

A SOCIAL ANALYSIS OF CONTESTED FISHING PRACTICES IN LAKE VICTORIA



Modesta MEDARD Ntara

Propositions

1. Fishing on Lake Victoria is impossible without engaging in asymmetrical (unequal) power relationships with financiers (this thesis).
2. Fishing in Lake Victoria is an activity embedded in networks rather than an individual activity- because ownership of resources, action and processes are vested in network of actors larger than the individual (this thesis).
3. Power is not given, it is attributed to people (Habermas, 1977; Social Research 44:3-24)
4. Markets for fish are not simply a question of demand and supply; they are far more complex than assumed (Medard et al. 2015)
5. A person who stands for nothing will fall for nothing.
6. It is not only what we do, but also what we do not do, for which we are accountable.

Propositions belonging to the PhD thesis entitled:

A social analysis of contested fishing practices in Lake Victoria, Tanzania”.

Modesta Medard Ntara
Wageningen, 23 February 2015.

A social analysis of contested fishing practices in Lake Victoria, Tanzania

Modesta Medard Ntara

THESIS COMMITTEE

Promotor

Prof. dr. ir. H. van Dijk
Professor of Law and Governance for Africa
Wageningen University

Co-promotors

Dr. P. Hebinck
Sociology of Development and Change group

Dr R. Mwaipopo
Department of Sociology and Anthropology
University of Dar es Salaam, Tanzania

Other members

Prof. Dr. A. Thorpe, University of Portsmouth, UK
Prof. dr. E. Frankema, Wageningen University
Dr. M. Bavinck, University of Amsterdam
Dr. J. Beuving, Radboud University Nijmegen

This research was conducted under the auspices of the Wageningen School of Social Sciences (WASS)

A social analysis of contested fishing practices in Lake Victoria, Tanzania

Modesta Medard Ntara

Thesis

submitted in fulfilment of the requirements for the degree of doctor

at Wageningen University

by the authority of the Rector Magnificus

Prof. dr. M.J. Kropff

in the presence of the

Thesis Committee appointed by the Academic Board

to be defended in public

on Tuesday, April 28, 2015

at 16.00 p.m. in the Aula

Modesta Medard Ntara

A social analysis of contested fishing practices in Lake Victoria, Tanzania,
272 pages.

PhD Thesis, Wageningen University, Wageningen, NL (2015)
With references, with summaries in Dutch and English

ISBN 978 94 6257-247-8

Table of Contents

Table of Contents.....	v
List of Figures.....	x
List of Tables	x
ACKNOWLEDGEMENTS.....	xiii
CHAPTER 1 DEFINING AND EXAMINING LAKE VICTORIA.....	1
1.1 Introduction: positioning the thesis.....	1
1.2 Discourses on Lake Victoria’s fishery dynamics	2
1.2.1 The overfishing discourse	2
1.2.2 Eutrophication	3
1.2.3 Native species disappear.....	3
1.2.4 The role of markets and politics	4
1.2.5 Nile Perch as saviour	4
1.3 Unpacking the arena: a methodological framework.....	5
1.3.1 Unpacking Lake Victoria.....	7
1.4.1 Research objectives and research questions	21
1.4.2 Problem statement.....	21
1.4.3 The study objectives and research questions	22
1.4.4 Methods of data collection and sampling procedure.....	22
(a) Selection of the study site and recruitment of participants.....	22
(b) Research methods and information collection procedure.....	28
(c) Data processing and analysis	31
(d) Post-Fieldwork qualitative data analysis.....	31
(e) Ethical consideration	32
(f) Limitations in data collection and information gathering.....	33
1.5 Structure of the thesis	34
CHAPTER 2 RECONFIGURING LAKE VICTORIA’S RESOURCES AND TRANSFORMATION OF ITS FISHERIES OVER TIME.....	35
2.1 Introduction.....	35

2.2 Lake Victoria essentials	35
2.3 Market driven fishery: examples from Nile Perch import ban, eco-labelling and slot size measures	43
2.4 Trends in Dagaa export and its establishment.....	44
2.5 Management transformation: co-management - a global response.....	45
2.5.1 Who is to participate in managing the lake?	47
2.6 Summary of the chapter	48
CHAPTER 3 FISHING AS A SOCIAL PRACTICE	49
3.1 Introduction.....	49
3.2 Locating societal transformation.....	50
3.1.1 Zinza fishing organisation (1940s-1970s)	51
3.1.2 Fishing in Zinza clan and sub-clan groupings (1960s-1970s).....	52
3.1.3 The Zinza minority in a globalized fishery	55
3.2 Social organization and norm implanting in Sukuma society.....	57
3.2.1 Witchcraft and magic: are they enduring cause for Sukuma success?	61
3.3 Commodification and changing fishing traditions and ethics	63
3.3.1 The rise of 'camp empires', power and networks in fishing.....	64
3.3.2 Triple capacity through empire: the case of Chikuku.....	66
3.3.3 From 'nzengo ethnic social ties' to 'commercial ties' in Sukuma society	72
3.4 Other social dynamics and their link to camp eEmpire organizations	74
3.5 Summary of the chapter	77
CHAPTER 4: THE ORGANIZATION OF THE NILE PERCH FISHERY ON LAKE VICTORIA- THE CASE OF TANZANIA	79
4.1 Introduction.....	79
4.2 Organization of Nile Perch in gill-net fishery	80
4.2.1 Fishing in the early days: single net, shared canoe	80
4.2.2 Fishing in the commercialization era: from single net to multi-paneled nets	81
4.3 Organization of the Nile Perch in beach seine fishery.....	83
4.3.1 Beach seine fishery before the 1980s.....	83
4.3.2 The beach seine fishery in the commercialized era (1990s -2000s).....	85
4.4 Long line fishing organization	90
4.4.1 Long-line fishing in the early days	90
4.4.2. The long-line fishery in the era of commercialization	91

4.4.3 Fishing processes in migonzo fishery.....	94
4.5 Emerging fishing relations and networks.....	95
4.6 Reconfiguration of Nile Perch export supply channels and networks.....	98
4.7 Summary of the chapter	103
CHAPTER 5 THE ORGANIZATION OF THE DAGAA FISHERIES IN TANZANIA'S LAKE VICTORIA	105
5.1. Introduction.....	105
5.2 Social and technical transformation in Dagaa fishery	107
5.3 The Dagaa commercialization era (1991-2011).....	110
5.3.1 The case of Kome Island and Kirumba fish market	110
5.3.2 Kirumba Dagaa market: the steering and coordinating node in Dagaa trade	114
5.4 Key actors and actions in Dagaa fishery	115
5.5 Growth of regional and export markets for Dagaa	118
5.6 The supply channels	125
5.7 Summary of the chapter	1255
CHAPTER 6 LABOUR RELATIONS: THE INTERACTION OF SOCIAL NETWORKS AND MARKETS IN TANZANIA'S LAKE VICTORIA FISHERY	128
6.1. Introduction.....	128
6.2 The crews' profiles, social networks and commoditized labour markets.....	129
6.3 Situational analysis of crew's life in and around the camps.....	134
6.3.1: Labour contracts and recruitment processes.....	139
6.4 Women Dagaa processors and labour arrangements in Lake Victoria.....	152
6.5 Winners and losers in Lake Victoria fisheries	153
6.6 Summary of the chapter	155
CHAPTER 7 FISHING INVESTMENTS, MARKETS AND POWER RELATIONS... 157	
7.1 Introduction.....	157
7.2 Profile of <i>matajiri</i> and their involvement in fishing.....	158
7.3 Capital costs and materials required for fishing in Lake Victoria.....	160
7.4 Cost, risks and challenges faced by <i>matajiri</i>	162
7.5 How <i>matajiri</i> persist in fishing activity	166
7.6 Credit markets, fish markets and <i>matajiri</i> decision making power	168
7.7 Overcoming burdens: How <i>matajiri</i> reduce costs and risks.....	172

7.8. Growing tendencies and counter-tendencies in the Lake Victoria's fishing arena	178
7.9 Summary of the chapter	180
CHAPTER 8 GOVERNANCE PRACTICES IN A GLOBALIZED FISHERY	182
8.1 Introduction.....	182
8.2 Dual Ministerial mandate and bureaucracy	184
8.2.1 Core fisheries Ministries, related Ministries and complexities.....	184
8.3 The role of regional Lake Victoria governance bodies.....	186
8.3.1 Over-riding governing power through projects and programmes.....	189
8.4 Fisheries governance agencies in Tanzania	191
8.4.1 National governing bodies in Tanzania	191
8.4.2 Governing bodies at local level	192
8.4.3 What are BMUs?	194
8.5 Booming beach seines: government hyperbole and illegal gear	196
8.6 The power of markets, corruption and networks in governing Lake Victoria fisheries	200
8.6.1 Markets: A driver for governance in Lake Victoria fishery	207
8.7 Summary of the chapter	218
CHAPTER 9 DISCUSSION AND CONCLUSION	220
9.1 Introduction.....	220
9.2. Key issues and processes of change in Lake Victoria's fisheries.....	221
9.2.1 The patronage system is cracking.....	221
9.2.2 Fish markets and credit markets – a source of power and commoditization	222
9.2.3 Market transactions and processes of social differentiation	223
9.2.4 Contested gender spaces, risk production and social relations: the market effect	223
9.2.5 Externalizing costs through network and market transactions: the unjust outcome of power and control	224
9.2.6 The Lake's biomass turned into an input for a globally marketed commodity.....	224
9.2.7 The lost trust and empathy in the arena – a governance challenge.....	225
9.3 Contribution to the world of science and other future research	226
9.3.1 The actor structure debate: unequal power, counter tendencies, resistance and contestation.....	226

9.3.2 Methodological contribution	227
9.3.3 Theoretical and conceptual contribution on power	228
9.3.4 Policy contribution and recommendations	229
Literature list	231
Appendices	251
Appendix 1: Information sheet and consent form	251
Appendix 2:	252
Appendix: 2.1	254
Appendix 5.1	256
Appendix 7	257
Appendix 8: Glossary of Kerewe, Jita, Luo, Zinza, Sukuma Kiswahili terms used in this study.	261
Summary	267
Summary in Swahili	270
Samenvatting	272
About the Author	276

List of Figures

Figure 1.1: Methodological framework	20
Figure 2.1: Map of South eastern Lake Victoria and location of the field sites	23
Figure 2.1: Lake Victoria showing international and local boundaries	36
Figure 2.2: Total annual catches (tons) of Lake Victoria, 1959-2010	38
Figure 2.3: Nile Perch export from Lake Victoria, Tanzania, 1996-2011 (US\$)	40
Figure 3.1: Various institutions and and networks in Sukuma society	59
Figure 3.2: Multi-camps, multi-gear and multi- boats	66
Figure 3.3: Example of Ja's camp as an empire	68
Figure 4.1: Long line (migonzo) and bait actor groupings	93
Figure 4.2: Initial fish supply channel (1980-1990's)	99
Figure 4.3: Exclusion of 'local resident fish collectors'	99
Figure 4.4: The Nile Perch fish supply channels	100
Figure 4.5: Current Nile Perch fish supply channels and networks	102
Figure 5.1: Map of Tanzania with identified Dagua major trade destinations from Kirumba	122
Figure 5.2: Dagua supply channels in Tanzania	126
Figure 7.1: Nile Perch credit markets and financing hierarchies	170
Figure 7.2: Dagua credit markets and financing hierarchies	172
Figure 8.1: Flowchart of the institutional structure and co-management arrangement with linkages to other stakeholders	188
Figure 8.2: LVFO Statutory bodies, flow of data and information and decision-making and management intervention for management of Lake Victoria	190
Figure 8.3: Example of eco-labelling structures from EPFs to the fishing camps in Lake Victoria, Tanzania	215

List of Tables

Table 2.1: Bait fishery: a 'commercial' subsector in Nile Perch fishing	39
Table 2.2: Indicators of regional fishing efforts in the Lake Victoria, 2000-2012	42
Table 3.1: Social networks: Kinsmen and ethnicity in fishing camps	73
Table 4.1: Examples of number and size of gill-nets in a Nile Perch Fishing unit in Lake Victoria Tanzania	82
Table 4.2: Number of beach seines per country, 2000-2012: Kenya, Tanzania and Uganda	86
Table 5.1: Trends in Dagua fishing gears, Lake Victoria, Tanzania,1986-2010	109
Table 5.2: Top 15 commercial Dagua camps at Mchangani, Ito and Ikulu (Kome Island)	110
Table 5.4: Official records of Dagua from Kirumba regional market, 1998-2010	120
Table 5.5: Dagua tonnages transported from Kirumba market in Mwanza	120
Table 5.6: Official records of Dagua tonnages from Kirumba to the main domestic destinations, 2009 - 2011	122
Table 5.7a: Overview of bags of Dagua and price list traded for human consumption and animal feed in 2010 at Kirumba	124

Table 5.7b: Overview of bags of Dagaa and price list traded for human consumption and animal feed in 2011 at Kirumba	1244
Table 6.1: Crew labourers' age categories in Lake Victoria, Tanzania	130
Table 6.2: Years fished by crew	130
Table 6.3: Average number of crew in Nile Perch and Dagaa fishing units	131
Table 6.4: Factors considered when hiring crew in the Nile Perch and Dagaa fisheries	132
Table 6.5: Reasons given by matajiri for hiring non-relatives (N= 154)	132
Table 6.6: Factors considered when crew decide to work in a given fishing camp	133
Table 6.7: Prospects for new entrants to get a crewman's fishing job	134
Table 6.8: Number of fishing camps crew worked at before interview date (N=154)	138
Table 6.9: Reasons given for crew members' mobility in various fishing camps	139
Table 6.10: 24 Hour activity timeline for a Nile Perch gillnet crew in commercial camps	145
Table 6.11: Price difference between crew and tajiri in Nile Perch commercial camps	148
Table: 6.12: Example of incentives and cut off points in the Nile Perch gillnet fishery	149
Table 7.1: Camp and boat (<i>matajiri</i>) owners' age (in %)	159
Table 7.2: Number of years fished by <i>matajiri</i> Table 26	159
Table 7.3: Reasons for investing in the current fishing activity (in %)	160
Table 7.4: <i>Matajiri</i> acquiring fishing inputs from credit (in %) Table 28	161
Table 7.5: Number of times respondents have been victim to theft or puracy (in%)	165
Table 7.6: Respondents' agreement on selected investment decisions Table 30	168
Table 7.7: Types of information supplied through the market channels (in %)	169
Table 7.8: Income and costs (incl. labour) in Dagaa commercial camps in five fishing units, 2010-2011	175
Table 7.9: Income, costs and reduced prices in 10 Nile Perch fishing units, 2010	176
Table 8.1: Number of beach seines in the Tanzanian part of Lake Victoria, 2000-2012	197
Table 8.2: Reasons stated by fishers as to why beach seine fishing continues Table 35	203
Table 8.4: Set of objectives in LVFO Fisheries Management Plan: 2009-2014	211
Appendix	
Table 1.1: Sample sizes for each set of activities	252
Table 2.4: Regionally agreed and nationally implemented management measures applicable to the Nile Perch and Tilapia fishery on Lake Victoria	254
Table 5.3: Kenya animal feed industries and buyers of Dagaa from Kirumba	256
Table 5.8: Major domestic animal feed companies in Tanzania identified at Kirumba	256
Table 7.3: Important equipment and facilities for investing in fishing in Lake Victoria, Tanzania	257

Table 7.6a: Overview of investment costs in a motorized Nile Perch gill net fishery	258
Table 7.6b: 1Overview of investment costs in a motorized Dagua fishery	259
Table 7.6c: Overview of investment costs in Nile Perch long line fishery	260
Table 7.6d: Overview of investment costs in NP beach seine fishery	260

ACKNOWLEDGEMENTS

First and foremost I give thanks to God for His continual love and support through the Lord Jesus Christ and the presence of the Holy Spirit. No one could ask for better or more giving and supportive advisors than Prof. Han van Dijk and Prof. Paul Hebinck. I am only one of many students who have benefited enormously from the endless energy and tactical savvy of these two Professors. They both unreservedly devoted themselves to guiding me through and finally rounded out a fine dissertation committee. Thank you for your unyielding commitment and dedication to seeing me through this project. Thank you, also, to my in-country supervisor, Dr Rose Mwaipopo, for your advice during my fieldwork and SEDEC workshop meetings.

This study was carried out with the support of the Netherlands Organization for Scientific Research (WOTRO/NWO, Grant W01.65.304.00) through a research project on "*Disentangling the Social and Ecological Drivers of Ecosystem Changes on Lake Victoria, Tanzania* (SEDEC)". I wish to recognize the keen interest the coordinator of SEDEC, Paul van Zwieten, had in this study and his administrative and technical support towards its success. Thanks to you personally and the entire SEDEC scientific team and colleagues - Ilse, Happy and Andrea - whose discussions helped me to be focused. Once again, thanks to Paul, Han and Dr. Ben Ngatunga for conducting interviews for Ph.D students in Dar Es Salaam (Tanzania) and realizing my potential to join the study.

In carrying out this study, I have received professional and friendly help. I will never forget my best friends and mentors – Dr Kim Geheb, the late Prof Doug Clyde Wilson, Prof. Siri Gerrard, Prof. Jeppe Kolding, Prof. Barbara Neis, Mr. Martin van der Knaap and Prof. Valerie Burton. You always had an answer to all my questions no matter how vague they (sometimes) were. I sincerely say to all of you that you have all contributed to a remarkable journey, excitement and joy in my life. This study's merits are based on your many suggestions, practical help and previous work that we worked on together and you have helped me upgrade my career. However, I remain fully responsible for the contents of this book.

This effort would never have happened without practical and institutional support from the Tanzania Fisheries Research Institute (TAFIRI), the National Fish Laboratory, Nyegezi Fisheries Education Training Agency (FETA), the Tanzania Fisheries Department (TFD) and the Local Government Authorities (LGAs) of Sengerema, Ukerewe, Ilemela and Magu Districts whose staff helped me directly and indirectly. I thank the Directors of TAFIRI, researchers, technicians and supporting staff who facilitated my research in various ways during the course of my study. I particularly want to thank all the men, women and children from respective field sites. Many thanks to my field assistant, Mr Deograsias Wahalalika, for his good work and perseverance through hardship in the fieldwork and to his wife, Lea, for allowing Deograsias to be absent from home during the study.

To the Wageningen University staff, first from the Law and Governance Group and later from the Sociology of Development and Change Group (SDC), I thank you for the supportive and cheerful environment which made it easier for me to study and to write this book. While I am grateful to all, a few deserve to be mentioned here: Diana Dupain, Jos Michel, Lucie van Zaalen, Leontine Visser, Annelies Coppelmans, Maarit Junnikkala, Dorotea Wartena, Dik Roth, Mariëlle Takes, Diana Sietz, Nuria Rossell, Godelieve Spaas, Ellis Oudendijk, Monique Nuijten and Gerard Verschoor. Many thanks to Ineke van Driel, the liaison officer, and Heleen Danen from WASS office for your efforts to assist me in administrative matters. My fellow Tanzanians and East Africans, thanks for occasional get together and *nyama choma* we have had together while in the Netherlands.

Thanks to Bambi my book editor, for her tireless effort to make sure we get this book right and on time. Bambi you are not only a fast reader and insightful, but fun and easy to work with. Bambi thank you so much.

It is worth mentioning friends who made my life struggle and lovely stay bearable. Dorotea Wartema, Henri Waanders (Social Raadslieden, Wageningen) and Linda Kaster, thank you for your unique kindness never taken for granted, especially in the land where strict appointments are the order of the day. I thank you very much for keeping the faith and for your constant availability and willingness to assist. In particular, I thank Linda Kaster for your efforts to assist me cross the hurdles and social challenges I faced along the way. You and Maxine made the chilly winter and lonely stay bearable. I shall always remember you.

Many thanks go to my mum, Mrs Calista Gama Ntara, and my late father, Mr Medard Mpotisambo Ntara, whose love for education always inspired me to aim higher. *Baba*, you have really missed from sharing the joy of my completion and the reading of this book! I miss you so much: may your soul rest in everlasting peace. *Mama* and *Baba*, thanks for giving me life and setting me on the path that I am on today - a wife, a mother and a scholarly person.

My sister Vicky and in-law, Major General Patrick Mlowezi, you mean so much to me and my family. You are truly second parents, who raised and shaped my lifeline. Thank you for your love, support and encouragement. I owe you infinitely. My brother Vincent and sister in-law Sabina, thanks for all you did for me and my family. My sisters Rose, Thea and Yutha, brother Zamea and my late sister, Leah, thank you for your love, prayers and all your support. To all my friends in Tanzania and other parts of the world: thank you.

Finally this book would not be half as good as it is if it were not for the companionship of my family. My husband Hendrien (Henk) Bronkhorst, daughters Anna-marie and Blandy, never flagged in their love and support after most families would have given me up as a lost cause: "A lost wife and mum". I thank you so much for your understanding and patience, especially during the long periods I had to be away from the family, both in the course of field work and while at Wageningen University writing up this thesis.

I am very thankful to you Henk, for your faithfulness and trustworthiness. Your tolerance during my absence, perseverance and love shall never depart from my heart. I am so appreciative of your financial, material and moral support for the

family throughout my study period. Without your dedicated support, it would have been difficult for me to remain focused to the end.

To Blandy, thanks for taking care of the house, your younger sister Anna-marie and all logistics despite your tight school programme. I feel so indebted and I promise to help you discover your true path in life.

Anna-marie, we started this journey together in 2008 and you stayed with me for a period of ten month in the Netherlands. Through your companionship you have directly and indirectly made this book. It was not easy to leave you in Mwanza during my second leg in 2011. Thank God you accepted the situation, though sometimes you cried bitterly - "I want my mum, I want my mum". I am so sorry. You kept on sending touching and emotional messages. In some of them you wrote "Love is Power" and in another "Dear my lovely mother Modesta, I like you as a sister and you like me too. I am so happy that I will make you stay in this world forever and I will stay near you my mother. I love you". "Hi Mum, it is me Annamarie, sorry for disturbing you. Keep on working hard. Love you, bye". "Every step I take, every move I make, every single day, every time I pray I will be missing you. Thinking of the day when you went away, what a life to take, what a bond to break, I am missing you mum". These messages are still with me. I promise you Anna-marie, I will be the most caring and loving mother you have ever known and I will support you as you map out your destiny. Once again, thanks for your concern and emotional questions - "Mum how is your book?"; "Mum, what are you writing about?"; "Mum, how many pages are you writing?"; "Mum, when are you finishing?"; "Mum, when are you coming back?" I have finally answered them and this book is dedicated to you Anna-marie. I love you so much!

CHAPTER 1

DEFINING AND EXAMINING LAKE VICTORIA

1.1 Introduction: positioning the thesis

The central argument of the thesis is that the global market for exotic species, notably the Nile Perch which were introduced to the Lake in the 1950s to more efficiently exploit the Lake's fish resources, is a significant driver of change in Lake Victoria's fisheries. The incorporation of the Lake's resources into the global market dramatically transformed Lake Victoria's fishery landscape. It contributed to the reorientation of a barter and local market oriented economy to one that is increasingly shaped by global market demands for Nile Perch and Tilapia and even indigenous species like Dagaa and *Haplochromines* spp.(Haplos).The combination of global and local forces has produced a very specific site of struggle between actors, in their attempts to reap the benefits of the biological and social resources of the lake and to exploit the opportunities created especially when it was discovered that Nile Perch is a sought-after fish which thrives in Lake Victoria. In addition, while it may seem that 'local' fish species escaped all these transformations, Dagaa fishing and trading strategies have been transformed in similar ways. Nile Perch and Dagaa do, thus, not simply co-exist biologically but their fishing practices and market organisations are similarly organised. The social arena emerging from these processes has been transformed dramatically. New sets and categories of social actors (often foreign owners of Nile Perch Export Processing Factories [EPFs], middlemen, fish handlers and beach management units) have entered the arena and now interact, collaborate and compete with those that historically used the lake for their livelihood (e.g. fishers and their families, community members and local traders).

A striking emergent property is the development of a rather aggressive form of entrepreneurship that has gradually remodelled the socio-technical organisation of fishing, through the introduction of motorised fishing and multi-panelled nets, but has also remoulded the fishing camps into large and small fishing empires. This entrepreneurship gradually established a system of control over resources to the benefit of the centralized organizer that controlled access to the resource and the resource itself. This includes controlling fishers, their fishing methods, and fish handlers and the disciplining of camp labourers. This system of control extends from centralized to isolated locales, on islands and mainland landing sites, reconfiguring existing networks and creating new forms of dependency through market access and credit provision. Associated outcomes are processes of inclusion and exclusion, and insecure livelihoods through the disconnection of local fishermen and resource users from their fishing grounds.

These new entrepreneurs manage to manipulate and circumvent recent policy initiatives designed to govern the Lake's fish resources and to achieve quality

standards. Resource access, and fishing and trading arrangements are vested in large groups in the local, regional and export market channels. This has made the Lake Victoria landscape a hybrid one, influenced and shaped by complex interactions between the Lake's many peoples, and their interactions with the outside world. This landscape defies reduction to a simple reproducible form because of its multiple hybridity: it is made (and constantly remade) through the entanglement and interaction of the social and the natural, the human and the non-human, the rural and the non-rural, and the local and the global.

The thesis argues that those social actors and their fishery practices that have a long historical record of occupying the Lake's social and ecological space position themselves differently. They practise contrasting discourses of development. Thus, despite the fact that the globalisation of Lake Victoria's resources has increased the competition for these resources amongst the different social actors, globalisation does not completely shape local development processes. The local is not simply a deviation from the global and its political economic fabric: the local rather emerges as a social space with a locally, historically and culturally specific dynamic, which at times co-exists with global dynamics. They also mutually transform one another. Following Long (2001) and Escobar (2010), I argue that multiple realities and practices, rather than one reality and practice, characterise Lake Victoria's social and ecological perspectives.

The chapter proceeds as follows. I will first briefly elaborate on the contrasting discourses regarding the Lake's fishing ecology. This short expose serves to position the thesis in the broader debate on the dynamics and future of Lake Victoria and its fisheries. What then follows is an outline and detailing of my methodological framework for the interpretation of Lake Victoria as a social arena and social space of interaction between the social and the natural, the local and the global. After this, I will discuss the notion of arena. Unpacking the Lake Victoria arena builds on six methodological cornerstones. Finally, I will describe the key informants selected, how and why these were selected and what modes of data collection were used.

1.2 Discourses on Lake Victoria's fishery dynamics

Five contrasting discourses about Lake Victoria can be identified. These provide an academic context to engage with natural science traditions affecting the Lake's future development challenges and solutions for its problems. Positioning myself *vis-a-vis* these discourses has formed and informed my mode of interpretation of Lake Victoria, which I will explain in detail in the sections that follow.

1.2.1 The overfishing discourse

Overfishing, so it is argued, occurs. The major concern is to manage fishing effort and capacity. Scientists and governments in the region argue that Nile Perch catches are declining and concerted efforts are required to prevent the collapse of this fishery which has brought such fortune to the area (FAO/LVFO, 2005). The establishment of 'Operation Save the Nile Perch' (LVFO, 2010:4) and the 'Implementation of Zero Tolerance to Illegal fishing and Trade to 100% with focus on Nile Perch' (Okware, 2009) are examples of such management endeavours. Scientists and fisheries managers across the region insist that fishing pressure has increased, threatening the Lake's

ecosystem, its economy and the capacity of local fishers to sustain their livelihoods. Yet Nile Perch exporters look for ways to expand their markets, and their processing capacity and are building new factories. Additionally, the EPFs currently operate between 30-50% below their installed capacity (FAO/LVFO, 2005). All in all, fishing needs to be restrained and controlled through administrative and technical measures to safeguard bio-diversity and sustainability of the lake for future generations of fishers, traders and consumers.

1.2.2 Eutrophication

The ecosystem and the Lake's capacity to maintain its fish stocks and species has dramatically changed, due to processes of eutrophication in and around LV because of the intensification of agricultural production. A group of scientists working on a multi-disciplinary project known as SEDEC¹ argue that the continuing eutrophication presents an even greater risk to the Lake's resources than overfishing: "Eutrophication and fisheries drive Lake Victoria's changing ecosystem with far-reaching consequences for exploitation patterns, livelihoods and trade" (SEDEC, 2007:13). This argument is based on the fact that the LV fish stock dynamic is also influenced by bottom-up processes in the form of steadily increased eutrophication and primary productivity (Kolding et al., 2014:56). But it has also been argued that the eutrophication scenario in LV is more difficult to interpret (ibid.). Analysis by Kolding et al. (2008) indicates that the dynamics of fish production in LV are environmentally driven to a large extent. There are emerging signs of the decline and disappearance of Nile Perch from sheltered eutrophic bays, such as Speke Gulf and Winam bay. As a consequence, fishing is not the sole driver of stock dynamics (ibid.). The changing indicators of water quality (e.g. chemical nutrients) show that LV is not in a steady state. Therefore, the interpretation of trends and the use of fishery assessment or ecosystem models that assume environmental constancy can be highly misleading if eutrophication is not taken into account. However, the debate as to whether the stocks are mainly driven by top-down (the fishery) or bottom-up (nutrients) processes is not settled yet and is under ongoing investigation (Sitoki et al., 2010). But most managers and community members do not believe in eutrophication: they believe that Nile Perch is overfished and there are signs that the export industries suffer from structural over-capacity and production ranges between 25-50% of installed capacity (Medard et al., 2015).

1.2.3 Native species disappear

The introduction of Nile Perch in Lake Victoria in the 1950s has resulted in a decline and, in some cases, a total disappearance of most native fish species. 'By the early 1990s, what had been a diverse multispecies fishery rested on only three species: The non-indigenous Nile Perch, the non-indigenous Nile Tilapia *Oreochromis niloticus*, and the diminutive *R. Argentea* (Dagaa). Although some of the blame for the cichlid extinction has been shifted from the Nile Perch to other anthropogenic factors, such as overfishing and eutrophication (Seehausen et al., 1997), 'the Nile Perch was certainly a major contributor' (Pringle, 2005a:780). Stocks of *Haplochromines*, which

¹Disentangling Socio-Ecological Drivers of Ecosystem Changes in Lake Victoria (SEDEC). Research project, funded by grant number W01.65.304.00 from the Netherlands Organization for Scientific Research (WOTRO/NWO).

were the most abundant fish in LV and formed 80% of fish stocks (Kudhongania and Cordone, 1974; Okaromon et al., 1985), comprised of over 500 species (Seehausen, 1996), declined. 60% of the species are feared to have become extinct due to predation by Nile Perch (Witte et al., 1992a; 1992b). The introduction of Nile Perch has brought an enormous amount of bio-mass (notably the *Haplochromis* species) to near extinction.

1.2.4 The role of markets and politics

Around the lakeshore, enthusiasm over the increase in the value of the fishery has been tempered by concerns about species loss, increased economic stratification and intensification of the fishery (Wilson et al., 1999), and the fact that most Nile Perch is exported and locally unaffordable (Medard, 2005; Pringle, 2005b; van der Knaap & Ligtoet, 2010). This particular debate approaches the lake's dynamic from the point of view that the Nile Perch has not saved LV's fisheries and eco-system. Hubert Sauper's film 'Darwin's Nightmare' (2004) put the fishery in the international spotlight and, more worryingly perhaps, the fishery's consumer markets. The film portrayed the Nile Perch fishery as a social and economic catastrophe, and massively unjust to the people who relied on it. It showed comfortable administrators and wealthy export factory owners, contrasted with children wandering through the war zones of Nile Perch detritus. Sauper's film created a contentious tale with a different political ending: "Nile Perch is not very popular with local consumers and, moreover, local communities have come to depend on other social and economic gains that the export provides, such as income and employment" (LVFO/IUCN, 2005:2). Yet, there is growing pressure to promote the fact that fisheries feed voiceless and hungry people (Geheb et al., 2008; van der Knaap and Ligtoet, 2010), who eat the left-overs from the export factories, known as 'punk' in Tanzania (Gibbon, 1997a) or 'mgongo wazi' in Kenya (Abila and Jansen, 1997). A number of authors argue that the local economic gains from this new fishery are insufficient (van der Knaap, 2006) and hamper people's ability to adapt to the new fishery challenges.

1.2.5 Nile Perch as saviour

The Nile Perch is also called the saviour or *mkombozi* (Reynolds and Greboval, 1988; LVFO/IFMP, 2006; Reynolds, Greboval and Mannin, 1995). It is claimed that the Nile Perch is more appreciated than the widely disliked *Haplochromines*. Others assert that Nile Perch is economically far more efficient and profitable than the local species (Kadigi et al., 2007:1; Thorpe and Bennet 2004:40; Pollard, 2008). Lake shore 'boom towns' have sprouted as a result of the Nile Perch expansion, generating in turn demand for services and labour (Medard et al., 2015). The export processing factories have not only added value locally but have also diversified the fisheries. The production of fish fillets, fish maws, trimmings (off-cuts), and belly flaps have created economic opportunities for local and regional economic activities. The Nile Perch, therefore, has set in motion processes not only of biological evolution (e.g. changes in the composition of species) but has also fuelled the development of a processing industry catering for global markets, as well as regional, domestic and local markets.

1.3 Unpacking the arena: a methodological framework

This thesis engages with these contrasting natural and social science perspectives. It does so through a social analysis of fishing, which is perceived and understood here as a socially, culturally and economically embedded activity, practised by social actors rooted in complex sets of social relations of production that not only span the local environment but, progressively, the global as well. My approach to understanding Lake Victoria is not to treat it as a biological system. Starting from this position would imply that I view Lake Victoria as a socially neutral system. Such analysis would ignore inequalities in wealth and power, and differences in practices and values. It would also ignore the fact that the social and political landscape has been gradually and dramatically changed by new sets of social actors, including global and local ones, who have entered the social space which is Lake Victoria. Their entry has not only created new opportunities but also a series of constraints and threats to bio-diversity and local livelihoods of fishermen and their families. Lake Victoria conceptualised as an *arena*, expresses that the Lake is neither socially nor ecologically a neutral space.

Following Giddens (1984, 1987), I conceptualise 'arena' as the social setting or site of enactment of social activities and processes. A focus on the enactment of the social allows me to analyse how actors enact cooperation but also to study resistances, contestations and negotiations enacted by social actors in their struggle to access the lake's resources and to get a fair share of the benefits derived from such access (Ribot and Peluso, 2003). Long (2000:190; 2001:59) defines arenas as social locations or situations where issues, resources, values and representations contest with each other. These are either spaces in which contestations associated with different practices and values of different domains take place or they are spaces within a single domain where attempts are made to resolve discrepancies in value interpretation and incompatibility between actors' interests.

Since the beginning of my fieldwork in June 2009, I have encountered many practices carried out in the many locales that together constitute the fishing camps and fishing locations, landing sites, various markets that are operational, processing factories and government offices, among others. Each has its own dynamic and strategy to catch and to get fish, to manage and regulate fishing, and to make a living from fishing. I started following how fishing is organized in Lake Victoria, what actors are involved, what their roles are, how they interact, where they operate, their fishing methods, where they sell fish, and how they negotiate with each other.

I did so because the centre stage of the arena is occupied by the principal actors, that is, those groups in society that seek to influence actions and policies. Some groups focus on several issues at once and are, hence, involved in different arenas; others focus only on one issue in a single arena (Renn, 1993:182).

Zinza elders agree with my analytical statement to view Lake Victoria and its fisheries as a social arena. Lake Victoria has always been a site of social struggle but also one where fisher folk have cooperated to master the Lake's resources; more recently, it has been reconfigured into what I have labelled in this thesis 'the Lake Victoria *arenas*'. The Zinza, who have been fishing the Lake for years, argue that things have dramatically changed in and around Lake Victoria. They narrate that

they have lost their identity: they are more 'confused' about how to define a fisherman and fishing activity. Fishing, compared to the past, is now organised in a web of dependencies. It is conducted in a collective effort of networks and the poor have fewer options to get fish than the wealthy and are either excluded or forced to get fish in risky environments and from marginal sources: these are sub-standard, low quality sources whose use is often prohibited as an illegal activity.

Fishing, as the local expression goes, is through 'enablers' (*wawezechaji*) and 'guarantors' (*wadhamini*). A camp owner (*tajiri*) is nowadays provided with financial, material and technical input by EPFs, agents of EPFs and prominent fish traders in return for fish supplies. In this way, a new class of fisher folk has emerged that is 'physically absent' but 'functionally present'. McCay et al. (1995) and Munk-Madsen and Larsen (1998) call them the 'absentee' owners. Kurien (1996) labels them as 'non-worker owners'. Edward Omkwe expresses the changes in organisation in LV as follows:

"Fishing in this lake is through enablers. You can't fish without them. It is rich people who fish, we just work for them. We are tied up with endless loans and credit. That's why we can't get out of the fishery, because we can't afford to pay back the debt. We are obliged to continue searching".
(Ntama-Kome Island 16.11.2009)

These and other accounts I collected over the years not only confirm that the notion 'arena' is useful and relevant, they – more importantly, perhaps – point at the emergent properties of the Lake Victoria arena. The accounts inform us that fishing is coordinated through networks from production to marketing, where strategic decisions are made, prices are prefixed and costs are externalized downwards in the network. It goes down to the level of *unfair* wages to camp labourers, who are bound by strict camp rules and bylaws which maintain order and discipline. Rich camp owners coerce power and use security guards to safeguard money, assets and rich ecological fishing sites. One Zinza elder called such a fishing arrangement a 'deprived relation' which involves 'a commander and prisoners'. He is quoted as saying:

*"Our sons have become prisoners. They do the actual work of fishing but are strictly not allowed to own shares in boats and/or gear in a fishing unit the way we did. They are totally excluded from property ownership and it is becoming harder for them to be successors in ownership. During our time a fisherman was oneself. Now we have camp owner (*tajiri*) and labourer (*kibarua*) and the gap between the two is enormous. These differences are deepened because of the growing cultural and economic gaps that exist between many of the outsiders, migratory commercial fishers and investors, and local community members. Our sons have been distanced as they no longer fish for family fishing operations but for anonymous outsiders (*watu wakuja*). There is no trust in today's fishing. They are confined to fishing and watched throughout by gun-toting security guards. This is intimidating us as elders, traditional fishers and resident community members. It has created mistrust not only between the labouring class and *tajiri* but in the entire resident community"*
(Mtoso, 17/11/2009).

Zinza elders also claim that they no longer consume some of their favourite Tilapia species, and many others such as Bagrus and Labeo, because the Nile Perch is a predator, a hunting fish and has changed their ecological belt. Not only that, the

indigenous fish are commercially intensified and hooked as bait to catch the ever hungry Nile Perch.

Contrasting accounts, such as those of the current fisheries law enforcers, reinforce the idea of Lake Victoria's being an arena. A fishery manager in an interview on June 12, 2012, for instance, portrayed the Zinza and other 'traditional' fishing ethnic groups as 'resistant to change, to export regulatory measures and global market conditions', because of their involvement in local markets and their use of prohibited fishing gear. In contrast to the Zinza, the catch of new, migrant commercial fishers (e.g. Sukumas, Kuryas) is mostly in accordance with the quality requirements of export markets. Whereas traditional fishers are regularly subjected to penalties, gear confiscation and exclusion, commercial fishers are labelled as those that comply '*with*' global standards. Those who supply regional and local markets are referred to as '*without*', thus not complying with EU standards (Kadigi et al., 2007:76). These views, in turn, confirm that the local is seen and defined in terms of the global.

1.3.1 Unpacking Lake Victoria

Conceptualising an arena methodologically as settings or sites and spaces of action, interaction and enactment, requires a number of more general methodological considerations that are associated with the advances of social sciences more generally and the need to go beyond structural analysis of social change and development (Long, 2001). These considerations together reflect the need to study of arena as a situational analysis of actors, actor practices and key events (Long, 2001). These events and practices occur in specific times and spaces and need to be studied as such. Situational analysis requires exploring how local populations of fishers are embedded in sets of social relations that span the local, regional and global. Whether these relations shape the way the exploitation of the fish resources offered by the Lake is organised and the extent to which they do, are my central concerns.

(a) Attributing agency to social actors

Inspired by Giddens (1984; 1987) and Long (2001; 2007) the analysis of an arena begins with attributing agency to social actors. Agency refers to the knowledge, capability and social embedded-ness associated with acts of doing and reflecting that impact upon or shapes one's own and other people's actions and interpretations. Agency refers to the capability of individuals to act independently and to make their own free choices.

(b) Practices, enactment and dynamics

Long (2001) argues that while the methodological focus is on the analysis of actions, counteractions and discourses that compose the arena, actions, counteractions and discourses '*are themselves reconfigured by the particular actions and negotiations that ensue*' (2001:72). This implies that arenas are constituted by actions and interactions amongst social actors (see Massey, 2004) which, in turn, offers insight into the study of the dynamics of enactment. Dynamics of enactment manifest in the form of patterns and processes. In and around Lake Victoria these include processes of eutrophication, a gradual intensification of fishing, and a range of policy interventions and attempts to regulate fishing to exclude certain fishing practices. In

addition, they include import bans, illegal fishing, empire formation, bribery, power play, externalizing cost to others, armoured patrolling of fishing grounds, new markets opening up and old ones falling away, and so on: all these are events and processes taking place in and around Lake Victoria. I use the notion 'empire' as a metaphor for characterizing 'the new "superstructure" of globalizing markets which increasingly re-orders large domains of the social and natural worlds by subjecting them to a new and centralized control and to massive appropriation' (Van der Ploeg, 2008: xv). The notion 'empire' can be used not only to analyse the role of global markets in the shaping of the Lake Victoria arena, but also to explore the organisation of fishing camps. The metaphor 'empire' is also fitting there.

Arenas are constituted by multiple practices (including those of 'empire') which are, in turn, supported and expressed by multiple discourses. My ethnographic endeavour to unravel the organisation of the fisheries and the various dynamics entailed in assessing the Lake and its fish resource often led me to study contrasting or counter discourses about the lake and its environment. Discourses appear in the form of laws, regulations and bylaws, as well as intentions about the future of the fishery sector; but discourses are also embodied in practices (Hajer, 1995; Long, 2001). Counter-discourses manifest in the form of illegal practices which may be interpreted as a display of resistance to policy measures and unfair distribution of benefits. Resistance, as Long (2007:70) suggests, is a "socially embedded" process, like discourse, which is constituted through social interaction. It is often hidden (van der Ploeg, 2008) but, when one looks closely, one discovers the underlying discourses legitimizing colliding interests and interpretations. I encountered skilful ways of particular groups of actors and community members to circumvent attempts by the State to control the exploitation of fish resources. The Lake, thus, unfolds analytically as an arena with a number of contrasting and contesting discourses - policy, socio-cultural, ecological and economic - expressing in turn multiple strategies of actors and multiple social realities. Discourses are connected to or even dependent on each other. The processes and practices are constituted by local and global political, ecological, socio-cultural processes and economic forces (Escobar, 2001:139) simultaneously linking the global and the local. This means social actors not only construct and enlarge spaces; they also move across different spaces and connect these through their practices (McGee, 2004) and social networks.

(c) Human and non-human interactions

Arenas are dynamic, constructed and reconstructed over time, not only through the interaction of the social but also through the interactions between the social and the natural, the human and the non-human, the rural and the non-rural, and the local and the global (Woods, 2007:495). Social actors are thus socio-ecologically situated in the arena. The thesis in this way seeks to comprehend human society ecologically and to account for the manifold interactions within and between society and its natural and ecological environment (Bryant and Bailey, 1997). This requires, in my view, an analysis that recognizes that the Lake (e.g. ecology) makes the people and the people and their institutions (e.g. the social systems) make the lake by the way they organize production and trade. They mutually constitute each other in locally specific and heterogeneous practices which are dynamic. In line with a co-evolutionary (Zimmerer and Basset, 2003) or a co-production perspective (Ploeg,

2008; Woods, 2007) it is analytically enriching to understand the Lake as the locally specific outcome of the mutual transformation of the social and the natural: as the outcome of manifold interactions and processes that operate at various social and political levels, from the 'local' to the 'global'. It is the locality (or the space) and the practices of everyday life where, according to Bourdieu (1990), action and agency are created and given meaning and power are constructed.

(d) Global-local connections

Arenas are sites of encounter between the global and local. Lake Victoria allows us to understand globalization, its dynamics and effects on the local, as non-linear. Fishing in Lake Victoria has long been characterized by fishing for local markets. When the Lake was discovered by global players, the global demand for its species remodelled the fishing industry and fishing practices. Subsistence production and local and regional markets co-exist with the production of Nile Perch destined for international markets. The interaction of global and local processes, however, has not simply led to a global or western form of modernity; instead, following Escobar (2010) and Arce and Long (2000), it is more appropriate to talk about multiple modernities and multiple realities. The Lake's fish species may be well integrated in global markets, but this does not imply that global values and practices predominate and have replaced localised values and practices. Regional, domestic and local markets remain important and economically dynamic (Medard et al., 2015), but their organisation has been reshaped by experiences with global marketing, which has set in motion processes of increased, and at times massive, competition amongst the major players in the lake's fisheries, e.g. boat and camp owners, EPFs, commissioned agents and numerous middlemen and women. Other fisheries, such as Dagaa and indigenous fish species (e.g. bait fishes), begin to look like Nile Perch and are subjected to fierce competition. More and more Dagaa is being exported as fish meal for poultry factories in continental markets. The market for fresh, smoked, dried and salted Nile Perch (*kayabo*) is expanding. The Dagaa and Kayabo markets have their own mode of ordering. The global market for Nile Perch is, thus, not only steered from 'outside' but gradually has developed its own economic dynamic in Tanzania.

(e) Networks

Arenas are constituted by networks and the relationships between the social actors in the arena are not necessarily hierarchical, despite existing power differences. I have looked at actors' interactions and their relative applicability empirically, as evidenced in voices of particular informants and by participant observation. Actors in Lake Victoria shift positions as much as they do their practices and relations. I follow Knock's (1993) suggestions that social groups and their structures are networks whose influences on decisions can be traced and explained. Moreover, what network theory is also able to do is to identify how characteristics of group members' interactions influence the group's ability to exercise its collective, as well as individual, interests. The ways that these groups interact and express their power are determined by what they are 'based on'.

These social groups are understood in concrete time and space, an understanding which is approached through social network theory (Emirbayer and Goodwin, 1994) as it helps to ground the concept of social power in interaction (Barnes, 1988). Within

sociological theories the question of the concrete time/space manifestation of actors and groups has been addressed by social network theory (Knoke, 1993). This means that social practices are ordered across time and space and should not be thought of as environments in which social events elapse, but as constitutive of social practices and activities (Giddens, 1984, 1987) in a given system.

In Lake Victoria, the social relations of production that people enter into in order to survive, to produce and reproduce their means of life, local networks and the organisation of fishing, have been transformed during globalisation processes. Access to rich fishing areas is subject to fierce social struggles, where those with control over resources and access to significant capital investments and weapons tend to win. Poverty and unequally distributed benefits, alongside bio-diversity loss and resource depletion, have become key characteristics of current fisheries practices. Moreover, national policies are increasingly moulded by neo-liberal principles and tendencies, allowing foreign ownership of key assets like processing factories, boats and capital, and in turn increasing competition among the social actors that traditionally used and controlled the Lake's resources for their livelihood. Global organizations and governing bodies have been reformed by the expansion of international trade in fish and their regulating influence begins to be felt locally. The wish to secure quality fish and to control fishing methods thereby ensuring sustainable fishing has left its imprint on fisheries.

(f) Markets

Markets are essential and are shaped socio-materially by the 'product' (quality), 'the place' (the markets sites and the distribution networks), 'the people' (practices and preferences), as well as social relationships (Hebinck et al, 2015; Kotler, 1984). Markets and networks are difficult to distinguish as both appear essential for the mode of interaction between actors. Through markets, and in the presence of its material base (the fish), the traders and other market-based actors fix prices and, at the same time, offer constant credit, while key actors in the network connecting fish, fishers and traders, employ social and economic power to control actors and their activities on small and large scales and with great efficiency. Actors interact, become familiar with each other, and produce an exchange of goods or services.

I, therefore, conceptualize the fish market in Lake Victoria as a socially constructed and negotiated space. Lake Victoria is also a physical place for trade and also a place for social gathering and the building up of relationships. I conceptualize the market as not simply a physical place, but a 'social network' or 'an interaction' which is coordinated by the mediums of exchange. Man-woman interactions in fishing and fish trade also plays a role in creating different features of markets (Medard et al., 2015), and in this instance the 'currency (medium of exchange) is sex' and not money. Apart from sex deeds, fish markets are also characterised by corruption, bribery, theft, cheating and aggression. This means that the market is a social practice which is often deeply socialised and facilitated by supportive and/or selfish relations.

Markets in Lake Victoria are physical sites where fish gets checked, approved or rejected and handled, landing sites are created and improved, local fisheries' management bodies Beach Management Units (BMUs) and fish quality inspectors are formed and sanctioned to oversee hygienic conditions, product forms are defined

and rules and protocols are formed to ensure all that is preferred or required by the market (buyers) is adhered to.

Markets are also the sites where people buy and sell what is available and affordable with no regard to quality preferences. Actors become subjective and choice-less (Medard et al., 2015).

An exceptional feature of the market in Lake Victoria is that it is a buyer's market: Nile Perch buyers determine fish quality and prices. Buyers coordinate activities and markets over meaning, purpose and the final outcome. Their control over the supply chain/network enables them to keep prices as low as possible. Fishers, traders and agents of EPFs are firmly incorporated into the networks that, ultimately, are almost fully controlled by EPFs. Endless loans and credit, and control by EPFs within the supply chain, often result in fish sellers 'dependency and poor negotiation power. Fish buyers in LV are, therefore, constantly struggling to define their boundaries, to define insiders (network members) as well as outsiders through which the resources are mobilized in strategic and purposive actions.

One of strategies to maintain co-ordination in the export market is through contracts. Contracts are part of the network governing instrument (FAO, 2001), but in the LV case, they often bring negative consequences by enhancing control and minimizing negotiation. Cannon et al. (2000) identify two types of contract: legal contracts (those enforced by law) and relational contracts (those embedded within social norms). Contracts in Lake Victoria oblige Nile Perch export network members (fishers, agents of EPFs, camp owners) to implement fish quality enhancing practices. They provide details on roles, responsibilities, types of collateral, rules and sanctions and, most importantly, define outcomes or outputs (e.g. fish size, freshness) to be delivered. Contracts are also relational and rely on individual self-discipline, reciprocity, trustworthiness and obedience.

Contracts represent promises or obligations and guarantees of future actions. Those without contracts or outside the networks find it difficult to access credit and face unreliable market problems. Contracts permit market reliability because some export and regional markets are difficult to enter. For instance, in Nile Perch export markets, contracts permit advancement of capital costs and transport costs and may offer transport and ice for preservation. All in all, one of the major characteristics of Lake Victoria's markets is that actors are required to be 'hard-workers', to 'reciprocate', to invest in 'relationships', 'discipline' and 'tolerance' in order to gain access to the market and strong networks.

(g) Power

An arena is a site of power struggle between various social actors who, together, constitute the arena. Power is scattered in various networks and is continually reinforced by different sources of power. Power, or the ability to use human agency, is central as actors attempt to employ their agency and power to reorder the networks in order to control the resources and discipline the agency of other actors in the network. I emphasize the power of social networks because actors depend on each other in fishing, fish purchases, transportation, supplies (e.g. fuel and ice) and marketing and, therefore, 'social networks' of 'interdependencies' are automatically created. These networks eventually provide sets of 'power relations' where the goal is to gain rights and power. In so doing, power struggles and discourses inevitably

occur. In this case, it is not the actors themselves but it is their relations that generate or lose power.

Power means the ability of one person to make another person do something that s/he otherwise would rather not do (Dahl, 1957:203). This suggestion was known as the 'first face of power' (Dahl, 1961) as it was followed by two famous critiques which contained a 'second' and 'third' face of power. The 'second face' was suggested by Bachrach and Baratz (1962). They thought Dahl's conception was adequate for some exercises of power, but ignored the situations in which 'A' uses power to make sure 'B' does nothing - that the question of 'B's interest does not even arise. For them, all forms of political organization are related to the 'mobilization of bias' that is built into institutions, whereby some issues are organized in and others organized out. This is the 'second face' of power - the non-decision making process (Clegg, 1989). Luke (1974) was the source of the 'third face' of power where 'A' has power over 'B' and 'A' affects 'B' in a manner contrary to 'B's interests.

The other concept of power is a facilitative (Habermas, 1977) and communicative one and it is not based on the instrumentalization of another's will but on the formation of a mass will in a communication directed to reaching agreement. Recent developments about power have been made by Foucault. He drew attention to the techniques by which power was exercised (Clegg, 1989), a practical meaning of power. For Foucault (1984), power is neither strategic nor facilitative: it is a technique which emerges silently in two ways - in the control of bodies and in discourses. According to him, discipline is the key to the concept of power as facilitative. Clegg (1989) affirms that discipline is an achievement. Foucault (1984) also considers coercion and normalization. He believes that power is the ability to make a person do what he wanted to do anyway but under different conditions.

Coser (1956) defined power as "any type of influence to make others comply with one's intention" or as "exclusive possession of information". Dahl (1957:202) concurred with Coser and proposed the liberty of using influence, power [and] authority interchangeably. Murdoch (2001) asserts that power lies not only within the macro actors themselves but in the links that bind actors and entities together. Power also depends on the durability of relations and mobility of materials (Law, 1992). Durability refers to very strong and strategic relations, whereas mobility refers to the application of material objects. The provision of the two can serve to consolidate social order, power and hierarchy (Murdoch, 1998). This is why Latour (in Murdoch, 2001:410) also emphasizes that 'stakeholders' power lies in strategic relations and material objects'. Nevertheless, power is still a broad term and can best be defined in specific, dynamic and multiple contexts and Lake Victoria presents an interesting one.

My conceptualization of power is one which sees individuals in their social context as embedded in networks of relationships (Latour, 2005). This agrees with Long and Long (1992) and Hajer (1995) that an individual is a social representation and not necessarily an individual in his/her own person. I have combined my approach with concepts of social power rooted in social relationships (Long, 2001; Escobar, 2006) because groups gain power through mobilizing 'collective' resources (Long, 2000). This process is facilitated by group norms (Hajer, 1995; McGee, 2004), mutual commitment (Woods, 2007), shared attitudes (Bachrach and Baratz, 1962) and

influence because networks use social power based on influence to produce social commitment (Renn, 1993:185). Some forms of influence correspond in the social network literature to the trust which emerges from interaction (Burt and Knez, 1995; Uzzi, 1996).

In Lake Victoria, however, trust does not necessarily emerge from interaction because the majority of actors do not trust each other (Chapters 6 and 7). Trust is replaced by coerced and/or self-discipline, reciprocity and tolerance, and is instigated through contracts, rules, bylaws and control. Without some form of discipline there is no trust. Generally, in LV, actors rely on non-natural behaviour and are subject to network rules and conditions. This agrees with Giddens (1984) view that all norms have the potential to be treated manipulatively. Fear of exclusion motivates actors to comply with and tolerate certain ideologies or behaviours, even though they may ideologically oppose them (Chapter 7). But discipline can result in setbacks because it denies some degree of freedom and suppresses individual power without having to renegotiate (Chapter 6 and 7). This means counter-tendencies and resistance continually occur.

Resistance in LV is part of society and everyday life (Medard et al., 2002a) and is either exposed or concealed. Resistance is related to power differences and it helps to determine where power is located (Renn, 1993:183) because conflicting versions of the same phenomenon may occur (Long, 2007:79) since the actors' ideological positions, their capacity to be creative and ability to translate meaning, may differ and change. Forms of resistance vary within society (Abu-Lughod, 1990) depending on various factors. In Lake Victoria, the forms of resistance are very much dependent on the market tiers in which the fish is sold, gear type, ability to access the resource, status (e.g. crewmembers vs *matajiri*), originality (migrant and resident actors), the area/location² in which the activities are performed and actors' status in the network (weak or strong). Actors' responses to various practices require that they be recognized and thematized in social discourses because discourses are produced in interaction and help to constitute power relations and practices collectively and/or independently. Continuous struggle to use illegal fishing gear, rights to fish as traditional fishers, to avoid discrimination through over-reported 'debts' and costs, under-reported fish catches, pre-fixed prices and unfair remunerations are examples of thematized resistance.

'Influence' and 'control' (Figure 1.1) are also strong power indicators in Lake Victoria. They help the building-up of relationships and influence actions, as well as the structure of networks. A good example is the influence of EPFs over access to the fish resource. Traditional fishing practices (Chapter 3) have been transformed to intensified and commercialized fishing and opened up the Lake to global markets (Medard et al., 2015). EPFs have influence in all aspects of fish export undertakings: fishing, handling, preservation, transport and trade. They exercise strict control over equipment, fish quality checks and documentation. Their influence has created group-level power (strong network) which is mobilized following strategies that emerge from a discourse that people with greater influence disproportionately mould.

² Island vs mainland areas, centralised or isolated areas.

(h) *Social actors and categorisations*

While social actors play a significant role in the arena, it is useful to categorise them in groups and subgroups. There is a clear need to move away from pre-defined actor categories. Actors' positions in the Lake arena appear not as fixed and their positions, roles and relationships change over time (Emirbayer and Goodwin, 1994; Nizami, 2013) and they do not necessarily have similar interpretations of a particular phenomenon or event. Their interrelationships are complex, varied and rooted in history. I met camp owners (*matajiri*), owners of EPF's, camp supervisors, boat crew members, security guards, net makers, cooks, traders and processors, service providers in bars, hotels and recreational centres, representatives of the state, politicians and villagers who lived in and around the lake and who used the lake resources for their livelihoods. I also encountered 'offenders' and 'illegal operators', financiers and 'enablers' of fishing and fish trading activities such as the Nile Perch EPFs, agents of EPFs, Dagaa traders and truck brokers.

Categorizing actors in Lake Victoria can take two forms. One way is to distinguish them based on their position and view of the lake and its future. At least four types of social category may be distinguished as relevant for Lake Victoria.

- A first group makes 'money' from the lake and has a more commoditized view of the lake as an arena of investment to be rationally exploited.
- A second group are the disenfranchised, those who feel that the resource is no longer theirs and are engaged in an 'everyday form of resistance' and want to exploit the resource in different ways, as they see fit. This form of resistance depends to a considerable extent on the users' daily needs and their total reliance on the resource for their daily life. This group is becoming bigger, with fluid networks. This agrees with Scott's (1986; 1985) view that resistance may fail to organize collective action due to network fluidity and opportunistic behaviour among actors.
- A third category is based on a more traditional, permanent and place-based view of the lake as a resource among the many that make up a household's economy. The majority are fishers found in bait fishery (a sub-sector of the Nile Perch commercial fishery) and other fisheries such as Tilapia and Haplochromines.
- A fourth group are those that are banished and engage in risky and insecure jobs (Medard, 2012). Some are totally excluded, e.g. local community members, the old, non-gear owners, the broke and theft victims. For this group, every day is a struggle: a day without opportunity is a day without a meal.

A second way of categorising and distinguishing actors is taking note of their interests and power differences. They do not necessarily have a similar understanding of the fish resource; they do have an understanding of the diversity of actors and their interest in the resources of the lake. In the following section these groups of actors are described by attaching labels and linking them to the four aforementioned categories.

(i) The lakeside local dwellers: These are primary right holders.³ In the previous categorisation they fit the 'disenfranchised' label- those who have lost hope. They include subsistence farmers and fishers, local fish consumers, women and livestock keepers. Their main interest is to get fish for food and income. Lake waters have been part of their lifeline for drinking, transport, and watering animals, bathing, washing and cleaning. Historically, the fish resources bound them together culturally and ethnically as an economic and natural heritage through which they engaged with each other. Competition, as a result of the influx of powerful migrant fishers, high fish demand in local, regional and export markets, access to the resource and entrepreneurial network with huge investment intensity, makes their lives insecure. They have fewer options and are forced to derive fish from marginal, illegal and highly risky sources. Generally, poverty rules their lives and they consume what is available (regardless of the quality). Moreover, the turn of the lakeshore to sub-urban and shanty town with many migrants has led to the loss of norms and cultural values in their community: there is a proliferation of theft, piracy, prostitution, excessive drug-usage (*marijuana* and *kuber*⁴), alcoholism and marriage breakdown.

(ii) Commercial camp owners (*matajiri*): They have a commoditized view of the lake and have access to fish resources because of their involvement in entrepreneurial networks. Their main interest is to make money and to get a high tonnage of fish for sale to EPFs, Commercial Dagua Traders (CDTs), regional and domestic markets. I consider these actors to be among the drivers of change in LV fishery as they control production processes and labour. They seek to attain and support entrepreneurial qualities through 'fishing camp empire building'.

(iii) Crew members - (*wajeshi*⁵): These are male hired labourers who go out fishing on a daily basis and labour in rain, in sun and in threatening weather. They, therefore, belong to the banished group. Their interest is to earn a fair wage for their labour, to get fish for food for their families and to become future *tajiri* (boat and equipment owners) - a traditional career path in fishing which is currently difficult to follow. Their access to the resources (fish and income) is subject to remuneration and a share system determined by camp owners (*matajiri*). The majority are poor and voiceless. Hard-work, discipline and experience in fishing are important for them.

(iv) Agents of Nile Perch EPFs and Dagua (CDTs): These are powerful actors and key drivers in production, marketing and distribution networks. They have high access to fish resources, transport, storage and packing facilities, and are supported by the credit markets and entrepreneurship networks. They have penetrated into all fishing villages (isolated and centralized) and they conduct their activities through

³ Individuals or groups of people who have the right to know, claim and realize their rights, and everyone is equally a right holder (www.people-action.org)

⁴ A highly addictive, intoxicating drug being sold under the brand name 'Kuber' also known as Khaini. It is a smokeless chewing tobacco which is very popular in India. Kuber contains up to 25% nicotine, making it highly addictive. It causes dizziness, weak teeth, gum bleeding and drowsiness <http://www.thevoicebw.com/2011/12/16/what-is-kuber>. In the long run the after effects could cause tooth discoloration, holes on the gum line and cervical cancer and sometimes women can become infertile. (<http://www.tnt.org.za/index.php/2012-06-29-07-13-09/item/123-kuber-new-drug>).

⁵ *Mjeshi* (singular), *wajeshi* (plural). This name was invented in early 2004 in the Tanzanian part of the lake.

large and small scale fish collectors. They have a commoditized view of the lake and their main interest is to maximize profit and to make their networks more effective.

(v) Local, Domestic and regional fish traders (*walanguzi*) and processors: Their interest is to get fish (of any quality) that suits a wide range of consumers, as long as they get money. Demand for fish in the local markets is not being met by the current supply. Due to the high competition for fish and a lack of steady financial support, they strive to get fish caught by any gear (legal and illegal), of any quality and from any ecological site. They have a commoditized view of the lake but are challenged by superior actors (EPFs).

(vi) Village government leaders: These are duty bearers, administrators and governors of people and their social systems at the local level. Their power is mostly overtaken by circumstances. Their interest and duty (mostly on paper) is to provide basic services to and ensure improved welfare conditions for the people in their locality. The influx of people from different cultures brings many challenges, including the rise of criminal issues such as piracy, theft, fighting and the loss of fishing ethnic traditions. Generally, government leaders lack administrative, judicial and financial power and the majority are trapped in bribery and corruption (lack of accountability). They rely on fines charged for various offences for their daily individual and group survival: offences are blessings to them because they are part of their income. This implies a high frequency of criminals. They are often by-passed in various fisheries' decisions. They fall into the insecure group.

(vii) Beach Management Units (BMUs): These are local fisheries management bodies whose duties are to curb fishing illegalities in their community. Their individual group interests and expectations are diverse and conflict with original ideas of being custodians of the resources. Their major challenges include reliance on donor project funds, lack of power transfer from the state and involvement in corruption, which they learn from their seniors (fisheries managers). These groups have limited resources and capacity to plan and run local activities and have no power to counteract actors' strategic actions which circumvent government regulations. They have ended up being hosts of official visitors, field guides and facilitators of fisheries extension services. They are burdened with many costs (monitoring, surveillance and collecting other officials' and their own bribes) and risks (water accident, social conflicts)⁶. Some members have been injured, while others have lost their lives without compensation, while combating fishing illegalities. This has resulted in the majority of BMU members' protecting their personal interests and the interests of their community members - to fish and use any gear - as long as they get fish for food and money. They also link with officials to maintain their position and are entangled in corrupt networks. They fall into three categories: There are those who engage in insecure and risky jobs, those who feel that the resource is no longer theirs and those who view the lake as one resource among many that make up a household's economy.

⁶ They get orders to execute various activities without having funds to do so. They are told to apprehend offenders and take them to court and this results in social conflict in their communities.

(viii) City and District Authorities: These actors are duty bearers with authority and power. Their major role is to improve the livelihood of the people by ensuring proper service delivery. Funds are mobilized through the collection of levies and taxes in their jurisdiction. This activity is given the upper hand and contradicts resource management initiatives, with no regard for legal and illegal undertaking. Because of the money in fishing, landing sites have turned into markets and tax collection centres. This has also made officials and tax collectors corrupt. They view the lake as a place for generating money to cater for various expenditures in their authorities.

(ix) Nile Perch Export Processing Factories (EPFs): Investors in NP export processing industries are very powerful, influential drivers of major decisions in the fisheries sector. Their interest is to undertake the fish export business for profit maximization. They have strong networks through their national and regional business associations. NP fish production, marketing, handling and distribution are controlled by them in order to comply with EU quality regulations. At the local level they have entrepreneurial networks with camp owners (*tajiris*) and their agents to ensure their interest are met. They have a strong commoditized view: to make money.

(x) Local NGOs and CBOs: Most of these are concentrated in towns and lack funds, professional capacity and trust. In most cases they are not collectively organised and lack focus because of opportunistic behaviour. Such weaknesses make the majority of them protect their personal gains instead of the poor. Generally, they view the Lake as a resource to make up a household's economy, as well as income for themselves through donor projects and programmes.

(xi) Political leaders: Their main interest is to attract voters for political gain and they target highly concentrated areas. They are very opportunistic. While they support fisheries policies on paper, through the constitution, they also support their voters' interests, including their involvement in illegalities. Generally, political interest undermines management initiatives and the future of fisheries. Political leaders view the Lake as among many other resources for supporting a household's economy. They feel that the resource is no longer theirs and, therefore, do not serve the interests of the locals (their voters).

(xii) Women: Their main interest is to get access to the resource for food and to raise their children and family with dignity. They also want to undertake fish business equally with men, regardless of sex and culture. They are interested in getting involved in decision making processes and the freedom to choose jobs, as well as personal life styles. Women's roles in the fisheries sector, however, have been linked to 'biological sex': they play specific roles in a way that tends to marginalise women. They are part of the strugglers and resisters, and are tolerant and often choice-less. 'Fish for sex' (Lowen, 2014; Medard, 2012; Lwenya and Yongo, 2012) is common: women sell their bodies to fishermen in the hope of taking back a prize catch. They are banished and engage in risky and insecure jobs.

My description may not be complete, but the features described above reflect the multi-actors' dimension in the arena and have consequences for the methodological aspects of the study: multi-sited, with multiple realities and multi-actor ethnography. Moreover, none of these actors act singly: they are webbed in various relations.

(i) *Space and sites: on boundaries*

We need to have a view of the location and enactment of the action. Renn (1993:182), while emphasising the policy and political dimensions of action, comments that the usefulness of social arena is that it serves as a methodological device to describe the symbolic location of political actions that influence collective decisions or policies. Symbolic location implies, according to Renn (1993) that arenas are neither geographical entities nor organizational systems. Massey (2004) and Escobar (2001) make similar comments when considering boundaries of social action and enactments.

The Lake Victoria arena manifests in many different sets of places and spaces. The arena has multiple sites with fluid and shifting boundaries. Arenas and social networks are not geographically fixed to Lake Victoria *per se* and potentially span the global, including global consumers, processing industries, distributors, supermarkets and global health and import regulations. The methodological implication for the organisation of field work is that there are multiple units of analysis.

As the only social scientist in SEDEC studies, I was tasked to identify the major drivers behind increasing fishing pressure and to study the decision-making of individual 'fishermen' with respect to fishing activities and investments in fishing equipment (SEDEC, 2007:13), an approach which was intended to follow the independent fisherman cum crewmember - 'Independent Actor Analysis' (IAA) - and link this with fishing pressure. The 'fisherman' in this perspective implied "*someone who went out fishing and made various individual fishing investment decisions*".

I followed multiple sites and multiple units of analysis because the Lake arenas are constituted in instances and situations: dynamic markets, flexible networks and manifestations of power (incl. gender) in all these sites. I chose the 'fishing camp', as an empire and a representative of 'social system', to be the centre for analysis to show how it is shaping the fishery within an 'entrepreneurial network' and not through traditional craftsmanship. Camps as part of social system are inhabited by a diversity of actors and reinforced by different sources of power. They are places and mechanisms to explore access and benefits and are supported by different power attributes such as division of labour, which enhances specialization and traceability, bylaws, discipline, security and control. Camps are also market hubs and are part of the commodity chain, with a series of networks of relations through which fish passes, from extraction to exchange, transport, distribution and final use. Camps have potential 'networks' that stretch well beyond spatial and geographical distances.

The selection of fishing camps prompted me to link four analytical nodes - 'fishing camps' (social system), 'markets', 'networks' and 'power' - and to deepen my story through selected events, practices, processes and discourses. I chose the four nodes because Lake Victoria is an arena in which global market forces and capitalism articulate with local level organizational networks and power relations. The arena is driven by the demands of a globalized export market and facilitated by highly

mobile markets (e.g. the EPFs, agents/middlemen and shore-bond traders) and fish exploiters. There are also local, regional and continental markets for economically and less economically attractive fish species. Given the linking functions of EPFs, CDTs, agents/middlemen and traders, and the power to channel market preferences to fishing camps for exploitation of specific target species, fishing camps have great potential to facilitate and accelerate fish exploitation and the organization of fishing, as well as marketing.

Situating my analysis in fishing camps, markets, networks and power revealed more professionalized discourses in a diversity of actors. Having worked for some years in Lake Victoria and with some initial exploratory studies, I realized that the IAA was not feasible due to a variety of reasons:

- i. fishing in LV Tanzania is not undertaken by 'independent actors' who are pursuing only their own individual interests and making their own decisions. Ownership of the resource (e.g. boats, money, gear) and actions taken are vested in networks of relations, including powerful groups larger than the individual. This refutes the idea of an individual fisher. Therefore, studying the 'decision making of individual fisherman' through IAA with respect to fishing activities in LV, Tanzania, is an inadequate representation of reality.
- ii. new fishers have emerged - camp owners/*tajiri*, financed through fish market demand channels by actors who are known as enablers and/or guarantors and without whom fishing is impossible. This has resulted in *matajiri* being bound by reciprocal agreements/contracts in order to attain financial and material guarantees. It seems that the insurance options dictate their actions and decisions.
- iii. fishing, trading actions and decisions are coordinated through market mechanisms: entrepreneurial actors channel market demands through networks, dictate where fish are extracted from and directly influence the organization of fishing.
- iv. Nile Perch and Dagua commercial camp owners (*tajiris*) own multiple camps, multiple gears and have huge investment capacities. This kind of stewardship in a global and capital intensive fishery seems unlikely to have emerged from neo-classical economies: it is in the hands of neo-liberal state or supra-state agencies. I, therefore, was guilty of being driven by method, rather than giving primacy to the context of real social conduct and understanding social practices ethnographically, as indicated in (v).
- v. fishing is conducted in networks, and the wealth is dissipated. Utility-maximizing actors receive the entire benefits of their exploitation, while externalizing the costs and risks onto all users down the production channels by over-reporting costs and under-reporting prices, weight measures, income and outputs (Chapter 7). This means there is a real danger that economics will introduce a false precision to the analysis because economics in this context does not reflect the real social and political costs of the fisheries.
- vi. the traditional fisherman's status in Tanzania has changed to a labouring class - a crewmember (*mjeshi*), with *little* or *no say* in fishing activities and decisions. Hiring crew is often entirely impersonal (Chapter 6), which implies the relationship is contractual and the gap between the owner of fishing equipment

and the labouring class (e.g. crew and Daga processors) is huge, and their interaction (information and communication) is controlled.

I, therefore, gave primacy to analysing how fishing is organized in LV Tanzania for the following reasons: (i) SEDEC's (2007:13) proposal had generalised assumptions based on other fisheries as to how fishers were organized and responded to different processes, including ecological and fish demand at local and export markets (ii) Due to high integration within and dependency upon fish markets in LV, the unit of analysis had to follow the logic of the market - the money- which is relevant for studying 'enterprise practices', with an understanding that money is being renegotiated throughout the network. It is, thus, the 'fishing business practices' (large or small) effected by the entrepreneurial network and the power relations that must generate the unit of analysis.

1.4 Methodological Framework

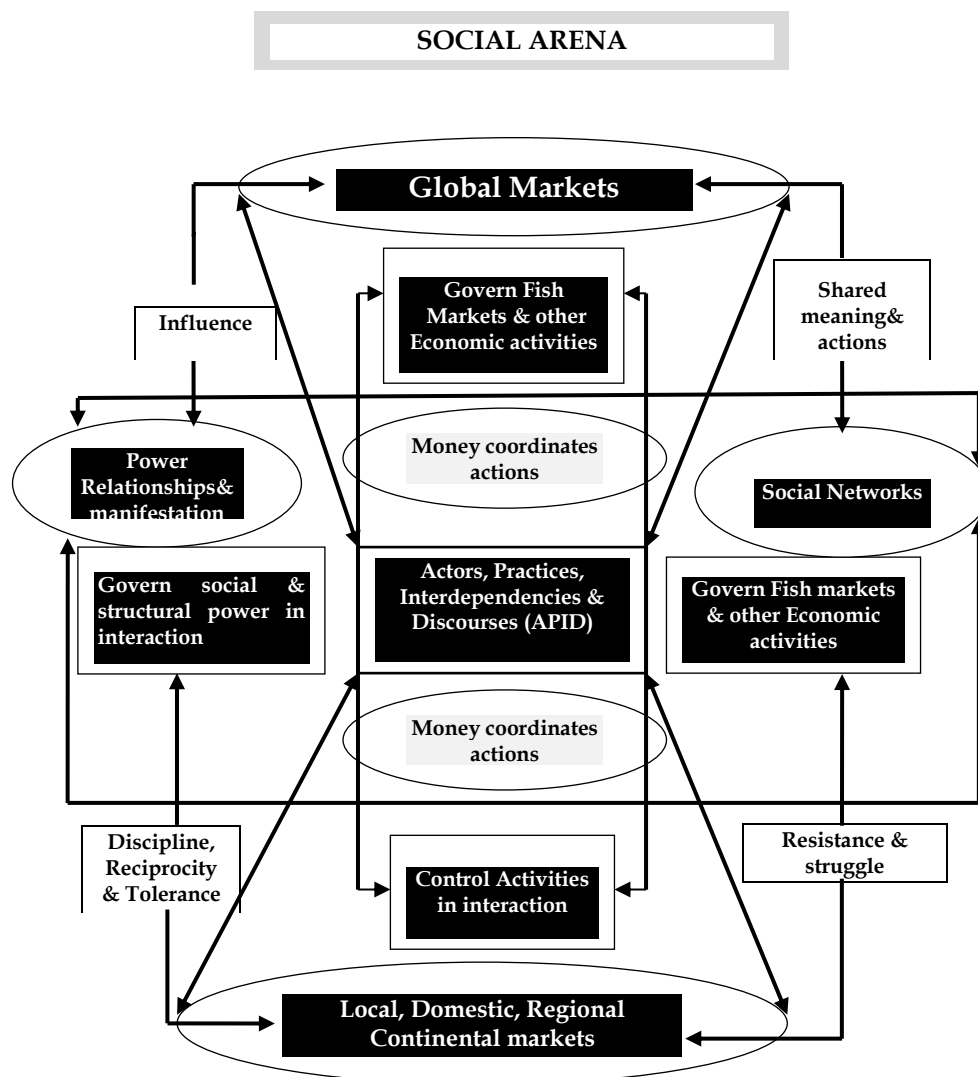


Figure 1.1: Methodological framework

The intimate interrelationship of actors, markets, networks and power is expressed graphically in Figure 1.1. The framework traces how social power is consolidated, negotiated and reinforced by different actors: powerless and powerful, equal and unequal, strong and weak, controlled and non-controlled, rich and poor. Inevitable power struggles between actors for control over the resource shape and re-order actors' access⁷ and life.

1.4.1 Research objectives and research questions

In light of the above framework and elaborations, the study focuses on transformations, and tries to elucidate how fishers and fishing communities navigate between opportunities offered by markets and social networks, ecological opportunities offered by lake ecosystems and existing opportunities and constraints embedded in livelihoods and governance systems. I look at the impact of these transformations on (a) fishing (b) markets (c) social practices (d) labour relations (e) governance processes and the livelihood systems of the fishing communities in Lake Victoria, Tanzania.

1.4.2 Problem statement

Lake Victoria is an arena where different discourses of development and everyday practices have evolved over time. The arena is transformed and shaped by local and global interactions that manifest via markets, networks and power processes, bringing together a range of actors (including management and governance actors) trying to gain control over how the lake's vast biological and economic resources are being used. These processes have changed the social and political landscape and opened up new opportunities, as well as constraints. They have given rise to new actors, diverse networks and new processes. These are often very unfair, and very unequal because fishing is now associated with intensive investment and involves *powerful* networks in the markets and in the production processes. Within this framework, the poor have fewer options to get fish than the wealthy, and either cannot get fish, or, if they try, do so at the edges of the fishery, outside of the main, controlled fishing grounds, by breaking the law, or obtaining sub-standard fish unwanted by the powerful actors.

But the arena is not simply constituted by those that hold power or those social actors to whom power is attributed: there are counter discourses emerging. Many actors have agency and they use it in many different ways with many outcomes because fishing is not just an economic rational activity, but a socio-cultural process which has long and deep historical roots. Fishing is also escaping dependency, controlling, exploiting (externalizing costs to others), enduring, tolerating, forming empire, embeddedness, excluding, down-sizing, disciplining, forming charters and alliances, patronage, aggressiveness and risk-taking, such as resistance, dishonesty, witchcraft, criminal acts (e.g. corruption, bribery, cheating, theft, piracy), extravagance, sexual favours and prostitution.

⁷ And other extra-legal aspects such as authority, cohesion (rules)

1.4.3 The study objectives and research questions

The main objective of this study is to understand how fishing is organized in LV Tanzania. I have done that by looking at local fishing practices and international linkage and by showing where and how fishing is organized, by whom fish are harvested, who is in control, who gets the work and the benefits and who bears the risks and burden and how. Importantly, I have tried to show how networks and/or strategic actions reach common understanding and/or end up against other parties in an interaction, leading to exclusion, down-sizing, exploiting, or exiting.

The *main questions* this thesis address are: *What* is the nature of the *arena* that has gradually evolved due to the introduction of the Nile Perch and processes of globalisation, and *how* has the Lake Victoria been transformed by global and local processes?

There arise five clusters of main guiding questions:

- (i) *Why* and *how* is Nile Perch and Dagua fishing organized? *Who* makes decisions and are those decisions made as a result of local and global processes?
- (ii) *What* are the networks of relations (enterprises) constituting actors and *how* are these woven together in joining power processes and access to resources? How does power affect transaction relationships through markets and networks?
- (iii) *Why* and *how* are labour relations and enrolment processes organized and controlled? *Why* are they organized the way they are?
- (iv) *How* and *why* is the government trying to control and govern the fisheries, and *how* are the fisheries governed and controlled in reality? *What* governance practices have emerged? *What* are the counter-tendencies and discourses? *How* and *why* have they emerged?
- (v) *What* are the key socio-ecological drivers of change in Lake Victoria? *Why*?

1.4.4 Methods of data collection and sampling procedure

(a) Selection of the study site and recruitment of participants

I define a fishing village/fishing site as any place where fishing camps are socially and physically constructed, fishing operation is organized, fishing boats are gathered on shore and where fish are traded. The fishing village/sites where interviews were conducted were selected randomly and purposively following various dimensions of stratifications which were suggested by SEDEC (2007) research team. This study focused on the following factors: (i) Diversity of actors and activities (ii) diversity of fishing gear and methods (iii) presence of Nile Perch and Dagua fisheries (iv) high fishing investment intensities (v) accessibility to road and water transport (vi) actors' mobility and fishing seasonality (vii) cost-effective factors. Four districts were selected to represent island locations (Sengerema and Ukerewe Districts) and mainland locations (Magu and Ilemela Districts) (Figure 1.2).

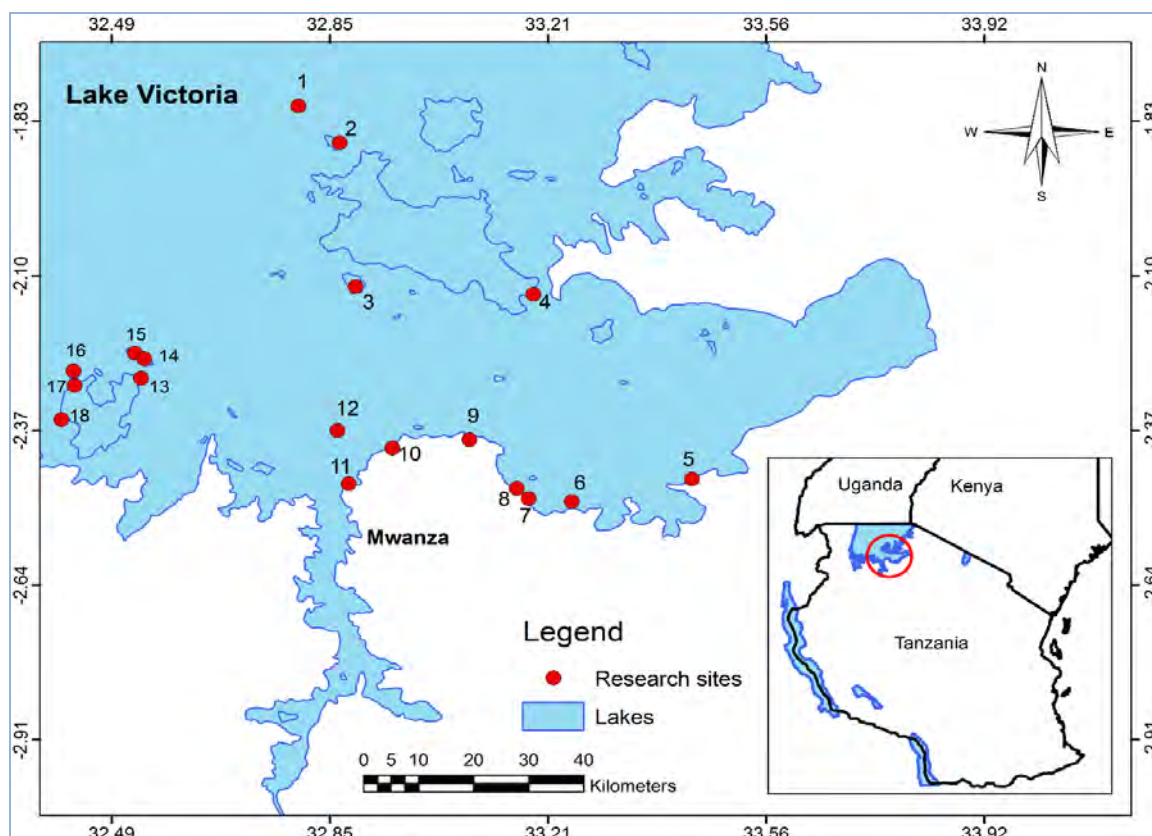


Figure 2.1: Map of South eastern Lake Victoria and location of the field sites

Legend:

- | | | |
|-----------------------------------|--------------------------|---------------------------------------|
| 1:Ghana Island (Ukerewe Isl.) | 7:Shinembo (Magu) | 13:Mchangani (Kome Isl.), Sengerema |
| 2:Galinzila Island (Ukerewe Isl.) | 8:Nyakasenge (Magu) | 14:Ikulu Island (Kome Isl.),Sengerema |
| 3:Bwiro Island (Ukerewe Isl.) | 9:Kayenze (Ilemela) | 15:Ito Island (Kome Isl.), Sengerema |
| 4:Lugezi (Ukerewe Isl.) | 10:Igombe (Ilemela) | 16:Chikuku (Kome Isl.), Sengerema |
| 5:Ijitu (Magu) | 11:Mihama (Ilemela) | 17:Ntama (Kome Isl.), Sengerema |
| 6:Mwanchimwa (Magu) | 12:Makobe Isl. (Ilemela) | 18:Nyalusenyi (Kome Isl.), Sengerema |

This stratification enabled me to get centralized/urbanized and isolated fishing villages and it was meant to yield a more diversified array of responses and afford a more extended bias on the situation at hand for suggesting generalizations, as well as interpretations. Having worked in Lake Victoria fishing communities for a number of years, I was familiar with some of the languages and cultures which saved me considerable time. This means that the use of research methods such as narratives, Focus Group Discussions (FGDs) and Participant Observations (PO) was not as limited as often is the case for a foreign researcher. I had long experience as a researcher and I was familiar with the communities concerned.

I began my exploratory study in June, 2009 in order to (i) introduce the study and familiarize myself with officials and community leaders (ii) map out potential fishing sites (iii) find out if there were any related studies from which to draw lessons (iv) identify district key informants and how best the research could be achieved and finally (v) pre-test some key informant and FGD questions to discover their potential and shortfalls. Others were to (vi) share my objectives and rationale for the study and (vii) identify emerging issues and new actors and their role in fishing. The main research study was undertaken from 2009-2011. The Fisheries Frame Survey data and

some market data cover the period 2009-2013 (cf. LVFO/EAC, 2013; Medard et al., 2015).

(i) Fishing camp selection:

The study commenced by a census and listing individual camp owner names (*matajiri*), the camp charter⁸ (see Chapter 3), the number of camp owned, the main camp and sub-camps (if any), camp location, type of fishery, number of fishing boats, number of crew, type of boats and type of gear used. The process was aided by secondary information obtained through Fish Catch Assessment (CAS/IFMP, 2008) and Fisheries Frame Survey (FFS) reports (LVFO/IFMP, 2010b; LVFO/EAC, 2013). During the process, I was also able to designate large (more than 5) and small camp owners (less than 5) based on the investment intensity and associated cost (Appendix 7). If there were less than 8 or 9 fishing camps, I selected all; if there were more I selected between 8 and 9 fishing camps. I also took into account the proportionality of camps based on fishery and gear type to arrive at 18 sampled villages⁹. The census form was also used to collect basic information about supervisor name, number of nets in each boat, whether or not it was in working order and whether it was used for fishing or some other task (e.g. fish transport, lake patrol). When a sample was made for a transport and/or patrol it was replaced by a fishing boat. However, few exclusive interviews were made to inquire about the role and function of transport and patrol boats.

I was also able to obtain letters of permission to visit any village or district which had followed standard procedures for research approval and letters of support from the host institution (Appendix 1.1).

A diagnostic step was made to clarify which people, social systems, organizations/institutions were directly and indirectly related to the study and to investigate whether networks were operating in the shadow of a hierarchy, in the shadow of markets (Hanf and Scharpf, 1987) or both. This process served as a primary mechanism to identify critical issues (Bryson and Crosby, 1992) and to support and design appropriate techniques for investigation (Table 1.1).

(ii) Respondent selection and sampling procedure

At the camp level: Individuals were selected to be interviewed on the basis of their roles in the fishing industry. The management of the fishing camp was the key aspect and it was divided into various roles and a few are described here. The owner holds title to the camp name and boat charter (see Chapter 3). He/she is also the main decision maker and controller of finance and investment. He/she is also known as contractor if he/she has forged alliance to host other small camp owners under his name (Chapter 3). A boat renter is someone who pays a fee for control of the fishing boat (in specific period) and gets all the income flow from ownership in return. Sub-contractor is a camp owner and beginner who owns few number of boats (less than 5) and is hosted and given protection (security and control) by large camp owner. A camp supervisor is someone who oversees the operation of the camp and fishing

⁸ That signifies someone's ownership, status and trend in fishing: growth or decline, stability or instability. It is also an agency for power. Boats are chartered with logo of airplanes, flags, animals, birds, named football teams, famous soldiers and presidents' names and so on.

⁹ I had an average of 8 fishing camps in 8 fishing villages (8x8); 9 fishing camps in 10 fishing villages (9x10).

operation on behalf of the owner and stays at the camp most of the time. Crew is a hired labourer who goes out fishing. Others are cooks, patrollers and security guards, net mounters and repairers, engine repairers, fish and material transporters (see Chapter 4 and 5).

Having described the above complexity, 154 fishing camps were randomly and purposively¹⁰ selected from 18 landing/fishing village (Figure 1.2). An average of 8-9 fishing camp owner were included in the sample. In each camp an owner or camp supervisor was selected to participate in Face-to-Face Interview (FFIs). The camp level interviews were conducted with the person who knew the most about the management of the camp and fishing operation. This was done mainly to owner of the camp. In the absence of camp owner, the camp supervisor was interviewed. In addition, 35 camp owners and supervisors were involved in FGDs based on fishery and gear type, Individual In-depth interviews (IIs) and Key Informant Interview (KIIs) (Table 1.1).

One crew from each chosen camp was selected randomly bringing an additional of 154 crewmembers using some questions specifically for them along with sections of the main camp owner's interview schedule. I chose crewmembers because they participated in actual fishing and they knew about fishing operations. Moreover, crew were majority of camp labourers to represent the labour relation aspect at camp level.

The fishery type stratification at camp level:

Of the 154 camp owners¹¹, 100 were owners of Nile Perch camps, 42 Dagua camp owners and 12 Tilapia camp owners. However, the fishery representation primary sample for crew was 105 for Nile Perch, 47 for Dagua and 2 for Tilapia (Table 6.1). Crew sample was different from camp owner's sample and the reasons are given below:

- *100 Nile Perch camp owners' vs 105 Nile Perch crewmembers:* In addition to 100 crewmembers selected from owner's primary sample, five Nile Perch crew were added later because of owner's influence in selecting crew in the first sample (see 'f' below, limitation in data collection and Table 6.3).
- *42 Dagua camp owners' vs 47 Dagua crewmembers:* In addition to 42 crewmembers selected from owner's primary sample, five Dagua crew were added later because of owner's influence in selecting crew in the first sample (see 'f' below, limitation in data collection and Table 6.3).
- *12 Tilapia camp owners' vs 2 Tilapia crewmembers:* Only two Tilapia camp owners in raft boats enrolled crewmembers. This led to selection of 2 crewmembers only in Tilapia fishery. 10 camp owner performed both roles – owner and crew and some extra questions were covered to understand their role in crewmanship.

Gear type sampling stratification at camp level: I randomly and purposively sampled 83 Nile Perch gillnet camp owners, 17 Nile Perch long line camp owners and 42 Dagua seine net camp owners from the primary sample. In addition to that, I used qualitative studies to explore fishing organization of 15 *makila* (small gillnet camp

¹⁰ To capture fishery and gear types

¹¹ Camp owner, *tajiri* and boat owner are used interchangeably. However, camp owner and *tajiri* are commonly used in this thesis.

owners) and nine beach seine camp owners. Other respondents who were chosen randomly and purposively and interviewed at the camp level were; cooks (5), security guards (5), boat builders (6), regional bait traders who had direct contact with *matajiri* (3) and bait fishers (8) (Table 1.1).

The camp and fishing unit sampling at camp level: 15 fishing units for catch data, income and expenditure were selected. This consisted four camps; two Nile Perch camp which had 5 fishing units from each individual camp and two Dagaas camp which were represented by 2 and 3 fishing units respectively. In total they were 15 fishing units (10 for Nile Perch, and 5 for Dagaas) drawn from the primary sample (N=154). They were selected subject to camp owner's consent. Agreed format on data records, regular visit by the researcher and frequent communications through telephone between the camp owner/supervisor and the researcher were done. This was done to understand the average earnings between camp owners and crew in order to enrich the investment and labour relation studies.

At the market levels:

The regional and export markets level: Commercial Dagaas Traders (CDTs) and Export Processing Factory (EPF) managers. 10 respondents were purposively selected from five EPFs and five CDTs in Mwanza. These were also credit provider and financier, fish buyer and supplier of materials, fishing equipment and cash to the owner, controller of fish quality standards and provider of vessels or insulated trucks for transporting fish to the market place. The aim for studying them was to understand their role in fishing and fish trade, how they have emerged over time, how they control most of the catch through fishing networks and how these shape and are shaped by the configurations of fishing arrangements and social material networks of actors (Medard, et al., 2015).

The large scale and agent of EPFs and CDTs: These were large scale traders linked to the international (EPFs) and regional markets (CDTs). They are known as 'agent' of EPFs or CDTs. Because of their mobility, an attempt was made to interview 20 of them while in fishing villages, in Mwanza town and at Kirumba fish market. For the case of Dagaas, truck brokers, Dagaas brokers and Dagaas traders were involved (Table 1.1). Their selection was randomly and purposive.

Bait cross-border traders: I identified three in Kome Island and were purposively chosen to enrich the bait fishery (Chapter 4). They came from Ugandan side of the LV and sold bait in large quantities in islands and mainland fishing villages.

The local market traders: Interviews were conducted with a sample of male and female fish traders who bought fish at the landing sites and a few in hinterland markets (e.g. Magu District; see Medard et al., 2015). The selection mechanism was to interview at least three or four traders from each fishing/landing site (Figure 1.2) who were selected randomly and purposively. A total of 55 small scale fish traders were involved (Table 1.1). The aim was to understand their nested nature and how the local markets are not only intrinsically interwoven with the local economy, culture

and history, but also how they exist within a broader set of markets that give them their locally specific dynamics and practices in LV Tanzania.

Vessel operators for landed tones/sacks of dried Dagua for animal feed and human consumption at Kirumba market: I enrolled a male Dagua trader who was stationed at Kirumba market for interacting with vessel operators and recording tones of Dagua delivered by cargo vessel from the study sites¹² and others for two years (2010-2011). He was familiar with Kirumba administrative structures, the vessel schedule, number of storage space and documentation procedures. Counter books were used to collect the information in order to understand how Dagua fishing and distribution channels were organized from the fishing villages to the market place and who were the key players in transport, finance, fishing, packing, distribution network and trade. Due to insufficient and unreliable data at Kirumba (Nanyaro et al., 2004; Hofmann, 2011), the data provides estimates of tones of Dagua transported from Kirumba to other parts of Tanzania and beyond.

Governing institutions:

Local government and political representatives: About 42 leaders were involved in group discussions and individual interviews. These were: 10 Village Executive Officers (VEOs), 7 Ward Executive Officers (WEO), five Sungusungu members (vigilant groups), one political councillor and 19 village committee members. The interview types were IIIs, KIIs and FGDs. Purposive selections of participants were done to capture historical and social cultural issues, fishing organisation perspectives, the market and governance issues at local level.

Local village elders: The interviews involved male and female elders from four selected administrative villages namely; (Mwanchimwa/Kigangama), Lugata, Ntama and Mchangani-Buhama (Kome Island). The aim was to explore fishing organization and associated changes over time, changes in fish species, societal transformation and the adaptation of rural fishing economies to the global markets. FGDs, KIIs, IIIs and narratives were used to capture various information (Table 1.1). Participant's selections were done purposively and randomly.

Beach Management Units (BMUs): These are local fisheries management bodies instituted in each lakeshore fishing village in Tanzania (see Chapter 2). About 55 were involved in the study to explore governance and lake management, power relations, fish trade, their role and function in society, their relationship with Fisheries Department and associated problems and challenges. The selection was purposive and random.

Fisheries managers and researchers: Five researchers from TAFIRI and nine fisheries managers from Fisheries Department were involved in various discussions during the course of proposal development, SEDEC workshops held in Mwanza and Dar Es Salaam, field site selection, changes in fish species and fish composition and other

¹² Tonnes of Dagua are destined at Kirumba and other markets indicated in Chapter 5.

emerging changes in fisheries and fishing organization in Tanzania. The selection of participants was purposive.

Involvement of Civil Society Organisation (CSO): From the onset of SEDEC (2007) proposal, an initiative was made to involve civil society organisation in order to contribute to issues related to fishers, governance, markets and ecological issues. The East African Communities' Organization of Lake Victoria Resources (ECOVIC) was the focal organisation in sharing information in SEDEC meetings and at individual level. I had three important discussions with Mr Jackson Ndobeji (ECOVIC Executive secretary in Mwanza) to discuss various matters related to the study.

(b) Research methods and information collection procedure

Two questionnaires were designed for Face-to-Face Interviews (FFIs) /Interaction: one for camp owners/*matajiri* and one for crewmembers (*wajeshi*). Five qualitative tools were used: Focus Group Discussion (FGD), In-depth Interviews (IIs), Key Informant Interviews (KIIs), Participant Observation (PO) and narratives. I also collected ethnographic data using notes, audio and video recording and photographs with respondents' consent. Prior to the actual study, all research tools were pre-tested to assess the validity and reliability of the data collection and later they were fine-tuned. A feedback session was arranged for adjusting interview approaches and revising questions based on comments by myself, my assistant and respondents.

Data and information was collected with the help of an experienced male ex-camp owner, after two weeks training. The following were major research methods used:

(i) Face-to-Face Interviews (FFIs): I administered a total of 308 FFIs to two main types of respondents at camp level namely: (a) Camp owners/*matajiri* or supervisors¹³ (b) crewmembers. For each category of camp owner and crew, specific related themes for inquiry were made. For camp owners these were resource mobilization, networking, communication and information, decision aspects, incentives and disincentives, risk and exit factors, markets and governance aspects. On the crew's side, issues involved were involvement in fishing and experience, communications and networking, mobility and migration, remuneration and share systems and risk and uncertainties.

(ii) Records of catch data, income and expenditure: Data from 10 Nile Perch fishing units were taken for a period of one year (2010) while for Dagaa fishing units were taken for a period of two years (2010-2011). The data included, daily Nile Perch catch records in kilograms, Dagaa sacks harvested daily and their expenditures. All fishing units were motorized and had equal number of nets for Nile Perch (70 nets of 3 panels and 3 crew for Nile Perch) and one Dagaa seine net (9 panels, 4 crew). The data helped to provide estimates of owner and crew incomes. Catch records, PO, KIIs and IIs methods were used.

(iii) Participant Observation: Active and passive participant observation formed the primary source of my data since I was investigating fishing organization and situating it within the context of fishing practices, as well as trade. One of the greatest

¹³ In the absence of camp owner a camp supervisor was interviewed.

strengths of this interpretive method was the ability to recognise how the fisher, fish trader and community daily practices and interactions shape the fishing organization. I adopted the method for recording participant observation suggested by Bernard, (1995) and Beuving, (2013), which includes jotting and recording. I investigated how markets – a driving force for socio-ecological change (where big actors exploited small actors) - added to exploitation of the processes involved in the conversion of biological and social resources in Lake Victoria and shaped the harvesting of Nile Perch and Dagaa and how the history of social practices (including governance aspects) of fishing has changed.

I was actively involved in pulling beach seines, making nets, tying sinkers, buying and processing fish, eating fish and fishing Dagaa (seine net) and Nile Perch (gill net). I also attended funerals, weddings, community meetings, church congregations and other social events. I spend my time juggling this exciting social life with trips further afield, accompanying my informants to hospitals and/or traditional healers, to bars, tea rooms, food stalls and church, dancing, travelling in passengers boats, watching movies and listening to gospel songs while sparing my time for note-taking. In this way, the method provided me with an insight into the enjoyments, as well as hardships, in fishing and fishing life styles, as well as the risks (e.g. cruising in calm and rough weather).

I was able to steer conversations to various activities and situations revealing the discourses used to explain the organization of fishing. I actively and passively observed and noted in advertent transgressions of culturally appropriate behaviour. I believe that the complexity of Lake Victoria fishing organization can only be understood through such in-depth description (Geertz, 1973) and the practice of ethnographic techniques. This is because the validity of data obtained using PO is likely to be greater than that collected through other methods, since activities and conversations are understood *in situ*. I believe that this method provided a closer representation of reality than is possible using other techniques. Data and information obtained through this method was also not necessarily reliant on informants' conscious awareness of their actions and so was less susceptible to desirability bias.

I adopted data recording methods suggested by Goulden et al. (2013). These included the use of jottings as mnemonic devices (Bourdieu, 1990), recorded either overtly or covertly, depending on the attitude of the participants. These were then expanded into descriptive field notes detailing events, activities and conversations. Alongside this practice, I also used to note theoretical and conceptual likenesses of the research.

(iv) *Focus Group Discussion*: I carried out a total of 45 FGDs with various groups (Table 1.1) and the discussions lasted for one to two hours. The FGDs were composed of between six and twelve participants, as proposed by Merton et al., (1990:137), such that they were not so large as to be unwieldy or to preclude adequate participation by most members, nor were they so small that they failed to provide substantially greater coverage than an interview with one individual. The discussions took place in a calm environment, taking into account issues surrounding recording quality and seclusion. Discussions were held at camp compounds, under a tree canopy, at

participants' homes, in school class rooms, village government offices, BMU offices and community halls among others. I identified a number of issues by this method. The greatest advantage of this approach was that, after recording the socio-demographic characteristics of each participant, I was able to match speech (voice tone, names) to individuals, thus the discussion was analysed and issues were examined. The limitation of this group approach was controlled by the inclusion of individual data through in-depth interviews.

I recognised that the dynamics of group discussions were different given differing group compositions and was very much dependent on individual roles, fishery type, location (mainland/island), gender, age, gear type and individual social status. I also noted that knowing each other prior to the group discussion could be beneficial, since group interaction would consequently be more natural and individuals would be able to confirm or dispute peer contributions. It had potential limitations in restricting individual freedom to divulge truths about sensitive issues. Because I inquired about a number of sensitive and controversial issues, I felt the advantages of working with people who knew each other outweighed the shortfalls. I drew on local social networks to access groups of people willing to participate in group discussions. Other participants were obtained from a list of respondents who took part in the questionnaire survey, based on their knowledge, ability to articulate issues, uniqueness of response, experience and willingness.

(v) In-depth Interviews: In addition to structured interviews, FGDs and PO, detailed inquiries were obtained through IIs (Kumar, 2005) using this practice to inquire how fishing and markets were organized in different fishery and gear types. This was done by following the IIs topic guide but it also relied on my creativity in posing in-between questions. I carried out IIs with 32 participants (including five EPF managers and five CDTs) and because of the sensitivity of some questions, some interviews were preceded by written consent. Repeated contact through other interviews and an extended length of stay in the fishing community helped to build trust between the researcher and respondents.

(vi) Narratives: Since the notion of networks, power and risks has been found to be difficult to discuss in general (Berkes, 2010; Law, 1992), the use of narratives in revealing social networks and power was given salience by particular individuals since it provided participants with opportunities to create meaning in the retrospective consideration of past and on-going events (Kumar, 2005). This approach was less structured: there was no pre-determined content and it provided a deeper insight into the interactions. Most participants were selected from previous interviews and/or snow ball technique. Central to this approach was the trust between myself and respondents. I recorded a total of 26 interviews (Table 1.1). I also used this method to produce a documentary (Medard et al., 2012a). This digital media has showcased a number of lessons (<http://www.wageningenur.nl/en/Research-Results/Projects-and-programmes/SEDEC-1/Publications-2/Video-SEDEC.htm>).

(vii) Key Informant Interviews: Key Informants were those who had special positions and were looked upon as representatives of the opinions and experiences of issues under investigation. They were likely to have knowledge or experience that was relevant and/or important to my research or they represented important stakeholders - those who were able to affect the study objectives and those who would be affected. KIIs were conducted using a semi-structured interview schedule and issues were specified in advance, while other issues were co-opted during the interview schedule.

(viii) Workshops and meetings: I participated in various workshops and meetings passively and/or actively and constructed knowledge hands-on. The most important ones were two workshops on Nile Perch eco-labelling organized by two EPFs in Mwanza on 29-30th/7/2010 and 22/1/2011 as a result of Nile Perch 'trade barriers and demands of international markets for assurance that Lake Victoria is not fished irresponsibly'. The third was a National workshop on BMU networking, which aimed at strengthening BMUs for the enhancement of Fisheries Co-management in Tanzania. The fourth was a World Congress on Small Scale Fisheries (WCSSF) held in Bangkok (Medard, 2010). Also, I conducted four district community meetings (March-May 2011) towards the end of my field work. I revealed some key findings, pursued issues which required general conclusion and filled gaps on issues which needed some explanation. Lastly, two SEDEC workshops (18-20th May 2010 and 16-17th May, 2012) held in Tanzania and the Netherlands (Jan, 2012) and several other meetings were very useful.

(c) Data processing and analysis

Face-to-face questionnaires were double entered using the Census and Survey processing System and comparison was done to check for consistency. Data cleaning involved range and consistency checks and these were finally analyzed using the STATA data analysis software which enabled the generation of output tables. There were several actions to ensure the integrity of data and its management. Two levels of 'Quality Control' were employed. During data collection, questions were asked by myself and the assistant; they were then compared and clarifications sought in the event of discrepancies. The second level was done during the data entry phase. Data was entered by two independent data entrants. Their entries were then compared and verified by tracing through the ID number. Data were examined for missing values, quality and consistency for every interview batch on a daily basis.

(d) Post-Fieldwork qualitative data analysis

Since the research design was inspired by network theories (Callon, 1999, 2001; Latour, 2005) the analysis drew on different techniques associated with each of these methods. Data recorded through FGDs, narratives and KIIs were transcribed and translated from Kiswahili to English after completion of the interview. The final transcripts contained both the original and the translation to ensure accuracy in the meaning of terms. These documents were then imported into NVIVO 2.0 qualitative software to aid analysis. The field notes were originally produced in English and were directly imported into the same programme. A coding list with full descriptive

details was developed using a pilot set of narratives, IIs and FGDs transcripts. Each document was coded manually and electronically. On completion of the study the coding list was re-drafted to include categories and/or themes depending on the questions.

On completion of this structured and coding system, interpretation of the data and information was done by myself, the assistant and respondents through clarifications. The analysis used explicit, systematic and reproducible methods to validate and establish trustworthiness of the findings. This stage of analysis was then written up in a series of thematic and descriptive reports and summarised with reported evidence. These reports were integral to the analysis process since they integrated descriptive data and statistical findings and highlighted discrepant cases which could then be explored.

Although verified through triangulation and cross referencing with more structured methods, much of the PO data was based on KIs, following established anthropological practices which provided the bulk of the data (Renn, 1993). I developed a final list of responses by experienced informants and linked it to some quantitative data. From this, I developed a framework for all themes and narratives from my findings. The final stage of analysis linked all these steps together using a process of constant comparative analysis.

Finally I returned to the framework to identify specific case studies and events which helped to set some arguments for use in this book. Given the nature of qualitative interpretations, I acknowledge that the interpretation of the data is constructed and that the results may have been interpreted differently by another researcher since there is always the possibility that other interpretations are possible because data can have more than one explanation. However, I have relied as much as possible on observations and quotes in the results that follow and these provide reliable evidence of the arguments presented in this work.

(e) Ethical consideration

The research was approved ethically by SEDEC Scientific Committee which constitutes different scientists from Tanzania Fisheries Research Institute (TAFIRI), Tanzania Fisheries Department (TFD), Uganda National Fisheries Resource Research Institute (NaFIRRI), Lake Victoria Fisheries Organization (LVFO) Secretariat, ECOVIC, University of Dar Es Salaam (Tanzania), University of Waterloo (Canada), NIOO-Netherland Center for Limnology, Netherlands Organization for Scientific Research (NWO), University of Bergen (Norway) and Wageningen University (Netherlands). The key ethical consideration was the confidentiality and anonymity of some information. I ensured respect for all community members and participants to safeguard scientific validity and integrity. Community participation in the entire research process was sought and enhanced through a gradual interaction held before and after the interviews. Permission to audio tape was agreed between the respondent and myself, as well as issues which participants did not want to be taped.

All questionnaires were assigned ID numbers. These were then used rather than the individual names when entering, editing and analysing data. A master list that links the name of the individual to the ID number, field notes and questionnaire was kept securely and all electronic data were backed-up before being destroyed. One

important observation was that most crewmembers requested their names to be disclosed, an indication of being unhappy with labour conditions, whereas most *matajiri* and their supervisors did not want to do so because they worried about being excluded from entrepreneurial networks by higher status members (e.g. EPFs and CDTs) in the fish supply and market channels.

(f) Limitations in data collection and information gathering

a. *Matajiri control over camp labourers' involvement in interviews:* In most commercialized camps, *tajiris/camp* supervisors proposed which crew be involved in the interviews, which implies that information was strictly controlled because camp leaders did not want their labourers to disclose sensitive issues, such as severe camp bylaws and general cruelty. However, my assistant helped to minimise the negative impact of this limitation to my research. We both followed crew outside the camp and scheduled separate exclusive interviews. This challenge explains the extent of control over labourers and how camps coordinate their activities, without relying on mutual understanding in some issues.

b. *Male interview objections over their female partners:* This was observed at Ijitu and Mwachimwa (Magu District). Although fishing equipment was owned by women, their male partners did not accept their female partners being interviewed. They claimed that all assets were under the control of men as head of households and they claimed that fishing without them was impossible and nobody understood it other than them. The women denied being oppressed and claimed that they invested in fishing before they met their partners. One remarked: "*my sister, these homes hide many things, I just wanted him for respect and protection as a married woman but all the properties are mine*" (Interv. 6001). To resolve the matter, I arranged interviews with women far from their home compound.

c. *Boat names which are not used for fishing in the Tanzania part of the lake:* While I was inquiring about fishing boat investment costs, I noticed a serious problem in naming boats. While various reports on 'craft type description' (CAS/IFMP, 2008:9) in Tanzania named 'Sesse boats,¹⁴ *matajiri*, supervisors and crews objected that Sesse boats were not used for fishing in Tanzania but in Uganda (FGDs, 4/5/2010). These boat types were regionally harmonized (Muhoozi, 2002) and named after Sesse Islands in Uganda. Further interviews with a District Fisheries Officer in Sengerema confirmed that fishers on the Tanzanian side did not use Sesse boats. The few I could see (in Kome Island) operated for cross-border trade between Uganda and Tanzania for *Clarias (mumi)* bait fishery. When I asked why in the census (LVFO/IFMP, 2008c, 2010b) there were about 27,000 Sesse boats in Tanzania, he remarked:

"It is an ideology of 'harmonization' which makes scientists and managers to adapt things which in reality are not in practice. It is lack of patriotism and history. Our bosses who attend regional meetings have endorsed it. What do we do? During frame survey (fisheries census) BMU are forced to record our boats Sesse to please donors and regional scientists on paper but, in reality, our fishermen do not fish with Sesse boats. We are taken by regional events and in so doing, massive information and history are distorted" (Shang'wabo, 11/5/2010).

¹⁴ Long and wide Ugandan boats, named after Sesse Islands found in the Ugandan part of Lake Victoria.

The issue of boat harmonization has many explanations in the Tanzania case: (a) fishing craft history and technology is disappearing (b) global and regional scientific influence on standardization is predominant, with no regard to socio-technological and cultural heritage of individual countries.

1.5 Structure of the thesis

The thesis is organized in nine chapters. Chapter 2 gives a detailed account of the historical background of Lake Victoria fisheries. It looks at the role of LV's fisheries in the country's economy, fish production trends, processing, marketing, the position of fish in the country's food policy, management and regulatory issues and the current management effort enforced from global, regional and local processes. Chapter 3 shows how the modern and traditional cultural repertoires continue to co-exist. It explores the local dimensions of fishing with a view to analysing how the local operates as a social space in which practices and processes take place that make fishing more than only shaped by and responding to global processes. Chapter 4 and Chapter 5 provide a descriptive analysis of Nile Perch and Dagaas fisheries. They show how they are organised, and why the two fisheries are organized the way they are. Chapter 6 provides an opportunity to understand the interaction of social networks and markets in a globalized fishery through labour processes as part of the investment input. Chapter 7 shows the power of fish markets and credit markets and how they shape the organization of Lake Victoria fisheries. It also reveals counter tendencies and various types of opposition reflected in various types of discourses. Chapter 8 shows how the Tanzanian government is trying to govern the LV fisheries on paper versus on-the-ground realities. It stresses that governance in LV fisheries is not a linear process and is not generated by the state. The state cannot produce meaningful outcomes. It shows how money coordinates actions through market mechanisms. Chapter 9 concludes and states the effects of the combined chapters to create a sequential scientific story in a single volume. It contributes to academic and societal policy, has practical relevance and makes future research and policy recommendations.

CHAPTER 2

RECONFIGURING LAKE VICTORIA'S RESOURCES AND TRANSFORMATION OF ITS FISHERIES OVER TIME

2.1 Introduction

On 25 February 1978 - shortly before the Nile Perch boom - John Ofulla Amaras published the following in a letter to the East African Standard: "Please take note that Nile Perch...were stocked in Lake Victoria and Kioga [sic] from Lake Albert in August, 1954...by myself assisted by fish scouts at that time Augustino Kyomya, Benwa Magadu, Peter Karakaba and others, under the directive of the then Senior Fisheries Officer, Mr. Alex [sic] M. Anderson" (Pringle, 2005a:784).

This chapter charts Lake Victoria as a socio-ecological system that has evolved dramatically due to major changes in its immediate environments (e.g. population growth, eutrophication, resource competition) and the purposeful recomposing of its fish resources through the introduction of new species (Nile Perch in particular) which greatly affected the quantity and quality of the lake's resources. This created enhanced opportunities for local fishers to earn a living and offered at the same time options for the sudden expansion of an export oriented fishery sector. The introduction of the Nile Perch, not only transformed the lake and its resources but also social and economic relations around the lake and is, therefore, subject to critical debate and opinion. (...) . *whether or not it was 'right' to introduce the Nile Perch into Lake Victoria is a contentious and subjective question*" (Pringle, 2005a:781). More importantly, the transition from artisanal fishery to modernized globalized fishery, means that power relations have also changed. Evidence can be found in chapters 3-9.

2.2 Lake Victoria essentials

Lake Victoria is one of Africa's Great Rift Valley lakes (Figure 2.1) covering 68,000 km² and shared by Kenya (6% by area), Uganda (43%) and Tanzania (51%). It has a mean depth of 40 m, a maximum depth of 84 m, a shoreline of 3,450 km, a water retention time of 140 years and a catchment area of 193,000 km² (LVFO/IFMP, 2008a; LVFO/LVEMP, 2005) which extends into Rwanda and Burundi. In addition to its size and volume, the lake is unique in several ways. It supports one of the world's biggest inland fisheries aimed at both domestic consumption and international markets and it has experienced some of the most extreme ecological transitions ever observed in a large freshwater environment. The lake also feeds hydropower installations, provides drinking and irrigation water and generates revenue through lake transport and tourism. The lake basin is inhabited by more than 30 million people, and a substantial number amongst them depend directly and indirectly on the lake's resources as fishers: owners of camps and their crew (Table 2.2), engineers, boat builders, fish dryers and processors, net menders and traders. The principle ethnic groups inhabiting the lake margin are: in Uganda, the Baganda, the Basoga

and the Samia; in Kenya the Luhya, Luo and Aba Suba; and in Tanzania, the Sukuma, Kerewe, Zinza, Haya and Jita (Geheb et al., 2000:49; Wilson, 1996).

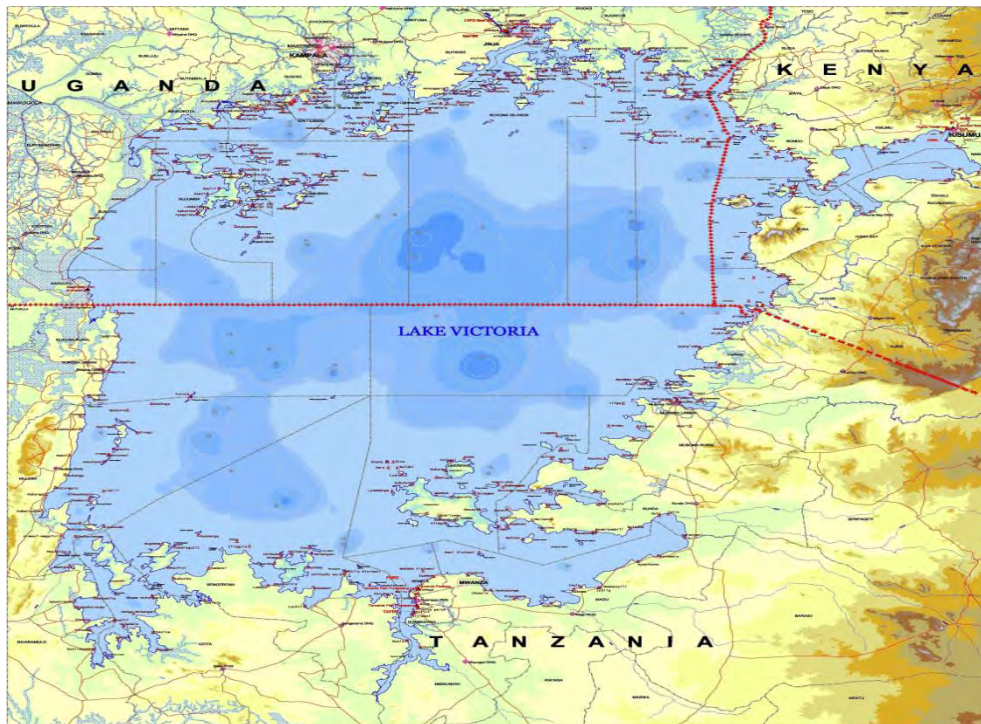


Figure 2.1: Lake Victoria showing international and local boundaries

Fishing is the most important economic activity and has a long history. By the end of the 1940s, native fish stocks were under severe pressure, occasioned by (a) the growth in the fish market and associated transport infrastructure that saw fish being transported down the railway line towards the East African coast and (b) the arrival of new, improved fishing technologies, which brought a huge number of boats next to using canoes and line fishing and flaxen gill nets to catch fish (Geheb, 1997; Geheb et al., 2008). Colonial fisheries authorities debated how to counter this downward trend, focusing on the introduction of exotic fish species. In the early 1950s, the authorities decided to introduce four exotic species of *Tilapia* to supplement dwindling stocks of the two endemic *Tilapia* species. The rather more controversial consideration was what to do about the enormous volume of *Haplochromis spp.* in the lake. Most of the members of this fish species had little economic value, as they were bony and unsuitable for export. However, it comprised some 90% of the lake's fish biomass, and was composed of more than 500 different species (Seehausen, 1996; Turner, Seehausen et al., 2001). For some, the lake needed a more valuable form of fish meat and a robust predator to take advantage of this abundant food source. The prime candidate here was a magnificent predator, the Nile Perch (*Lates niloticus*), which can grow up to 200 kg in weight. For other thinkers, this was a far too risky course, not least because of the remarkable diversity of *Haplochromines*, and their improperly understood evolution (Witte, et al., 1992a; 1992b). In 1954, however, the Perch was surreptitiously introduced into the lake (Geheb, 1997; Pringle, 2005a; Welcomme, 1967; Wilson, 1996). The introduction and spread of the Nile Perch

turned out to be an unprecedented ecological event: “the Nile Perch appeared to be spreading, wavelike, from the point in Uganda where it had been introduced. It was an enormous predatory fish, eating its way through the lake like a giant vacuum cleaner” (Goldschmidt, 1998:193). “Nile Perch did what they had been introduced to do: preyed voraciously on the *Haplochromines*. ... many species vanished before they could even be formally described” (ibid:193). Initially, the effect was quite limited. From around 1960 to the early 1980s a multi-species fishery, consisting of artisanal inshore gillnets for Tilapias and others, and a commercial offshore trawl fishery, for *Haplochromines*, developed. Catches increased and stabilized at around 100,000 tons from the end of the 1960s (Figure 2.2). In the long run, the introduction of new Tilapia species and Nile Perch were to radically transform the lake, both ecologically and economically. Insofar as the fishery is concerned, these introductions had five major consequences.

The first was a gradual increase in the numbers of Nile Perch. The fish took some time to establish itself, and only began to appear in catch statistics in the mid-1970s (Cowx, van der Knaap et al., 2003; Maembe, 1990; Ssentongo and Welcomme, 1985). By the 1980s, the ‘explosion’ of this species was being referred to as the ‘Nile Perch boom’ (Abila and Jansen, 1997; Gibbon, 1997a; Reynolds et al., 1995) and Tanzanian fishers christened it *mkombozi* meaning, ‘saviour’ (Reynolds and Greboval, 1988). Catches increased by more than a thousand fold over a period of 15 years, from about 335 tons in 1975, to 388,115 tons in 1990 (Figure 2.1). In recent years, the lake is estimated to yield around one million tons per annum (all species combined), making it one of the world’s most important inland fisheries (LVFO/IFMP, 2008a:25; LVFO/LVEMP, 2010). Of those, 66.6% originates from the Tanzanian part of lake and the remainder is from Uganda (18.6%) and Kenya (14.8%) (LVFO/IFMP, 2008b). Nile Perch became commercially the most important fishery on the lake and has developed into a multimillion dollar export industry. Nile Perch fillets form the bulk of fishery export: about 90 per cent of the exports are in fresh-chilled form and 10 per cent in frozen. The EU market has been by far the most important one for Tanzania and imports about 60-70 per cent of Tanzanian Nile Perch products of which 90 per cent is in fresh and chilled fillets’ form (URT, 2003a). This has made the Tanzanian government (as well as Kenya and Uganda) to give more management attention to Nile Perch in order to maintain the market, as well as the income.

The second outcome was the Nile Perch’s devastation of the *Haplochromis* species, its main food source. By the time the Nile Perch stock reached its maximum, the contribution of *Haplochromis* to the lake’s fish biomass had declined from 90% to less than 1% (1989-2002). An estimated 200 species were driven to extinction (Seehausen, Witte et al., 1996), an event that has been described as one of the greatest mass species extinction events in recent history (Kaufman, 1992), and is well described elsewhere (Goldschmidt, Witte and Wanink, 1993; Witte, Goldschmidt, Goudswaard, et al., 1992). Catches of these species crashed.

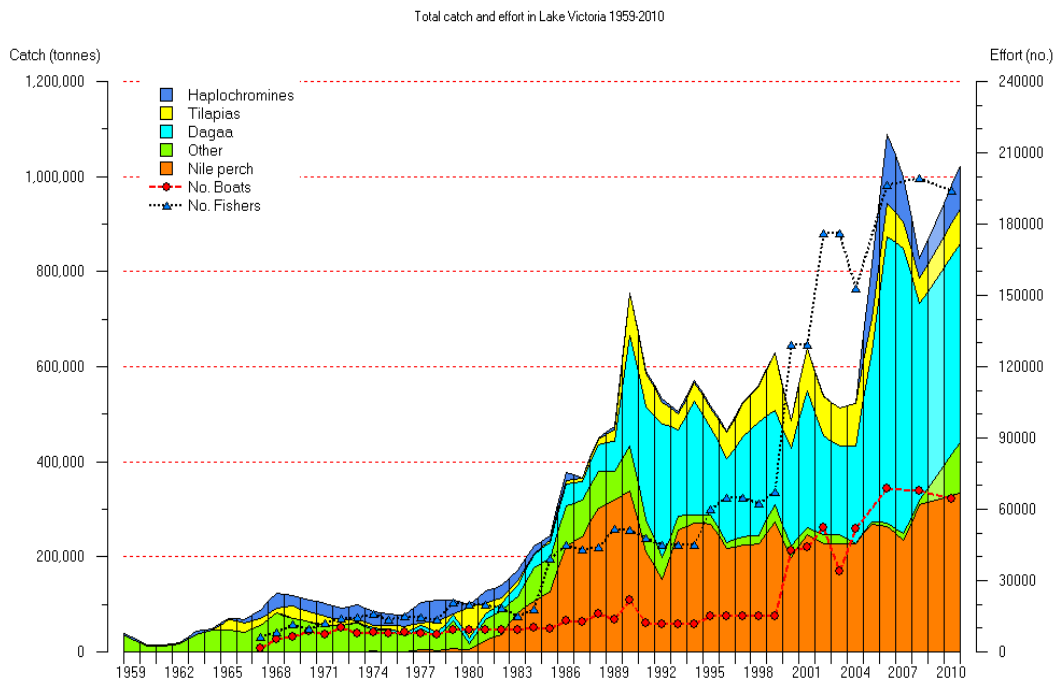


Figure 2.2: Total annual catches (tons) of Lake Victoria, 1959-2010

Note: data is grouped into 5 main groups, number of fishers (upper dotted line) and boats (lower dotted line). From 1990 the Nile Perch fishery catches fluctuated around a mean of 235 000 tonnes.

Source: Kolding et al. (2012, 2008) and LVFO (Unpublished data).

A third impact related to the lake's miniscule endemic sardinella, the Dagaa (*Rastrineobola argentea*). Freed from competition (with *Haplochromis spp.*) for food sources, the Dagaa thrived. It was not among the main prey of the Nile Perch, and catches increased spectacularly from 13,000 metric tons in 1975 to 650,000 tons in 2006 and back to 500,000 tons in 2007. Between 1996 and 2004 the average annual catch was between 200,000 and 300,000 tons, but in 2005 it more than doubled to nearly 480,000 tons (LVFO/IFMP, 2008a). Overall, the Dagaa fishery expanded and reached its boom period around 2004-2005 (Figure 2.2). It is now the most important catch from the lake in terms of weight. This is partly explained by the overcapacity in the Nile Perch fishery and partly by the dramatic commercial transformation that the fishery of LV has undergone in the past 30 years. The recent shift to Dagaa also includes the popular Tilapia and the recovery of other species, especially the *Haplochromines*, because of intensive fishing of the main predator, Nile Perch (Figure 2.2).

The fourth main dimension of Lake Victoria's fishery sector transformation relates to the exotic Tilapia species. One of these, the Nile Tilapia (*Oreochromis niloticus*), was to establish itself firmly in the fishery. Fishing intensity in Tilapia shoreline habitats, combined with competition from exotic fish, forced one native species into extinction, and the other to near extinction. However, in recent years catches from the lake increased from about 13,000 metric tons in 1975, to 105,000 tons in 2000 and declined to 70,000 tons in 2008 and 32,976 tons in 2011, while some of the

Haplochromines started reappearing, predominantly as by-catch to Dagaa fishery. This catch has risen from 110,264 tons in 2005 to around 140,000 tons in 2011(LVFO/EAC, 2011).

A new and recent transformation observed by this study is the rapid growth of ‘bait fishery’ – as ‘commercial sub-sector(s) of Nile Perch fishery’. The major baits in high demand are *Clarias spp* (*Mumi*) and *Haplochromis spp.* (pers. obs). These baits are harvested in various ecological sites: in bays and fish breeding areas,¹⁵ rocky areas, rivers, satellite lakes, wetlands and permanent and semi-permanent ponds locally known as *malambo*. *Clarias* and other bait entrepreneurs and farmers have emerged and the business is growing rapidly. With such changes, the entire Nile Perch production system and fishing organization has changed and native fisheries are connected with commercial fisheries (Table 2.1). Any action in Nile Perch production (e.g. competition, gear use, financing mechanisms) has direct implications for these native species. For instance, bait fishers are also contracted and financed by Nile Perch camp owners and buyers (agent of EPFs), the fifth and final key change.

Table 2.1: Bait fishery: a ‘commercial’ subsector in Nile Perch fishing

Local names (Kiswahili)	Scientific name
(a) Neke or Mumi	<i>Clarias</i>
(b) Furu	<i>Haplochromis</i>
(c) Mbete	<i>Momyrus</i>
(d) Nembe	<i>Schilbe</i>
(e) Gogogo	<i>Synodontis</i>
(f) Dagaa	<i>Rastrineobolaargentea</i>

Source: Field study (2009-2011)

Therefore, a clear manifestation of the intensification of the fishing sector is not just the increased number of fishers and catches, but also the spill-over effect and growth of different sub-commercial fisheries and the organization of fishing. The inclusion of native species in Nile Perch fishery has meant that more fishing camps have had to be organized, not only for Nile Perch gill net, beach seine and long-line fishery but also for Nile Perch bait fishery (Chapter 4). This means a greater diversity of gear, facilities (e.g. food for bait fishers, storage bait preservation¹⁶), financing mechanisms and labour is required. More importantly, the bait fishery sector is also a bio-indicator necessary for determining the nature and extent of ecological changes, as a consequence of fish exploitation efforts emanating from the local and global demand for Perch. The information is also essential to understand the changes in the Nile Perch food chain and avian habitats, which continue to be destroyed by human activities.

¹⁵ Officially (on paper) closed for six month from 01 January to 30th June.

¹⁶Haplo bait fishers preserve in floating boats (with water) to keep their bait (Photo 4.4), while *Clarias* fishers use plastic containers and change water from time to time. With *Clarias* they also feed them other fish feed ingredients made locally.

2.2 Trends in Nile Perch export and factory establishment in LV, Tanzania

Prior to the arrival of the colonial administration, the fishery was a typical artisanal fishery, dominated by fishers who owned their labour and their fishing gear (FGDs, Lugata elders, 17/11/2009). The ‘Nile Perch boom’ accelerated and massively expanded the fishing industry. It coincided with an emerging European market for high-quality white fish meat, prompting the development of industrial fish processing capacity along the lake’s shores in Kisumu, Musoma, Mwanza, Entebbe and Jinja (Harris, Wiley and Wilson, 1995). The export of Nile Perch has since expanded away from the European Union (EU) to the Middle East, the United States and Australia, and now represents large foreign exchange earnings for the lake’s riparian states of Uganda, Kenya and Tanzania.

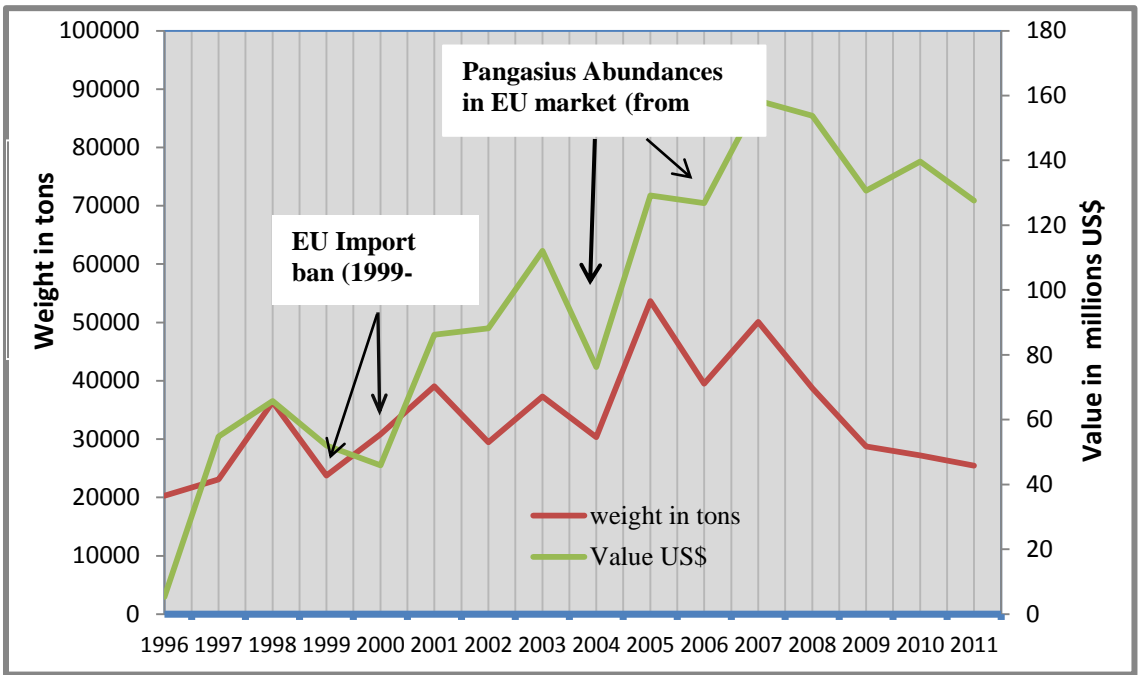


Figure 2.3: Nile Perch export from Lake Victoria, Tanzania, 1996-2011 (US\$)

Source: (URT/MLFD, 2012; Medard et al., 2015)

In Uganda, indeed, its export is second only to coffee in the rankings of export earnings. The value of the catch at beach level per annum is estimated at USD 550 million (LVFO/EAC, 2011:1) with Nile Perch contributing USD 370 million (68%) and the export of about USD 350 million per annum for the entire lake, a major contribution to the regional export earnings (Mkumbo, 2012:8). The contribution of the fishery to the GDP of the riparian countries is Kenya 2%, Tanzania 2.8% and Uganda 3% (Cowx, van der Knaap et al., 2003; Geheb et al., 2008:87; WB, 2009).

As indicated in figure 2.3, the value of the fishery has risen considerably. The main market for Perch remains the European Union, and the industry is, therefore, subject to the regime of EU health and safety inspectors. The EU has frequently closed its doors to the export for reasons ranging from unsatisfactory hygiene in

processing factories to cholera outbreaks on the lakeshores (Kadigi et al., 2007; Lukanga and Mgaya, 2005).

What also worries fish investors, the LVFO and the individual governments around the region is that EPFs are closing down because of shortage of Nile Perch. They claim that continued fishing illegality and increased effort levels (Table 2.2) have worsened the situation. In 2010, the ALFA group of companies (one of the largest freshwater fish processing factories) confirmed that its Mwanza-based factory, which has the capacity to produce 120 metric tons per day, produced only 60 tons a day between 2005 and 2009. By 2010, production had reduced to 30-35 metric tons per day. Likewise, the ALFA's Musoma factory, which has an average capacity of 40 tons per day, had fallen to 20-25 tons per day in 2010 (Vedagiri, 2010). Related trends are happening in other factories and some have closed (personal observation). This has led most EPFs to invest in other fish or in non-fish related sectors, such as apartments and estate development, fish farming (prawn and Tilapia), chicken farming, cattle ranches, beef processing, supermarkets, hotels and tourism. Would these trends not, for example, provide the industry with an incentive to consider marketing constraints for LV fishery?

During the study, it was learnt that the closure and reduced processing capacities of EPFs are partly due to the pressure to upgrade their factories to meet EU quality regulations (WB, 2009) (Fig. 2.3). Another factor, from EPFs view point, is the change in market demands and limited occasional orders in the EU markets as a result of competition from Pangasius fishery, grown intensively in aquaculture farms in China and Vietnam (Medard et al., 2015).

Flows of investment capital and labour into fishery increased, along with growing demand. In 1983, there were an estimated 12,041 boats on the lake. By 2010, there were 64,595 boats and 194,172 fishers (LVFO/LVEMP, 2010) and by 2012 about 205,249 fishers and 71,138 boats (including foot fishers) for the entire lake (LVFO/EAC, 2013).

The fishery also generates indirect employment for additional multitudes of fish processors, transporters, factory employees and others. All along the lakeshore, 'boom towns' have developed in response to the demands of fishing crews with money to spend from a day's fishing. These towns resemble shanties, and they offer beer and local brews, sexual workers, guest rooms, entertainment halls, transport facilities, shops and markets for food and non-food items (see more Chapter 3). And yet, there are limited sanitary facilities. Of the 1,443 fish landing sites identified (535 in islands) in the 2010 regional frame survey, 34% had communal lavatory facilities, 34% were served by electricity, 11% were served by a potable water supply, 0.4% of their cold rooms were working and 57% had tendered tax collection and turned to full-time markets of fish and other goods. Of those, 416 were in Tanzania, 409 in Uganda and none from Kenya (LVFO/LVEMP, 2010:8).

Threats to Nile Perch and its sustainability by export industry is of great concern in Tanzania and elsewhere in the region. The Nile Perch processing sector currently suffers from significant levels of structural over-capacity: factories operate at less than 50 per cent of the installed capacity (Lukanga and Mgaya, 2005:214) and a number of them have already closed, as indicated earlier. In 1999 there were about 25

Table 2.2: Indicators of regional fishing efforts in the Lake Victoria, 2000-2012

Indicator	2000	2002	2004	2006	2008	2010	2012
Landing sites	1 492	1 452	1 433	1 431	1 327	1 443	1 481
No. of fishers	129 305	175 890	167 466	196 426	199 242	194 172	205 249
No. of boats	42 519	52 476	51 592	68 836	67 513	64 595	71 138
Outboard motors	4 108	6 552	9 609	12 765	13 721	16 188	20 229
Sails	6 304	9 620	8 672	10 310	9 811	8 424	7 871
Paddles	32 032	35 720	33 405	45 753	43 553	39 771	41 392
Gillnets <5''*	113 177	178 205	142 618	215 049	207 954	159 013	200 689
Gillnets >5''	537 475	724 879	1 090 434	1 007 258	805 678	708 292	832 295
Hand lines	53 205	58 123	40 953	71 636	65 717	48 681	49 679
Long line hooks	3 496 247	8 098 023	6 096 338	9 044 550	11 267 606	11 472 068	13 257 248
<i>Dagaa</i> : small seines	3 588	7 795	8601	9 632	10 276	13 514	15 064
<i>Beach seines</i> *	7 613	3 491	3355	3 553	4 187	3 743	4 375
<i>Cast nets</i> *	5 887	1 095	803	775	1 174	1 282	1 551
<i>Monofilament nets (Timba)</i> *	0	0	5 944	2 293	20 194	16 488	35 253

*Illegal gear type

Source: LVFO/LVEMP (2010); MLNRT (1987).

EPFs around the region and yet 21 had supply problems (SEDAWOG/LVFRP, 1999: 73). At that time, a few firms in Kenya attempted to export Tilapia but this failed to pick up due to limited supplies of the fish and high competition from low-cost Tilapia exporters. In 2003-2004 EPF establishment reached its peak of 35 in total. Around the same time (2005), Kenya had 11 Nile Perch EPFs although three were not operational (Imende, 2005:70), while in Uganda Ikwaput-Nyeko (2004:15) reported the existence of 13 functional EPFs. By 2008, Tanzania had 13 EPFs establishments of which three were not operational (Lukanga and Mgaya, 2005:216). During the same period Njiru, et al., (2008:11) confirmed the presence of six operational factories in Kenya, ten in Uganda and an overall under-utilized capacity of 30-50% for individual factories.¹⁷ In the same year (2008), the Chairman of East Africa Community Council of Ministers, Dr John Magufuli (New Vision 08/12/2008), reported a total of 25 EPFs operating in the region and the EU Head of delegation in Uganda confirmed that 10 EPFs had been closed in Uganda (Vincent de Visscher, New vision, 08/12/2008). This implies that more than 18 EPFs had been closed in nine years (1999-2008). Of those, ten were from Uganda, three in Tanzania and five in Kenya. Mkumbo (2012:9) affirmed the presence of 19 operational EPFs by the end of 2011 at regional level.

¹⁷ More trends for production decline in Tanzania is reported in Chapter 8.

2.3 Market driven fishery: examples from Nile Perch import ban, eco-labelling and slot size measures

The emergence of the commercial Nile Perch fishery in Lake Victoria has been driven by powerful consumer markets and, therefore, it is a buyer driven market. The consequence is that health and consumer concerns elsewhere on the globe shape the nature of the market dynamics in and around the lake. In February 1997, Spain and Italy claimed that high levels of bacterial contamination (including salmonella) had been detected in imported Nile Perch from the lake region. Similarly in March 1997 an EU inspection confirmed serious microbiological contamination. In April 1997, the EU imposed mandatory tests for salmonella on imports of Nile Perch because of outbreaks of cholera on Lake Victoria's shores. As a result, Nile Perch import to European markets has been banned regularly. The longest ban was from January 1999 to April 2000 (Kadigi et al., 2007). During this time, most Nile Perch fishers incurred significant losses because the export processing factories offered low prices to fishers on the grounds that the EU market had closed. Despite the closing of the European market, some factories continued to buy fish at low prices, and sold frozen fillets to other international markets outside the EU. One *tajiri* tells more:

"When the export ban was instituted in 1999, I continued with fishing but with less motivation because Nile Perch prices dropped from TShs. 2,500 (US\$ 1.7) to TShs 600 (US\$ 0.4) per kilo. I could not stop because fishing yielded at least a little cash every day and I was still tied-up with prepaid loans from factories. In essence it was not a total ban but also a boom period for factories to stock fish purchased at a very low price. I closed two fishing camps and laid off labourers, because it was expensive to run more than two fishing camps. I was back to normal when EU markets opened" (Pers. Comm. name withheld: Igombe, June, 2011).

Therefore, global capitalism has influence in fishing organization either way (upgrading or downscaling) subject to market conditions. Import bans and the subsequent closure of factories create worries not only for fishers and EPFs but even for the governments (central and local) because of enormous loss of income usually obtained through levies and taxes.

Following the EU regulations (EC/No 1831/2003) of the European Parliament and of the Council of 17th July 2003 on eco-labelling schemes (EU, 2008) and the FAO (2003) notice on eco-labelling, in 2006 the East African governments through LVFO embarked on Nile Perch eco-labelling, together with a leading supplier of fresh and frozen seafood products in Europe and America - The ANOVA Food Ltd (ANOVA, Vicfish, GTZ, and AquaEco, 2007). Other partners are Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ, a German Development Corporation), Naturlande.V., a certifying association for organic agriculture based in Germany, AquaEco (an international consultancy company for organic agriculture) and Tanzania Nile Perch export factories. Eco-labelling is meant to encourage sound environmental practices, and for businesses, in identifying and establishing markets for environmentally preferable products and maintaining and extending market share (FAO, 2008). A pilot study was initiated in Bukoba (Tanzania) and led by Vic Fish Ltd which is an export processing factory based in Tanzania (ANOVA et al., 2007). The LVFO stresses that the EU, which is a major market for fish and fisheries

from East Africa, needs eco-labelling in order to ensure the quality of the products (New Vision, 26.2.2008b).¹⁸The move to eco-labelling is a step forward to minimize risks of Nile Perch import bans in EU countries and a market incentive for retaining and/or expanding export market share by individual firms, despite the downward trend in export processing capacity.

Some stakeholders in Lake Victoria's Nile Perch fishery have mooted on eco-labelling agenda with respect to the sustainability of the lake (The New Vision, 26.2.2008). There is a feeling that eco-labelling will bring more risk to local traders and consumers, who rely on Nile Perch fish and fish products, while short-lived benefits will be accrued by industrial processors and foreign retailers and distributors (the ANOVA).Eco-labelling, a global market incentive, has a number of practical implications for fishing organization in individual camps, landing sites and the factory administrative structure (Figure 8.3). See more in Chapter 8.

In 2003, following the EU/Lake Victoria Fisheries Research Project's recommendation on a Nile Perch slot size of 55-85 cm Total Length (TL) measure and a minimum size of 28 cm TL for *Tilapia* measures,¹⁹ a tentative enforcement was instituted by the Tanzanian government because a number of factories were buying small size fish directly and indirectly (Medard and Mlahagwa, 2003). In 2007, this enforcement initiative was gazetted and harmonized (Table 2.4)²⁰for the three East African states (LVFO/IFMP, 2007). Despite these controls and management systems, illegal fishing, that is, fishing with forbidden gear that allows smaller fish to be caught, continues. The extent to which illegal fishing and trading occurs is difficult to estimate but it exists and can be observed day and night. This has been affirmed by Njiru et al.(2009:9), who assert that, slot size measure has not been a successful tool in management of Nile Perch because samples from Kenya and Uganda factories in 2008 showed that 51% and 71% of individual fish processed were below the slot size respectively. All the challenges are led by Nile Perch fish buyers in all market tiers (Medard et al., 2015). Details are to be found in Chapter 7.

2.4 Trends in Dagua export and its establishment

In the early 1960s, Dagua were mainly caught to feed chicken and ducks in individual homes (mainly along the lakeshore) and not for human consumption in Tanzania. Towards the end of the 1960s and in the early 1970s people started to consume Dagua, especially those which were processed during dry seasons (FGD, Lugata 17/11/2009).

In the 1990s, there was a brief report of Dagua being exported from Kenya to Hong Kong and Korea (Ongunja, 1991). Two years later, an attempt was made to export it to South Africa but the consignment was rejected because of its poor quality (Abila and Jansen, 1997). The interest in animal feed investment grew, and by 1997 Kenya had eight big processing companies (Abila, 2003) and later six more industries were established in Kenya (Abila and Jansen, 1997). To date, a significant proportion

¹⁸ 'Fisheries to eco-label L. Victoria', a statement by Commissioner of Fisheries Uganda, and current LVFO Executive Secretary.

¹⁹ This is to protect immature fish, to harvest mature individuals and, at the same time, to protect the large females which are expected to replenish stocks.

²⁰ The harmonization also involved other measures for mesh sizes for gill nets and *Dagua* seines.

of Dagaa goes into fishmeal factories in Kenya and Tanzania (Abila, 2003; Abila and Jansen, 1997; Gibbon, 1997b; Hofmann, 2011; Nanyaro et al., 2004).

The spectacular growth of Dagaa fishery in Tanzania is manifested in the growth of its international market centres (Kirumba in Mwanza) and sub-collection centres, such as Nyamikoma and Nyashimo (Magu), Kijiweni and Mchangani-Kome (Sengerema), Kabangaja (Mwanza), Nkome-Mchangani and Mganza (Geita), Kibuyi (Musoma Rural), Ghana, Izinga and Burubi (Ukerewe) and Sota (Rorya). Other establishments include more than 12 micro-finance and credit cooperative societies at Kirumba (Mwanza) and storage facilities located in other cities and border exit areas. Not only that, the emergence of numerous actors and institutions (Chapter 5) signifies its growth.

Lake wide Dagaa catch estimates are heavily influenced by the Tanzanian part of the lake, where total landings are much higher (about 60%) than in Kenya and Uganda (LVFO/IFMP, 2008b). In Tanzania, Dagaa export records do exist but, according to interviews with government officials, the data at Kirumba International Market were officially recorded and kept properly only from November 2010 (Name withheld, March, 2010). Records for Dagaa exports at Kirumba had continued for years but had all disappeared. Yet, no distinctions were made between domestic and export trade. This seems questionable as the Fisheries Regulations 'Form 3d' requires an "Export Performance Report" (URT, 2009). Generally, export trade for Dagaa in Tanzania in particular, is still a controversial and un-transparent business. Despite inspection stations (Maembe, 1990) to monitor and cross-check exports exit, the problem persists because control is easily circumvented.

A major conclusion to be drawn from the above data is that the Lake Victoria fishery is now basically reduced to 3 dominant species: Nile Perch (42%), Dagaa (42%) and Nile Tilapia (15%) in terms of weight (LVFO/IFMP, 2008a, 2010b; Parkes, 2008). In addition, a notable aspect of the transformation of the fisheries is that the fishing organization of Dagaa fishery has gradually adopted the same style as in the Nile Perch sector (see chapters 4&5). Due to this transformation, I gathered data for Dagaa export and distant domestic trade for a period of two years (2010-2011) at Kirumba (Mwanza). I believe the information is of value for understanding Dagaa fishery in Tanzania.

2.5 Management transformation: co-management - a global response

Within fisheries, globalization has been associated with new management approaches, due to changes in fish harvesting, processing, transport and handling technologies as a result of the expansion of markets and fish export. The opening-up has triggered donor-funded projects with different management regimes, subject to the interests of donors and foreign consumer communities. These have led to most African fisheries being modernized, adapting to new global fish quality policies. LV is not exceptional. Harmonized regional policies (Table 2.4) are part of on-going modernization processes, with many challenges at local level. In recent years, Tanzania has stipulated more regulations in its fisheries regulation framework to abide by EU fish quality standards (URT, 2009:41-80).

The 'co-management' approach was first initiated around 1997 in Tanzania during the first phase of the Lake Victoria Environmental Management Project

(LVEMP I). This was the time when a donor-driven discourse to involve the communities in fisheries management was promoted all over the world (LVFO/LVEMP, 2005). Local Fisheries Management Bodies (LFMBs), known as Local Enforcement Units (LEU), were piloted in Mwanza Gulf, Tanzania, but the name was later changed to Beach Management Units (BMU). The rationale behind co-management is that conventional management has often failed to manage 'small scale' fisheries effectively or in a manner that is fair to local fishers (Berkers, 1989; Jentoft, 1989) because centralized systems take little heed of the different conditions of local communities and often fail to ensure that local communities have equitable access to fisheries in the form of legally recognized rights to fish (Pomeroy and Berkers, 1997).

From around 2000, the Lake Victoria Fisheries Research Project (LVFRP), LVEMP and the BMU initiative, were introduced all over the lake (Geheb, 2000a; Medard, 2002). BMU Operational Guidelines were developed and harmonized for the entire region (Ogwang et al., 2004). This idea is of interest because the problems which the BMUs set out to combat were by no means simply confined to one country and it was suggested that similar groups be set up for the entire region. These early initiatives were further consolidated under the Implementation of a Fisheries Management Plan (IFMP) Project from 2005 to 2010. To date a total of 1,067 BMUs have been formed. Of those, 281 are in Kenya, 433 in Tanzania and 355 in Uganda (LVFO/IFMP, 2010a). The establishment was supported by two giant donor funded projects, the EU and World Bank (WB) and partly by International Union for Conservation of Nature (IUCN). The BMUs are responsible for ensuring that no illegal fishing and trading takes place in their areas of jurisdiction and that breeding areas are protected (Ogwang et al., 2004).

Currently, there are many managerial problems and challenges due to the fact that the approach to co-management through the establishment of BMUs does not represent the creation of a true co-managerial relationship but, rather, the subjugation of fishing communities to uphold the state's law (Geheb, Abila, et al., 2000; Medard and Geheb, 2000). Fishing communities see themselves as enforcing state regulations on behalf of the state, and hence, as doing the state's work, as merely an extension of the state's administration. As a result they demand remuneration, as well as bribes. The government's devolution of power to fishing communities around the lake basin does not indicate faith in the abilities of fishing communities to design and implement their own fisheries regulations and/or their own community management plans. In many respects, fishers and their fishing communities are seen as ignorant, slovenly and untruthful (Chapters 6 and 7). This results in two managerial difficulties. On the one hand, fishers and their communities are criminalised, both in the minds of administrators and in their own. Fishing communities (fishers) come to perceive that there is little that they can do that is right. Government demand for increased enforcement is strong, yet, enforcement challenges still exist in Kenya (Okwach, 2009), Uganda (Okware, 2009) and Tanzania (Mahatane, 2009). It is tempting to suggest that while there are problems in enforcing regulations that user communities have trouble believing in (Chapter 8), it is even more difficult when enforcement staff themselves do not believe in them as tools in the fight for a sustainable fishery. Moreover, some officials participate actively in

illegality, bribery and corruption (Okwach, 2009; Okware, 2009; UFFCA, 2013), despite the decision by Council of Ministers (CoMs) to implement 'zero tolerance measures'²¹ to eradicate illegal fishing/trade by 100 per cent for the entire lake by December 2009 (ibid.). This promised plan of activity has failed totally (Chapter 8).

The other problem is that, although the three East African States have embarked on fisheries co-management strategies (LVFO/IFMP, 2008a; Ogwang, 2009; Ogwang, Medard and Ikwaput-Nyeko, 2004) with the assumption that fish yields can be both optimized and stabilized by better management (LVFO/EAC, 2011), these approaches are, however, often based on unjustified assumptions about equilibrium fish stocks and livelihoods, based entirely on fishing with various mechanisms (legal and illegal) and on how to utilize the resource to minimize risks and ameliorate vulnerability. I will show some of the livelihood strategies deployed by different actors in order to make a living under conditions of extreme dependency, both social and natural. Implementation of co-management in LV has many challenges and is still dependent on donor projects. Actors' interest in resource management is disappearing (Chapter 8) and collaboration between community members and government officials is falling apart because of the interest of fisheries managers and government in retaining state discretionary rights and because of corruption. The real problem is that the management of the lake addresses the minor actors and not the key players, such as EPFs and camp owners-*matajiri*. Moreover, BMUs are based on wrong assumptions regarding the organization of fishing, as I will show that in Chapter 8. The whole idea of co-management of the fishery resource in LV is at stake and many problems and challenges are found, from production (Chapter 4 & 5) to the marketing sector (Chapter 7).

2.5.1 Who is to participate in managing the lake?

In contrast to the traditional views of fisheries managers and policy decision bodies about the fisheries of LV, the community is no longer just composed of local actors. This expanded view of community has led analysts to talk about stakeholders (Bryson, 2004). These so-called stakeholders do not think and act in the same way, nor are their political and economic interests the same. More importantly, there is the question of how the actors are defined, based on global modern perspectives, to fit with local realities. I will shed-light on how a fisherman (a fisher in this context) is defined, despite the many autocratic views described in section 2.6

The Tanzania Fisheries Department (TFD), defines a fisher as 'an *individual* who takes part in fishing conducted from a fishing vessel, a platform whether fixed or floating or from the shore' (URT, 2003b:9). A fisher is regarded as a distinct fellow, with no regard to his/her interactions/networks, place specifics and knowledge base. More importantly, a fisher is assumed to be a *man*, because 'going out fishing in a boat' in LV waters is done by men. LVFO defines a fisher as a stakeholder who has a stake in fisheries resources, either directly dependent on the fisheries resources or affecting the fisheries resources through their activities (LVFO/IFMP, 2010a). This is a broad definition and it fits any fishing occupation, including traders and exporters.

²¹The 7th session of East Africa Council of Ministers (CoMs) on 27th Feb.2009 in Tanzania signed a joint communiqué requiring partner states to implement 'zero tolerance' to eradicate illegal fishing/trade to 100% by December, 2009.

In the Tanzania Fisheries Act, a *stakeholder* is defined as a person or group of persons or institution whose interests are materially affected, either directly or indirectly, by fishing or fishing related activities 'subject to the Act' (URT, 2003b:12). Accordingly, a fisher is directly subjected to being a member of a Beach Management Unit (BMU): 'no one can work in fisheries at a landing site without being a member of a BMU' (LVFO/IFMP, 2010a:1). The LVFO defines BMU as an organization of fisher folk at the beach (boat crew, boat owners, managers, charterers, fish processors, fishmongers, local gear makers or repairers and fishing equipment dealers) within a fishing community (LVFO/IFMP, 2010a:iii). The TFD defines BMUs as a group of devoted stakeholders in a fishing community, whose main function is the management, conservation and protection of fish, in collaboration with the government (URT, 2003b:6). This implies that the TFD regard BMUs as their extension arm, which should work on their behalf through a management agreement (URT, 2003b:22). A fisher is also regarded as the sole owner of a fishing boat and other equipment as indicated in the fishing licensing and, therefore, a fishing boat is the main criterion for someone to be recognized as a fisher in LV, Tanzania. This is not necessarily the case.

It should be known that actors in the arena are diverse with a wide range of referents. Some of them can fish without owning a fishing boat so long they have social networks, money and make a profit. They have different interests in managing and/or exploiting the lake's resources, often with contradictory economic, social and political interests. The configuration of actors in the arena, their actions and social relationships, continually evolve, with new actors and fishing practices. Moreover, conflict, resistance and controversy between different actors occur (Medard et al., 2002), creating new material structures - new institutions, changing landscapes and contestation of knowledge among others. This means that, while communities around Lake Victoria, Tanzania should be considered as 'communities of place' (Escobar, 2001) with their own specifics, the lake arena should also be understood as a space for negotiation, as both the subject and object of struggles between a range of actors. Part of the struggle is to understand properly the dynamics and diversity of resource users (the actors) and their practices.

2.6 Summary of the chapter

The chapter notes the contributions of fisheries to the economic development of riparian states, the transformation of fish species and how fish trade (the market) can change local practices and management processes, institutions, the society and the world at large. The chapter also shows that the management efforts and establishment of BMUs are attempts to regulate the fishery but they address inferior actors and irrelevant variable(s) and have an outdated idea about power relations in and around Lake Victoria. The lake is being managed by networks of powerful and multiple actors who move across different spaces (Chapter 8). It brings an important view point that actors are continually changing the meaning and form of the use of fisheries resources and, therefore, fisheries managers' ideological positions, their capacity to be creative and ability to translate meaning should change.

CHAPTER 3

FISHING AS A SOCIAL PRACTICE

“Fishing is a broader thing; it is not just going out fishing” (Bathel Mandevu, Kome Island: 02/11/2009).

3.1 Introduction

It would be a mistake to view fishing as only a localised activity governed in a vacuum. Fishing as a social arena has deep and long lasting institutional roots. It binds people together in many different ways, ethnically, economically, culturally and across genders, as an economic and social activity through which they engage with each other. Local and global dynamics, however, interact in place-specific ways such that ‘modern’ and ‘traditional’ cultural repertoires continue to co-exist. Such processes ensure that the organization of the fishing is continually redesigned to access and secure fish in different ways. Some of these changes are characterized by the creation of social inequality, harsh labour conditions, of dependency and the exclusion of specific groups. They are often in tension with each other, if not in outright conflict.

The central argument that runs through this chapter is that fishing is a social practice embedded in changing social, economic and cultural repertoires, including the use of witchcraft,²² the creation of new social networks, the establishment of empires, engagement in sexual relationships, working against the fisheries regulations and struggling to secure economic independence, which can be seen as an attempt to accommodate changes in such a way that people’s livelihoods are protected or secured. The chapter explores the local societal dimensions of fishing in order to analyse the socio-ecological spaces, in which practices and processes take place, that make fishing more than only shaped by, and responding to, global processes.

In this chapter I will try to describe how traditional practices and the ever growing competition for fish resources underpin organisational forms and practices within the fishery. The main questions are:

- (i) *How have the historical legacies of the Zinza and Sukumas served, shaped and transformed their societies, as well as their fishing practices in and around L. Victoria? How does this help to explain societal transformation in L. Victoria, Tanzania?*
- (ii) *How are the socio-economic institutions and cultural processes locally constructed in an attempt to accommodate local (ecological) and global (economic) changes in LV fisheries?*
- (iii) *How are social and economic relations shaping fishing organisation and transforming the socio-ecological spaces and networks? What is the impact on the way fish is accessed and traded at local level?*

²²Ritual means of working harm against an enemy, usually considered to be anti-social; done by a sorcerer, a person who wittingly directs injurious magical medicine to others for revenge or jealousy.

Based on my methodological framework (Figure 1.1) and central argument, the issues discussed here are based on those elements of socio-cultural and historical processes which directly and indirectly shape fishing organisations, as a result of actors' practices in their local settings. I took them seriously and engaged culturally with those around me while I was living with and observing Zinza, Sukumas and other ethnic members and participating in their daily routines. I had no means of escaping their reality. The chapter unveils how the local has been transformed by the global as the outcome of manifold interactions and processes that operate at various social and political levels.

3.2 Locating societal transformation

Historically, there were five fishing ethnic groups in Tanzania's LV fishery: Zinza, native Haya, Kerewe, Luo and Jita (Geheb, 2000b; Medard, 2002; Medard et al., 2002b). Before and after the introduction of Nile Perch, these ethnic groups were also known as fish eaters because they 'knew how to eat it well without wasting any flesh'. They had preferences for specific types of fish. While Zinza preferred Tilapia ('sato'), the Luo preferred lung fish ('kamongo'), the Haya had a taste for Bagrus ('mboju' or 'hongwe') and the Jita and Kerewe favoured Tilapia and *Haplochromis* ('furu'). Although all these groups had their preferences, they also took advantage of a variety of other fish species in the lake. Fishers from these ethnic groups were known for their personal endurance in fishing. They had a range of skills and knew how to use different types of gear, the ecology of the lake, such as catch seasonality, wind patterns, the colour of the water and its implications for catch availability, variations in water temperature, seasonal movement of fish up and down the water column, moonless and moonlight catch trends, reading stars (*nyota za ndimira*²³) and lunar cycles for determining good and bad fishing periods. They also knew how to swim and deal with 'soke'-dangerous water tornados, accompanied by violent weather. To learn these skills, practitioners would start from a very early age.

In the words of a 40-year old Jita long-line Nile Perch fisher at Mwanchimwa (Magu):

"Historically, most of the fishermen in this lake were Jita, Kerewe and Luo. They were experts of long-line fishery, which requires skill because we fish a hungry fish caught by its own desire to hunt food (bait). With the long-line, you can set as many hooks as you want and get nothing if you are not skilful. The truth is, when any tajiri claim to have hired good fisherman, it should be a Jitas, Kerewe or Luo. You cannot also compare these tribes with Zinza and Haya. There are only a few Zinza, and they rarely travel far from their homes to learn different fishing techniques. Likewise, the majority of Haya fish near their home in Bukoba. But now fishing has changed. Most wajeshi and even fishing camp owners are Sukuma. It is now a job which need connections and patronage" (Sadiki Masumbuko, 18/9/2009).

Today, the ethnic profile of the fishery has changed to one dominated by nomads, pastoralists, farmers and business camp owners notably, Sukuma (49%) and Kurya (11%). They have their origin in ethnic groups that have no historical association with

²³ There are male and female *ndimira*. Traditional fishers used *ndimira* to determine the 'annual fishing calendar'. The stars sink or disappear in June (female) and July (male) and this is followed by strong wind and cold water. Females rise in August while males rise in September and this is followed by short rains from September to-December. With commercialization, however, the calendar is obsolete.

the lake fishery. Of those, 62% are in the Nile Perch fishery, 31% in the Dagaa fishery, and 7% in the Tilapia fishery. The remaining proportion of camp owners (*matajiri*) is still occupied by ethnic fishing groups: the Jita (9%), Kerewe (9%), Zinza (6%), native Haya (5%), Luo (4%), Ha's (3%) and other minor tribes (4%). The same trend is also observed for crewmembers where 59% are Sukuma, followed by Jita (16%), Kurya (8%), Zinza (8%), Kerewe (7%), Haya (4%) and Luo (1%). This trend contradicts the historical situation where Jita, Kerewe, Zinza, native Haya and Luo formed the majority of fishers in Lake Victoria, Tanzania.²⁴ Observations at the camps showed that the majority of camp cooks were Sukuma women, due to their experience in cooking *ugali*²⁵ (Photo 3.8) in extended families and their migration in search of opportunities.

In the following section, I will discuss the social fishing knowledge and practices of Zinza and Sukuma ethnic societies and their everyday life as representative actors who are responsible for the fisheries resource use in Lake Victoria. I chose these communities because they gave meaning to the critical historical events and, in part, understood things differently. To date, Sukuma are the majority in fishing, while Zinza are the minority. We must also realize that these communities carry their historical legacies which have served, shaped and transformed their society, as well as their actions. While Zinza elders describe a tight and well-defined ethnic group in the past, with a variety of rules and social institutions governing its members, Sukuma, seem to be more flexible and underwent drastic internal transformation when they entered the fishing arena. The outcome of this transformation is the result of the internal and external relational effects of network construction within and beyond their individual societies. The emergent processes of transformation are in essence dynamic, rooted in history and given shape by multi-sited struggles and everyday manipulation associated with different practices and domains in social and ecological contexts.

3.1.1 Zinza fishing organisation (1940s-1970s)

The Zinza are part of the Bantu-speaking people who migrated from Uganda in the early 1800s and they speak a language similar to the Banyankole from the Ankole Kingdom in South-western Uganda. They are also closely related to the Haya and Subi from North-western Tanzania (FGDs, 17/11/2009). Some Zinza originate from Uganda's Bunyoro Kingdom (Adrian Tizeba, 10/6/2011), and the two ethnic groups (Banyankole and Banyoro) are closely related (Chitamwebwa, 19/5/2011). The Zinza are related to the Haya of Tanzania and the Nyoro, Toro and Ankole of Uganda (Bjerkes, 1969:186). The official census of 1957 in Tanzania gives a total of 55,000 people who called themselves Zinza (Bjerkes, 1975:2). The Zinza I am referring to in this book are from Lugata village, Kome Island (Sengerema District), in the Southwest of Lake Victoria. Lugata had 8 *vitongoji* (hamlets), 1,600 households and a total estimated population of about 11,000. Of those, about 8,000 were Zinza (Fikiri Mazige, Lugata Village Executive Officer (VEO) 17/11/2009). Apart from small hold

²⁴ Elders, Mwachimwa 14/9/2009; Elders Lugata, 17/11/2009 and Mzee Lubasa, 08/1/2010

²⁵ A stiff-porridge made by either maize or cassava flour or a mixture of the two



Photo 3.1a and 3.1b: Zinza elders at Lugata village and the researcher

farming, individuals raised livestock: of those, 1,050 were cows, 1,290 were goats and 10 were sheep.

In the past, the Zinza fished by themselves. There was no hired labour. Grandfathers (*'mababu'*) were very involved in fishing and, in the process, they taught their sons and grandsons how to fish. Fishing being one of their main economic activities, grandfathers were key people, who brought in innovative ideas and organized fishing. The clan compound was the main place for organizing and imparting fishing skills (FGD, Lugata elders, 17/11/2009).

Fishing expeditions typically took less than an hour because fishing was conducted close to the shore. Catches were shared amongst clan members within the clan compound. *"However a clan member shared his fish, it was respected"* (Simeo Kasusa, 17/11/2009). The size of allocations was based on the number of household members in a family and a person's status in a clan, based on their divine powers. The clan heads received the lion's share out of respect for the role they played in the clan.

3.1.2 Fishing in Zinza clan and sub-clan groupings (1960s-1970s)

In the 1960s to 1970s clan and sub-clan groupings in Zinza society each had particular specialities. Those located close to the shore fished, while those located in the hinterland farmed and reared livestock. The lakeside dwellers had considerable economic advantage due to their access to water resources for fishing and watering cattle.

Fishing clan or kinship²⁶ relations were divided into small groups, where sons from different clans and sub-clans joined and replaced their parents and grandparents in fishing. As competition between clans and sub-clans grew, they were tempted to fish far from their landings, and fishing became less localised. The Zinza went as far as Bukoba (Kagera Region) in the western part of the lake to fish. Zinza society limited the amount of time that their fishers could spend away from

²⁶ The value of relationship traced through parental links and recognized for social, cultural and economic purposes

home, reasoning that being away for too long would cause marital strife and the neglect of families, and that the men would take lovers while away.

“Our ancestors went as far as Bukoba to fish. But it was forbidden to stay away for more than three months. Divorce, separation, and any behaviour that might cause marital problems were not tolerated. During their absence, their families were closely observed by clan elders” (Ruben Kusi Kaiga, Zinza elder from Lugata, Kome Island. 17/11/2009).

Fishing was carried out during specific seasons. January to March was the peak fishing time. Those who migrated returned home during the crop harvest: April to May. From June to August, fishing was not conducted because of rough weather and dangerous fishing conditions. Instead, they paid visits to relatives, ate their harvests, conducted festivals and performed religious and traditional ceremonies such as weddings, circumcision and rituals. Fishing resumed again from September to November and they returned home in December for Christmas and New Year celebrations.

As time progressed, however, the restrictions placed on fishing activities began to be contested and challenged. Demand for fish was growing: the Zinza community was engaging more and more in the market economy, and populations were growing both within and beyond their community. Zinza fishers began learning new fishing techniques, and fishing all year round. In an effort to prevent fatalities during the storm season (June to August) fishing trips were strictly recommended to involve unrelated clan members to avoid water accidents and killings from the same family or clan members. In this case, fishing skills, norms and traditions were exchanged between unrelated fishers. Fishing canoes were shared with no costs and a person's catch would be distinguished by cutting small marks into fishes' fins. Respondents claimed that no one was worried about their fish being stolen or 'substituted'.

They punished theft within their communities harshly. This included flogging (usually 25 strokes, but it could be up to 40), defamation, and psychological punishment. The father of the offender would be fined a cow and other assets, depending on the seriousness of the offence. The most terrifying punishment was banishment from the spiritual clan, '*O- msambwa*', a totality of clan spirits, souls and ghosts, which was worshipped at a sacred site located within the clan's land, usually near a big tree, forest or shrubs. '*O-msambwa*' is still believed to possess vital forces and power and be able to bring both good and bad luck. It, therefore, plays an important role in fishing. Prayers are offered to '*O-msambwa*' in the hope of improving employment prospects and family fortunes, of resolving conflict, of granting good crop and fish yields, at marriage and child bearing (Medard et al., 2012b). If such spirits are dishonoured, they will cause the clan as a whole a sequence of misfortunes. Bjerkes (1969:187) also found that death, sickness and other misfortune in Zinza society were connected to a personal source.

The spirit world inspired other punishments for thieves. The '*lutego*' spell could be cast against a thief and cause death, create hardship, loss of job, an unhappy life and psychological problems. All of a thief's family members would gradually die and the thief would be the last. But *lutego* is discerning. If the spell is cast against someone wrongly accused, then the spell caster and his/her clan will die.

“‘Lutego’ is a severe punishment. It is like witchcraft. That’s why theft was not allowed at all in our community because the whole clan would vanish. It was not something to tamper with, and only ‘gifted elders’ could do so after consultation with other clan elders. It was only enacted if elders were certain. But now we don’t do ‘lutego’, if we do, we will all die, because theft is rampant” (Mtoso, 17/11/2009).

They first heard about net thefts on Lake Victoria in the 1970s when *Bagrus spp.* (*‘Hongwe’*) catches were at their peak.

“For the first time, we witnessed theft by Sukuma migrants. They were chased and threatened with ‘lutego’. This created antagonistic relations between us and Sukuma for many years. When some died as a result of ‘lutego’ we would not see the Sukuma for a while, but now they are everywhere and they steal by including Zinza as accomplices. We can’t control it anymore” (Roki Constatine, Zinza elder and retired traditional fisher. 21/11/2009).

Today, the wide variety of rules and social institutions governing the Zinza clan members are changing:

“Nowadays we have a diversity of morally corrupt people in our community. Inter-marriage is common and parents have no power. We depend on our children financially and materially. Theft is embraced so long they give us money. We can’t influence our sons’ futures or their choice of partners or workmates” (Mkama Liso, Zinza elder from Lugata. 17/11/2009).

Another Zinza elder added:

“Our younger generation is spoiled by education, intermarriage and modernity, especially those who are married to educated wives from other tribes with different religious beliefs and traditions. In such homes, women have become the spokespeople of their families, and object to our cultural practices - something that is impossible for a village woman in our society. Now our sons have to negotiate with their wives to safeguard their marriages. But also, our sons are not able to follow tradition, and some of them don’t believe in tradition anymore. Whatever they do, they link it with science from European books and not to their natural environment, and, as such, our rituals and traditional values are becoming history. Actually, what I am telling you is history too - the younger generation is totally broken! The O-Msambwa are angry, they don’t answer our prayers any more. But when their families suffer from job losses or demotion, or marriage failure, sickness and political trouble, our sons come to us at once and say: “Babu nisaidie nimekwama!” (“Grandpa, I need your help; I am stuck!”). Then we know exactly what they need” (Mzee Faida Ndayi, 17/11/2009).

From 1950 to 1970 the market for fish around the lake grew as a result of developments in the cash crop global economy. Cotton ginneries were developed in various locations in Mwanza, around which local markets for fish also developed. Fishers would travel by foot – often, long distances – to deliver their fish to ginnery sites, which turned into fish markets because of the concentration of workers who bought fish on their return home after their production shift had ended. Zinza community members spoke about changes to the fishery that reflected the growing market and increased pressure upon it. In the 1950s, the *ningu* (*Labeo spp.*) fishery was said to dominate fishery, and reached its peak in 1956. By 1959, *ningu* catches had declined, as had the average size of each fish landed (Roki, Constantine, 21/11/2009). Cadwalladr (1965) also reports that by 1965 the *ningu* fishery had virtually disappeared from influent rivers in Kenya, which colonial authorities attributed to the failure of their regulations, to increasing fishing efforts and new

fishing technologies. With the collapse of *ningu* stocks, the Zinza began targeting *Sato* (*Tilapia* species). By 1961 *Tilapia* catches and fish sizes had fallen, so the Zinza turned to *Hongwe* (*Bagrus* spp.)

The Zinza did not like eating *Dagaa* and so did not know how to catch it. They scooped it up with sheets along the shore to feed to their poultry. But by 1963, the Zinza had learned how to fish *Dagaa* and there was plenty around Maisome Island (near Kome Island). By the early 1970s, *Ningu* and *Hongwe* stocks were on the decline, so they turned to *Ngere* (or *Gogogo-Synodontis* spp.): small, bony fish. This fishery peaked in the 1970s, and began to decline in the early 1980s (FGDs Lugata, 17/11/2009). By 1982, the Zinza had started to fish Nile Perch in their area (Roki Constantine, 21/11/2009).

Interviewees claimed that since then, cultural norms and values have disappeared. Fishing is done aggressively and theft is common, and is an avenue to access the fishery, employment and income. Under such circumstances, a thief might be seen as a brave man, who is ready to die fighting for his life. Theft is now commercialized and it is mounted in strong and loose networks, as we shall see later.

3.1.3 The Zinza minority in a globalized fishery

Zinza elders confirmed that they were the minority in today's fishery because their involvement in the fishery is influenced by their society and culture. They still feel that being hired as casual crew is beneath them, and compare themselves to the Haya and Kerewe as the most stubborn people in the Lake Victoria basin. One elder confirmed this:

"To be honest, we're just self-centred. We look after own desires and, especially the men, are very particular about what jobs we do. This is why there aren't many of us in the fishery. We want to own big fishing camps before being labourers. This is how we are. We are too boastful. Our attitudes have become moulded over many years. What we end up doing depends on what our kinsmen – whether dead or alive – choose for us to do. But things have changed with new techniques and strategies, which our elders disapprove of. This is why the Sukuma dominate the fishery"(Mtoso²⁷, 17/11/2009).

Another remarked, 'where there are trees there are no builders (*kwenye miti hakuna wajenzi*), the lake is here but we are strained into other things' (Philip Simeon Kasusa 17/11/2009).

"Historically in our society, fishing has been labelled as a worthless job, inferior and undeserving of respect. Most Zinza elites prefer clerical jobs just like our fellow Hayas. But this is just because fishing is a tough job and when going fishing you don't wear smart clothes" (Deus Tongano, 17/11/2009).

Nevertheless, Mtoso and Deus's views to explain why Zinza were a minority have been contested. A political leader at Lugata, revealed that Zinza's were not a minority in fishing by chance. It was due to significant ecological and health effects.

"Ecologically Zinza is a lowland area, and in ancient times it was covered by papyrus, forest, shrubs and trees and was among the most favourable areas for mosquito life cycles. This affected

²⁷Retired clerical officer of Tanzania Bora Shoe Company

most of our under-five children and those who survived were attacked by Schistosomiasis, intestinal worms, and other water borne diseases. Belief in the connection to witchcraft, particularly for acute Schistosomiasis, and poor medical services led to the death of a number of Zinzas. There was no way our elders could avoid these diseases. Yet, the lake water was part of our life line as it is up to today. The after-world plays a powerful role in Zinza communities, and to this day, associations with death and dying remain powerful. This association is reflected in our clan names: 'Tirutoza' - 'death does not select a peer group'; 'Tirubuuza' - 'death does not ask who should be taken'; 'Tirwirukwa' - 'you cannot run away from death', 'Tirunganyila' - 'seeking God's protection against death'; 'Tulibahamo' - 'death is not localized' (Adrian Tizeba, 10/6/2011).

Zinza elders also reported to have been affected by syphilis in the early days, which affected men's reproductive health and, thus, the population.

It was further affirmed that their current population in fishing was related to the culture of marriage and child rearing. In early years, a Zinza child was nursed and weaned until three to four years of age, when the mother may well be expecting another baby. Also historically Zinza were non-polygamist and non-migratory. Polygamy was forbidden, and mobility was restricted to specific times and seasons. Mobility was regarded as an avenue for most men to co-habit with temporary sexual partners - an attitude which was not accepted by Zinza elders.

The traditional hierarchical structures and practices in Zinza society had [and still have] great influence on decision-making processes, choices, activities and behaviour. The concept of respect to elderly men in particular, is a limitless and oppressive concept. One elder commented:

"Even in this meeting, if women were part of the team, they wouldn't speak or sit alongside men. Women would be in the corner or in the next room and stay speechless. We had invited two of them but one had a sick person to attend to and the other one refused when she knew that she would be the only woman in the meeting. It is our tradition" (Simeon Mchelebhe, 17/11/2009).

Zinza women played a major role in farm activities, looking after the sick, the children and the family. They were responsible for infusing norms into a child - particularly a girl child. When young girls got pregnant before marriage, mothers were burdened and abused for allowing an 'immoral act'. Such girls were excommunicated and isolated, by taking them to 'Singo Island' (a small island within Kome Island) for the rest of their life. Such exclusion was done to avoid misfortune within the clan. This made Zinza women comply with a disciplined life. They were confined at home. Bjerkes (1969:187) also noted that Zinza had strict rules against intermarriage and commensality rules (governing eating and marital arrangements) which were becoming obsolete.

In the following section, I want to show the contrast with the Sukuma ethnic group and how their traditional settings (*Nzenzo* living system) and culture help to explain their prominence in today's Lake Victoria fishery. I also take *nzenzo* as a centre for my explanation because I believe it has influence on the way commercial fishing camps are organized.



Photo 3.2: Sukuma elders at Mwanchimwa, Kigangama village (Magu)

3.2 Social organization and norm implanting in Sukuma society

Traditionally, the Sukuma were pastoralists²⁸ and farmers, and had a hierarchical order of administrative and divine powers. There was a chief (*'ntemi'*, pl. *'batemi'*), who was always a diviner and traditional healer. Those with such powers were also known as *'bafumu'* (sing. *'nfunu'*), responsible for preparing medicines to protect members from attack when they pursued thieves, minding their cattle while they grazed, or while migrating to other places. They were also responsible for providing traditional medicines to treat infertility, twin child health protection, stomach, skin or other diseases (Desmond, 2012:155). Some medicines were rubbed into incisions and mixed with various herbs and ash.

Such chiefs also had administrative and judicial powers (Shivji and Maina, 2003:16). Alongside the *ntemi* was the *'ntwale'* (pl. *'batwale'*) who helped *ntemi* to organize different activities. The *batwale* worked with *'balunshi'* whose job it was to call assemblies, announce deaths and funeral arrangements, announce the loss of property, organise the weeding of common grave land and other communal activities. Although the chiefdom was abolished after independence (Shivji and Maina, 2003:16), some elements of these administrative and governance systems still exist in Sukuma society. Mzee Lubasa,²⁹ in an interview, tells more about Sukumas:

"The Sukumas inhabit a large area of Tanzania that includes Mwanza, part of Mara region (Bunda), Shinyanga and Tabora. They came from Kenya through Bukoba route and others were channelled through Ukerewe and settled in Magu and Bunda. Others went as far as Arusha and they were chased by Masai and turned around and settled in Shinyanga, Tabora, Mwanza and so on. The surrounding of Lake Victoria was a form of re-organization. Sukuma are traditionally experts in river line fishery and fish using 'luswigilo' – a traditional trap made by strong wooden sticks".

He adds:

²⁸ They risk their lives in order to acquire cattle. Bravery is shown toward maintaining and protecting cattle. Wealth is also measured in terms of cattle and cattle raiding is a means of acquiring wealth.

²⁹ A 70+ year old social Anthropologist and Sukuma ethnic group member

“The Sukuma are nomads and have no family restrictions. A boy is taught to be independent in his teenage years, and he will then migrate in search of labour - cattle herding, selling milk, farming in peer groups and so on. In the old days, a house had no value. People would just migrate without selling it or give it away. For us, migration is part of life. In the old days, the houses would be left and any person could use them. When I was born, we were in Mbarika Village. Then my father moved us to Nera, then Malugusu and we continued to other places until I became independent. The Sukuma are flexible, easy going, humble, eager learners and tolerant. We were brought up in tough conditions - farming and cattle keeping. Now the Sukuma are in many places for work. We are also courageous” (Butimba, 8/1/2010).

The traditional Sukuma settlement is called ‘*nzengo*’, which I define as a conceptual nucleus around which Sukuma culture, tradition and society revolves. Mzee Lubasa defines it as ‘an adoring place, a camping place, a living place - and dwellers are known as ‘*wana-nzengo*’ -in Kiswahili ‘*wakaazi wenzangu*’- or ‘fellow-inhabitants’ (10/1/2010). It is bound by norms and traditions including burial and weddings, knowledge about traditional medicine, deeds of adolescence, pregnancy and how to groom young males to become independent. *Nzengo* leaders are responsible for moulding the community into a disciplined and cultured life. Through *nzengo* bylaws are made and inhabitants are sanctioned by serious punishments. These include ‘*kuturujiwa*’ (lit., ostracization) in which an offender does not get any support, including help to bury their dead. But *nzengo* is also a shelter for the weak because of its ability to provide various services and help.

Nzengo accounts for both livelihoods and for social formations and structures. Their culture establishes a framework for reflection and for doing things, within which there is immense variation. And then there is the Sukuma ability to adapt, as opposed to Zinza. Sukuma are not resistant to change, at least not to changes from which they profit. Sukuma are inquisitive, tolerant, eager to learn, and there is nothing in their social system sufficiently strong to result in destructive conversation such that, any conversation with others is, in effect a constant gain.

Sukuma have other small institutions (Figure 3.1). They employ a farming system, called ‘*luganda*’, in which male and female peer groups or different household members join together and farm communally. Abraham (2012) confirms that many aspects of traditional Sukuma life were organized collectively, including cultivation, millet threshing, house building, weddings and funerals. These relationships constitute an economic and social organization that helps the Sukuma to mobilise their labour force to farm large areas rapidly and to share knowledge on farm management (burrowing, planting, weeding, crop rotation, use of cow dung), harvesting and farming seasonality. Through such groups they also inform each other about off-farm labour opportunities for additional income generation.

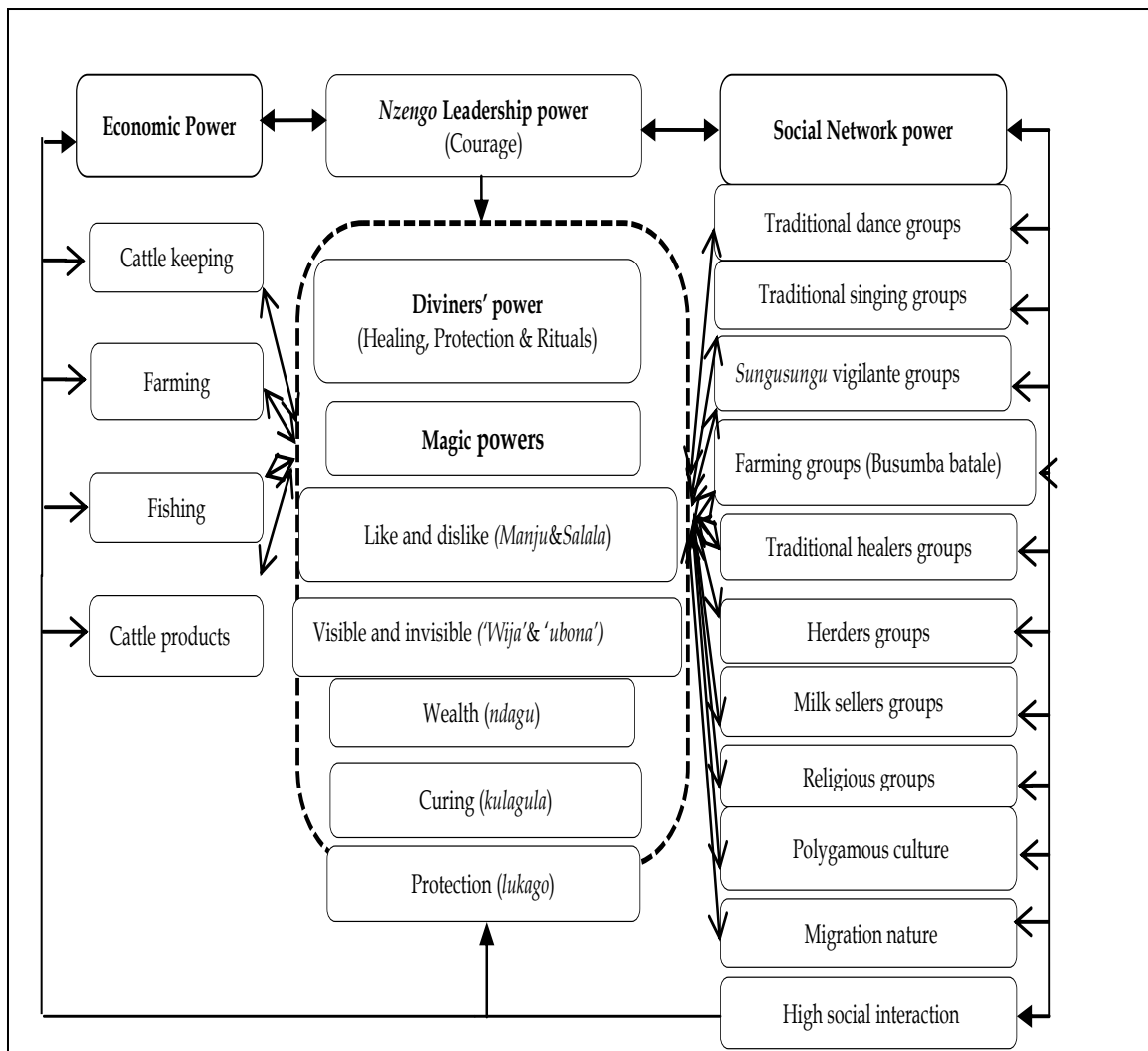


Figure 3.1: Various institutions and networks in Sukuma society

Sukuma are well-known as traditional dancers (*ngoma*) (Bukurura, 1995:8; Desmond, 2009), jokers (Kabuye, 1975; Pedler, 1944) or comedians and singers (Gunderson, 2001), activities which are mostly conducted during crop harvesting seasons. Troops of singers and *ngoma* entertainers travel to different villages to perform traditional dances: the '*wigashe*', '*bugobogobo*', '*buzwilili*', '*bhugalu*', '*bhugika*' and others. '*Bhugalu*' (*ngalu*) and '*bhugika*' (*mugika*)³⁰ are famous rivals. These dances provide an opportunity for youth to meet new people and find new sexual partners. They drive youth to join forces in economic activities and to enter into relationships through the famous process known as '*chagulaga*' (choose one) - a Sukuma way of seducing a lady - which is still the case in some rural communities contrary to Zinza ethics.

Sungusungu as well as *luganda* groups are associated with specific songs as energizers in livestock and farming activities. These traditions have spread and infused in Lake Victoria fisheries, a resource which was not traditionally prioritized by pastoralist society. To date, pulling beach seine in Lake Victoria, Tanzania is always accompanied by Sukuma songs as motivational trappings. This attracted

³⁰ The fans of *Bhugalu* are known as '*ngalu*' while *bhugika* are '*mugika*' and they compete as in football matches - in this case the '*ngalu vs mugikas*'.

them to join beach seine as pullers (*wachoji*, *wakokozi*), supervisors (*meja*, lit. *major*) and orchestrators of various songs.

'Nizakuchola, natizilekwiba: Meaning - 'I have come to search for money and not to steal'

'Ukakaya nalekaga sagala, limililakanduhu ha ng'wabkudima': Meaning - 'at home the condition is bad the sun is scorching and there is no place to go'. (Field participation: Ntama, Kome Island, 20/11/2009).

In the early 1980s, the Sukuma, together with Nyamwezi pastoralists, created '*sungusungu*' vigilante groups (Abrahams, 1987:181) to protect property – particularly livestock – against theft. '*Sungusungu*' is a Kiswahili word that refers to a species of large black biting ants. The initiative grew to cover forms of local-level violence such as fighting, family and relational conflicts and criminal offences. The formation of *sungusungu* groups has been attributed to people's not being satisfied with fundamental aspects of the supply side of their relationship with the state and as a result of the state's failure to capture rural areas both politically and economically (Abrahams, (1987:367). This is another institution which has a very significant role in Sukuma society, and now the entire Lake Victoria basin.

Friction, naturally enough, began to occur (and still exists) between the *sungusungu* groups, the local administration and the police. The latter accuse the *sungusungu* of taking the law into their own hands and providing additional means of social control. But the *sungusungu* have also been instrumental in community policing, investigation, apprehension and punishment. They work hand in hand with village elders, leaders, police officers and the ward-based militia ('*mgambo*'). To date, this pattern of organization has been adopted in modern government systems and is found in several parts in Tanzania under the village government's peace and security sub-committees (Medard, 2002).

But the *sungusungu* have evolved and lines between what were clearly vigilante groups and bands of thugs have become blurred. These changes are particularly visible in fishing communities, where men of questionable repute and honour have joined the *sungusungu* groups. They threaten community members, get involved in corruption, impose dubious fines and demand sexual favours. Because of women's insecurity in the islands, *sungusungu* members act as 'security guards' and 'protection racketeers' and can attract bribes and many sexual partners seeking their protection.

"This island is unsafe. At night, you wouldn't dare to go and watch a movie or dance alone. You can be raped. You need a man to protect you, and then you will be at peace. We also have many fees that are required by the village, the ward or district for each household. If you get a man, he can help you to cover these as part of your household. All of our village authorities, BMU members and sungusungu have more than one partner, because they are authorities and have influence, and can therefore protect us or put us in trouble" (Kasigwa Nyagabona, 20/11/2009).

At all sites visited during this research, men strived to be *sungusungu* members. It can be a lucrative business. Most prefer to work in densely populated centres where the chances of being able to levy fines is highest. Many *sungusungu* groups work jointly with corrupt officers, village and BMU leaders to share fines and bribes

(Chapter 5, textbox 5.1). They have created new autonomies by claiming monopolies of security and protection. It is also a means to get a meal, their laundry done and a bed to sleep in through women. Because there is a clear demand for protection amongst women, particularly on the islands, there is also a market. Very often, women cannot thwart the sexual advances of these men because they are themselves on the wrong side of the law – as traders of small fish and owners of small mesh-size nets (Medard, 2012 :564).

Marriage in Sukuma society is a relatively relaxed affair, and a marriage ending, and one or other of the couple remarrying or seeking out new relationships, is considered unremarkable. Divorced or unmarried women are referred to as '*wasimbe*', and may have children. Such women may have little interest in monogamous relationships, and may have several sexual partners. Such women are common and migrate to various fish landing sites – as cooks (Chapters 4 and 5), fish traders, bar maids, guest attendants and Dagaa processors and driers (Medard, 2012). So, for the *sungusungu*, the pickings can be rich at landing sites.

3.2.1 Witchcraft and magic: are they enduring cause for Sukuma success?

Power seeking through magic, witchcraft, rituals and traditions is very common in Sukuma society and may be one of the reasons behind the Sukuma's audacity and prominence in Lake Victoria fishery. Magic is a means to fortify the individual or community in any or some undertakings such as magic for love, magic for curing (*kulagula*), magic for protection (*lukago*) and other economic activities such as magic for wealth (*ndagu*). Ocholla-Ayayo (1976:153) also asserted that, magic is also connected to religious aspects and many religious rituals contain magic. A Sukuma elder and social anthropologist narrates:

"We have one tree called 'malehe' or 'hangachalo'. This tree is very important in Sukuma society for providing us with the courage to do what we want to do, including fishing. If you wanted to fish, the elders would ask, are you cleared? (lit., have you been provided with traditional rites and other forms of protection?) This is why Sukuma are everywhere. In fishing, mining, cattle keeping and farming" (Mzee Lubasa, Butimba 08/1/2010).

Also, '*ndagu*'³¹ is a well-known way of achieving success in Sukuma society, no matter what the activity embarked upon. In fishing, the rope used to drag a corpse to shore is the main ingredient for making *ndagu* in fishing. I observed a number of fishers who strived to get a small piece to take to traditional healers to make the magic of wealth through *ndagu*. Belief in *ndagu* is so strong, that people are attracted to the fishery just because of it; they may also remain in the fishery, fearful of quitting it, because *ndagu* comes at a price, a 'diving contract' that no fisher would want to break lest he attract misfortune and tragedy. A respondent from Ito Island confirms this assertion:

"Believers in witchcraft and superstition live like the fire and wind. Lighting the fire is a nightmare: they have to follow the direction of the wind. In fishing, we have rich fishers but you can't believe

³¹A famous Sukuma magic for wealth by abiding by certain principles and strict conditions ('banned acts') which the believer should follow to meet fortune. Otherwise s/he will not succeed. '*Ndagu*' is performed by 'gifted elders with spiritual power', traditional healers and witch doctors. It does not require payment but if one succeeds one has to pay. Most of it is charmed (Lubasa, 08/1/2010).

how restrictive their lives might be. They wear abrasive clothes, walk bare-foot or in flip-flops and sleep in horrible animal skins without mattresses. Others won't sleep in the same house with their wives for the rest of their lives. They own many houses and visit their wives, but then leave to sleep on their own without a woman. These restrictions are associated with ndagu. It is not an easy life. Such fishers are so secretive, they don't trust others and they normally don't want to share their views on how they have become wealthy. We actually hate and fear them because murder for them is normal, so long as they get rich (Baraka Kasiri, interv no 60082: 31/8/2010).

It was emphasized that, such practices and traditions were instilled in their nuclear families, their communal settings (*nzenzo*) and through their social interaction and migration. Belief in witchcraft seems to be very strong in Sukuma society. Their witchcraft and magic create confidence and courage in decision-making, and in confronting fisheries managers, fellow competitors and natural danger.

During the study, conversations about individual *matajiri* who were said to have become involved in *ndagu* through murder were common. Such beliefs mean that calamity might be credited to the evil of 'anonymous labourers' (e.g. *wajeshi*), close relatives and/or friends. The suspicion of *ndagu* coloured arguments and discussions about inequalities in wealth or success and intensified them.

Protection against murder might be provided by performing rituals for ancestral spirits ('*mizimu*' or '*wakurugenzi*') but, equally, it was said that this was beyond the control of most individuals. For instance, many strategies were deployed by crewmembers to avoid death by witchcraft: respecting ancestral relations, mobility (Table 6.9) by not working for one *tajiri* for long time, reversion to traditional healers and involvement in traditional rites ('*zindiko*') and adhering to taboos and beliefs (*miiko*). Some fishers wore protective talismans to ward off the danger, or constructed ancestral shrines³² at home and/or in fishing camps for regular respect to the ancestors, appealing to compassionate supernatural forces,³³ offering thanks-giving and making sacrifices to their forefathers' and ancestors' spirits. Notwithstanding such efforts, witchcraft as an expression of the hostility and envy in fishing was unavoidable, and often beyond individual control.

The intensity of norms, traditions governing fishing organization and witchcraft practices varied between fishery type, gear type and ethnicity. Witchcraft and superstition were also reported to be practised by the Kerewe, the Jita, the Ha from Kigoma and the Luo (Medardet al., 2012b). Luo belief in charms,³⁴ sorcery, witchcraft and traditional medicine has also been reported by Ochallo-Ayoya (1976:153):

"Fishermen of the Luo community consider a boat to be not an object but a living being, to which blame and responsibility can be assigned. Boat building and fishing are accompanied by many rituals. The ceremony that takes place before the launching of a boat is like the final ceremony called riso in a Luo marriage. The launching of the boat is the occasion for a major ceremony, called nyasi-yie, in which the boat that is ready to be launched is regarded like a married daughter coming home. During the riso celebration, the grandfather presents gifts such as beads, earrings, plumes, bangles and dol (necklaces), objects believed to act as protective talismans. The boat may be named after a grandmother, a grandfather or a married daughter, whose spirit is believed to enter the boat to look

³² Small fenced huts decorated with shells, mostly observed in traditional healers' compounds.

³³ Speaking the 'word of God' during leisure time, painting bible verses on the boat, attending prayers, burning incense and wearing rosaries. Muslims would hold tasbeeh.

³⁴ Are objects believed to have been invested with protective power, normally used for the good of individuals. But there are also destructive charms (Mzee Lubasa, pers. comm. 8/1/2010).

after it. Each boat is believed to have it sown nyamrerwa or priest. If a death takes place as a result of an accident on the lake, it is regarded as a killing of retribution, the slaying of a kinsman by another”(1976:176).

It was also reported that indigenous species such as Dagaa had more taboos that shaped their fishing practices than the Nile Perch fishery. Dagaa fishing had a closer association with lake spirits:

“We all perform rites on our boats to ward off evil spirits before the beginning of the dark phase of the lunar cycle. All the Dagaa camps around do this. If it is not done by the owner, it will be done by the camp supervisors. Even wajeshi do it in their own time because they think it will bring them good fortune. We believe that there is a big ship called ‘Athumani’ which travels on the lake at night. It is rarely seen. ‘Athumani’ is a ghost and has two colours, red and light-blue. Each colour has its own meaning. If a fisherman sees a red coloured ship, catches are expected to be low, whereas, light-blue means high catches”. (Interv. 600140:06/12/2010 Mchangani).

Sophie Zephania, a Luo Dagaa *tajiri*, talked about how she hired her crew along ethnic lines, for good performance and experience in fishing traditions, and how she adjusted herself in running her camp:

“I normally hire Jita, Kerewe and Luo because they know how to fish Dagaa, the ecology of the lake, the weather and wind patterns. They also know traditions and taboos, which helps to get good yields. They also cleanse the boats and their body before heading for the lake to do away with ‘janaba’³⁵ and attract good spirits and fortunes. But, also, I never make tough bylaws in my camp. If I do, they will run away because they know I am a woman and I need their energy in fishing and for other tough jobs in my camp”. (Ntama, Kome Island, 14/11/2010).

Zephania’s participation in Dagaa fishery is also due to her historical role in her society. Dagaa fishing and trade was reported to be an immediate economic option for most Luo men and women because of its divisibility and ability to absorb a range of small capital holders. There is also a lower risk of theft in the Dagaa fishery because the net is never left unattended on the lake.

3.3 Commodification and changing fishing traditions and ethics

Commodification, however, is gradually erasing taboos and traditions from the Lake Victoria fishery: most of the young generation and new ethnic fishing groups (e.g. Sukuma and Kurya) seem to be fearless and progressive, while the old leave the fishery. An elder from Ntama lamented:

“A lot of taboos and beliefs are now disregarded. Wajeshi go out to fish with marijuana, kuber and alcohol. All our traditional sacred islands are occupied by camps. ...There is no respect for the lake anymore” (Jamhuri Nyera, Interv. 6008: 15/11/2009).

Some young *matajiri* do, however, use advanced witchcraft and magic to neutralize or repel restrictive taboos, beliefs and other risks (Chapter 7). It is the reality that, with commercialization, camp owners incorporate some taboos and beliefs into ‘camp bylaws’ to comply with fishing traditions and at the same time to strictly control the camp labourers (Chapter 6). This tendency contributes to making young

³⁵ A fisherman is required to bathe before going fishing when having slept with a woman, even his own wife.

crewmembers ignorant of taboos and beliefs: instead, they become accustomed to camp bylaws, which impose camp discipline on a wide range of ethnic groups.

Another reported advantage of witchcraft practices is that it weakens fisheries management ethics and provides loopholes for illegalities to continue in fishing. Fear of being bewitched affects regulatory application. BMUs, official law enforcers, directly and indirectly associate the degree of enforcement with the risk of illness and/or death. Disregard of management initiatives is the only risk avoidance technique for them to free their minds from such witchcraft risks.

“From November to April we have many boats here at Ntama. People sell their cattle and farms and buy beach seine nets. Although the law does not allow these, they are difficult to eliminate. I once confiscated a beach seine which was fixed with a talisman at the cod-end. The owner asked me to return the talisman, he was at the point of crying. It was as if he had lost a valuable asset. He told me ‘you can take the beach seine, but allow me to remove my talisman’. He bribed me TShs 30,000 (\$20). I was scared to take his seine and talisman because anything could happen on my side. After a month, the same man had two more beach seines here and another one at Nyalusenyei Village. Fishers use talismans for protection and to attract wealth and good fortune. There is a lot of superstition in fishing. A number of fishers network with traditional healers and witches and they sometimes bring them from far away, such as the DR Congo and Kigoma. Fishing is a broader thing, it is not just about going out on the lake” (Name withheld, BMU leader, Ntama 12/11/2009).

Apart from witchcraft, laxity by the regulatory authorities (fisheries managers and BMUs) is common because it is contextual to individual relationships and social networks (Figure 3.2). Actors relate fishing with the community in which they live and help each other. Such relationships harden their interests and they, therefore, protect and defend each other. What is illegal on paper is not always practical (Chapter 8). The fisheries authorities and BMUs can often appear chimerical, showing great seriousness when their superiors are around but, in their absence, becoming part of a community of rule-breakers. A respondent from Makobe Island remarked:

“BMUs don’t dare to confiscate our beach seines and the small fish we catch. They don’t have that strength. They live here and we help each other. Some of them have shops and bars and we are their customers. Our fisheries officer came close to dying after confiscating a seine owned by a prominent fisher. The first time, he had his arm almost cut off by angry fishers; the second time he became very ill. His legs swelled and he could not walk for almost a year. Finally he knew why he suffered. Now he works closely with one of the richest and most powerful fishers around here, who owns more than 200 boats. He had to befriend him to save his life. Those who have connections with fisheries officers hardly ever lose their illegal gear or small fish. Corruption is also part of our lives (Mabula Machenulo, 18/8/2010).

As indicated previously, the art of not being governed depends on belief in witchcraft. Whatever the case, it does not help Lake Victoria fishery.

3.3.1 The rise of ‘camp empires’, power and networks in fishing

In this section, I will show how the fishing camp as an empire has evolved and contributed to shaping fishing practices. Fishing camps (*kambiyauvuvi*) are places where individuals and/or networks of relations organize fish production in terms of labour, fishing equipment, supplies (ice, fuel, food), fish storage, transportation

facilities and security systems. With commodification, camps include other facilities such as groceries, pool tables, gambling games, chase and board games, places for conducting players, tea rooms, bars and guest houses. Three reasons have been identified for establishing such facilities. First, *matajiri* want to retain within their dominion the money spent by camp labourers. Secondly, they want to confine and control labourers within their camps efficiently and effectively. Thirdly, they want to create other businesses and jobs within the camps in which they can engage relatives and friends. The camps serve as connecting devices to bring together large numbers of distant and heterogeneous entities whose connection would not have emerged without them.

The structure of camps differs between mainland and islands, and between isolated and centralized/urbanised fishing communities. Many permanent fishing camps are in centralized and highly concentrated areas, while semi-permanent camps (e.g. thatched huts) are mostly found in isolated places. Where the space for camping is small, particularly in centralized locations, guest houses accommodate a number of crew, particularly during the dark phase of the lunar cycle when Dagua fishing is at its peak (Chapter 5) and when Nile Perch long-liners fish during the day (Chapter 4). At this time, there is a large influx of new and experienced labourers associated with these fisheries and of semi-permanent crew, boat owners and renters.

Both internal and external factors in camp settlements shape and influence the transfer of fish, as well as material and immaterial factors. They depend on the season and on social and economic networks, but also include strategic logic such as (i) seeking better fish catches (ii) better prices (iii) searching for sufficient land to camp and process fish (Dagua) (iv) moving away from algal blooms (*'lugoga'*³⁶) (v) escaping potential theft and piracy risk areas (vi) following financial, material and transport providers (vii) following friends and cohorts for helping each other (viii) running away from competition (ix) avoiding high operational costs, e.g., in mainland sites (ix) moving to isolated areas in order to exercise high labour control (x) moving closer to home for managing fishing and family (xi) escaping accusations, e.g. of theft, sorcery and witchcraft and (xii) avoiding staying with strict law enforcers.

Fishing camps in Lake Victoria, Tanzania have administrative systems, leadership and bylaws to ensure labour and fishing inputs are controlled. Camp identities are created for individual camps, which are known as 'charters' (see Chapter 1). The charter is then marked on the camp's boats and, in this way, the camp empire names are created. Camp empires differ in magnitude in terms of investments: physical assets, labour, mechanization and the land and water area they occupy. This means, the larger the physical assets, the larger the empire is likely to be.

A number of *matajiri* manage complex camp enterprises located in wide spatial networks comprised of main camps and 'branches' (sub-camps) with either same gear type (e.g. Dagua fishery) or different types of gear e.g. Nile Perch fishery (Figure 3.2). Moreover the development of 'sub-camps' in Nile Perch fishery permits the deployment of different fish species, boat types and fishing methods. Sub-camps are also made strategically to rationalize operational costs, risk, and labour management and to enter into a new fishery (e.g. bait fishery).

³⁶ When the alga blooms, the long-liners migrate to other cleaner locations because it becomes harder for NP to see the bait.

The spatiality of camps is also an avenue for the creation of ‘market networks’ between centralized³⁷ and isolated sites or island and mainland sites, with fleets of fish collection and ice distribution boats and/or trucks connecting sites. Figure 3.2 gives an indication of the complexity of fishing camps and sub-camps in Nile Perch fishery.

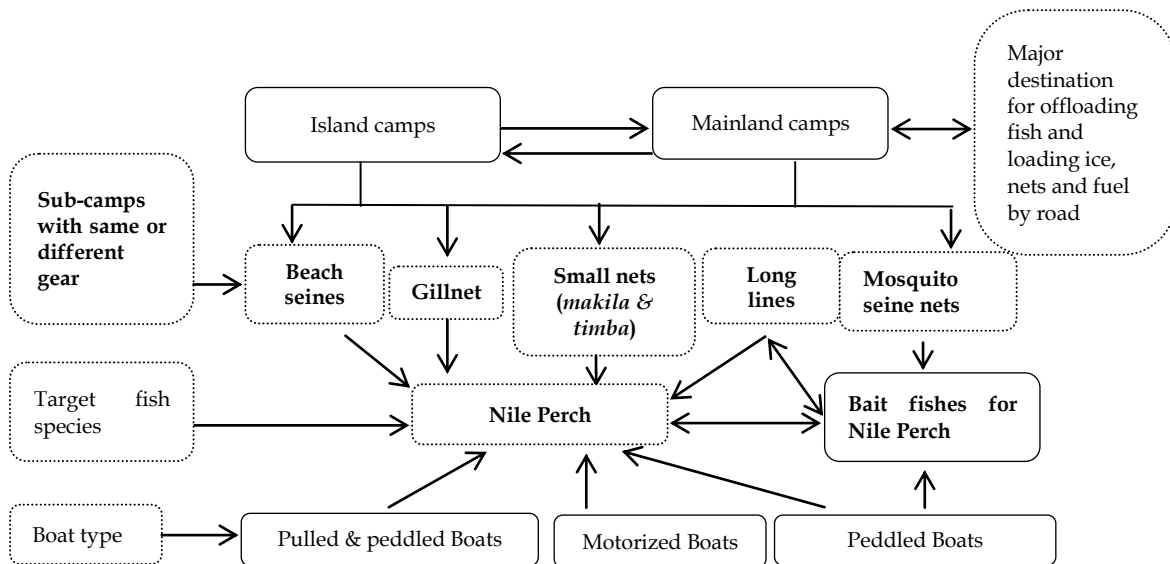


Figure 3.2: Multi-camps, multi-gear and multi- boats

Source: Field study; 2009-2011.

As various nodes - markets, fish landing sites and transport hubs - interact and are consolidated by such strategic networks, actors mobilize various elements (e.g. prices, contracts, storage facilities) that demarcate and influence the structure of the network. Bush (2004:38), and later Murdoch (2010), claims that the spatiality of a network becomes extremely important for long distance control maintained between actors and various nodes. Therefore, a network approach aims at tracing the various nodes actively or passively (Law, 1992; Murdoch, 2001). It looks at the aspects that tie the nodes together, such as friendship, family, contracts, kinship, gender, ethnicity, and common interests, and lead to one or many different relations as we shall see later. Any action, any result of an interaction, and any outcome (e.g. wealth or poverty) is not the consequence of the action of an individual but is the result of relational effects of several parts of the network.

3.3.2 Triple capacity through empire: the case of Chikuku

Chikuku is found in Ntama Sub-Village, Lugata Village on Kome Island. The settlement was founded in 1994 when a Sukuma camp owner migrated from Magu and camped with his crew at Chikuku. Lugata village was formed in 1974, during the

³⁷ Collection points of quantities of fish before transportation to markets.

Tanzanian 'villagization' (*'ujamaa'*) initiative. Chikuku camp is located about 3 km from Lugata, and 1.5 Km from Ntama.

Other than the village administration, Chikuku has two administrative fishing organizations. The first is a Chikuku Camp Committee (CCC), which has a mandate over the 15 fishing camps in the Chikuku area, and comprises six members: the '*balozi*'³⁸ (the chair); the 'commander' (*'kamanda'*), who is responsible for executing bylaws; and three elders who deal with conflict resolution. The CCC's main roles are to foster communication, scrutinize new applicants for camping at Chikuku, allocate space for new campers and liaise with local fisheries management bodies - Beach Management Unit (BMUs) - and district and national officials. Other activities are to ensure good hygiene, peace and security and to manage the Social Welfare Fund (SWF), an insurance facility for all Chikuku residents. Surprisingly, SWF funds are also reported to be used to bribe officials (e.g. paying for food, accommodation and beer) (Interv. 60010 and 60015: 11/11/2009).

The second level of organization is formed by the 15 individual camps, all owned by Sukuma's, including 'MV³⁹ Lyo', 'MV Utatanishi', 'MV Mayunganya' and others (Chapter 6). The camps' leadership comprises representatives of fishing equipment owners and supervisor(s). Of the 15 fishing camps at Chikuku, 'MV *Ja* camp' has many fishing boats, a fish collection boat from the EPF and direct contact with export markets.

All boats from *Ja* camp are yellow, and have a green stripe, which signifies their charter. They also have phone numbers painted on the side, and the origin of the boat: - '*kwetu Magu*' ('my home is Magu'). *Ja* is a rich Sukuma camp owner, married to a shop keeper and he joined Nile Perch fishing in the year 2000. Born in 1966 and having completed secondary school, he was raised in a farming and pastoralist family. Other camps at Chikuku (those with fewer than 5 boats) are embedded within '*Ja*' camp as 'sub-contractors'. The mechanism by which this works is complex. Each sub-contractor camp is led by a different *tajiri*, each of whom has forged an alliance with *Ja*. Their boats are obliged to fish in the same areas as '*Ja*'s' boats. They are patrolled by '*Ja*'s' armed security teams through the night, and are supplied with fuel and other material for each fishing trip at costs declared by '*Ja*'. They are expected to pay high respect to '*Ja*' when he arrives at the camp, and to help out with various chores within '*Ja*'s' own camp, such as offloading drums of fuel, wooden materials, bundles of nets and food stuffs. Sub-contractors' camps are obliged to be *Ja*'s 'allies' and to inform him about issues which may interfere with the fishing operation or his life. Above all, they sell fish to EPFs through *Ja* at a reduced price and cannot easily change to another person without having the social network and paying back the dues.

This arrangement has several benefits for sub-contractor camp owners. They get security and protection from theft and piracy; they avoid victimization by other big chartered camps (being ripped off, chased away); and they gain access to markets and credit markets for capital equipment and material supplies. For *Ja*, the sub-contractors enable him to get more fish at reduced price for his market channel, to

³⁸ *Balozi* is the first local community administrator in Tanzania, which is, in recent years, losing its prominence and is being taken over by hamlet or sub-village leaders (*viongozi wa mtaa*).

³⁹ Stands for Marine Vessel

manage and evade tax costs by claiming them all as his own camp in order to evade taxes and operational costs. In other words, the sub-contractors are just like *Ja*'s own sub-camps, as described below. Other details are provided in Chapter 7.

“It is helpful for us to use Ja’s charter because he is rich and has connections. For instance, when we pay annual fishing license fees, he declares all boats in the camp as his boats and because we use his charter, it is not easy for officials to distinguish between them. The more boats that are licensed at a time, the lower the fee per boat. The Forestry Department also collects fees from each camp owner for use of the forest land, and for the firewood the camps collect. They levy these for each camp, so when we use Ja’s charter, we get counted as one camp. Ja negotiates and organises the payments, and we then pay him back through fish sales (Interv 60015: Chikuku, Kome Island).”

This kind of camp organization is about control, building empire and negotiating development in arenas where different camps’ organisations interact. It is also about the creation of exemptions and ways of dealing with taxes and fees that negatively impacts on government revenues. It is the effective functioning of *Ja*'s camp that is central, producing a triple capacity for *Ja* to deliver to his fish buyers and financiers (Figure 3.3).

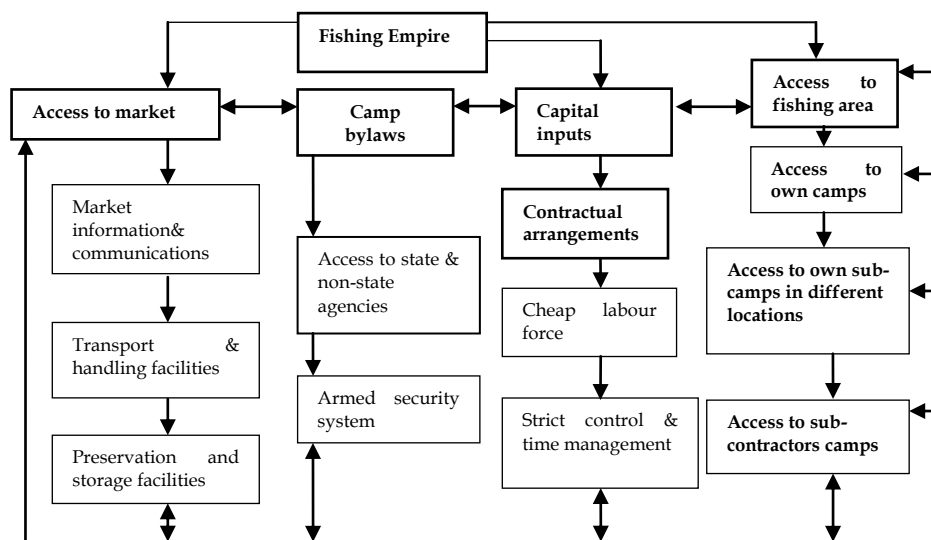


Figure 3.3: Example of *Ja*'s camp as an empire Figure 0.3

Source: Field study (2009-2011).

Although *Ja* has access to markets and other benefits, such as armed security guards, he is still vulnerable to piracy and theft as a result of sabotage from professional pirates and thieves, who target rich camp owners and eventually affect *Ja*, the sub-contractors

“People prefer to steal from big chartered camps, to hold them back from the wealth which they accumulate. They feel that when they steal a boat, an engine or nets from them it is an insignificant drawback. But sometimes the thieves are not professional: it is their own labourers seeking revenge because of bad pay, cruelty or the matajiri’s lack of respect for them (Interv. 60010 21/11/2009).”

The big chartered camps are not only targeted by thieves but also pirates. A 33-year crew member, who dropped out of the fishery, has more to share:

“Fishing is highly risky and uncertain, and people have lost their dignity. It is an era of coercion, stealing and exclusion. Death is becoming normal, particularly for crewmembers. To be thrown into the waters or have your arms cut off is common. I was fishing for a rich man who owned a big charter, but in 2006 I was thrown into the water to drown by pirates. I survived, but was seriously scarred by machete slashes across my body. My parents and wife stopped me from fishing, saying it was better to die poor than face such risks. Nile Perch has totally changed my life. I am now a tomato farmer and I have hardly been able to afford fish since I was a fisherman” (Godfrey Mabimbi, Lugata Kome Island: 14/11/2009).

Not only that, some crew do not like to work in powerful chartered camps (see Mulengwa and Soni, Chapter 7) because of crew arrogance and aggression induced by their camp leaders. Nevertheless, the powerful chartered camps attract more investment from the EPFs and offer more crew labour market opportunities.

(a) Features of an empire in Nile Perch fishing camps

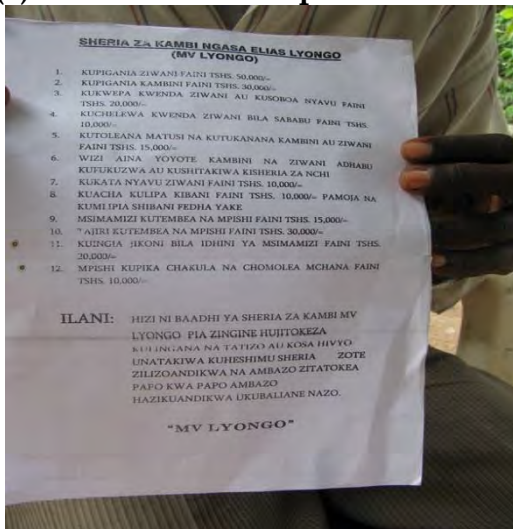


Photo 3.3:Form no. 1: Prints of camp bylaws

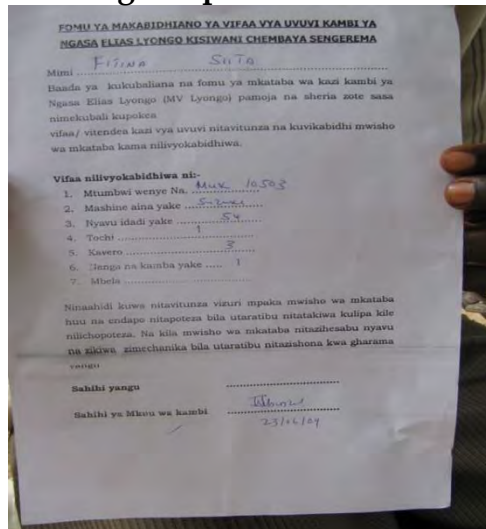


Photo 3.4: Form no. 3 Allocation of number to crew for job offer



Photo 3.5:Camp supervisor instructing security guard



Photo 3.6: Crewmembers apprehended for theft



Photo: 3.7:Two rooms to lock-up suspects and offenders



Photo 3.8: Cooks preparing food for camp dwellers



Photo 3.10: Some camp crew eating at the campsite



Photo 3.9: Firewood for use at the campsites



Photo 3.11: Clarias (*vibora*) bait preservation at the camp



Photo 3.12: Net mounting at the campsite



Photo 3.13: Fleets of nets ready for use



Photo 3.14: Boats with nets packed at the camp shore



Photo 3.15: Tanks being filled with fuel



Photo 3.16: Crew ready to depart for fishing



Photo 3.17: Store for keeping life jackets



Photo 3.18: Pool table for holding crew before fishing



Photo 3.19: Fish being weighed and selected



Photo 3.20: Spoiled fish sold to a bicycle trader



Photo 3.21: Trucks waiting for Nile Perch at the mainland site



Photo 3.22: Bicycle fish traders crossing to Ijinga Island (Magu)



Photo 3.23: Fish being transported to EPF

Photo 3.24: Fish and passengers taken from island by ship

3.3.3 From 'nzengo ethnic social ties' to 'commercial ties' in Sukuma society

In this study, Sukuma are the predominant ethnic group: they account for 49% (n=154) of camp owners (*matajiri*) and 59% (n=154) of crewmembers. At Chikuku, 99% of the crew are also Sukuma. The eminence of Sukuma in the labouring class is exceptional because of their origins as pastoralists and farmers. One would expect camps to hire native crews from traditional fisher groups. Their bulk in labouring determines their power in fishing, because access to resources is made when labour is combined with capital. Other opportunities may also arise, such as knowledge, social connections, physical strength and so on.

Matajiri at Chikuku enrol most crew from their homelands (Sukuma land) because of social networks, and the easy recruitment process through friends and relatives. At *Ja's* camp all crew come from the Magu District. Towards the end of the fishing session (*mtegeruko*), it is *Ja's* younger brother and his wife who make arrangements to recruit crew and transport them to Chikuku for subsequent sessions. The crew workforce involves those who have fished or *Ja* previously and new ones. The latter include those who have no idea of who *Jai* s and the whole mechanism of camp organisation, including the bylaws.

Hiring kinsmen as crew, was reported to be inefficient because of the difficulties in separating family and business affairs. Fishing, says *Ja*, is now more professional, otherwise you can't profit (18/11/2009). Therefore, unequal grounds exist in terms of social ties (kinship, origin) and commercialization, with the latter being considered most (Chapter, 6). During the study, non-kinsmen were higher in Nile Perch (78%, n=100), followed by Dagaa (62%, n=47) and Tilapia (8%, n=12) fisheries for reasons related to commoditization. Nevertheless, *matajiri* do hire kinsmen as supervisors and camp crew. When this was triangulated to all *matajiri* (n=154), they gave various reasons as summarized below:

Table 3.1: Social networks: Kinsmen and ethnicity in fishing camps (N =380)

<i>Why would you hire a crewman who is a relative?</i>	<i>Frequency</i>	<i>Percent</i>
1.0 <i>Job succession (creation of employment), income and dependency</i>	152	37
1.1 Employment follows the family route because of unemployment and nepotism. A son of a policeman is likely to be a policeman	2	
1.2 Retain income within the family/clan	10	
1.3 Reduce family dependency	73	
1.4 Help each other now and in future business expansion	41	
1.5 Job inherited from parents	26	
2.0 <i>Poverty reduction</i>	120	29
2.1 To reduce poverty and burden within the family	78	
2.2 Long-run strategy because there are no alternative jobs	42	
3.0 <i>Trustworthiness and respect</i>	35	8
3.1 Maintain respect in undertakings as a result of family and clan hierarchy	35	
4.0 <i>Gain power and control and risk avoidance</i>	108	26
4.1 Internal security is created to reduce theft risks	63	
4.2 Less cultural diversity, less behavioural problems	3	
4.3 Easy traceability at camp and home	32	
4.4 Wrong doers can be disciplined by <i>nzengo</i> and clan elders back home	10	

Note: Responses were not mutually exclusive.

Source: Field study (2009-2011).

Job succession and income (37%), reducing poverty in families (29%) and avoiding costs and risks (26%), were the main reasons for employing kinsfolk, while trustworthiness (8%) was reported not to depend on either origins or kinship relation. Medard (2000:104; 2005:187) observed how the Tweyambe Women's Fishing Enterprise (TFE) employed their own sons, a strategy to ensure income and employment remained within the group and lowered the risk that fishing gear would be stolen.

However, further group discussions with *Ja* and his fellow *matajiri* from Sukuma land at Chikuku confirmed that hiring their ethnic members, who are non-kinsmen from Magu, was the best option and an economic strategy that has expanded from kinship to ethnic economic bondage, as a result of the regular demand for labour, investment intensity and commoditization. Therefore, the labour hiring trend at Chikuku is likely to happen in other camps owned by Sukumas. It has enabled them to control labour and labour markets in their area and to communicate in the same language, thereby diffusing to some extent fishing knowledge and understanding with minimal distortion.

I believe that the changes and transformations of Sukuma from farming and pastoralism to fishing, are due to their ability to redefine their practices and respond to local and global realities. It is also due to their power to negotiate social and economic relationships within Sukuma culture itself, from a nomadic cattle-raising and farming society to three means of subsistence: farming, fishing and cattle keeping.

3.4 Other social dynamics and their link to camp eEmpire organizations

In this section, I want to show the connectivity between camp organization, business patterns and social endeavours, including prostitution and crime.

The underlying process of camp organization has resulted in the growth and expansion of fishing villages to significant sizes. This has attracted many people besides the fishers themselves: fortune-tellers, gamblers, traditional healers, traders, prostitutes, the jobless and homeless, hawkers, entertainers, transporters, preachers, the helpless and many others. They come from many different parts of the country and from across border areas to take advantage of services such as food stalls, the sale of household wares, fishing equipment, electrical appliances, tailoring and garments, construction materials, charcoal and firewood. Apart from those facilities mentioned earlier, there are also milling machines, halls for entertainment and social meetings, food vendors, football grounds⁴⁰, transport services (ships, boats, vehicles), fuel and kerosene stalls, repair services (for bicycles, outboard engines, watches, shoes, motorcycles, radios and televisions), church services, barbers and hair dressing salons and permanent local markets for selling a variety of food stuffs. Ikwaput-Nyeko (2004:8), Geheb et al., (2008:93) and van der Knaap and Ligtoet (2010:434) also observe changes in the lake's landing sites, and that they are increasingly significant urban areas around the lake.

"I rely more on Dagaa than Nile Perch for my restaurant business. At Dagaa camps,⁴¹ there is money, and most of it remains here on the island while in Nile Perch, money is taken by a few individuals in the export channels. Once the Dagaa is dried, it is sold the same day to Dagaa mobile traders from various markets who come around to buy sacks of Dagaa and transport them to Mwanza via the Juliana ship. But we have also a few camps who sell their Dagaa directly to the middlemen from Kirumba. When the Dagaa are sold, our business becomes active because there are more labourers at Dagaa than at Nile Perch camps. Each Dagaa boat enrolls four to five wajeshi and two Dagaa processors. The problem for Nile Perch camps is that wajeshi live on loans because of long fishing contracts which last for 35-65 days. If Dagaa catches are good, our businesses pay because prostitutes also come in from many areas to spend time with wajeshi and matajiri. Here, women can sleep with six men in a day and in two weeks they can make TShs 250,000 (US\$167). I was told about a young lady at Gozba Island who made TShs 500,000 (US\$333) in two weeks (Fatuma Salum Nanzara⁴², Ghana Island: 30/11/2011).

Mama Tabia from Ntama, Kome Island, owns a bar and guest house and shared her understanding about the importance of camps and prostitution for her business:

"I rely on two things in my bar, hotel and guest house businesses. The concentration of Nile Perch fishing camps, and the influx of traders, beautiful barmaids and sex workers. We have ten big fishing camps around. My barmaids and guest attendants know the camp enrolment schedule and when crew get paid (siku za mtegeruko) because camp inhabitants are potential customers. I normally locate crates of beer for each barmaid and they get paid based on the number of crates sold. They, therefore, compete to get sexual partners from fishing camps, who are good spenders and can afford to buy beer and pay good cash for sex. My barmaids make a lot of effort to interact with them to ensure they drink here and maintain relationships. I have also taken this opportunity to connect

⁴⁰ On Ghana Island, two football rival teams, the marijuana smokers (*wavuta bangi*) and development lovers (*wapenda maendeleo*), were observed.

⁴¹ During the study, Ghana Island had 450 fishing boats and of those, 200-250 fished *Dagaa*.

⁴² A BMU female leader who was well informed about camps and business linkages.

them to my guest house business. Some rooms are rented by matajiri for their sexual partners for a long period, until they separate.

I travel to far places, to islands, the mainland and towns to search for beautiful barmaids and guest attendants. They have become so mobile because if they stay in one place for a long time they become familiar and lose market value. I prefer to search for new ones all the time. It is expensive but this is how I make money. If my maids happen to get matajiri, I make more money because this mobilises supervisors and camp crew to spend their income here and not at another bar or guest house. In this case, I even sell beer on credit and am assured of payment because we just notify tajiri to deduct from crew's income. With more camps, we make more business and the villages grow to towns and sub towns" (Mama Tabia, 14/11/2009).

For women, such relationships relate to being successful in their life and gaining more economic independence through access to bars, guest houses, hotels and shop businesses. Sexual exchange is a feature of many women's making a livelihood. Mama Tabia's case provides two lessons: (a) she targets business prospects in highly concentrated camps which leads to an influx of camp dwellers through business alternatives (e.g. food, beer, women etc.) and (b) camp owners can motivate their camp dwellers to spend in specific bars, for themselves as well as the barmaids. This means the power of camp organization is well beyond the campsite and is a result of relational effects of several parts of the networks.

Similar dynamics were observed for women traders and processors. The strategies involved in getting fish are the sum of those needed to secure fish (capital) and power, comprising individual influence and traits, social networks, local level alliances, sexual relations and subordination to lower actors - camp crew, cooks and supervisors within their male partners' camps. FGDs with six women fish traders and processors, who had sexual relationships with either camp owners (*matajiri*), supervisors or crewmembers at Mwanchimwa (Magu), unveiled many dynamics. The women typically claim that men and women have unequal control over fish resources and men reap greater benefits because they control production and highly lucrative fish markets. As a result, women fish traders have been marginalized to less remunerative activities of little interest to men and deploy a number of strategies to remain in business. Mary Simon is quoted as saying:

"...we rely on fish which are not in the export category but, if we happen to get one, we sell to export channels. Our major buyers for our fish are local people from this village, neighbouring and far villages, and are mainly bicycle and foot traders. In order to protect our market, we join forces with camp owners and their labourers and campaign for BMU leaders who can protect our interests and we protest against any fisheries officer who confiscates small fish or illegal fishing gear. What we do is not only for our own desire, but also for the entire community. People are suffering: there is not sufficient food in households and the impact falls on women and children. Not only that, if men in the export category go out of business, we shall go out of business also because they will join our markets and we can't compete with them. In this case, our struggle against law enforcers is to obtain some share of our men partners' income for both of us to co-exist (Mwanchimwa, 11/6/2010).

Nonetheless, women are aware that, as access to the export market category gets increasingly restrictive, men too may seek income from the local fish trade. Women at Mwanchimwa decided to launch effective competitive strategies to protect and

curb the influx of men into their business sector that they command at the local level. This was done by ensuring that illegal fishing gear, such as beach seines, which caught part of their share for local markets, continued. Medard (2012 :563), observes strong social connections between men and women in unique camp ownership alliances and illegal fishing practices (see Case 4.1). At Mwanchimwa, women joined forces with camp owners and campaigned against restrictive law enforcers in their localities, so that the use of illegal fishing gear and outlawed fishing techniques could continue. The women feel that their activities serve the local markets and community interests by supplementing family income, thus contributing to the welfare of the community whose alternatives are limited.

The continuous struggle by women in the fish trade is more than just about generating income. Women strive to get access to fish through sexual partners who own fishing camps, such that they have direct and indirect control over their men and labourers who work in their partner's camps. One camp owner describes how this works:

"I have two women, one is in my home village and another is 'nyumba ndogo'⁴³ she stays here at the camp and we help each other. Having her around, I get a place to eat and rest because my home village is far. She takes all spoilt and small fish from my boats. In that way, she makes money for her own income. She also helps to support my camp labourers and provides them with small loans. In this way, my crew don't get tempted to join another fishing camp. This is how we try to make our camps independent" (Mwanchimwa, June 10, 2010).

This relationships shows the asymmetry of power between men and women in the fish trade and, in this case, through the umbrella of 'households' created in fishing networks in the form of 'nyumba ndogo', political and economic units which are popular in fishing communities and elsewhere in Tanzania. These households can be both an economic drain on individuals, as well as an economic security blanket. In such relationships, fish are not sold or given to any other trader without the woman's consent. Moreover, the women have power and influence to fire camp labourers if their wishes are opposed.

The world's oldest profession, prostitution, is, of course, a medium for exchange, income, gaining influence and access to fish. The linking of camps and fish sales to sexual relations ensures that those unable to sell sex, due to their age or otherwise, are marginalised to a very significant degree. Bibi-Meng'wa, a 90-year-old woman, captures some of the transformations in and around Lake Victoria:

"The lake has changed because of wazungu (Europeans). I have traded fish since I was 11, but now I can't. Fish trading needs young women because men are not interested to sell fish to old people. They want sex with those that they sell to. Today fish is like beer. It traps many." (Bibi Meng'wa, 14/9/2009).

The lure of sex for fish means that crew sometimes steal fish from their camps to sell to the women they are attracted to, at a reduced price. Sometimes, the situation is convoluted and creates supervisory laxity, because some women may have secret sex with the *tajiri's* crew.

⁴³ Meaning 'small home or sub-house'. The men have no qualms about pursuing women other than their wives. Some men abandon their wives while others became active in both homes.

"If you snitch on the crew who steal fish in a boat for the purpose of giving it to a woman – thereby reducing the amount of fish the woman can get - she will fire you, because these women control us and the camps as supervisors. 'We' [supervisors], are employed by these women. If they don't like us we will be sacked immediately. We know how to handle and to live with them" (JB Kabadi, Mwanchimwa, 10/6/2010).

Kabadi's narrative shows the power of women, and reminded me of the words of caution from a Fisheries Extension Officer (FEO) when I first landed at Mwanchimwa. He said:

"Here, we have women fish traders who are known as 'wamachinga'⁴⁴. Some are regular, others are itinerant. These women marry a man here, temporarily or permanently. The majority don't want to be married and to be taken to their partner's village. Economically, they are liberated such that it is not easy to control them. They pay school fees for their children and some of them have built their own houses. The point I want to make is that these women are powerful. They can even make me stay here, get transferred or fired. Make sure you interact with them and that they become your friends, otherwise you will not get cooperation from them and even their male partners, the matajiri, supervisors and wajeshi" (Chrisant Kazimbaya, 16/12/2009).

This means, women are not just making fishing and trading illegality proliferate, they also instigate the transfer and firing of fisheries officers, supervisors and camp labourers in their locality. This seem to be the easiest way for men to shift some of their power to women, once trapped in sexual relationships.

3.5 Summary of the chapter

This chapter has revealed that the local dimensions to fishing are shaped by a diversity of social spaces, in which practices and processes take place that make fishing more than only shaped by, and responding to, global processes. Social practices shape and determine access to the resource, as well as the organisation of fishing. It is evident that fishing binds people in different ways, ethnically, culturally, socially and across genders, as an economic and social activity through which they engage. It shows that fishing can be harsh and lead to exclusion. It is characterised by social divisions. The poor often engage in marginal work, which is highly risky, including prostitution and crime. Needless to say, some of these tendencies are in tension with each other, if not in outright conflict. All that is happening is linked to commercialization, as a result of ever-growing economic competition amongst the various actors.

The development of 'empires' in fishing is both supportive and destructive. It is a form of own governability which is constructed, shaped and supported by powerful actors, the market economies, as well as social life systems. This setting is increasingly creating governance and management challenges for Lake Victoria fisheries. Lack of access to the resource and exclusion are the most immediate problems faced by communities, who seem to have no solution as to what it might

⁴⁴ Singular (*Chinga*), plural (*wamashinga*). *Chinga* is a famous name in Tanzania for a hawker and itinerant trader. It originates from a village called Nchinga in Lindi (Southern part of Tanzania) where young males migrated to Dar Es Salaam City for hawking in search of a better life. Eventually they were labelled as *wa-machinga* - meaning people from *Nchinga* village - in the early 1990s. Today, *wamachinga* are part of a well-known informal sector and have gained prominence even in Tanzania's fishing industry. In this context, *achinga* can be either a male or a female fish trader.

take to protect them, because what is happening is out of their hands. These impacts are also trans-national and linked to global discourses, which are characterized by capital intensity, market conditions, advancement in technology and security systems. The empire system is a response to the economic and cultural struggle for autonomy, interwoven into discourses for the defence of place and resources. It is also a logical response within an under-regulated, anarchic socio-economic space.

The global and local processes in Lake Victoria have not only transformed the fisheries but also the people and the societies in and around Lake Victoria. Sukuma predominance in fishing has to do with the link between their traditions and economic undertakings. Their beliefs and culture have contributed to form rules of conduct, social order and functions. For instance, *nzenzo* structures function as relations of production and as a social network. Their historical engagement in farming and pastoralism guides individual and groups attitudes, actions and behaviour. Multiple institutions and their practices have made them attain internal and external integration and multiple advantages. They have become less rigid about their ethical obligations, compared to the Zinza, such that there is enough space for individuals to make their own living, to have external contacts individually and there exists a 'pastoral mentality'⁴⁵ in individual thinking.

It is worth emphasizing that women's dependency on men creates additional insecurity and risks factors. The main challenge they face is finding a way to support themselves and their families. Ecological changes and globalization have precipitated a social tragedy in the region, and women have taken on the burden of coping with risky social practices.

⁴⁵ Willingness to risk in order to acquire cattle but, in this case, willingness to acquire fish and capital

CHAPTER 4: THE ORGANIZATION OF THE NILE PERCH FISHERY ON LAKE VICTORIA- THE CASE OF TANZANIA

4.1 Introduction

This chapter provides a description and analysis of the development and transformation of Tanzania's Lake Victoria Nile Perch fishery, and how this fishery has evolved over the last three decades (1980-2011). It draws on major historical transformations that occurred before and after the explosion of Nile Perch fishery. The chapter focuses on five domains of change: evolution of the Nile Perch fishery; networks of actors; technology and gear types; site/location; and fish markets. Insofar as gear is concerned, this chapter focuses on three types: beach seines, long-lines and gill-nets. The chapter draws on different sources of information: interviews with elders and retired fishers, owners of fishing camps and equipment (*matajiri*), women, boat builders and gear makers, Fisheries and local government officials, crewmembers (*wajeshi*), village leaders and Beach Management Units (BMU). The chapter addresses three key questions:

- (i) *How is Tanzania's Lake Victoria Nile Perch fishery organized?*
- (ii) *Who are the key actors within it?*
- (iii) *Within which networks are these actors placed?*

It offers a tentative answer to the question of why it is organized in the way that it is.



Photo 4.1a: Fresh Nile Perch



Photo 4.1b: Smoked Nile Perch

Nile Perch fishers use three main gear types: beach seines, long-lines and gillnets, and this results in three types of organization of the fishery. Section 4.2 focuses on beach seine fishery, Section 4.3 on long-line fishers, and Section 4.4 on fishers that make use of gillnets.

Historically, fishing technology represented by gear type has been an organizing factor on Lake Victoria. For the lake's communities, gear type is the nexus around which social units are formed. Sons learnt how to use the gear from their fathers and grandfathers, and this knowledge spread through the sub-clan and clan, such that individual clans came to be associated with particular gear types.

Gear types are also determined by the fish type targeted and its size, by seasons, location (shallow or deep waters) and depth range, and target markets (fish size, processing form). In an earlier study (Geheb, 1997) vividly describes how the transition from traditional gear types to flaxen gill-nets and, then, from flaxen nets to nylon ones transformed Kenya's Lake Victoria fishery. Innovation in fishing gear has in turn spurred far-reaching and significant social, ecological and economic changes across Lake Victoria.

4.2 Organization of Nile Perch in gill-net fishery

Gill-nets are used to trap the fish behind the gills as it tries to get through the net mesh. The gill-net is very selective for size, if not for species. A fish cannot usually be caught in a gill-net if it is too big to swim into the mesh, or too small so that it swims through the net. In the following section, a description is provided of how use of this gear evolved in Tanzania's Lake Victoria fishery and how the fishery is organized.

4.2.1 Fishing in the early days: single net, shared canoe

Interviews with elders Kigangama and Lugata (Kome Island) revealed that, before the introduction of 'flax gill-nets', fishermen used papyrus to make woven fishing nets, using fibre from specific trees, sisal, and dried banana leaves. Fishermen wove fishing nets in their homes. They learned how to weave from grandparents, parents, friends and neighbors. The nets were used to catch Tilapia, Bagrus, Haplochromis, Protopterus and Labeo spp. The woven net was called '*mtego*' ('a trap') and a fisher was called '*mtegaji*'. Fishing was done close to the shore for home consumption and surplus was given for free to neighbors, traded through barter for other food commodities and, rarely, sold at domestic and border markets mainly in Kenya and Uganda (FGDs: Elders at Lugata 17/11/2010).

Because fishing was not conducted every day, canoes could be borrowed from those that had them. At the same time, it was common for different clans to share a fishing canoe while using their own individual nets, and to fish communally. Fish caught by any one fisher would be marked with his own unique mark, such as a small wedge cut from the tail, so that the owner could identify it later (Interview Shinje, Kwangu 26/5/2011). The majority of gill-net fishers owned 1-3 nets and the richest fishers could own 10-15 nets. Nets were set and hauled within half to a maximum of two hours.

In 1905, the British introduced gill-nets made from flax, but these were expensive, and one had to travel to Mwanza or Kisumu to get them. These targeted Tilapia

species (*Oreochromis esculentas* and *O. variabilis*) (FAO, 1981; Graham, 1929) and, over time, the same gear was also deployed to catch other indigenous fish species.

The proliferation of the Nile Perch in the 1980s prompted a variety of community-based innovations, with gill-nets being manufactured from empty sacking, car tire twine and nylon ropes. The majority of fishers owned 1-3 nets (FGDs: Elders at Lugata -17/11/2010; Shinje Kwangu 26/5/2011).

4.2.2 Fishing in the commercialization era: from single net to multi-paneled nets

In the last two decades (1990-2011), gill-nets made from nylon materials from local shops are used by 80 per cent of fishing fleets in the Nile Perch fishery (URT-FSNWG, 2010) and fishers' access to fishing gear has changed tremendously through the development of shops which sell different types of gear at landing sites. Gill-nets are bought and supplied by EPFs, EPF agents, *matajiri* and fishing camp owners. Fishing gear is even ferried out to the islands on EPF cargo boats, along with ice and fuel supplies.

During the study, gill-nets were divided into two distinct categories: those, which are supplied within EPF market networks (EPF agents and fishing camp owners), which comprise nets of 5 - 7 inches (12.7 - 17.8 cm) mesh size; and those derived from local, domestic and regional traders' Market Networks, which were from 2.5 - 4.5 inch (6.3 - 11.4 cm) mesh size nets. The net suppliers and/or guarantors include local women fish traders, male and female bicycle fish traders and domestic, border and cross border fish traders ('*walanguzi*').

Fishers who were in EPF market networks had a minimum of 50 and maximum of 80 multi-paneled nets (see 3.13), in their fishing units while of those who were supplied by local and regional traders, the majority had a maximum of 45 single-paneled nets per fishing unit (see: Gill-net-scenario). In this study, a total of 83 gill-net fishers were involved. Of those, 20 had invested in 60 gill-nets, 19 had 50 gill-nets, 20 had 70 gill-nets, 6 had 80 gill-nets and 3 had 55 gill-nets. 15 fishers used single gillnets - *makila* (10-15 nets per crew) and were financed by either local, domestic or regional traders.

It is important to note that the gill-nets supplied through the EPF market networks are all multi-panelled. A single gill-net piece is 90 meters long and has 26 vertical meshes designed in triple (26x3), quadruple (26x4), quintuple (26x5) and a few have six or seven panels. Therefore, 50 pieces of 3 panels is equivalent to 150 nets in a single fishing unit, while 80 nets of 6 panels is equivalent to 480 gill-nets. The following is an example of the number of nets, length and depth, invested through the EPF market networks on Lake Victoria, Tanzania (Table 4.1).

Table 4.1: Examples of number and size of gill-nets in a Nile Perch Fishing unit in Lake Victoria Tanzania

No of nets*	Panels 3-6	Total nets**	Length of net	Area covered in setting the net (length wise)	Meshes (Depth in meters)
80	6	80x6=480	90	80x90=7,200/1000=7.2 Kms	26x6=156: (1.5mx12=18)
70	3 or 4	70x3=210	90	70x90=6,300/1000=6.3 Kms	26x3=78: (1.5mx6=9)
60	3 or 4	60x4=240	90	60x90=5,400/1000=5.4 Kms	26x4=104: (1.5mx8=12)
50	3 or 4	50x4=200	90	50x90=4,500/1000=4.5 Kms	26x4=104: (1.5mx8=12)

Note*: Number of nets mentioned by fishers

Note:** Actual number of nets in a given fishing boat.

Note 3 panels= 6 stretched arms ('vifua'), i.e., 6 x1.5=9 meters.

Source: Field study (2009-2011)

The nets are set at different depths up and down the water column. While at the bottom, gill-nets remain stationary (when depth is determined), in the middle water, nets are drifted slowly, as they do when set on the surface.

Respondents claim that it did not make sense to invest in fewer than 50 nets – any less would render the fishing unit uncompetitive (Marwa, Mwita: Mihama 22/5/2011). A camp supervisor at Ghana (Ukerewe) explained that before new fishing camps and sub-camps are established, the owners investigate the depth range, number of nets per fishing unit and number of panels other fishing camps are using in the area, so as to establish a competitive baseline.

“We migrated from Ikulu (Kome Island) to Ghana Island (Ukerewe) a few months ago, but before that, I came here to get more insights about average catches, depth of the area and the panels needed. After my research, I called my director to supply the required nets and after two days, the cargo was delivered” (Interv. No 600119, 29/11/2010).

From 2006-2008, there were many gill-nets of 3.5-4.5 inches (8.9-11.4 cm) in most Nile Perch camps. Most fishing boats had between 80-100 nets, typically of low ply (between 3 and 9 ply). From 2009, mesh-sizes have grown to 6-7 inches (15.2-17.8 cm), nets are of thicker ply (9-18) and have 50-70 nets. One camp owner had more to say:

“We always balance the weight of the nets and average fish catches. When 80-100 nets of 3.5-4.5 inches were put in a single boat, the nets had less ply, fewer panels (3-4) and we caught tons of small size fish, mainly in shallow waters (4-7 meters depth). Now, we use thick ply, bigger mesh nets, fewer nets (50-80) in deeper water and with more panels. We get an average of three to four paneled nets of 5-7 inches. The nets are brought to us by owners of fishing camps or agents of EPFs. Both EPFs and net manufacturing factories are owned by a few Asian elite and, therefore, they easily communicate to make the netting materials they want” (Interv. no. 60082, Ito Island: 20/8/2010).

In other words, fishers were finding it difficult to stay ahead of the competition by introducing more and more nets to their boats. Fishers have responded to this by increasing the number of panels per net (i.e. covering more of the water column), but reducing the number of nets per boat so, in effect, increasing the fishing power per unit, without increasing the weight. It was also found that the number of nets a given

boat can carry depends on the type of wood used in its construction, and its size. Large boats made from hardwood (mostly motorized or sail boats) can carry more nets than small boats made from soft wood.

4.3 Organization of the Nile Perch in beach seine fishery

4.3.1 Beach seine fishery before the 1980s

A beach seine is a wide net, to either side of which are attached long hauling ropes. Along the top of the net, the 'head rope' is fitted with floats so that it remains on the surface, while the 'foot rope' is fitted with stones. In this way, the net is kept upright, and in constant contact with the lakebed. The net spans the whole water column, and fish can neither escape over the net, nor under it. In setting the seine, one end of the net is left on the shore, while the rest is taken out into the lake, to form a wide arc, and then the other end is brought back to the shore. Both ends are then hauled by teams of haulers, and most fish within the arc are captured (Geheb, 1997:69). Typically, the nets are organised in panels, so that those panels on the outside of the arc have the largest mesh-size, while those in the centre have the smallest. In the centre of the net is a cod-end ('*mfuko*', 'a pocket' or '*kitovu*', 'an umbilical cord') into which fish are 'funnelled' as the net is hauled towards the shore. Beach seines are used exclusively from the shore and in relatively shallow waters, therefore, targeting in-shore species of fish (FAO, 1981).

Before Nile Perch was introduced to the lake, the species targeted with beach seines were *Tilapia*, *Bagrus*, *Haplochromis*, *Protopterus* and *Labeo*, and seines were used exclusively on sandy lakebeds. Although there is evidence that beach seines made out of papyrus were used elsewhere on the lake (Geheb, 1997), in Tanzania variants of this net were reportedly first introduced by the Haya community on the western side of the lake. Here, the sandy bed of the Emin Pasha Gulf made it an eminently appropriate gear to use; in addition, the Haya favoured the gear type because they had plantain to make the twine and it was safer to use than floating out onto the deepest parts of the lake, exposed to the elements and the lake's temperamental tides (Roki, pers, comm 21/11/2009). Certainly, the Haya fishing communities from Kagera were associated with the beach seine and they called it *ikokooro* (Kateka, 2010). The Sukuma, however, also claim to be pioneers in this form of fishery (FGD Elders: Kigangama 20/9/2009; Mteminyanda, pers. comm. 19/11/2009).

Elders from Kome Island confirmed that they first saw *kokolo* made from stalks of plantain (*matoke*) in the 1940s. The net was manufactured with intertwined dried stalks of *matoke* ('*migomba ya ndizi*') and the hauling ropes were made from sisal fibres or other twines from indigenous trees. Later, the technology spread to other fishing communities and finally the Jita and Kerewe also became experts in its use (Lugata elders, FGDs: 17/11/2009). In-depth inquiries with a Haya elder from Kasheno village (Bukoba) confirmed this:

"We are the pioneers in kokolo fishery. This technology occurred because ecologically we are blessed with natural grassland, known as 'ebyai' or 'ebigoye' and 'ekinswi' and traditionally we farm plantains (matoke), a major food crop in our society. This vegetation has made kokolo history. In the early 1930s local craftsmen started making kokolo by intertwining and webbing 'ebigoye' or 'ebyai'

together. The twine (rope) for pulling kokolo was made with 'ekinswi',⁴⁶ a grassland which is considered to be stronger than ebigoye. By the 1940s a combination of technology had begun. Kokolo were made by either stalks of matoke trees or rope from indigenous trees known as omubugo (*ficus spp*) and kikolakole (*ricinus communis spp*).

This technology later spread to other fishing tribes such as the Jita and Kerewe because matoke were rarely grown in their land. To date, stalks of plantains (matoke) and ebigoye are still used in our society for roofing, while ekinswi⁴⁷ is used to make kokolo ropes. In 1954 the Haya started to use nylon nets brought by traders from Kisumu (Kenya).” (Juston Msigazi, pers com. 10/6/2012).

In 1994, I observed three old and long makokolo at Kigona village (Bukoba), made from mixed materials⁴⁸- indigenous tree rope, blue nylon twine and banana stalk, on PLEA⁴⁹ (Wilson, 1996) field work. Beach seines at this time were as long as 1.2 -1.5 km in length (1,200-1,500 m⁵⁰) and a single haul could take between 4-5 hours. A large number of fishers was required to haul the seine from the shore and a wooden capstan was fixed to the beach to assist with the haul. Fishing was strictly conducted in the sand bed (Msigazi, pers. com). Another reason for the Haya's association with kokolo gear is that their lake area is deep and very rough during the windy season. They cannot go with paddled canoes into deep waters. This made them find a gear in which shallow water could be accessed with minimum risk.

The local name for a beach-seine is 'kokolo'⁵¹ and a puller is known as 'mkokozi' or 'mchoji' (pl. 'wakokozi', 'wachoji'), while the owner is known as 'mmiliki wa kokolo' ('seine owner'), or 'tajiri' ('rich', pl. 'matajiri'). In all fishing ethnic settings (Kerewe, Jita, and Haya) the gear was collectively owned, based on systems of mutually beneficial reciprocal relations, with kinsmen and clan heads having the authority and power to control, which they inherited based on age, seniority, mental fitness and wisdom.

Fishing was conducted by male clan and sub-clan members who stayed in encircled home compounds. Regular and irregular haulers might join to help pull the net, with the intention of getting fish for their families. Clan elders had significant roles in the use of beach seines, and would decide (Roki, pers. comm. 21/11/2009):

- Where to fish.
- Who to involve.
- How to assist in the event of an accident on the lake.
- Which seasons in a year to fish (or not).
- How to divide the catch.
- How to maintain and repair the seine.
- When to replace a seine.
- How to sell the catch.
- Who to sell the catch to.
- Where to sell the catch.
- Who should not pull the seine (for any reason).

⁴⁶ These types of grass are still used to pull kokolo (pers. observ, 2012. Kemondo, Bukoba)

⁴⁷ Personal obs. Kemondo (June, 2012)

⁴⁸ An indication of technological transformation

⁴⁹Projects on Lakes of East Africa. I was a counterpart research fellow between TAFIRI and Michigan State University

⁵⁰ Measured through arm stretch.

⁵¹ A slight difference from ikokooro (Kateka, 2010).

- How to divide the proceeds were deliberated by clan elders.

Decisions were made either in formal or informal clan meetings, but the head of the clan assumed responsibility for gear ownership and made final judgements in controversial matters. This means that ownership, use and even pulling the seine, were solemnly embedded in kinship power arrangements, reproduced within the clan, and inherited and replaced by clan members throughout their lifetimes as part of the clan's assets. This activity was undertaken first, to provide food (fish) and self-sufficiency to kinsfolks; secondly, to cater for various ceremonies such as wedding, burials, rituals and circumcision; thirdly, to pay for educational and medical treatment; and lastly to invest and reinvest in fishing, cattle keeping, farmland, furniture and other businesses (e.g. shops). In this way *kokolo* bound kin members socially, culturally and ethnically, as one of the livelihood activities in which they engaged in relationships with one another.

4.3.2 *The beach seine fishery in the commercialized era (1990s -2000s)*

Since 1990, nylon fishing twine has been used to make *kokolo*, together with pre-fabricated sisal ropes. *Kokolo* is made by single net (24-26 meshes), in a V-shape, with six main parts. The first and central part – the cod-end - normally has a mesh size of about 0.5 - 1.5-inches (1.2-3.8 cm), and is made from 21-18 ply nylon twine. The 'wings' (*mashaovu*) of the net start to either side of this central panel, with a series of panels that start with small mesh sizes, which, as they radiate out from the cod-end, get larger and larger. The first of these are usually 2-inch mesh size (5 cm), 18-ply twine; the second of these 3-inch (7.6 cm) mesh-size, 12-ply twine; third panels out are usually 4-4.5-inches (10.2 - 11.4 cm), 9-ply twine. The final panels are usually 4.5-5-inches (11.4-12.7 cm), 9-ply. Finally, the rope from the final panel is between 150-250 m long.

Currently, the size of *kokolo* may be divided in two categories: big *kokolo* are about 1,500-1,200 m (1.5-1.2 km) in length while the medium and/or small size *kokolo* are between 600-800 m. What matters most for the width of *kokolo* is its cod-end, where fish are funnelled. A 1,200-1,500 m *Kololo* has a cod-end width of 3-4m. This means that the longer the *kokolo*, the bigger the cod-end is likely to be. In making *kokolo*, the length, height and width is dependent on the wideness of the pulling and landing site and the depth range of the fishing area. This means, setting *kokolo* in various locations is somewhat restrictive and, in this way, haulers/pullers concentrate on selected locations.

When they are fishing during the day, *wakokozi* get up early in the morning at 4.00 am and then haul until midday. If they are hauling during the night, they normally start at 21.00 hours and haul until 5.00-7.00 am.

Beach seines are set over pretty much any type of lakebed now. A few notable examples are Chilongo and Nyalusenyi on Kome Island, and Shinembo and Ijinga Island in Magu Bay, where they are set in areas where fish are known to breed. In Ntama and Mchangani (Kome Island), they are set on sandy lake beds. In Nyegezi Bay, Kigoto, and Capripoint they are set in rocky lakebeds.

Over the last 11 years (2001-2012), shorter *kokolo* have become much more common. These are 600 to 800 meters long with hauling ropes of about 900 m.

Because they are smaller, such seines can be rapidly set, hauled, the catch emptied, and the net set once more. This rapid action technique is called '*daladala*', a reference to the common public transport minivans that come and go along busy streets. They also involve fewer *wakokozi* (10-16). This type of *kokolo* is typically used in fish breeding areas, where the lakebed is often rocky, and these shorter seines can be untangled more easily. These shorter *kokolo* are also cheaper. In addition, because of the quick set-haul turn around, crew can quickly run away taking the lighter nets with them should the authorities appear. Long *kokolo* (ca. 900-1200 m) are mostly used over sandy lakebeds because these have fewer obstructions.

Peak and low fishing seasons are dependent on lunar cycles and rainy seasons. During the full moon ('*mbaramwezi*') *kokolo* catch greater quantities of individual Nile Perch, but the fish sizes are reported to be smaller compared to moonless periods ('*wakati wa giza*'). During moonless periods (*giza*), most *kokolo* operate during the day, while during full moon they operate at night.

The seasons also play a role, with better catches during the rains (January - March, September - December), but individual fish sizes tend to be smaller. From January to March, the inflow of rainwater into the lake results in increased water turbidity and fish kills ('*kiferezi*') are common due to lack of oxygen. May - August were reported as bad months due to rough weather and strong winds such as the '*siaga*' and the '*nkhomez*', and the beach seine crews will move to calmer areas mostly in fish breeding bays and on islands.⁵²

70 per cent of the *kokolo* investigated for this study were owned by Sukuma individuals, followed by the Kerewe (15 per cent), while the balance was made up of Jita, Haya, Zinza and other minor ethnic groups. Likewise, Sukuma were reported to comprise 85 per cent of pullers/haulers (*wakokozi*) and the remaining were Kerewe, Jita, Haya and other minor tribes. *Kokolo* hauling is accompanied by songs, which serve to boost morale and energize the crews. The songs have attracted many Sukumas as haulers and orchestrators in the *kokolo* fishery (Chapter 3).

In March 1994, commercial trawling, *kokolo*, Daga nets of less than 10 mm, and gill-nets of less than 127 mm mesh size were banned in Tanzania's Lake Victoria waters (Wilson, 1996; Wilson, Medard et al., 1999) and later the regulations were applied to the whole of Lake Victoria (Medard, 2002). More success has been achieved in banning trawling, but challenges remain with respect to the implementation of the *kokolo* gear ban and the mesh-size restrictions (Table 4.2).

Table 4.2: Number of beach seines per country, 2000-2012, Kenya, Tanzania and Uganda

Country/Year	2000	2002	2004	2006	2008	2010	2012
Kenya	5,803	1,157	869	553	762	991	1,063
Tanzania	999	1,454	1,532	1,675	1,776	1,301	2,079
Uganda	811	880	954	1,425	1,649	1,451	1,233
Total	7,613	3,491	3,355	3,553	4,187	3,743	4,375

Source: MLNRT (1987), LVFO/IFMP (2010b), LVFO/EAC (2013)

⁵² Able to rotate around the islands to protect from strong winds



Photo 4.2: Rocky beach seiners at Nyegezi bay

Lake wide, the total number of beach seines decreased from 7,613 in 2000 to 4,187 in 2008 a reduction of 45% and further reduced by 10.6% to 3,743 in 2010 but increased by 16.8% in 2012 (Table 4.2).

High competition between Nile Perch fish buyers is the main underlying cause for the persistence of beach seine networks and organizational processes. Strong Nile Perch actor networks have evolved (see Chapters 1 and 7)⁵³ in order to secure fish and market access. To date, *makokolo* are heavily involved in bribery and corruption, as part of strategic organized systems governing the use of this gear. In turn, these networks have much political, social and economic power. EPF agents, distant bicycle traders, *matajiri*, and local male and female traders, all seek to secure their fish supplies from the *kokolo* through the provision of financial and material support. Because *kokolo* are illegal, these actors observe the legal problems that confront *kokolo* owners and crews, and offer to assume some, if not all, of the risk, so as to secure fish supply. For instance, investment in the *kokolo* fishery is sourced from fish buyers - enablers (*'uuvui wa kuwezesha'*) - and in this case they bear some of the risks and the costs to ensure the gear is not taken away by regulators (see Chapter 8).

Many of the most prominent buyers of Nile Perch in the export channel have agents (see Chapter 2) and sub-agents (*'chinga'*) operating on their behalf at local levels (4.2 - 4.4). *Chinga* are provided with 'price margin' incentives and refundable capital, with which to buy fish and to secure some degree of supply guarantee. Besides export markets, a number of regional (across the border), domestic and local traders from Mwanza, Kigoma, Shinyanga, Singida and Tabora areas (Figure 5.1) also buy fish from *kokolo*. The wholesale trade is dominated by traders who buy at low prices and sell at high prices in far and distant markets (*'walanguzi'*). Based on the nature of their markets (non-restrictive), they do not have strong preferences in terms of freshness and size of the fish. In these markets, the quality of Nile Perch is influenced by local practices. Large quantities of Nile Perch observed in local markets were either juveniles or rejected by export supply channels due to poor quality. I observed a practice whereby fresh Nile Perch (particularly from *kokolo*) were kept

⁵³ Mutually, contractually and/or coercively.

and sold on the ground or on filthy tables with wet sand on them. The reality is the local traders sell and consumers buy what is affordable and available with little regard to the quality (Medard et al., 2015).

Buyers, however, give many reasons why they prefer to buy their fish from the *kokolo* crews: *kokolo* catch 'live fish' or fish that will be flapping about and prices are relatively lower compared to fish caught with other gear, because of lower operational costs and cheap labour. It was also emphasized that *kokolo* have to set prices lower than other gears because they often fish, and sell fish, at night and in isolated and secluded places.

Today, it is rare that *kokolo* fishing is organised around clans and sub-clans. Some argue that this is because of commercialization, and that there is no longer room for 'old fashioned clan decisions' because *kokolo* organization and networks are now broader and commercialized (Chapters 7 and 8). Directives and conditions are dictated by higher status members *cum* enabler/financiers from the networks and not by clan elders. In this way, ownership trends and practices are changing, with much consideration given to risk and cost avoidance in order to make a profit. While young fellows are eager to take risks (Chapter 8, Interv, no. 60057), the elderly are more cautious. One elder expressed it this way:

"We have our own way of looking at risks and minimizing or avoiding them. In a fishing boat, we don't allow crew (wajeshi) from the same family to fish in one fishing unit, to avoid water tragedies. In the same manner, we try to avoid risk by owning kokolo independently to avoid the entire clan's being prosecuted. If one is in court, there should be another person to rescue" (Mgosi Elias, Ukerewe 07/8/2009).

Elders are worried to be involved in offences and punishments, gear confiscation, corruption, bribery and mobility⁵⁴. There is a high rate of corruption in beach seine fishery such that the trust between fisher communities and regulators is not there. This is so, because the social and economic networks in this fishery have been made too 'loose'⁵⁵ by regulators [and] other actors in order to intensify corruption and bribery. One *kokolo* owner remarked, "We are on top of a dried tree which shouldn't exit. If it is cut, we drop down like pumpkins". (Interv. No: 60063: 19/6/2010).

Multiple actors are found in beach seine fishery beside those noted in Chapter 1.

(a) Beach seine owners ('*mmiliki wa kokolo*'): these are individuals embedded in both strong and/or loose networks of relations because of their importance in the local, regional and global market as providers of fish for food and trade. Today, *kokolo* fishing organization and networks are diverse and are based on a variety of factors, including ethnicity, origin (village membership/neighbourhood), friendship, peer groups, family/kinship, individual entrepreneurs and government officials (retired and non-retired). I found beach seines which were owned by fisheries officials (Magu), retired army men (Kome Island) and police officers (place withheld), and their nets were never confiscated.

⁵⁴ While escaping regulators, they search for calm fishing environments as well as good catches

⁵⁵ An indication of lack of trust

(b) Major: the *major* supervises the *kokolo*, and derives his name from the military rank. In some camps, they also have an assistant *major*. *Major(s)* are responsible for supervising the pulling schedule, repairs and maintenance, food availability, sales arrangements and security, as well as safekeeping the *kokolo*. *Majors* are physically tough, with muscular power. In some cases, *kokolo* owners and *majors* work jointly, but otherwise, there is a clear distinction between the two.

(c) Beach seine haulers/pullers (*wakokozi/wachoji*): these are labourers who pull the *kokolo*. They may be permanently employed, or semi-permanently. Their main duty is to set and haul the *kokolo*. The life is associated with high mobility. The majority are homeless, propertyless and sleep in communal places such as local bars, ghettos and *kokolo* hauling sites. Most are alcoholics, and drug addicted. Smoking marijuana (*'bangi'*), cigarettes and chewing *kuber* (narcotic) is common and contributes to their insecure marital and social status. Elders at Lugata stressed that *wakokozi* were the poorest of the poor, careless and without future. Pulling the *kokolo*, they said, was the only job available to them, which brings them pride. Such pride is derived from the market networks, such as women and bicycle traders, who link with them in pursuit of cheap fish.

(d) Kokolo security guards: this is a vigilant role within *kokolo* teams and is undertaken by *wakokozi* on a rotational basis to ensure that the beach seines are not taken away by officials or stolen. This involves sleeping near the hidden *kokolo*, sometimes armed with a machete. The *kokolo* is hidden in tree canopies, buried in the ground, hidden in homes or in bushes. The duty guard is closely linked to the *major*.

(e) Cooks in beach seine camps: these are almost always women. A cook is typically unmarried or divorced. She often has significant personal problems, such as excessive drinking, or homelessness (Personal observ. at Ntama, Chikuku, Nyalusenyi, Shinembo and Bwiro fishing villages, 2009-2011)⁵⁶. She typically rents a single room at the site where the seine is being hauled, and where she stashes her belongings. Like the crew she serves, she is highly mobile, as she follows the crew from site to site. In Lugezi (Ukerewe Island), however, male cooks were much preferred to female and were reported to have much more strength in keeping secrets to escape regulators.

(f) Beach seine fish buyers, financiers, guarantors of beach seines: these include female fish buyers and haulers, bicycle traders, EPF agents, gill net camp owners (*matajiri*) and *chingas*. They all play a role in buying fish from *kokolo* and providing financial and material support.

(g) Government officials (police, fisheries and legal officers), village government leaders and local vigilant groups (*'sungusungu'*): these are actors who are now

⁵⁶ On the Kenyan side of the lake, Lwenya and Yongo (2012:569) noted that, to access fish women choose various strategies, including cooking food for the crews or engaging in transactional sex. This explains some women and cooks behaviour in Lake Victoria's fishing community. Moreover, report by LVFO/IFMP, (2006:2) states that, poverty and gender inequality marginalize women in commercial transactions, making them vulnerable to sexually exploitative relations, such as fish-for-sex. This is aggravated by the lack of alternative income generating activities at the beaches and high rates of alcohol abuse and commercial sex work at the landing beaches.

connected to *kokolo* fishery through Monitoring Control and Surveillance (MCS) activities arranged by the Fisheries Department. With the exception of *sungusungu* and village leaders, the police and fisheries officials are more proactive in this fishery. They know all the pulling sites and *kokolo* owners and they conduct their own 'counterfeit patrols' to demand bribes from community members. Their visits to fishing villages are marred by open demands for cash and/or beer.

(h) The Fisheries Department (FD): these are key enforcers of beach seine and other illegal gears. Beach seine is their source of income through bribery and corruption. They network with MCS teams, police officers, BMUs, fish traders, legal officers and local leaders.

(i) Local household fish consumers (men, women and children): these are regular fish buyers and pullers of beach seines along the beach. While women and men pull day and night, children only pull during the day.

4.4 Long line fishing organization

4.4.1 Long-line fishing in the early days

Long-line fishing (*Migonzo*) is dominated by three ethnic groups: the Jita, Kerewe and Luo. The Luo from Nyanza Province in Kenya were reported to be the founders of *migonzo* fishing and this style of fishing later spread into Tanzania through Shirati and Majita Bays and spread to the Jita, Kerewes and Luo on the Tanzanian side of the border (Mzee Baiskeli, Kigangama: 21/9/2009). In the early days, long-lines were used to fish '*hongwe*' (*Bagrus* spp.), '*mumi*' (*Clarias* spp.) and '*kamongo*' (*Protopterus aethiopicus*). Long-lines are heavy-ply lines normally kept afloat in the water by polystyrene floats. At regular intervals along the line, hooks are suspended from snoods. This gear is used almost exclusively for the capture of Nile Perch. Because Perch do not like dead bait,⁵⁷ live fish are affixed to the hooks. The lines tend to be set in fairly deep water (ca. 20-50m) and, like gill-nets, will be raised or lowered depending on fishing conditions, mainly due to rainy or dry seasons. There are two main fishing techniques: '*laza*' ('set and leave') or '*tega zibua*' ('set and haul'). The lines are changed when they become too dirty with algae or are worn-out, while the hooks are often replaced when they are blunt or have become twisted.

Access to this gear is easy because it is a small investment – lines and hooks are cheap, compared to other gear. In the early days, the fishery was mainly subsistence and the surplus was given away for free, sold or bartered for other food and non-food items. A brief example of how it was organized is given by Musiba Mujungu, a Jita by ethnicity, owner of a longline camp and a teacher:

"Wadau walikuwa wakoo'-(actors were kinsmen'). In my clan we had four grandfathers. They were known as 'watoto wa Mujungu' ('the sons of Mjungu'). My eldest grandfather was the most powerful. He made final decisions on marriage arrangements, selling assets (cattle), undertaking business, funeral arrangements and rituals. He could also decide on careers of individuals within the clan. I remember my father told me he was chosen to be a policeman but he was denied. Fishing and cattle keeping were mandatory jobs for all male clan members. The second grandfather was the

⁵⁷ I also observed fresh *Dagaa* being used as NP bait on Kome Island by poor fishers, in the absence of Haplos and Clarias.

head of the fishing camp and he organized hooks, fishing twine, buckets, bait and fishing schedules. If more crewmembers were needed, he did not outsource from some unknown family, but relied on mainly grandsons, cousins, nephews and uncles. He was also responsible for grooming a successor. The third grandfather dealt with fish marketing and transportation. He was adventurous and in-charge of a transport sailboat, which travelled to Kisumu (Kenya) and Uganda for fish sales. The fourth grandfather was the clan caretaker and custodian of money generated from fishing, farming, milking cows, and cattle sales. All cattle were owned communally and kept together in one 'boma' ('kraal' or 'corral'). He also arranged a daily schedule for cattle herders. He took care of all his brothers' wives to ensure their daily requirements were provided for, including food because it was cooked separately in different homes but served and consumed together in groups of male and females (Ghana Island, Ukerewe: 01/12/2010).

This social and economic organization is no longer common as we shall see later.

4.4.2. The long-line fishery in the era of commercialization

Long-line fishery became much more popular in Tanzania in 1992 after the establishment of the first three EPFs in Mwanza. There are four key components to the fishery (Figure 4.1) and *wajeshi* are supplied with different facilities by Nile Perch camp owners and/or fish buyers.

A variety of bait fish are used in Nile Perch long line fishery (Table 2.1), but the favourite is the 'neke' or 'mumi' (*Clarias* spp). Two types are used: one with a dotted pattern on its skin (suggestive of army fatigues, and hence named 'combat' or 'vibora') and those without dots ('*jakubumba*'). *Combat* bait fish are caught in Tanzania (Chapter 2), while *jakubumba* are supplied from Uganda, DR Congo, Rwanda and Burundi by regional bait traders.



Photo 4.3: *Clarias* (*Mumi*, *jakubumba*) bait

The second most common baitfish are '*furu*' (*Haplochromis* spp.), which are harvested from the lake in a variety of ways: (i) with small *kokolo* in breeding areas; (ii) using seines and pressure lamps to attract *furu* close to shore; (iii) by hook and line (angling); and (vi) water beating, which scares the *furu* out of rocky areas and into waiting *kokolo*. During the dry season (May-Aug), *furu* are caught in breeding areas because of unfavourable winds on the open lake (Julius Kagosi, long line fisher. Pers. com, Ntama: 16/11/2009).



Photo 4.4.: Live Haplo baits preserved in a floating boat

The third most common baitfish is fresh Dagaa and this is used largely during the dry season when the lake is said to be facing a ‘food shortage’ and therefore Nile Perch eat Dagaa more than any other fish type. Dagaa are bought from Dagaa fishers.

The ‘gogogo’ (*Synodontis* spp.) is the fourth type of baitfish used. There are two types: those with spots, which are normally found during the dry season and those without spots, which are found during the rainy season, mainly in spawning areas and shallow waters. *Migonzo* fishers use small mesh nets of 2.5 to 3 inches (6.3-7.6 cm) to catch *gogogo*, which they say works best during the windy season (June-Sept). Because of the rough weather, they use large hooks and target large Nile Perch.

The ‘mbete’ or ‘domodomo’ (a Mormyrid) is the fifth type of baitfish. *Mbete* hide in rocky areas and are caught using small mesh nets of 2.5 to 3 inches, by angling or with small *kokolo*.

The following are key actors in long line (*migonzo*) fishery. In this fishery a number of *migonzo* fishing boats (non-motorized and with both ends pointed) are used in commercial camps and a significant number of rented boats were observed.

(a) Fish buyers, financiers and guarantors: these are *chingas*, EPF agents and commercial camp owners, who provide cash and material finances to *migonzo* fishers. While *chinga* provide small capital costs (bait, rented peddle boats, food and money), owners of commercial camps and EPF agents contract individual specialized *migonzo* crew and provide motorized vessels, fuel, operational costs (bait, food) and ice flake containers for preserving Nile Perch.

(b) Local and regional bait harvesters and distributors: there are a variety of baitfish suppliers. Some are local farmers from hinterland villages who catch baitfish from rivers, satellite lakes and other water bodies; then there are those who bring baitfish in from Uganda and distribute these amongst the Tanzanian islands and the mainland. In the latter case, most of the baitfish involved are ‘*mumi*’ (*Clarias* spp). Haplochromis species are also viable baitfish, which are caught using mosquito seines and fishing lines. Dagaa are also used as bait. The *migonzo* fishers will buy these from Dagaa fishers. ‘Gogogo’ (*Synodontis* spp) are also favoured as baitfish, and are either caught as by-catch, or specifically targeted by bait fishers. Most of the time, live bait is considered better than dead bait. All bait except Dagaa are sold live.

(c) **Bait collectors, preservers and sellers:** these are medium and small bait collectors who preserve 'Mumi' in plastic containers (Photo 3.11) and feed them with a variety of fish-feed made locally, while changing water often. *Furu* bait are kept in submerged boats⁵⁸ in shallow waters (Photo 4.4) and covered with nets to make sure they are not taken by birds and do not escape through the water.

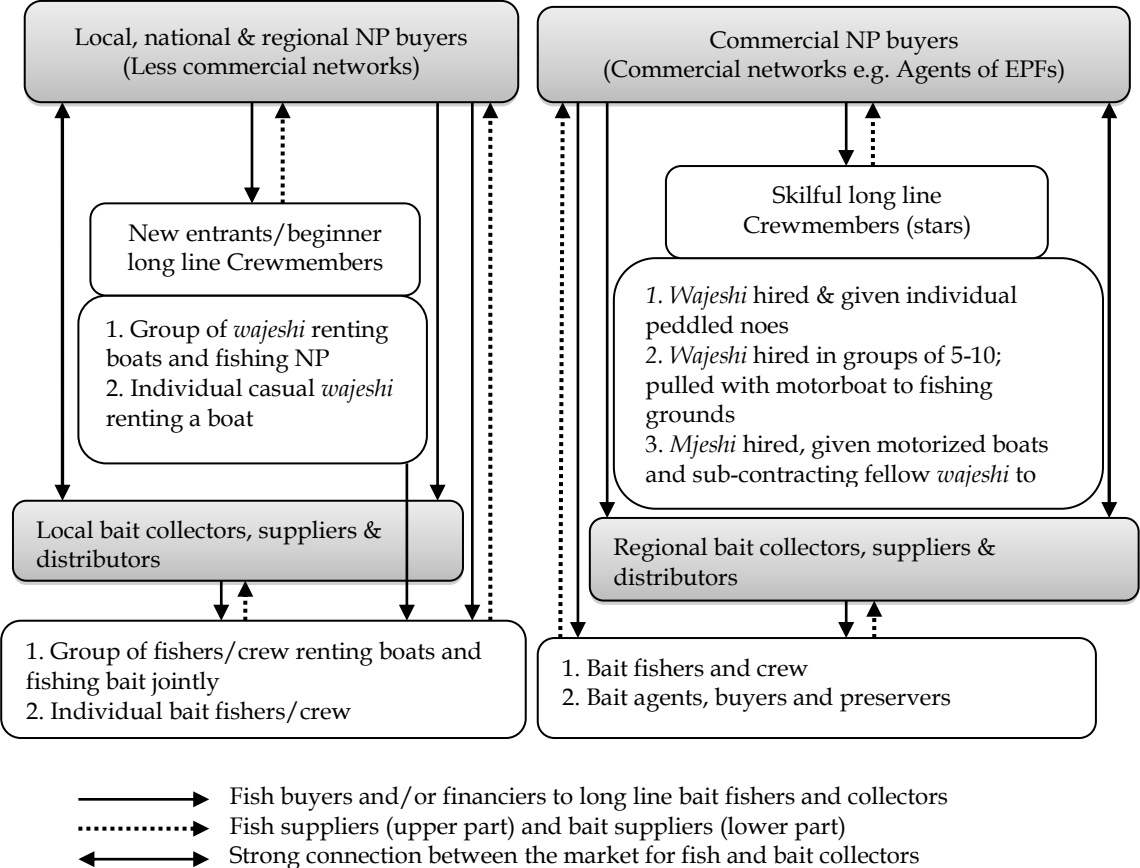


Figure 4.1: Long line (migonzo) and bait actor groupings

Source: Field study (2009-2011)

(d) **Migonzo skilful crew ('stars'):**⁵⁹ these are individual 'fisher-crew', who are head-hunted and contracted independently by camp owners (*tajiri*), agents of EPFs and large scale middlemen (*chingas*) (Figure 5.4), to go out fishing under special arrangements. They are entrusted with and given a motorized boat, fuel, ice boxes and money to buy bait and food for each fishing trip. They fish in deep waters and spend 3-4 days out on the lake. The stars hire 2-3 *wajeshi* (not known to *tajiri*) to work together while on the lake. 'Fisher-crew' are able to bargain their wages and are left with loopholes to sell small size or spoiled fish as part of their income. Details about the type of skills they have are given in Chapter 3.

⁵⁸ It is levelled with lake water to keep bait in their natural environment and tied with robe along the shore.
⁵⁹ A nickname given to them by fellow fishers due to their good performance records (*mwui nyota*).

(e) Hired crew in *migonzo* fishery: This group form the highest proportion of long line fishers. EPF agents and Nile Perch camp owners open separate sub-camps for long-line fishers with fleets of small canoes on different islands. 5-10 canoes are strung out behind a motorboat, pulled out to fishing grounds, and later picked up. They are also those who peddle back to the camp without being pulled.

(f) Migonzo crew Nile Perch: These are traditional fisher-crew (mostly Jita, Kerewe and Luo) with high fishing skills in *migonzo* fishery. They fish jointly and with less structural power in fishing, cooking, and marketing fish. They prefer not to be hired. They join forces, rent a fishing boat,⁶⁰ buy hooks and run their fishing camp jointly. They use sailed peddled boats. Because hooks are frequently lost or stolen, they sell fish to those who loan⁶¹ them either hooks or food for their camps. When the long line catch is poor, they switch to Dagua fishery.

(g) Migonzo casual crew: These are semi-permanent/irregular crew (*wajeshi*). The influx of this type of actor occurs during peak *migonzo* fishing seasons and the dry season (off-farm season) when most households face food shortages. Most of them rent canoes jointly by pooling resources together, while a few lucky ones are hired by either EPF agents and/or *chingas*. New and young entrants also belong to this group.

(h) Furu bait fishers: This fishery is growing very fast and the majority of fishers join during *migonzo* peak seasons. Some belong to commercial bait sub-camps, while others do not. Fishing camps are composed of young, middle-aged and old fishers and they fish in different ecological sites as indicated before.

4.4.3 Fishing processes in *migonzo* fishery

Migonzo boats have 3-5 crew, depending on their size, weather conditions, propulsion method, whether '*tega laza* or *tega zibua*' (def. below) fishing techniques are being used and the distance to the fishing ground. Fewer *wajeshi* are needed for *tega zibua* in a proximate fishing ground and in a motorized canoe, while more are involved in *tega laza* with a paddle canoe or motorized boat going to a distant fishing ground.

The first *mjeshi* is the vessel operator, the second estimates the depth at which the lines will be set, and is normally skilled at judging water temperature, depth range and winds. He also arranges the sinkers in the appropriate positions. The third *mjeshi* handles the bait, and passes the baitfish to the fourth *mjeshi*, who attaches the bait to the hooks and passes the line into the water.

There are normally a minimum of 600 and a maximum of 2,000 hooks per line, set 9 metres apart. *Migonzo* fishers often share their fishing grounds with gill-netters and Dagua fishers, both of whom fish during the night, while the *tega zibua* technique is used during the day. This latter technique helps to avoid conflict over fishing grounds, gear entanglements or accusations of fish theft (FGD, long-liners, Kigangama, 18/9/2009).

⁶⁰ Sometimes the boat is owned by one of the crew who is paid rent costs by the rest.

⁶¹ Shore-bound women traders (see Medard, et al., 2015) and sub-agents (*chinga*) because they pay cash without delay.

Seven key determinants were identified for how this fishery is organized: weather conditions, method of propulsion, investment facilitators/guarantors, the moon, the fishing system (*tega laza* (two sub-types) or *tega zibua*), bait type and its seasonal availability and the *wajeshi* enrolment processes.

(a) *Tega laza* (dry season: July-Oct and Feb): Fishing is carried out at night during the full moon, when hungry Nile Perch are able to see the bait in the moonlight. The lines are set at night, and hauled in the following morning. Most of this fishing occurs in distant fishing grounds. At this time, the water is clearer, and the bait (usually of a larger size) is better discernible to large passing Nile Perch. *Tega laza* fishing occurs in both deep and shallow waters.

(b) *Tega laza* (rainy season): During the rains, *tega laza* fishing occurs in shallow waters, and targets smaller Nile Perch. Bait fish tend to be small. During the rains, rivers wash colossal amounts of nutrients into coastal areas of the lake that attract smaller fish towards the shore and, behind them, Nile Perch.

(c) *Tega zibua* (daytime set and haul: Jan-May): Fishing is conducted in shallow waters with small baitfish, targeting small and medium sized Nile Perch. At this time, the waters are turbid, and the baitfish harder to see, so catches on *migonzo* tend to be lower than with other gear. Most *wajeshi* like this season because fish does not spoil and they get some hours to restart night. Because they stay in the neighbourhood of their long-lines (unlike with *tega laza*, where the hooks are set, and the crew returns to shore), there is less theft of the lines. *Tega zibua* is also carried out on a large scale (1500-2,000 hooks), with long-line crews and their boats hauled far out into the deeper waters of the lake by motorboats. After setting the *migonzo*, *wajeshi* paddle to a nearby island or rocky area⁶² to cook, eat and rest before they haul in their lines, and are then hauled back to the mainland. This type of fishing is mainly carried out by EPF agents, commercial camp owners and large scale *chingas* because of the high fuel and other costs (food and bait). The *migonzo* fishery attracts many new entrants into Lake Victoria's Nile Perch fishery in Tanzania, because of the relatively low investment needed to enter it. As alternative livelihood options become fewer and fewer in Tanzania's rural and urban economies, its importance to livelihood and income generation is considerable. In addition, it is a fishery 'unaffected' (hooks are neglected in fishing policies) by formal regulations, and offers the *migonzo* fisher considerable independence.

4.5 Emerging fishing relations and networks

There are many fishing relations in Nile Perch fishery that are dependent on social systems, market networks and governance processes. In Nile Perch fishing, capitalist and commercial relations of production have become predominant and new

⁶² Rocky islands or emerged small rocks due to reduction in water levels.

Case 4.1: 'Capitalist deal in form of partnership in Nile Perch fishery'

The Bembe and Ha's are fishers from Lake Tanganyika who migrated to Lake Victoria between 1992 -1993. Although they mentioned Kigoma Region (Tanzania) to be their origin, local residents claimed that they were from Tanzania, Zaire and Burundi. The Bembe and Ha fishers are experts in using single nets (not panelled) locally known as *makila*. The nets are 3.5 and 4.5 inches, 90 meters long, 25 or 26 mesh nets (width) and 3 ply and are labelled as 'illegal' by fisheries regulators. They use canoes and there are 3-4 *wajeshi* (crew) in each 8 foot (2.4 m) boat for three crewmembers and/or a 12 foot (3.6 m) peddled boat for 4 fishers. Each *mjeshi* has a small wooden box into which he packs 10-15 single nets. Each boat, therefore, carries 30- 60 nets, depending on the number of crew. They set their nets in the evening, and haul them in early in the following morning. They do not stay with their nets, or organise patrol boats, so the risk of net theft is high. Investment in this fishery is facilitated by mainly female shore-bound traders who will rent a boat jointly with crew, and then hire a crew and provide gear, while retaining full control over the catch. If crews were, for whatever reason, unable to contribute rent for the boat, women would step in and pay it for them. One narrates more:

"Each of us is given fishing nets and because the catches vary from each one's nets, we face different situations. Nets are stolen or drift frequently and we end up in continuous debt. Moreover, each of us is frequently loaned cash independently by the women to feed our families. If I get 60 fish, for each three fish, we get TShs 1,000 (US\$ 0.67) while the woman will sell it for TShs 2,000 (US\$ 1.3). But we are not interested in paying off all our debts. Where would we go? The lake is everything for us. We are here with our elderly parents, wives and children. The real challenge lies with the frequent bribes to officials so that they don't confiscate the nets and fish because we fish small size Nile Perch, we don't own fishing licenses and we use unregistered boats. Women traders are behind us and they handle all sorts of hurdles." (Mustafa Ali, pers. comm. 20/11/2009).

Women play an important role in the Bembe and Ha fishery in helping them to gain access to the fishery. Decisions over net purchases, renting boats, buying fishing accessories and where to sell the catch are all made by women. Women forge a relationship with one *mjeshi* (the guarantor) who is not necessarily a boat captain but a trustful person (settled with his family along the shore), who is obliged to look for another 2-3 *wajeshi* for a complete fishing unit. Women apply such strategy in order to allow freedom of choice in constituting *wajeshi* who can work together with minimal conflict and risk. Once he has identified them, each is given a box of nets. After landing, the women organize the sale of the catch, keeping aside some fish for the *wajeshi*'s food and for their own domestic needs. During the study, the women in this fishery had a minimum of one and a maximum of three peddled fishing boats. It was also reported that, before 2008, EPF agents would buy fish in the 0.5-1.5 kg range because the slot size measure for Nile Perch was ineffective, but now they only sell those fish of 1.5 kg and above to the EPF agents, and the remainder to female traders and processors and distant bicycle traders.

Source: FGDs Ntama- migombani, Kome Island (20/11/2009)

organizational forms are continually emerging in local, national and regional markets. In the following section, an analytical example of how Nile Perch fishing is constituted is provided. This is a transformation from subsistence fishing to a 'capitalist deal' in form of 'partnership'. Medard et al., (2015) identify more forms of relations in this fishery. These local markets escape the relationships of dependency and the subjective, exploitative conditions that characterise the export oriented markets. The aim is to provide an insight into how such dynamics work at local

levels in relation to global processes that have reorganized production and changed patterns of ownership and control. An example of local processes is provided in Case 4.1.

The basic idea with this arrangement is that the women front the initial costs of startup (the nets and other fishing accessories) and replacement of worn-out or stolen nets. They identify a guarantor – who in effect guarantees the investment by agreeing to fish for the women – and the business can shift to a guarantor if he manages to pay the costs of the nets and other fishing accessories. The cost for renting a small boat per month is shared by crew (TShs. 35,000-40,000; US \$ 23-27) but many times women provide the crew with small credits if they have no cash. Eventually, the women control all fish sales, and the guarantor and his crew receive very little by way of wages or fish. The guarantor also assumes the risk of his crew – if any of them were to make off with the nets, the guarantor is obliged to replace these. The same is true if the nets are lost on the lake, or stolen by someone else. He also reduces the women’s administrative responsibilities by managing the crew, their complaints and their problems.

Their risks are multiple. On the lake, they are wary of armed patrols from the big commercial fishing camps, who will willingly accost them and chase them away from the fishing grounds. Their nets, too, are illegal and, if there is any trouble with the authorities, it is the crew – and not the women – who must bear the responsibility of gear seizure, and the threat of court action.

“If the woman doesn’t like you personally or because you are unlucky, she can hire someone else. There are those who have sexual relations with women just because they want to get power of ownership of the nets and the box for keeping the nets. These women are very clever! We are the ones who go out fishing and are labeled as illegal fishers because the mesh nets are small in size. The truth is we are in a poverty cycle and lumbered with endless daily debts and an insecure life” (Mlegwa Mbuto, Ntama-Migombani, 20/11/2009).

The above example shows that next to the export markets there are a blossoming local, national and regional markets which have also adopted a ‘capitalist deal’. These markets are dynamic and provide substantial livelihood opportunities to a wider range of local and regional communities. Large proportions of fish that are caught for these markets are labelled as ‘illegal’ because of small size. A range of Nile Perch fish sizes and other traditional fish species are caught as by catch and also enter these markets. These markets do not just co-exist but interact such that, the national, regional and export markets have a tremendous effect on the way fish resources are accessed and traded at local level. It shows the way local markets in Lake Victoria are shaped by the emerging demand for Nile Perch destined for export markets (next section). The continuous struggle by women and men in these markets is more than just about generating income. It is more about escaping dependency and unfair relationships in export oriented markets. Relationships of this nature have spread and shaped many relations in different gear.

4.6 Reconfiguration of Nile Perch export supply channels and networks

In this section, I show how the Nile Perch export industry and trade businesses have come along. There are a number of 'middlemen', or groups of intermediaries, in direct contact with fishers at the landing sites and often commissioned as 'agents for EPFs and fish collectors and suppliers' through 'fish and labour supply tying loans'. These economic relations are characterized by reciprocal agreements and credit arrangements (Chapter 7), operating on large and small scales and in isolated and centralized sites. Globalizing patterns (Figure 4.2, 4.3, and 4.4) and resource exploitation have significantly reshaped the process of production and, more so, the adaptation of rural fishing economies to global markets. This reshaping translates into multiple forms of organization at the local level (see Case 4.1 and Textbox 6.1). Local, national and regional actors and their markets organize production and trade practices along new lines and within old and newly established networks, linking all markets in innovative ways. Starting from the early 1990s to 2011, I show how the Nile Perch's global demand has shaped Lake Victoria's fishery for the past 21 years in Tanzania. The chapter also provides an insight into powerful networks and how power manifestations come into existence, expand or decrease and are maintained in Nile Perch fishery.

The export of Nile Perch started in 1992, when Kenyan based factories realised the need for opening sister factories in Tanzania (Medard, 2003a). The entry of Kenyan based firms into Tanzania was facilitated by Tanzanian businessmen who had invested in fish and non-fish related businesses, such as cold stores, refrigeration, clearing and forwarding of import and export goods, cross border cargo transporters, milk factories and distributors.

The businessmen from Kenya and Tanzania had similar interests - to make money - but direct access to the fishing communities was sensitive and had negative implications because some villagers viewed them as 'outsiders'. The host Tanzanian business men were forced to look for reputable local resident villagers who were permanently settled and had influence to mobilize fishers and resolve any local disputes (Figure 4.2). Most fishers were happy to enter the new markets. They could sell fish at a price range of TShs. 40 - 50 (US \$ 0.08-0.11) per kilo in the early 90s to Tanzanian agents, while the price which was offered by Kenyan businessmen was between TShs 70 and 80 (US \$ 0.16-0.17) per kilo (Medard, 2003a).

Business relations were enhanced by price commission (between Kenyan and Tanzanian businessmen) and trust (between Tanzanian businessmen and local resident fish collectors). During this initial time, most of the processing and exporting activities took place in Kenya. Some companies from both Tanzania and Uganda landed their catches in Kenya and exported their products through their sister factories (URT, 2003). Smuggling fish to Kenya was very common and bribe money and corruption enabled the fish cargo to pass through the borders. Not only that, the business was very new in Tanzania: the government was unprepared and it took time for them to catch up with such changes.

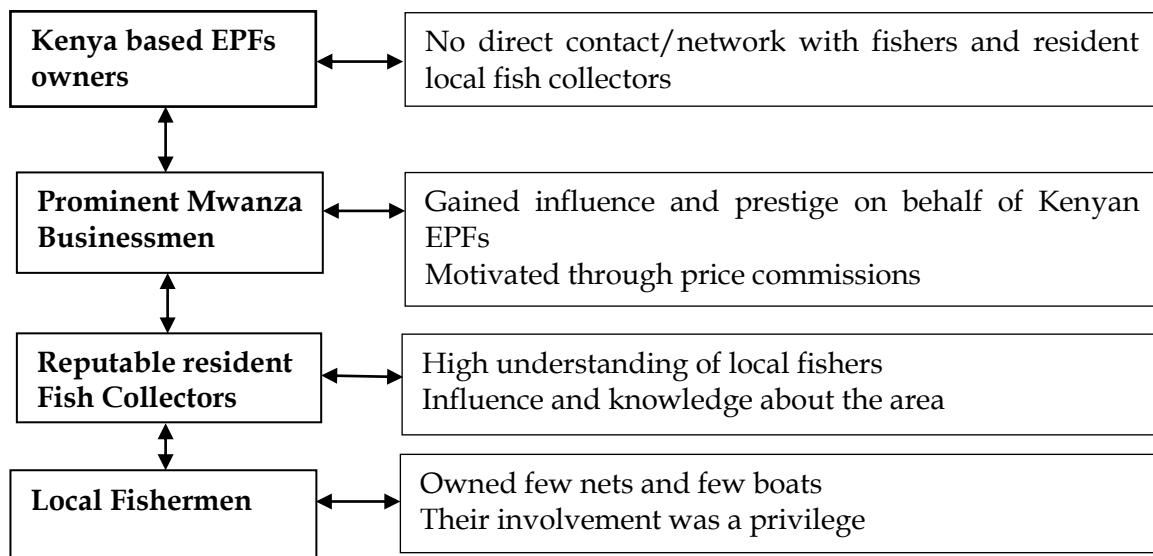


Figure 4.2: Initial fish supply channel (1980-1990's)Figure 0.2

Source: Field work (2009-2011).

Over time, Kenyan factories became more competitive and by 1992 two 'Kenyan sister factories' were built in Mwanza. More factory agents and fish collectors were engaged as fish suppliers. In the same year, an Indian Tanzanian investor joined the industry and followed the same procurement strategy by having local residents as fish collectors.

The interaction between agents of EPFs, resident fish collectors and fishers, grew. However, in due course, the role of resident fish collector in most networks became redundant (Figure 4.3).

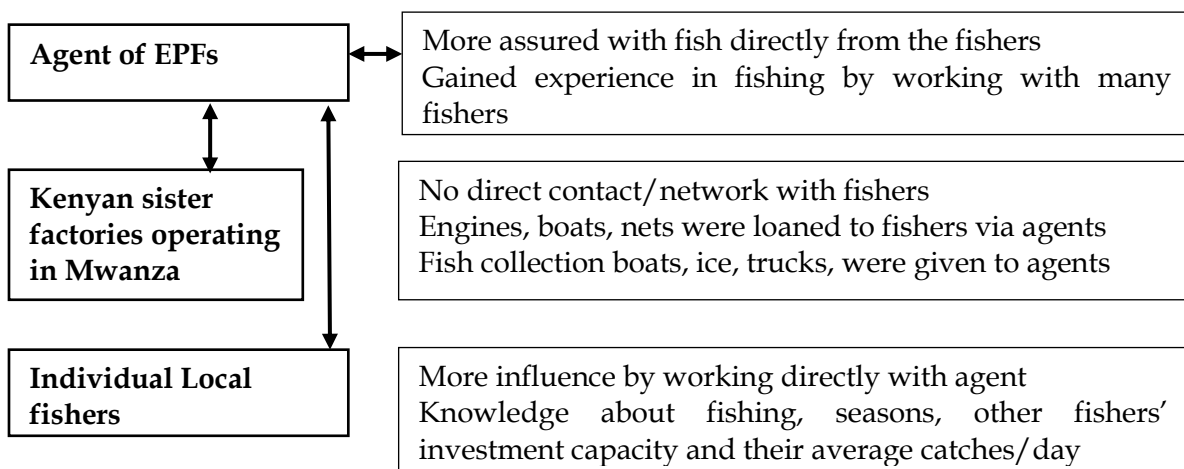


Figure 4.3: Exclusion of 'local resident fish collectors'

Source: Field study (2009-2011).

Face to face encounters between agents of EPFs and individual fishers and camp owners grew. Moreover, power struggles between resident fish collectors and fishers emerged and, in the end, fishers became more powerful because they had direct access to the fish resource. Fishers preferred to work directly with agents of EPFs in order to reduce unnecessary transaction costs and to allow direct negotiation. This meant fewer actors involved in a network (Figure 4.3).

Strategies were continually explored and, by 1994, a reasonable number of Nile Perch fishers had become rich (*tajiri*) and owned fleets of fishing boats, while others dropped out and left fishing. High capital and operation costs, theft (fishing gear, fish, outboard engine), exclusion from powerful networks and piracy, were common. At this stage, a strategic mechanism to exercise power and to achieve one’s objectives in a network was necessary. The networks obliged EPFs to provide money and materials in order to remain in the fish business and secure supply. This necessitated more creativity for bringing about effective networks by offering more credit facilities to fish suppliers (agents of EPFs) and individual prominent fishers (commercialized camp owners) (Figure 4.4). At this stage, the agent was a crucial business link. But the challenge for EPFs remained how to maximize fish supplies by bringing unequal partners (rich and poor fishers) into their networks.

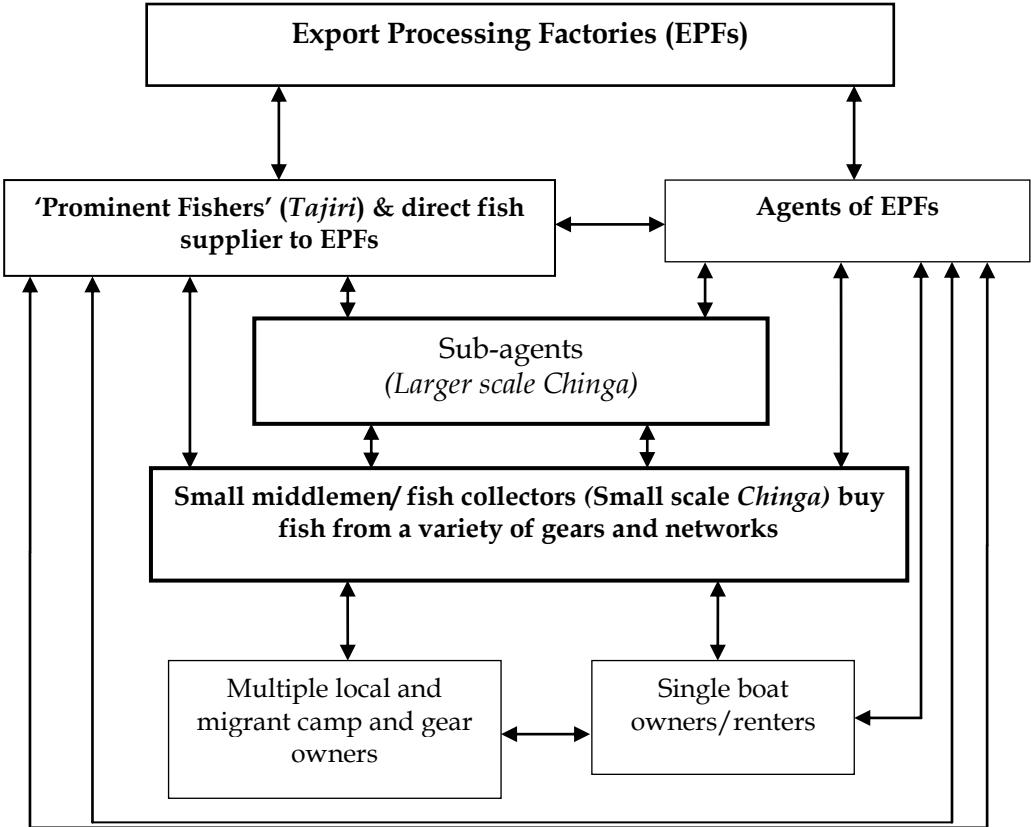


Figure 4.4: The Nile Perch fish supply channels Figure 0.4

Source: Field study (2009-2011).

This closeness was necessary for two reasons: (a) to include both poor and rich fishers in the export market in order to maximize fish supplies, as well as profit. This was important because, together, poor and rich could do more (b) Dealing with EPF agents was expensive because fishers became rich, self-sufficient and gained power to negotiate for better prices, a situation which prompted EPFs to find ways to deal directly with fishers and buy fish at low prices (see Chapter 7). Those excluded, such as resident fish collectors, community members and even outsiders (hinterland community members), struggled to get into the export networks. To date, most EPFs are connected to agents, prominent fishers (*matajiri*) and large and small fish collectors (*wamachinga*) (Figure 4.4). This latter group has replaced 'resident fish collectors. They are numerous, young and middle aged, mobile and very proactive in fish trade.

Various forms of struggle and resistance multiplied and transformed the industry into an aggressive business with local, national, regional and global players. Agents of EPFs and camp owners struggled among themselves and the struggles became apparent because the export markets were defined by individual and group interests. The long term aim for agents and *matajiri* is to get rid of export market dependence due to unreliable prices (Chapter 7) and other exploitative conditions (Medard, et al., 2015). Most CSFs get fish from different sources (dotted lines): Agent of EPFs, *matajiri* and direct fish suppliers to EPFs, individual traders, single boat owners and others (Figure 4.4).

Discourses of struggle and resistance in Lake Victoria are usually not complete: they open into new discourses continually and are linked with each other. The new factories (CSFs) are locally known as *viwanda vya wazawa* (the natives' factories), while the EPFs call them '*viwanda vya uwani*' (back-yards), and they are sub-standard. Fishers, and large and small scale traders always demand direct negotiation with fish buyers on prices and other credit arrangements. The CSFs, however, seem to have gained popularity with many fish suppliers because they engage in negotiations and have unrestrictive fish size selectivity and fewer rejects.⁶³ Moreover, CSFs set fish prices in two categories, 'with fish maws' (at high prices) and 'without fish maws' (at reduced prices). This categorization attracts many fish suppliers because fish maws are graded (extra-large, large, medium, small) and sold separately to fish maws collectors at a very high price. The biggest size (extra-large) fish maws were sold at TShs 220,000 (US\$138) per kilo while the smallest size at TShs 24,000 (US\$15). Fish maws are the most expensive Nile Perch items exported to Hong Kong and Far Eastern countries, as delicacies, and a very small portion is sold to some EU countries (URT, 2003). Also, while EPFs give high priority to giant Nile Perch fish suppliers, CSF buy fish in all quantities, day and night, from regular and irregular fish traders, an opportunity which attracts many fish suppliers in this market tier. The first CSF started in 1999. In 2011 there were five and, by July 2013, there were 16 (Medard et al., 2015). Of those, 50 per cent started in 2013 and the trend is accelerating. Most CSFs are local fish traders, agents of EPFs and other business individuals. The aim is to get rid of dependence on and discrimination from export markets and, more so, the EPFs.

⁶³ EPFs are blamed for exaggerating reject (spoiled and small size fish) fish without returning them to suppliers

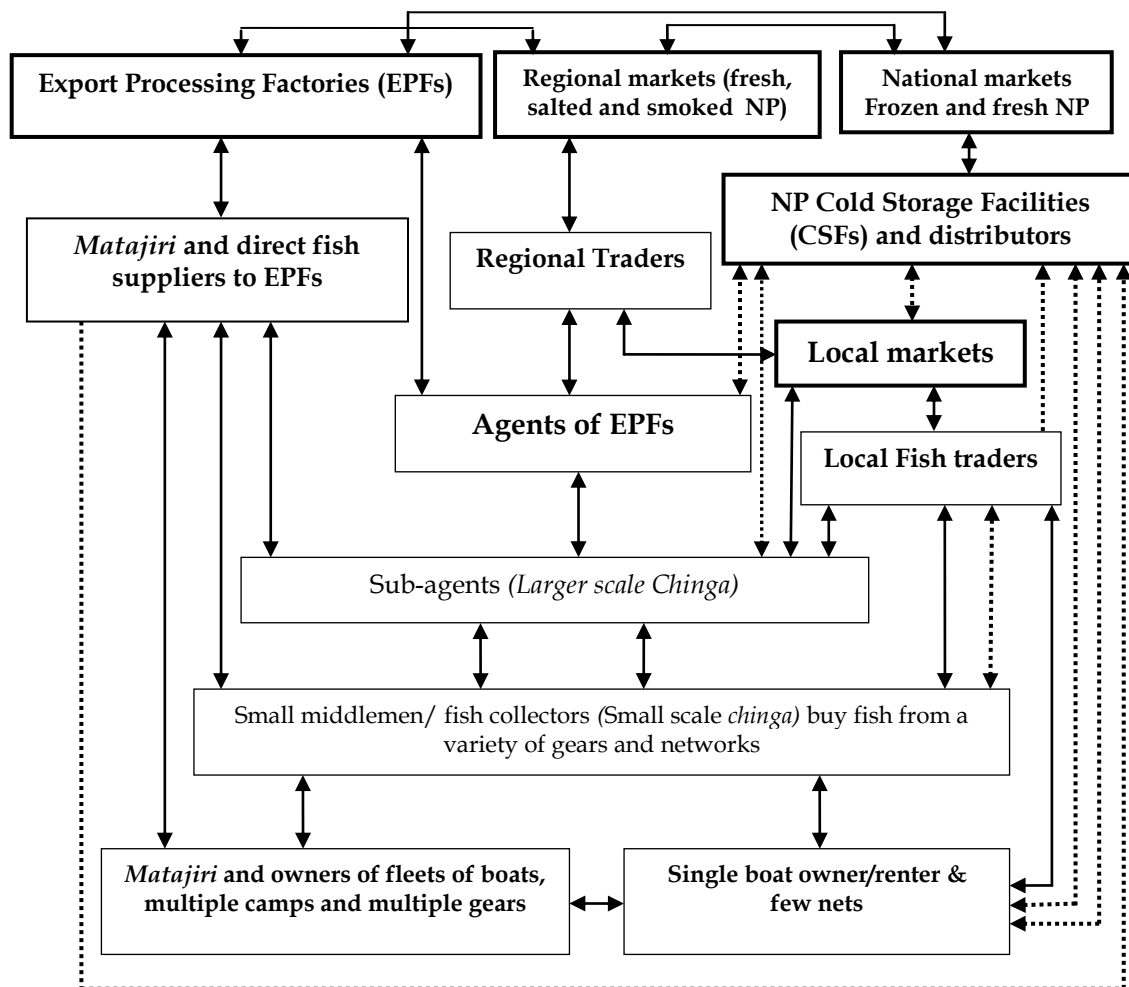


Figure 4.5: Current Nile Perch fish supply channels and networks

Legend: Dotted lines mean others agents and *tajiri* are progressively taking some of their catch to CSFs

Source: Field work (2009-2011).

An export factory representative from Mwanza, however, claimed that,

“....despite these struggles, the native factories (CSFs) will never win. There are strong business ties and hard conditions between EPFs and agents, as well as EPFs and owners of big camps (matajiri).it is almost a wedlock and is very difficult to get out of” (name withheld, June, 2010).

On the one hand, the EPFs blame the government for allowing ‘back-yard’ factories which they claim to be vehicles for up-scaling illegalities.⁶⁴ On the other hand, the struggle by and resistance of these new developments have been urged to be beneficial to local fishers and fish suppliers because they enjoy the fruits of lucrative prices fetched in all market tiers - the export, regional and national (Interv. no. 600122, 20/8/2010. Ghana Island, Ukerewe).

⁶⁴ Buy fish from illegal gear users and trade juvenile fish which are not legal.

The engine that drives production from this fishery is its markets and, for most fish traders, the priority fish to trade in Tanzania for the past 21 years is the Nile Perch. The presence of large and expanding markets for this fish encouraged many entries into the fishery, which plays an important role in determining what gear is used, influences the migration patterns of fishers, fishing camp establishments, and, ultimately, redefines the social relations of production and trade that characterise its communities.

Nile Perch export factories and trade businesses have come along with a number of 'middlemen' and 'women', groups of intermediaries in direct contact with fishers at the landing sites and, often, commissioned as 'agents for EPFs and fish collectors and suppliers' (the export market tier) through 'fish and labour supply tying loans' (Chapter 7). Yet, some local actors seem to resist export market arrangements and now the fishery can be typified as 'an everyday form of 'struggle''. How markets and networks work will be shown empirically in the next chapters.

4.7 Summary of the chapter

The chapter has provided an overview of Nile Perch transformation, with a multiple scale of processes, actors and practices creating patterned networks and heterogeneous relations in and around the Lake Victoria. It shows how the Nile Perch fish resource is mobilized by the respective fisher communities and, thus, enters the process of production as a commodity. The fishery is now within the large commodity markets, which are increasingly controlled and restructured by powerful actors. Localized, national and regional markets are at odds with global markets, as fishers (*tajiri*) and fish traders (agents of EPFs and others) struggle to diversify their markets in a range of ways. New actors, networks and products are produced while, simultaneously, new markets are created. These new markets contain new levels of competitiveness and entail more autonomy. More importantly, the empire system of patronage and the control (Chapter 3 and 7) of fish distribution networks are not permanent: they reconfigure continually.

The fishery is characterized by technological innovation and organizational change, as well as dimensions of actors' inequality, social and economic exclusion. Major changes in harvesting with multi-panelled nets (Photo 3.13) and a diversity of other gears have occurred. Fish handling, processing and transporting technologies have changed with the expansion of Nile Perch export. Moreover, freezing and cold storage technology, the development of fleets of fishing vessels and imported outboard engines are widely used. This has allowed fishers to fish in distant fishing grounds, adding new costs to fishing operation. Enterprising fishers and agents of EPFs have invested in multiple camps in different locations. Moreover, other varieties of bait fish have entered the global basket and reduced the fish varieties available for locals. Competition has increased the prices of fish and the middle ground is that the lake has turned into an arena of struggle every day and with exceptional forms of resistance.

More interestingly, the complexities and interactions in the Nile Perch venture reproduce recursively between actors in different fishery types and different fishing organisations. As a consequence, some fishers either switch from Nile Perch to Dagaa or fish for both in order to reduce the economic risks associated with fishing

exclusively for Nile Perch. Just as in the Nile Perch fishery, processes and practices have diffused and spread in Dagaa fishery, with its growing economic and commercial importance. The commercial rise of the Dagaa fishery, thus, spells economic disenfranchisement for poorer households: there is less Nile Perch and Dagaa for local communities to control (Medard, 2010a; 2012). There is evidence to show how this is the case in the next chapter.

CHAPTER 5

THE ORGANIZATION OF THE DAGAA FISHERIES IN TANZANIA'S LAKE VICTORIA

5.1. Introduction

The purpose of this chapter is to describe the organization of Dagua fishing at the production level, where labourers are enrolled and put to tasks, and fishing inputs are put into action. Dagua are caught, and investments (human and non-human) are managed and coordinated by fishing camp owners in a dynamic network of relations that surrounds the fishing and non-fishing environment: the camps, the villages, the governance systems, communications, social systems and many others. It also describes the socio-technical and marketing transformation and the emergence of specific forms of entrepreneurial actors. After the introduction, the chapter contains sections on the socio-technical transformation, the commercialization of Dagua fishery, the key actors involved, the growth of Dagua trade in regional and continental markets, trends of Dagua trade and consumption in Tanzania, the supply channels and, finally, a summary of the chapter.

This chapter addresses four key questions:

- (i) *How has the fishery transformed over the past six decades?*
- (ii) *How is Tanzania's Lake Victoria Dagua fishing organized at present and why is it organized this way?*
- (iii) *Who are the key actors within the fishery and how do they organize?*
- (iv) *Within which networks are these actors placed?*



Photo 5.1: Fresh Dagua

Rastrineobola argentea is a silvery zooplanktivorous *cyprinid*, a small sardine-like fish with a maximum length of eight to nine centimetres (Wanink, 1998:117). It is commonly known as 'Dagaa' in Tanzania, 'Omena' in Kenya, and 'Mukene' in Uganda. It is a nutritious and cheap resource fish and is usually sold sun-dried, either for human consumption or for fishmeal for animal feed. After fishing, Dagaa is sun-dried on sandy beaches, on grass or rocks (Gibbon, 1997b; Medard, 2012 ; Nanyaro et al., 2004; Wilson 1996). Sun drying reduces the fish's protein, lipids, and vitamins, so its nutritional value decreases (Nanyaro et al., 2004). In most of Tanzania's urban and mainland sites there have been initiatives to train small-scale processors and traders in fish handling and sanitation and also in solar drying techniques, to improve the quality of and add value to Dagaa products (FAO, 2008: 67). These initiative have not, however, been successful for a variety of reasons. The FAO (2008) estimates that more than 50 per cent of the production on the entire lake is used in animal feed, particularly chicken feed ('*chakula cha kuku*').

The fishery began to gain commercial significance in the 1970s. It expanded first in the Tanzanian parts in the 1960s, in Kenya in the 1970s and in Uganda in the 1980s (Okedi, 1981). It is one of the few native fish species to have survived and flourished after the introduction of the Nile Perch in the mid-1950s and it has grown steadily, even though Nile Perch feed on it (Getabu, Tumwebaze and MacLennan, 2003; Goudswaard et al., 2004; Pitcher et al., 1996; Tumwebaze, Cowx et.al., 2007; Wanink, 1999; Wanink, Kashindye et al., 2001; Wanink and Witte, 2000a; 2000b). Dagaa fishery uses artificial light generated from pressure lamps to attract the fish during dark phases of the lunar cycle.⁶⁵ The fish are caught using nets with a small mesh size of about 2.5-10 mm.

During my field work (2009-2011), Dagaa fishing seasons were between 18-21 days during the dark phases of the lunar cycle⁶⁶ and were very intense. The remaining days (12 to 10) were off-season and repair of nets and boats was done. Witte and van Densen (1995) also observed that fishers usually either suspend their activity for a period of 7-10 days around full moon or restrict their fishing to a short period before moonrise or after moonset. The result is that fishing is concentrated in the 2-3 weeks during the dark period and the quarter or half-moon periods of every 4 week lunar cycle. Taabu (2004:60) observed that, prior to and during new moon, the weather conditions tend to be rough and, therefore, light fishing is terribly interfered with and this consequently limits fishing effort. During the study, however, I also observed extended fishing beyond 21 days.

Major recent biological dynamics in this fishery are : (i) Nile Perch is the major Dagaa predator (ii) fresh Dagaa are used as bait fish in Nile Perch long line fishery (Chapter 3) (iii) Dagaa nets (2.5-10mm) harvest other fish as by-catch, mainly *Haplochromis* (Furu) and Nile Perch in Tanzanian waters (pers. observ.), while in Uganda Nile Perch and Tilapia are the predominant by-catch (Taabu, 2004:61) and (iv) its proportion decreases with increasing distance from the shore (*ibid.*).

Scientists around the region argue that the link between Nile Perch and Dagaa may be negatively correlated because (a) the Dagaa population continues to be

⁶⁵ The lunar cycle plays a role in limiting effort during some phases of the moon, such as full moon where no fishing is done.

⁶⁶Normally fishers fish during total darkness, half-moon, quarter and three quarter moon which brings to the total of about 21 days. In some cases they may extend to 22-23 days.

successful due to heavy fishing pressure on Nile Perch and (b) Dagaa populations have recently exploded because of reduced competition with *Haplochromis* (LVFO/IFMP, 2008a:7). In recent years, the fishery has undergone a series of technological and market transformations as we shall see.

5.2 Social and technical transformation in Dagaa fishery

Historically, it has been reported that prior to the use of light for Dagaa fishing, the species had been exploited on a subsistence level by Luo women in Kach Bay, using open cone-shaped baskets (Graham, 1929). These women would simply wade into the water carrying large open conical baskets in their hands with ordinary baskets on their heads and form themselves into a circle. They would then proceed towards the centre with much splashing and noise. When at the centre they would quickly scoop out fish using conical baskets and then turn the catch into ordinary baskets carried on their heads. At this time Dagaa was exploited almost exclusively for home consumption and, therefore, less effort was directed to the management of the fishery.

Old and retired fishers from Mchangani (Kome Island) reported that they normally fished *Clarias* (*Mumi*), *Tilapia*, *Synodontis* (*Gogogo*) and *Protopterus* (*Kamongo*). In the 1960s, Dagaa was fished by one or two foot fishers along the shore, using connected pieces of cloth and sacks to catch them. During that time, Dagaa were mainly caught to feed chicken and ducks and not for human consumption. Pressure lamps were not in use. During the same decade, fishers started to use pressure lamps and Dagaa seine nets (known as *mkokoteni* or 'hurry up') in shallow waters. While Dagaa for chicken and ducks were fished all year round, trading for human consumption was done during dry seasons to get a well-dried product. Towards the end of the 1960s and in the early 1970s new technologies came up. Fishing with canoes, pressure lamps and encircling small seine nets were used to catch Dagaa. The hurry-up nets were later known as '*kokolo la dagaa*'. Fishers placed bright pressure lamps on little floats, which attracted the Dagaa. The nets were then circled around the lamp, pulled together slowly and the catch scooped up. It was learnt that these types of net were used in Tanzania for the first time by Kerewe fishers, who had learned how to make and use them from Luo fishers in Kenya. Through marriage and inter-marriage, Luo fishers from Tanzania crossed the border and interacted with their fellow Kenyan Luos and the technology spread quickly. At that time, fishing was still done in shallow waters, with two panelled nets and by a mix of canoe and foot fishing (Samuel Opio, Dagaa fisherman pers. comm. Mchangani, July, 2010).

In the early 1980s scoop net (*mgono/kijiko*) fishery started when fishermen realised that the catch in shallow (inshore 0-500m) water had declined. Fishermen started to fish in mid-shore waters (500-1000m). They used 3 pressure lamps, an 8 meter long canoe and two fishermen. The dominant ethnic groups in this fishery in Tanzania were Jita, Kerewe and Luos.

Dagaa fishery became more popular after 1974. The 1970s were characterized as the decade of economic shocks and crises and Tanzania was facing its gravest crisis. The growing popularity of Dagaa coincided with food crises and it emerged as a copying strategy because this was also the decade where other indigenous fish

species (e.g. *Synodontis*, *Clarias*, *Alestes*, *Haplos*) disappeared. Many fishers joined the Daga fishery because demand increased for two major reasons: (a) hunger and economic hardship and (b) decline of indigenous fish species. An old and retired fisher from Mchangani (Kome Island) tells more:

"We had a major national drought between 1974 and 1976. This was followed by the downfall of the household economy through villagization policy (Ujamaa settlement scheme) in the same period. A number of homes were demolished and people were forced to settle in new villages (except in Kagera and Kilimanjaro⁶⁷), where they had no farms and other sources of food and income. In 1977 the break-up of the East African Community was another blow and it was followed by a war with Uganda, which took place between 1978 and 1980. This economic and political history brought many new entrants and a lot of changes in Daga. In 1974, we had 10 Daga fishing camps⁶⁸ at Mchangani for the first time and it was constituted by Luo, Jita, Kerewe and Haya ethnic groups" (Hungu Masogo, pers. comm. July, 2010).

When the Nile Perch fishery started in Tanzania in the 1980 to 1990 period, fishers who had been fishing indigenous species, which, by then, were regarded as commercial, started to lose track because of (a) the disappearance of indigenous species and (b) the fact that Nile Perch was traditionally an unknown fish to them. This led the majority of fishers to join the Daga fishery and many people started to eat Daga because of the lack of other options.

Between 1980 and 1990, the Daga fishery grew at a high speed and, gradually, scoop net fishing declined. Daga seine nets (hurry-up) became the predominant gear. Hurry-up nets were composed of four panels and fishing was done by a peddled canoe, three pressure lamps and four crewmembers. Another ecological change at that time was the concentration of Daga in offshore waters (1000 m and beyond). One elder from Mchangani (Kome) said that fishers set their nets as far as 2-3 km from the shore. This made fishers increase the size of the boats, as well as the nets from four to seven panels in a peddled boat. During this time, some fishers were still using scoop nets because in some seasons Daga were still abundant in mid-shore, rocky and in-shore areas (Baraza, Daga retired fisher, pers. comm., July, 2010).

In 1989/1990, another Daga fishing technology was introduced in Lake Victoria, Tanzania. A number of catamaran fishing boats (*vipe*) were brought from Lake Tanganyika to Lake Victoria by train, from Kigoma to Mwanza. A single *kipe*⁶⁹ comprises two boats placed 3-4 m apart, and held together by a pair of poles. They are typically powered by outboard engines. The powered catamaran operation requires at least four crew members and the net can be lifted at least three to six times per single fishing trip. By 1994, 100 *vipe* were counted at Igombe (Mwanza Gulf), a large urban fishing centre near Mwanza (Wilson, 1996), and, later, they spread to Kabangaja and Kayenze fishing villages. By 1996, Gibbon (1997b) reports, *vipe* dominated the offshore Daga fishery on Lake Victoria. The *vipe* are strong boats, mostly made from hard and mixed woods. Medard, et al., (2002a:195) observed a high degree of hostility between local residents and migrant *vipe* fishers from Lake Tanganyika, who were regarded as wealthier because of their novel

⁶⁷In these two regions, the ethnic groups resisted and *Ujamaa* villages were not established.

⁶⁸ Of those one was owned by a Luo woman (Olelya).

⁶⁹ *Kipe* – singular, *vipe* plural

technology, while resident fishers were learning how to use *kipe*. *Kipe* users lift webbed nets of 8-10mm mesh size, with an average opening circumference of about 40-50m. They normally use three to six kerosene pressure lamps.

There are currently three main types of Dagua fishing gear which are still in use in Tanzania. These are Dagua seine nets (*'kokolo la dagaa'*), scoop nets (*mgono/kijiko*) and lift nets (*kokolo la kipe*). Table, 5.1 summarises gear trends (number of nets) in the Dagua fishery from 1990 to 2010.

Table 5.1: Trends in Dagua fishing gears, Lake Victoria, Tanzania, 1986-2010

Year	Hurry-up/Dagua seine net (<i>Kokolo la dagaa</i>)	Lift nets (<i>Kokolo la kipe</i>)	Scoop nets (<i>mgono/kijiko</i>)
1986	-	-	1,658
1987	923	-	1,585
1988	-	-	-
1989	1,052	24	1,923
1990	1,140	27	1,408
1991	1,140	27	1,408
1993	1,140	27	1,408
1994	1,140	27	1,408
1995	2,024	315	749
2000	3,273	315	809
2002	4,843	130	812
2004	4,374	307	536
2006	4,843	370	994
2008	5,239	164	1,074
2010	7,834	94	590

Note: Between 1990 and 1994 and 1996-1999 there were many data collection problems on the lake. Therefore, all data needs to be treated with caution.

Source: LVFO/IFMP (2008b, 2010); MLNRT (1986, 1987a); MNRT (1994, 1995); MTNRE (1989, 1990, 1991, 1993); URT-FSNWG (2010)

In the 1990s a number of Dagua fishermen joined the Nile Perch fishery because of (a) the development of new markets and (b) high prices for Nile Perch. Likewise, investment in the Dagua fishery increased (Table 5.1) because demand increased in Tanzania, as well as in eastern, central and southern African countries such as Kenya, Mozambique, Democratic Republic of Congo (DRC), Zambia, Malawi and Sudan (Nanyaro et al., 2004). The re-establishment of the East African Community (EAC, 2008) in 2000⁷⁰ with Common External Tariffs (CET) by early 2005, resulted in subsequent market integration for a number of commodities. The growth of the Dagua fishery is one reason for the rise of intra-regional exports (EAC, 2008; Morrissey and Jones, 2008). Dagua is now the leading fishery on the Kenyan part of the lake, the second most important fishery after Nile Perch in Tanzania and the third most important fishery after Nile Perch and Nile Tilapia in Uganda (LVFO/EAC, 2012). The total catch reached 1,079,372 tonnes in March, 2010 and 911,328 in Sept 2011 (LVFO/EAC, 2010, 2011).

⁷⁰The EAC collapsed in 1977 as a result of disagreements between member countries. At this time, Kenya, Tanzania and Uganda were members. In the reconstituted EAC in 2000, Rwanda and Burundi are members.

5.3 The Dagua commercialization era (1991-2011)

5.3.1 The case of Kome Island and Kirumba fish market

Between 1997/2000 and 2000/2005 a wide diversity of actors and many new entrants joined the Dagua fishery (FGDs, Kome Island: July 2010). This transformation brought significant changes in investments and the organization of the fishing. Big Dagua camps now operate on many islands around the lake, with a high capital intensity (fishing inputs and labour) not unlike the Nile Perch fishery. Table 5.2 provides realistic data on the Dagua camps found in three locations on Kome Island, along with details of capital investments.

Table 5.2: Top 15 commercial Dagua camps at Mchangani, Ito and Ikulu (Kome Island)

Charter names	Boats	Engines	Seine nets	Life jackets	Pressure lamps (est.)	Labourers (est.)
MV Mabutus-sukita	25	25	25	100	150	177
MV Maugo Bwire	20	20	20	80	120	140
MV Majukumu	20	20	20	80	120	140
MV Ikimba-1*	19	19	19	76	114	140
MV S. Wadeya	15	15	15	60	90	115
MV Upendo	14	14	14	56	84	105
MV Cossovo	14	14	14	56	84	105
MV Tenda Haki	9	9	9	36	54	70
MV Jerry Method	8	8	8	32	48	70
MV C. Shoma	8	8	8	32	48	70
MV Maltha	8	8	8	32	48	70
MV Ikimba-2*	8	8	8	32	48	70
MV Willingtone	7	7	7	28	42	70
MV Kamanda	6	6	6	24	36	65
MV Dunia	5	5	5	20	30	60
Total	186	186	186	744	1,117	1,467

Note: MV: Marine Vessel

Source: Field study (2009-2011) * owned by one individual in separate camps.

Most owners use outboard engines and have more than one boat, with a number of *wajeshi*, Dagua processors, five to ten cooks, four to six net repairers, and one or two supervisors. Security guards armed with guns are engaged to protect the fishing fleets and camp equipment. During the study, the highest capital investment in boats and associated gear in a single camp was at MV Mabutus-sukita: 25 boats, each with its own outboard engine. The leading *tajiri*, however, had 27 boats (MV Ikimba) divided between two separate camps. Commercial Dagua seines (*kokolo*) had 9 to 11 net panels, but non-motorized boats had 7-8 panels. Investment in this fishery involves a Dagua fishing boat (a hardwood variant costs about TShs 3,500,000), an outboard engine (a 9.9 or 15 HP outboard engine costs ca. TShs 3,500,000), a *kokolo* (with 9-11 panels costs ca. TShs 1,200,000) and a single pressure lamp and its accessories (ca. TShs 45,000). Commercial Dagua fishing units use six pressure lamps (TShs. 45,000 x 6 = 270,000), which brings an average total investment worth ca. TShs. 8,670,000- (US\$ 5,418.75) for a single fishing unit (excluding operational costs).

Most boats are between 8.4 - 11m long, 1.5 -1.75m wide and carry about 5.5 to 8 tons of fresh Dagaa. Each commercial boat uses about 30-40 litres of fuel daily at a price of TShs. 1,800. (US\$ 1.1) per litre (*Tajiri* interv. no. 60091, 22/2/2011 and field observ.).

A single motorized boat has four *wajeshi* and one or two associated female Dagaa processors awaiting the catch on the mainland to dry them. Competition between individual fishing units and between camps for skilled personnel is intense and *matajiri* strive to get skilled crew or 'fishing stars' by offering incentives (Tshs. 50,000-300,000; US\$ 31.25-187.5) at the beginning or end of the dark phase of the lunar cycle (*'wakati wa kutegeruka'*). With such incentives, each fishing boat is obliged to fish a minimum of 150 and maximum of 200 sacks of Dagaa to be profitable. A single sack is filled with nine plastic buckets (*'madebe'*)⁷¹ of dried Dagaa (ca. 36 kg).⁷² Such incentives bring competition between individual boats, as well as camps.



Photo 5.2: A commercial *Dagaa* seine net (11 panels)

Incentives include bicycles, radios, mobile telephones, mattresses, watches, bundles of iron sheets and door locks. Some *matajiri* provide crates of beer⁷³ to the top three fishing units. These incentives are considered necessary to attract and retain crew. On non-motorized boats (*bugabuga/kusoza*) *matajiri* offer cash incentives and not assets to their crews, but they feel inferior compared to motorized boat owners.

"Wajeshi are just like footballers. We buy them and bribe them continuously and yet they can move on to better offers if they wish to. I need five wajeshi in my boat. You have to search for them, bid for them and then gamble with them throughout the fishing process. For us who own few peddled boats, we are subjected to live in a low profile status and close to our labourers. If we distance ourselves and become strict or harsh they stop fishing or breach the agreement when the dark phase of the lunar cycle is just about to start" (Giza Thomas, pers. comm., 14/11/2009).

It was reported that, on motorized boats, *matajiri* realize profits from 80-90 sacks of Dagaa for chicken feed (*chakula cha kuku*) and/or a minimum of 70-80 sacks of Dagaa for human consumption in a single dark phase of the lunar cycle. On peddled boats

⁷¹Debe is singular and *madebe* is plural.

⁷² Such weight is locally known as *chekencha* (loose filling) and is done at landing sites.

⁷³ One crate was TSh 38,750 (US\$ 25.8).

(*bugabuga*), profit is attained if *wajeshi* catch a minimum of 80-90 sacks for *chakula chakuku* and/or a minimum of 70 sacks for human consumption for a single dark phase of the lunar cycle.

Many *wajeshi* gain entrance to Lake Victoria's fisheries through Dagua fleets, where labour demands are highest,⁷⁴ although the Nile Perch fishery, because of its relatively high value, also attracts many entrants. Labour demands in Dagua have increased along with growing demand and the fishery's commercialization. Many Dagua fishing jobs and businesses (for instance at Kirumba market) are based on friendships, family ties, ethnic ties and origin, and such ties turn out to be helpful in social organisation: they enhance cooperation and lead to social capital and transmission of skills and knowledge found within social networks and family/community institutions. The result has been that Dagua fishing skills and knowledge in Lake Victoria have become concentrated in specific traditional fishing ethnic groups, particularly the Luos, Kerewe, Jitas and the native Haya. In the Dagua fishery, important knowledge is related to judging water up-welling, wind type (hazardous and favourable), wind seasons and direction, depth range, water temperature, social cultural values and the mixing of rain and lake waters and its impact on catches (see Chapter 3), all of which are little needed in the Nile Perch fishery.

Competition in commercial Dagua camps manifests in four major aspects: provision of incentives, division of labour and specialization, control of labour and use of boat charters as identities (logo names) in various camps (Table 5.2). As it is for Nile Perch fishery, the charter signifies the owner's status, as well as economic and social power. Fishing assets also attract more access to financial loans, material resources and good selling prices because of high negotiation power.



Photo 5.3: Rich *Dagua* camp owners at Mchangani – Kome Island

The majority of *matajiri* who owned ten boats and more at Mchangani and Ghana Island had opened sub-camps in different locations, both far and nearby, supervised by different supervisors. Managing a higher number of camp labourers (4-5 crew per boat, and 1-2 Dagua processors and cooks), higher operational costs (e.g. fuel, fishing accessories) and the need for more space to dry Dagua and to build crew's thatched huts (*maduku*, Photo 6.3a and b) for accommodation were major reasons mentioned. It was also learnt that, by doing so, theft and mismanagement of funds and

⁷⁴A single boat employs about four to five crew, with one or two *Dagua* processors.

properties were spread to different supervisors/leadership in the respective sub-camps.

It is becoming difficult to enter the production and trade sector without financiers in this fishery (Chapter 8). Entry into strong networks with small capital investment is obstructed. Contracting and sub-contracting fishing arrangements are also growing, as in Nile Perch fishery. While some big commercial camps contract with and host others within their camps (MV *Ikimba*, MV *Maugo* and MV *Majukumu*) to jointly labour for their supply channels, most *matajiri* finance small camps independently, without hosting them in the same campsite. The high number of labourers, efficiency in cost management and difficulties in securing space for drying and camping were the main reasons mentioned. More details are in Chapter 7.

It was found that, as commercialization and globalization took root in Dagua production, criminality - particularly theft (Photo 3.6) and piracy and socio-cultural breakdown were increasing. Moreover, investment strategies have created great inequalities between owners and camp labourers. *Wajeshi* feel compelled to steal (Textbox 5.1) in such camps because of cruelty, strict control and unfair treatment.

As a matter of evidence, I witnessed the following incident at Mchangani (Kome Island) in connection with crew theft. (See also Chapter 3 Sect. 3.3.1).

Textbox 5.1: Influence, Theft and Corruption in Dagua Fishery

On August 8, 2010, four Dagua *wajeshi* were apprehended and tied up in pairs as they landed at Mchangani under escort of two vigilante groups (*'sungusungu'*). They were alleged to have sold 13 sacks of Dagua at Itabagumba, far from Ikulu twin island. The catch was sold for TShs 236,000 but was worth TShs 715,000. The apprehension was successful after a good Samaritan observed the sale, and called the boat *tajiri* whose phone number was painted on the side of the boat. The catch was stolen from a prominent *tajiri* (MV *Ikimba*). The accused claimed that tough camp bylaws, unfair remuneration systems and brutality were the reasons they had committed the offence. They were subsequently beaten up, before being taken to the police post at Nyakalilo. The owner was a powerful *tajiri* who had connections with various government officials such as the police, law courts, and the local government administration. He was among the richest regional Dagua trader at Kirumba. The person who bought the catch from the alleged *wajeshi* was told [by the *tajiri*] to pay a bribe of five drums of petrol (worth TShs. 1.8 million) if he wanted to avoid prosecution. But he did not have the money. He was therefore accused of arranging for and buying stolen Dagua.

While at the *sungusungu* office, the accused were searched. To everyone's surprise, they had no money. They [the *sungusungu*] claimed to have taken it during the arrest to use for paying for travel costs to the police post and for attending court as witnesses. The court case occurred with unusual promptness and speed (three days). The thieves were each sentenced to two years in jail, while the buyer was sentenced to a year (Field observation, 17 /8/2010 Mchangani).

It was further reported that the EU Nile Perch export ban (1997-2000) resulted in many new entrants into the Dagua fishery (Chapter 2) and the subsequent expansion of Dagua in regional markets. Since then, Dagua production and trade has grown alongside Nile Perch fishery. The study found that of the 100 Nile Perch camp owners interviewed, seven (7 per cent) had also invested in Dagua fishery, a move which seems to have many explanations, including investment

expansion/diversification, availability of markets and familiarity with different fishing arrangements. A local political leader (CCM)⁷⁵ from Lugata (Kome Island) added to this:

“There has been a decline in crop yields in most parts of the country and there are problems in the labour markets. Daga is now a rescue food. It has been serving poor and modest households for years. But things are getting worse. In a few years people may not be able to afford it because it is now a commercial product and many people are involved. Sukumas, Kuryas, Ha and even Chagga have invested in this fishery. Traditionally, Kurya and Sukuma were pastoralists and farmers. The young generation has no alternative jobs. It is only the lake which is their grandparents’ farm” (Adrian Tizeba, 10/6/2011).

The Daga fishery has grown tremendously, with the involvement of many actors, including non-traditional fishing ethnic groups and migrant Ha’s from L. Tanganyika. To date, most Ha and Sukumas are also involved as *wajeshi* and supervisors in the Daga fishery and have spread all over the islands.

5.3.2 Kirumba Daga market: the steering and coordinating node in Daga trade

There has been a radical shift from fishing for local markets to fishing for regional and export markets in the Daga fishery. Most important is the lack of control over fisheries resources by traditional fishers, as well as local traders. Kirumba, which is located along the lakeshore in Mwanza town, is now Tanzania’s international market for dried fish. The market is a major driver in the Daga trade and distribution networks. It was built from 1995-1999, during the former President Benjamin Mkapa’s regime (1995-2005), which advocated privatisation and decentralization policies. Since then, the market for Daga in and outside Tanzania has expanded quickly. The Mwanza City Council receives *ca.* TShs. 46.6 million (US\$ 29,125) in taxes every month from Kirumba Market. Tax and levy collection is contracted out annually to private tax collection agencies (mainly powerful Daga traders and business individuals), whose task it is to gather the taxes, and fees for businesses, truck parking, storage and other functions. The more taxes and levies they collect, the greater the fee (e.g. TShs 46.6 M) that they pay to the City Council. In return, the City Council provides security, power, toilets and showers, water supply, fencing and maintenance of sewer systems. It ensures that all business undertaken in Kirumba is properly registered for tax collection purposes. In the 2009/2010 financial year, the Mwanza City received TShs. 7.6 billion as income from levy and tax collections for all its markets and other businesses, and only TShs 20.7 million were invested in services to the city (City Market master, Mwanza June, 2011).

Kirumba market is a prominent business place and a strong institution, with a chairman, a secretary, a ‘ten cell leader’ and 12 committee members. The ten cell leader hosts all visitors and is the main executor of day-to-day management. The actors involved in the Kirumba Daga market are embedded in wide and diverse networks, which change and develop constantly. The networks are represented in different forms through associations, cooperatives, group organizations, origin, ethnicity, friendship, as well as their relationships with government agencies. These

⁷⁵ During the study he was a member of CCM (Chama Cha Mapinduzi), the ruling party but later he joined the opposition party -Chama Cha Demokrasia na Maendeleo (CHADEMA).

networks allow coordination, manipulation, inclusion, exclusion and communications strategies. The latter increases coordination efficiency and improves network governance.

The most powerful actors in these networks are the regional Commercial Dagua Traders (CDTs) and transporters. CDTs are the main providers of financial loans and pre-payments for Dagua cargo, material equipment, as well as transport arrangements for fishers. Others who are part of these networks are brokers, packers, porters, those who go out to collect the Dagua (*'chinga'*) at various Dagua landing sites, chicken feed ingredients collectors (including *'konokono'* - dried snails and sand⁷⁶) and document handlers. Kirumba is also inhabited by the jobless, pickpockets and women who collect dropped Dagua from where they are dried and sorted, for home use. CDTs have also gained political and social influence to manoeuvre on tax issues, Dagua prices, documentation and black markets for foreign currency.⁷⁷

5.4 Key actors and actions in Dagua fishery

The key actors involved and their relations are described below.

a) **Dagua** camp owners. They are divided in four categories:

(i) Regional commercial Dagua traders (CDTs) and camp owners: These are prominent fishers and CDTs who are in control of production, marketing, storage and sales. They are well connected to regional wholesale buyers and are involved in domestic and cross-border trade, black market currency conversion and the hosting of regional traders (mainly women from DRC) while in Mwanza. Some own Dagua storage facilities and are strongly linked to truck brokers and transporters. They also finance and provide fishing and packing materials to other camp owners, who are obliged to deliver their cargo to them immediately after drying.

(ii) Big commercial Dagua camp owners: These are fishers who own 5 or more motorized boats. They reside in their camps during the dark, half-moon, quarter and three quarter phases of the lunar cycle (fishing season) and travel to Kirumba market for sales arrangements during the full moon (non-fishing season). They normally get loans for financial, material and other inputs, such as fuel, kerosene and food for camp labourers from CDTs. They supply large quantities of Dagua to their financiers and negotiate for better prices. At the beach level, they also give credit to small scale Dagua fishers who are obliged to sell their catch to them at a reduced price.

(iii) Small commercial Dagua camp owners: These are fishers whose cargo passes through various network nodes as a result of their financial vulnerability. While boat ownership mechanisms vary amongst those in this group, they usually own, partially own or have access to three to four motorized Dagua boats. They have irregular credit sources, as well as marketing channels, which may involve big commercial camp owners, Dagua brokers and other landing site buyers, such as regular and irregular wholesale and retail *chingas* and Kirumba cooperative society traders.

⁷⁶ Depending on the market demand, specific rations of *Dagua*, sand and snail, for making chicken feed are made.

⁷⁷ Traders from DRC bring in US\$

(iv) Non-commercial Dagua camp owners: They own one to two peddled boats. Normally they stay at the camps and sometimes they join the crew in fishing. Financially, they rely on their fellow fishers of the same category and small commercial camp owners, loaning each other kerosene and fishing accessories. They normally sell their catch at the beach level to local and domestic buyers (*chingas*), women traders and processors, bicycle traders from hinterland villages, Kirumba cooperative society traders and local household consumers.

b) Dagua brokers: These are traders who act as middlemen for Dagua camp owners and/or traders at Kirumba market. They do so if the latter have little or no capacity to find wholesale buyers. Brokers are involved to promote their cargo and to provide financial and marketing assistance. They get commission. Most Dagua brokers are attracted to this occupation from inferior jobs, such as being packers, truck conductors, cargo fillers and handlers. In some cases, relatives of camp owners take these responsibilities to ensure income and employment opportunities from Dagua fishing and trading remains within the family/clan. This latter arrangement is done to avoid cheating and high commission charges.

c) Truck brokers: These are specialized traders who arrange the transport of cargo from Kirumba to other market areas. They normally started out as truck conductors and cargo fillers and handlers. Most of them are members of cooperatives societies, which allows them to access loan and credits. Some own independent offices, while others use their cooperative office to perform this activity. In order to get empty trucks, they normally link with a number of truck drivers who transport different goods within the country, mainly in Dar Es Salaam, Shinyanga, Arusha, Tabora, Dodoma, Mbeya, Mtwara, Lindi, Morogoro and outside the country in the DRC, Burundi, Zambia (via Tunduma), Malawi and Kenya.

d) Fresh Dagua off-loaders and processors (*waanika dagaa*): These are young girls and middle-aged women, mostly unmarried, widowed or divorced. To get the processing job they have to pay an 'access fee' (see Chapter 7 and Medard, 2012). The women come with plastic basins for off-loading fresh Dagua from the boat and racks on which the Dagua is spread out to dry and then piled in heaps when ready. These women are directly responsible to the *wajeshi*, and in order to retain their jobs, the women typically end up having sexual relations with them, although some prefer to have relationships with *matajiri* because this gives them greater security, given *wajeshi* migration behaviour. Because the *wajeshi* migrate so frequently, they often persuade 'their' women to come with them. Conversely, the *wajeshi* can give up and leave at any moment, and whatever effort the women put into securing the relationships can come rapidly to nought. Women in this job are prone to the risks associated with having multiple partners because they are bound to work in conditions of high risk and uncertainty.

e) Cross-border men and women Dagua traders: At Kirumba international market, there are about 170 male and 60 regular female traders. Of the women who are

involved in these market channels, about 50 are from the DRC, 12 are from Kenya and 8 are Tanzanians. While traders from DRC trade Dagaa and sun-dried and salted Nile Perch (*kayabo*⁷⁸), mainly for human consumption, Kenyan traders are mainly involved in Dagaa for animal feed, while Tanzanians are involved in Dagaa for both human and animal feed. Dagaa for human consumption is a lucrative product in the DRC but it is associated with high risk from on-going civil wars which tend to scare most of the potential competitors from Kenya and Tanzania. The persistence of war in the region has enabled traders around the region to penetrate new markets, such as Darfur in southern Sudan.

f) Female service providers: These are women enrolled by camp owner to run cafes that sell mainly tea, buns (*maandazi*) and flat bread (*chapati*) in the fishing camps. They also sell cigarettes, sweets, soap, skin oil, toothpaste, condoms, matches, handkerchiefs and other goods. These women report directly to the *matajiri*, and in this way, the *matajiri* can ensure that at least some of the wages the *wajeshi* earn stays in the camp. Most of the women are unmarried, divorced or widowed. Tea is much in demand before and after Dagaa landing hours at night. The women sometimes sell tea and other items on credit because the *wajeshi* are often without cash. These dues are then deducted when the *wajeshi* are paid at the end of the dark phase of the lunar cycle. While at Ito and Ikulu twin-Islands women undertook this type of business, at Ntama and Mchangani *wajeshi* provided one or two dishes of fresh Dagaa daily (depending on catch) to one woman, who would then serve tea and snacks throughout the fishing season. In most cases, such women had close contact with at least one *mjeshi* or camp supervisor, through whom they obtained the opportunity.

g) Land owners for camping and drying Dagaa: These are the people or institutions who own the land on which Dagaa camps are constructed, or on which the Dagaa is laid out to dry. The rent was between TShs 30,000- to 50,000 per month. In the forest reserve (Ito and Ikulu Islands and Chikuku) Dagaa and Nile Perch (Chikuku) camp owners paid an annual charge of TShs 100,000- 150,000 to the District forest department.⁷⁹ The latter was done illegally, permitting deforestation, bribery and corruption (Chapter 9).

h) Dagaa bag fillers and menders: These are labourers who fill sacks with dried Dagaa, and mend rips and holes in sacks. Those with muscle power have a great advantage and also operate as porters, loaders and off-loaders of Dagaa cargo.

i) Beggars: These are old men and women, single mothers, children and even single men, who often visit Dagaa camps to beg for fresh or dried Dagaa for food. They wander about the camps during landing hours with a begging bowl, pans or plastics bags.

j) Dagaa cargo transporters and distributors of fishing inputs and other materials: A number of ships and high-powered boats operate between islands and Kirumba fish market. There are those who deal in cargo (including Dagaa) and passengers and

⁷⁸Local name for sun dried and salted Nile Perch in Tanzania.

⁷⁹ Officials had formed their own committee at Mchangani without involving Buhama village leaders at Kome Island to monitor and ensure all *matajiri* in the forest pay the charges. The committee, together with officials, were alleged for their involvement in corruption, falsifying the charges and involving migrants who were crooks in the committee.

others who deal in Dagaa cargo exclusively. Large, steel-hulled ships observed at Mchangani and Ntama were: MV Mugendi, MV Chacha, MV Matara, MV Nyehunge, MV Juliana, MV Veronika and MV Bujili. Other high-powered wooden boats were: MV Ikimba, MV Ngweso, MV Kitu Balaa, MV Penda Haki and many others, who pass among the islands on their way to Kirumba market. All transport-providers journey out with supplies and fishing equipment, and return with tonnes of Dagaa bound for Kirumba Market.

5.5 Growth of regional and export markets for Dagaa

Towards the end of the 1980s, Tanzania experienced a drastic change in the expansion of the regional market for Dagaa in Lake Victoria. Cooperative societies were registered at Kirumba and formalized to undertake Dagaa trade and that of other consumable and non-consumable products. In 1999, with the former President Benjamin Mkapa (1995-2005), the idea of privatisation and decentralization policies spread, together with the ambition to improve the hygienic situation at Kirumba fish market. This objective derived, on the one hand, from external pressure for international hygiene standards and, on the other hand, from the internal aspiration to reduce the high post-harvest losses of Dagaa that arose due to a lack of adequate processing areas and suitable storage facilities. The bad facilities meant that low quality Dagaa was utilized as animal feed. Finally, the international commercialization of Nile Perch created the need for market transformation and adaptations to international fish quality standards. Since then, Kirumba Mwaloni has become a very important site for national, regional and in terms of Nile Perch⁸⁰ international trade. In 2005 Kirumba market was officially opened by the former president (Mkapa) and representatives of the Japanese government. It became the main trading centre for Dagaa and dried and salted Nile Perch (spoiled and illegal size), locally known as *kayabo*.

Nanyaro et al. (2004) confirmed that Dagaa from Kirumba is traded in many countries. Out of total exports, the DRC remains the largest recipient of high quality Dagaa (30%) for human consumption, followed by Rwanda (20%), Burundi (10%), and Zambia (5%). It was further estimated that about 35% of Dagaa catches, for both human consumption and animal feed, remained in Tanzania. In Kenya, an estimated 50-65 per cent of Dagaa landed are used for fishmeal (Abila, 2003; Bokea and Ikiara, 2000). Table 5.3, Appendix 5.1 provides a summary of Kenya animal feed factories who purchase Dagaa from Kirumba.

About 60 per cent of Tanzania's Lake Victoria Dagaa catch from Kirumba international market was destined for animal feed factories in Kenya in the period 2009-2011. The remaining 40 per cent was traded in Tanzania, or exported to Burundi, Rwanda, Uganda (cross border trade), Sudan (via Kenya), Zambia and, in recent years, to Malaysia (via Uganda) (FGDs, Dagaa Traders, Kirumba, 12/2/2011). One trader from Kirumba commented: "If Kenyan factories stop buying our Dagaa, Kirumba will fall to pieces" (Maneno Albert, pers. comm 14/2/2011). Dagaa for animal feed is traded within Tanzania (30%), Rwanda and Burundi (3%), Uganda (3%) and Southern Sudan and Central Africa (via Uganda and Kenya) (2%), while

⁸⁰ Kirumba is a landing site for NP and Tilapia from various islands. It is also a receiving and processing centre for EPFs remains. Salted and sun-dried *kayabo* are processed and traded there.

Dagaa for human consumption is traded to the DRC (50%), followed by Tanzania (30%), Kenya (10%), Rwanda and Burundi (5%) and Zambia, Malawi (via Songea) and Mozambique (via Mtwara) (5%).

Nanyaro et al. (2004) observed high deficiencies of data for Dagaa due to various reasons: lack of human capacity, lack of funds and equipment, irresponsible fisheries staff, underestimation of Dagaa traded within and outside the country (corruption) and ambition of stakeholders to cheat for profit. These deficiencies still apply and contribute to poor export and domestic Dagaa trade data (see Textbox 5.2).

Textbox 5.2: Trade Networks and Illegitimacy in Dagaa business

“There are many illegitimacies in Dagaa business and transportation. A cargo which goes to DR Congo or Burundi will be transported as cargo destined for Tunduma (Mbeya) or Kigoma. Such cargo is provided with a fake transit document. The owners of this cargo are foreigners but they use locals to protect them until they reach their final destination. This involves a number of actors, including individual traders and high ranking officials. Moreover, the amount of cargo for export is completely underestimated. Instead of 20 tonnes, they declare 5 tonnes, and so no taxes are levied on the cargo between here and the border. Many times Dagaa for export is treated as domestic trade so as to evade taxes and to take bribes. Locals are supposed to acquire a trade permit which is supposed to be renewed annually. But the traders identify local destinations close to border crossings – like Kigoma, Mtwara, Kagera, Mara, Mbeya, Songea and Rukwa - while the Dagaa crosses the borders. Officials at the borders don’t want proper documentation and, through their networks, they get money to clear the cargo through the border. Once the cargo is in Kigoma, Tarime, Bukoba and Mtwara, it is off-loaded onto boats, and transported by boat along routes that avoid police and customs check points. Corruption is manifest at the borders because no official document from the original point of departure is required: they use a ‘trade permit’. Customs authorities, the police and fisheries officials are aware of all of this. Unofficial trade routes (*njia za panya* – ‘rat routes’) such as Ngara, Murusanganda, Kabanga, Rusumo (Ngara-Kagera), Kasumulu (Mbeya), Kirongwe (Rorya, Mara), Mutukula, Lukunyu and Kabidi (Kagera) are common smuggling routes. Between 2000 and 2005 we had a serious corruption problem and you could not get any records: all were falsified. A cargo going to Kenya is documented Tarime, the cargo for Mozambique is documented Masasi, the one for Zambia is documented Tunduma and a vehicle loaded with 20 tonnes of cargo is documented as carrying 5 tonnes. Such weaknesses have made Kenyans and the Congolese penetrate directly our landing sites and markets and they are hosted by locals. Our lake has turned into a ‘grandmother’s farm’⁸¹ because people can fish or trade the way they want” (Source: Interview at Kirumba, names withheld, 15/2/2011).

It was also found that there were no Fisheries Department records for Dagaa trade at Kirumba before November 2010 (Table 5.4). The latest figures by Nanyaro et al. (2004) showed that 868 metric tonnes of Dagaa were exported (DRC, Kenya, Rwanda, Burundi and Zambia) in 1998, 738 in 1999, 587 in 2000 and 4007 in 2001. Hofmann (2011) also found that between November 2010 and June 2011 only 3.89 tonnes were exported from Kirumba (Table 5.4). Yet in the records, no distinction was made between Dagaa for human consumption and for animal feed industries, assuming that such distinction can help to show the amount of Dagaa consumed as a national and regional priority for food security.

⁸¹Meaning any grand child can go and get farm produce.

Table 5.4: Official records of Dagua from Kirumba regional market, 1998-2010

Year	1998	1999	2000	2001	2002	2003-9	Nov 2010
Tonnes Domestic	No data	7.38	8.799	20.67	23.3	No data	No data
Tonnes: Export	868	738	587	4001	No data	No data	3.89

Source: Hofmann (2011)

Despite the official deficiencies in data records, Dagua traders and transporters at Kirumba reported that, during the high seasons (Jan, May-October), an average of seven 20-ton lorries, filled with Dagua, left Kirumba to destinations within and outside the country every day; and during low seasons (Feb-April; Nov-Dec), five Dagua filled lorries left the market every day.

Table 5.5: Dagua tonnages transported from Kirumba market in Mwanza

Type of transport	Season	Average no of trucks per day	Capacity in tonnes	Average tonnes transported from Kirumba per day
Normal lorries	High	7	20	140
Normal lorries	Low	5	20	100
Semi-trailer lorries	High	8	30-35	240
Semi-trailer lorries	Low	5	30-35	150

Source: Truck transporters and distributors: Kirumba (2009-2011)

In addition, eight semi-trailers (high season) and five (low season) trucks of 30-35 tons also transported Dagua for domestic consumption and export (Table 5.5). Based on the previous information provided in Table 5.4, it is evident that the mass of Dagua passes through Kirumba and other checkpoints unrecorded (Textbox 5.2).

5.6 Dagua markets and consumption trends in Tanzania

The national trade in Dagua dates back to the 1980s, when the National Milling Cooperation (NMC) (Dar Es Salaam) and the Mwanza Fishing and Processing Companies began processing for poultry farming (FAO, 1981). At the same time, markets for Dagua were growing in Dar Es Salaam, as well as north and south-east of Tanzania (Gibbon, 1997b). Significant export markets in the DRC had opened up, alongside a large 'supporting' market in Tanzania for poultry feed. In 1994, an Italian investor (Poli Amadoli Italia) built a huge Dagua storage facility at Kabangaja landing site (Mwanza) for its animal feed supplies (Medard, 2002a).

Previously, Dagua was considered a poor person's food and as a source of protein for many low and medium income fish consumers (Abila, 2003; Geheb et al., 2008; Medard, 2010b, 2012). The continued use of Dagua for animal feed products has increased prices for Dagua. There is now less fish and more so, less Dagua, for the local people to control at affordable prices. As Medard (2012) observes, poor households and women feel this most acutely since it is the women who are expected to bring food to the table and are held responsible for the upkeep of their families.

Nevertheless, Dagaa remains a staple source of fish for many households in Tanzania and in many parts of Africa.

A 2002 regional nutritional study around Lake Victoria found that Dagaa was consumed by children and adults at both lake and hinterland sites. Overall, the regional survey showed Tanzanians (37.6%) ate more Dagaa compared to Kenyans (17.3%) and Ugandans (5%) (Medard et al., 2002b). Moreover, studies conducted by the IUCN in 250 households in Kenya revealed that 89-95 per cent of rural households consumed Dagaa, of which 79 per cent had difficulty accessing and/or buying Dagaa (Abila and Jansen, 1997; Abila, Yongo et al., 1998). There were more households consuming Dagaa during the dark phase of the moon, when much of it was landed at reduced prices. Studies by LVFO/IFMP (2006) showed that Kenyans (mostly Luos) ate more Dagaa than their regional neighbours, followed by Tanzanians and then Ugandans. The rates of Dagaa consumption in most households around the region cannot be underestimated and attention is needed for this fishery because only Nile Perch rejected by the EPFs is available as an alternative to poor households (Abila and Jansen, 1997; Jansen, 1997; Medard, 2005, 2010b; Medard et al., 2015).

In recent years, Dagaa markets have grown rapidly into national and regional markets in lakeshore districts and fish landing sites (e.g. Nyamikoma, Mganza, Nkome-Mchangani). Substantial amounts of Dagaa are now traded without necessarily passing through Kirumba. Information from Kirumba showed that Dagaa is consumed in all regions in Tanzania and the major domestic destinations (2009-2011) are Dar Es Salaam (38.6%), Morogoro (15.6%), Mbeya (11%), Mtwara and Lindi (7.4%), Dodoma (5.2%), Singida (4.3%), Tabora (4.1%), Songea (4%), Tanga (4%) Iringa and Njombe (2.9%), Rukwa, Mpanda and Sumbawanga (2.8%). Other minor destinations are Arusha and Kilimanjaro.

In 2009, 66% per cent of Dagaa from Kirumba market was destined for Dar es Salaam, Morogoro and Mbeya. In 2010, it was 62 per cent and in 2011, it was 67 per cent, a slight increase given that the amount of Dagaa sent to Morogoro and Mbeya increased compared to 2009 and 2010 (Figure 5.1). It was also reported that high proportions of Dagaa for animal feed were transported to Dar Es Salaam compared to other regions. Dagaa for human consumption was also in high demand. Besides domestic destinations, an unknown amount of Dagaa was traded through the regional borders of Ruvuma (Songea), Mbeya, Rukwa (Sumbawanga and Mpanda), Tabora, Mtwara and Lindi to Zambia, Mozambique, Malawi, Burundi, DRC and Burundi (Textbox 5.2).

The following table provides a summary of total estimated Dagaa traded from 1999-2011 and main domestic destinations (Table 5.6).



Figure 5.1: Map of Tanzania with identified Daga major trade destinations from Kirumba

Many researchers agree that poor Daga processing has caused Daga prices to be relatively low and many people can afford to buy because of different measurements (tins, cups, buckets, small piles, sacks etc.) and divisibility (Abila and Jansen, 1997; Abila, 2003; Lwenya, 2002; Medard, 2002; 2010b; 2012; Medard, et al., 2002c). Lake Victoria’s Daga is still the most affordable and reliable fish source for many households and institutions. The growing demand for Daga has, however, begun to push up the price of Daga, particularly in places where demand for human consumption is highest, such as hinterland areas, prisons, military camps, schools and welfare institutions (Medard, 2012). Between February and April 2011 (rainy season), Daga for human consumption sold for an average of TShs. 2,800. In the same period, Daga for animal feed sold for an average of TShs. 2,100 per kilo in Kariakoo market (Dar Es Salaam) because of its abundance but poor quality (LVFO/EAC, 2011). At Kirumba, market prices of Daga for human consumption increased sharply to an average of TShs. 3,900 a kilo in June (dry season) 2011, putting it out of the reach of most poor consumers. Detailed prices per bag from Kirumba market (Mwanza) are provided in Table 6.8a and Table 6.8b.⁸²

⁸² Exchange rate: 1US\$ =TShs. 1,600.

Table 5.6: Official records of Dagua tonnages from Kirumba to the main domestic destinations, 2009 - 2011

Year	2009		2010		2011	
<i>Region</i>	<i>Metric tonnes</i>	<i>Per cent of total</i>	<i>Metric tonnes</i>	<i>Per cent of total</i>	<i>Metric tonnes</i>	<i>Per cent of total</i>
Dar es Salaam	17,090	40.8	15,735	37.6	15,124	37.5
Morogoro	6,183	14.8	5,868	14.0	7,220	17.9
Mbeya	4,171	9.9	4,522	10.8	4,950	12.2
Mtwara & Lindi	2,046	4.9	4,014	9.5	3,205	7.9
Dodoma	1,964	4.6	2,513	6.0	2,025	5.0
Singida	2,129	5.0	1,719	4.1	1,532	3.8
Tabora	2,185	5.2	1,393	3.3	1,587	3.9
Ruvuma	1,895	4.5	1,048	2.5	1,664	4.1
Tanga	1,887	4.5	1,615	3.8	1,462	3.6
Iringa	1,282	3.0	1,566	3.7	778	1.9
Rukwa	1,032	2.5	1,839	4.3	698	1.7
Total	41,864	100	41,832	100	40,245	100

Source: Mwanza City fisheries office, Kirumba (2009-2011)

The 'high season' for trading Dagua is from May - October (dry season) and low seasons occur during the rainy seasons from January-April and November-December (Mikidadi, Dagua trader, pers. Comm., 10/4/2011). 'High season' prices are based on quality when individual Dagua are large, the by-catch is low, and the Dagua have been dried on sand and not muddy soil. During this time, good prices and profit are gained because a high proportion of Dagua are sold for human consumption and, at the same time, less is available for the animal feed industry, which makes traders enjoy high prices for both categories (human and animal feed). During the rains, it is harder to dry Dagua than during the dry season: the ground on which it is dried is muddy, wet and black, and the proportion of by-catch, mainly *Haplochromis*, tends to be higher. During this time the proportion of Dagua for human consumption is relatively low compared to animal feed and its price becomes relatively higher (Table 5.7a). During the rainy seasons Dagua for animal feed is at a peak ('high season'), subject to quality, and the price of it becomes relatively stable.

Table 5.7a: Overview of bags of Dagua and price list traded for human consumption and animal feed in 2010 at Kirumba

Months	Year 2010			Year 2010		
	Human Consumption			Animal Feed		
	Bags (<i>Gunia</i>)	Kgs/bag	TShs/bag	Bags (<i>Gunia</i>)	Kgs/bag	TShs/bag
January	75,400	45	130,000	97,500	55	72,000
February	72,300	46	120,000	99,000	57	65,000
March	69,300	45	135,000	100,000	55	67,000
April	72,500	45	120,000	106,000	54	63,500
May	70,300	47	86,000	102,000	56	76,200
June	82,600	45	80,000	92,500	55	64,500
July	90,300	46	85,000	69,000	56	75,500
August	92,600	45	80,000	62,000	55	83,500
September	100,000	48	78,000	600,000	58	73,500
October	100,100	45	78,000	61,000	56	72,500
November	100,500	45	95,000	78,000	55	70,000
December	100,500	47	98,000	85,000	57	68,000
Total bags	1,025,950			1,011,500		

Source: Field study: (2009-2011)

Animal feed processing companies in Tanzania and around the region are competing to secure sufficient supplies against traders who supply the human consumption markets. However, the growing demand for animal feed companies in the region contributes to high Dagua prices, which is fuelled during dry seasons when the animal feed industry competes with the human consumption sector. This has resulted in more entrants and actors who have joined in the production, marketing as well as distribution sectors. A list of Dagua major animal feed companies in Tanzania is provided below in Table 5.7b, Appendix 5.1.

Table 5.7b: Overview of bags of Dagua and price list traded for human consumption and animal feed in 2011 at Kirumba

Months	Year2011			Year2011		
	Human Consumption			Animal Feed		
	Bags (<i>gunia</i>)	KGs/bag	TShs/bag	Bags (<i>gunia</i>)	KGs/bag	TShs/bag
January	78,200	45	130,000	98,000	55	70,000
February	76,100	45	110,000	100,000	57	68,000
March	68,500	45	130,000	110,000	55	69,000
April	72,000	46	120,000	100,500	54	65,000
May	73,000	47	85,000	90,000	56	70,000
June	85,000	45	80,000	97,000	55	65,000
July	89,500	45	85,000	95,000	56	75,000
August	91,600	46	80,000	75,000	55	80,000
September	191,000	48	78,000	70,000	58	78,000
October	100,000	46	86,000	72,000	56	75,000
November	99,000	45	90,000	76,000	55	70,000
December	90,000	47	95,000	78,000	57	68,000
Total bags	1,023,900			1,061,500		

Source: Field study: (2009-2011)

5.6 The supply channels

- (i) The Dagaa supply chain is characterized by complex networks that operate at three main levels: (i) production and localized Dagaa trading within lake zone markets and other parts (Map 5.1) in Tanzania. (ii) Cross-border trade between Tanzania and African countries (regional markets) and (iii) newly developed markets in Southern Sudan and Central Africa. Dagaa is destined for the markets and takes the following paths:
- (ii) Via wholesale traders at Kirumba, who operate as purchasing and selling agents to domestic and foreign large-scale markets. Others link with Dagaa brokers who are stationed at Kirumba. The majority of the wholesale traders own camps to ensure they get enough fish supplies. I call them 'Regional Commercial Dagaa Traders' (CDTs).
- (iii) Via Dagaa brokers and regional Dagaa traders (e.g. men and women from DRC and Kenya). Traders from DRC and Kenya do not own camps but have strong connections to the beaches (through local Dagaa traders and collectors) acquired as a result of financing roles.
- (iv) Via small-scale retail traders who are connected to non-commercial Dagaa camps and women Dagaa processors. This category involves a number of mobile, permanent and seasonal traders in domestic markets. They also sell to end users.

This means access to the lake's resources is restricted. CDTs, Dagaa brokers and other commercial traders finance camp establishments with motorized boats and, at the same time, control Dagaa production and its distribution in wider social networks such that the trade sector has shaped Dagaa fishing organization as well as trade.

Moreover, prices are not only determined by the quality of Dagaa, but also the source of finance and the networks in which the trade takes place. Paradoxically, the commercial developments exclude the poor fishing communities, leading to pockets of extreme poverty that coexist with wealthier fishers and traders. The poor get involved in high risk jobs while labouring in fishing camps, as well as markets.

5.7 Summary of the chapter

Dagaa fishery has become part of the commercial fisheries in Tanzania and it has followed the Nile Perch strategic production processes, as well as trade. There is less Dagaa for the local people to control at affordable prices. A capitalist mode of production and trade is in control and power has shifted from many points of coordination and decision making into a few hands, those who control the means of production, markets and social systems (e.g. networks). The marketing of Dagaa to the local, regional and continental markets redefines the fishing landscape through the emergence of new sets of social relations and practices, both in fishing and trading. Commercial Dagaa traders invest directly in fishing. They offer credit support -financial and material - (Chapter 7), pre-fix selling prices and arrange for

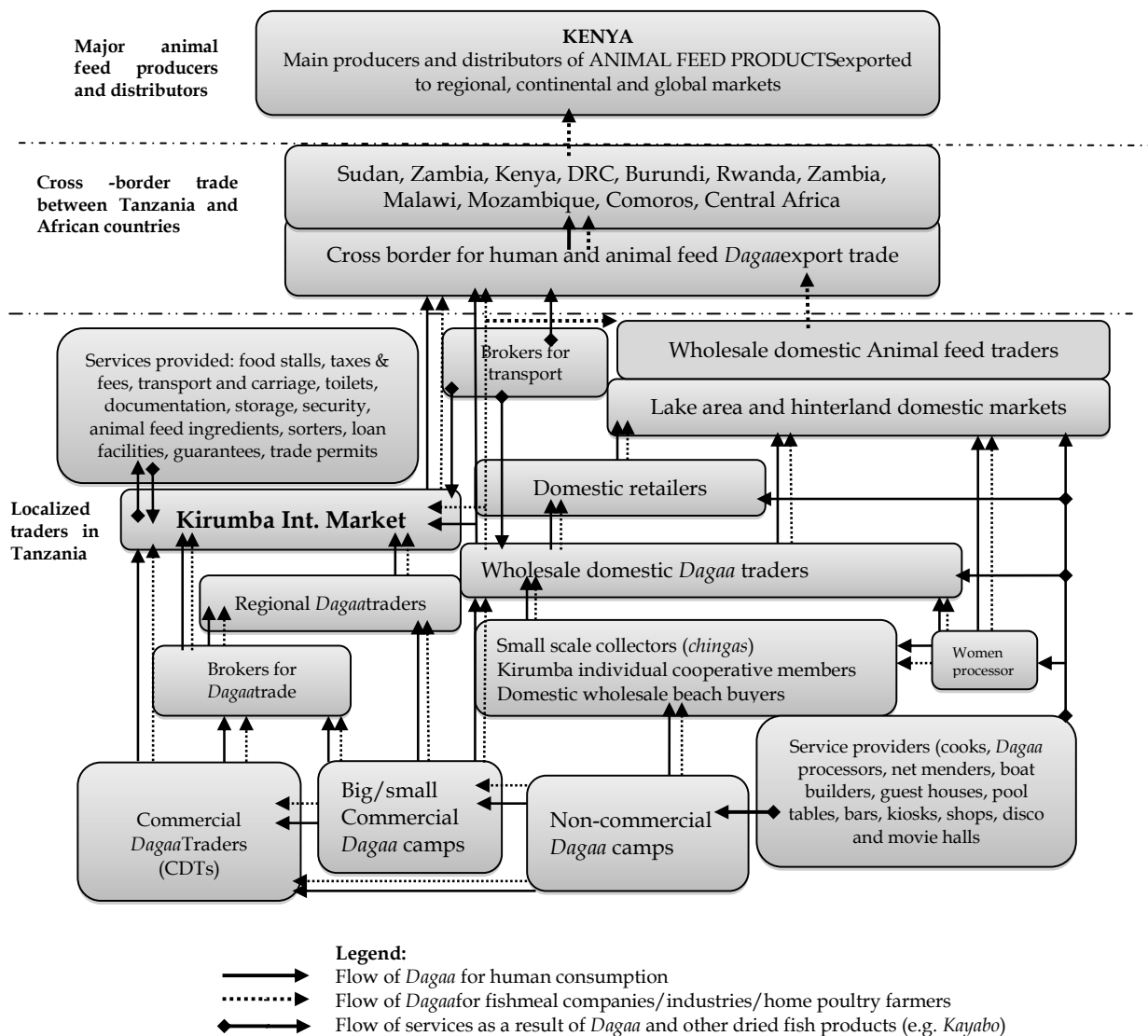


Figure 5.2: Dagaa supply channels in Tanzania Figure 0.2

Source: Field study (2009-2011)

transportation of *Dagaa* from the production to centralized markets (e.g. Kirumba). The dependency relationship is in all streams of production and marketing relations. Nile Perch and *Dagaa* are, thus, not simply co-existing social fishing systems but are in the marketing systems. It is becoming difficult to enter the production and trade sector without financiers and entry in strong networks with huge capital investment is difficult. This has made small scale boat owners (*matajiri*) work through channels that go largely unseen, though they play a great role in production, employment, income and food security in rural areas. The markets are the major drivers of change, as they do so through '*Dagaa* supply tying loans' which automatically results to '*labour* tying loans' and the essence of '*entrepreneurial camp organizations*' with labour contracts, division of labour and strict control. With such restrictive production and distribution networks, the local fishing communities' choices are

limited and, therefore, the need to maintain supplies of Daga through good management of the stock and improved processing and marketing systems is acute.

"Trustworthiness and fishing skills are the priorities in today's fishing: without them, it is hard to get a job" (Vedasto Lwandiko, interv. no. 40035, Kome Island, 16/8/2010)

6.1. Introduction

This chapter analyses labour relations in the Nile Perch and Dagaa fisheries by unpacking the strategies employed by *matajiri* when they negotiate contracts and wages with labourers as boat crew members (*wajeshi*), cooks (*wapishi*), Dagaa processors (*waanika* Dagaa) and packers, to name a few. In this chapter I will focus on boat crews and Dagaa processors to show the practical realities of how labour is organized and controlled in Tanzania's Lake Victoria. The main argument this chapter develops is that with the commoditization of the Nile Perch and Dagaa fisheries the nature of labour relations, as well as the instruments of labour (e.g. fishing gear, motorised boats), in the Lake's fisheries sector has changed dramatically. The chapter looks at the fishing camps found on the shores of Lake Victoria, both mainland and island locations.



Photo 6.1: Crew arriving at Bwiro Island for job enrolment

Human labour being one of the main inputs in the fishing industry, a detailed analysis of emerging labour relations in the fishing camps provides insight into the complexities of and processes involved in labour enrolment and recruitment, the role and use of camp bylaws to regulate, discipline and sanction labour, remuneration and share systems and the emerging division of labour and time management in increasingly complex fishing networks. Of these, labourers –*wajeshi*– the actual producers of fish resources– constitute the largest number of camp labourers (Table 6.3). Their actions affect fishing operations and the income of camp owners, as well as their own. Despite the fact that they are a majority, *wajeshi* have poor negotiation skills and a lack of solidarity to fight for their rights. They are exposed to a variety of risks, such as health risks due to water-borne diseases, Sexually Transmitted Diseases (STDs), alcohol and drug abuse and mismanagement of cash. While the fishing industry creates opportunities, income and jobs, it does not necessarily mean a healthy net improvement for all those that are involved. Labour discrimination,

exclusion, deprivation of liberties, exposure to multiple sexual partners, brutality and exploitation through externalization of costs, inflated deductions and compulsory delivery of 'services' are common. The reality is that labourers' livelihoods in the Lake's fishing industry are insecure and they are exposed to increasing risks and uncertainties.

In this study, a sub-sample of *wajeshi* was considered from each fishing camp and the main guiding questions were:

- (i) *How are labour relations organised and controlled in Lake Victoria fishing communities? And, how can we explain these processes?*
- (ii) *How are these labour relations (recruitment, labour management and discipline,⁸³ termination and exit), related to social networks and markets in a globalized Lake Victoria fishery? How do they provide an opportunity to understand the interaction of the social networks and markets?*

6.2 The crews' profiles, social networks and commoditized labour markets

A total of 154 *wajeshi* were interviewed. Of those, 46% worked in camps on Kome Island, 33% were from Magu and Ilemela (mainland) and 21% were from Ukerewe (Island). All of them were male and 105 worked in the Nile Perch fishery, 47 in the Daga and two in Tilapia fishing. About 22% had no or an incomplete primary education, 74% had completed their primary education and 4% had completed secondary education. Most of them were married (52%), some were single (33%), some co-habited (12%) and a few (3%) were separated or divorced. About 63% worked only as crew, 30% were both crew and engine operators and 7% combined fishing and gear mounting activities.

The age profile of the sample showed that the largest proportion (73%) of youthful 15-24 and 25-34 year olds were in the Nile Perch fishery, probably because fewer skills were required and it was not as tough as Daga fishery. Conversely, the largest proportion of Daga fishers (43%) were 35-44 years old and above, probably because of the requirement of greater skill and longer experience (Table 6 .1).

⁸³ Time management, bylaws, and division of labour

Table 6.1: Crew labourers' age categories in Lake Victoria, Tanzania

Age	Nile Perch	Dagaa	Tilapia	Total
15-24	22 (73.3%)	8 (26.7%)	0	30 (100%)
25-34	59 (73.7%)	21(26.3%)	0	80 (100%)
35-44	19 (54.2%)	15 (42.8%)	1 (2.8%)	35 (100%)
45+	5 (55.5%)	3 (33.3%)	1 (11.1%)	9 (100%)
Total	105	47	2	154 (100%)

Source: Field study (2009-2011)

Most crew had fished for fewer than six years (Table 6.2), and their first involvement in fishing was in someone else's boat (75%), who was not known to them before, followed by friends and neighbours (14%) and, a few, mentioned relatives (6%).

Table 6.2: Years fished by crew

Years	Nile Perch	Dagaa	Tilapia	Total
1-5	54 (74%)	19 (26%)	0	73 (100%)
6-10	24 (71%)	10 (29%)	0	34 (100%)
11-15	13 (59%)	9 (40%)	0	22 (100%)
16+	14 (56%)	9 (36%)	2(8%)	25 (100%)
Total	105 (68%)	47 (31%)	2(1.0%)	154 (100%)

Source: Field study (2009-2011).

The fact that the majority of crew started to work with unknown *tajiri* has many explanations. One is the decreasing importance of kinship relations, which used to be the main traditional recruitment criterion (Lugata FGDs, 17/11/2009). Others are the growth of commercialization in fishing, whereby labour is now commoditized and remunerated in cash and not necessarily dependent on kinsmen (Chapter 3) and, in recent years, the possibility of having many entrants from non-traditional fishing ethnic groups in the labouring class.⁸⁴ Additionally, the majority of *wajeshi* constructed multiple livelihoods and combined activities in straddling sectors such as farming (70%), cattle keeping (8%), petty trading (4%) and they only invested the rest into the fishery (18%), buying a few nets and hooks, which they claimed yielded at least a little cash every day, unlike farming. As stated earlier (Chapter 3), the majority of *wajeshi* were Sukuma (59%) who were traditionally farmers and pastoralists which, therefore, explains the above trend. Ikiara and Odink (2000: 203) also noted that people favoured fishing because they earned money and that the agricultural sector is risky because of erratic rainfall and poor soil. 87% of Dagaa crew (N=47) were employed on a boat comprised of four crew members in one boat, whereas 74% of Nile Perch crew (N=105) worked on a boat with three members. 16% of Nile Perch crew (N=17) worked on a boat using long-lines with an average of four crewmembers (Table 6.3).

⁸⁴ Assuming that if they belong to a traditional fishing group the likelihood of interacting with or knowing *tajiri* is high.

Table 6.3: Average number of crew in Nile Perch and Dagua fishing units

Number of crew per boat	Nile Perch	Dagua	Tilapia	Total
2	8 (8%) gill net*	0(0%)	1(50%)	9 (6%)
3	80 (76%) gill net ⁸⁵	6 (13%)	1(50%)	87(56%)
4	17 (16%) long line	41(87%)	0 (0%)	58(38%)
Total	105	47	2	154

Source: Field study (2009-2011). * Few crew because one was sick

Crew tend to work in shifts in Nile Perch fishery, with longer fishing days on the islands than on the mainland. So, Nile Perch crew work a maximum 60-day or 35-37 day stretch (Nile Perch camps on islands), before being rotated, and replaced by a new crew. On the mainland, one out of a four-member crew rests, while his three crew mates fish, before alternating after a week. In the Dagua fishery, crew work for 21 days or slightly more. The incoming crew may well be unknown to the *tajiri*, and there is no contract stipulating that an existing crew will resume work with the same *tajiri* once the rotation has been completed. Once a shift is completed, crew will rest up, and move on to another *tajiri*, or seek work again with the same *tajiri*, but with no guarantee that they will be rehired. This all speaks of the degree of labour commoditisation within the fishery. Another reason for differences in allocating crew in a boat and in fishing days is the labour market. Mainland locations seem to have an excess of available labour, as a result of the high influx of school-leavers who have no fare to travel to the islands.

Commercialization and commoditization have also influenced share systems in fishing. No crew members had a share in a boat (100%) and most did not own fishing gear (88%). The *tajiri* would not allow the few who did⁸⁶ to use their nets while labouring. Instead, these crew had to keep their gear at home or with friends near the camps for future investment in fishing. In surveys carried out between 1992-1993, Wilson et al.(1999) found that 14% (N=241) of the crew held some share⁸⁷ in the gear that they operated in a given boat, while 6% held a share in the boat. In this case, remuneration was attached to either the crew member's labour or his equipment (e.g. paid catch from his nets).The reluctance of *tajiri* to allow *wajeshi* gear or boat share in their fishing boats suggests that labour and equipment have also become commoditised and, with commercialization, they have become more of a commercial investment input and less of a way to employ a family. The other reason for *matajiri* not allowing crew to have a share of the net or boat while labouring is due to the proliferation of theft of fish (Textbox 6.2), equipment and materials (e.g. fuel, nets), which has triggered mistrust in fishing.

When asked about kinsmen relationships between crewmembers and their *tajiri*, most crewmembers pointed out that they had no prior engagement/working relationships, beyond sharing ethnicity and origin. Kin relationships between *matajiri* and *wajeshi* have become less and less important for hiring crew members. This trend

⁸⁵ Five crew were added due to owners interference in selecting crew of their own interest

⁸⁶ Of those who accumulated nets, 9% worked in NP, 15% in *Dagua* and 2% in *Dagua* & Tilapia.

⁸⁷ Owner had his own nets. Crew were allowed to have their own nets in a given boat and the catch was also separated, based on their gear. This was also part of their share/remuneration.

is part of the gradual process of commoditization in the fishing sector and the particular nature of entrepreneurship that has emerged in and around L. Victoria. *Matajiri* indicated that when selecting their *wajeshi* they largely consider trustworthiness, experience, and a reputation of being hardworking (Table 6.4). Camp supervisors play a key role in assessing the quality of the crew.

Table 6.4: Factors considered when hiring crew in the Nile Perch and Dagua fisheries

What factors do you consider when hiring a crewman?	Nile Perch		Dagua	
	Yes (%)	No (%)	Yes (%)	No (%)
1. Trustworthiness	99	1	93	7
2. Hard working	68	32	57	43
3. Experience	75	25	60	40
4. Original home (ethnicity, neighbours)	43	57	50	50
5. Health and muscular power	56	44	60	40
6. Education	12	88	15	85
7. Family relationships (kinsfolk)	22	78	38	62

Source: Field study (2009-2011)

Through qualitative interviews, a number of reasons were given by *matajiri* (N=154) for hiring crew who were not relatives (Table 6.5). The main reasons were to increase efficiency and effectiveness in their undertakings.

Table 6.5: Reasons given by matajiri for hiring non-relatives (N= 154)

Why would you hire a crew member who is not related to you?	Frequency	Percent
1.0 Hard working	56	44
1.1 They do not misuse resources (equipment and materials)	2	
1.2 Business lasts because fishing is separated from relations	9	
1.3 They do not feel mistreated if paid their dues	5	
1.4 Job continuity is due to performance and not relationship	14	
1.5 Roles are delegated and assumed with care and respect	19	
1.6 Fishing is contracted and formalized	7	
2.0 Trustworthiness and respect	42	33
2.1 Real trustworthiness because relatives can pretend	12	
2.2 They are cheerful regardless of owner's grumpiness	5	
2.3 Abide with bylaws and camp procedures	10	
2.4 Good informers/spies when given incentives	7	
2.5 Respectful	8	
3.0 Control, costs and risk reduction	30	23
3.1 Easy to take them to task when they commit offences	5	
3.2 Cost-effective: costs are quantified and risks are avoided	10	
3.3 No blame by relatives when punishing unknown crew	5	
3.4 Avoid family conflict and misunderstanding	4	
3.5 Avoid family/ clan disaster in case of water accidents	6	

Note: Responses were not mutually exclusive

Source: Field study (2009-2011).

When it was inquired if crew's families and/or relatives had been involved in fishing in the past, about 40% (Nile Perch) and 53% (Dagua) said yes, while 60% (Nile Perch) and 47% (Dagua) said no. Those who said yes, mentioned their fathers (30%), brothers (19%), grandfathers (12%) and uncles (6%) as having been involved in

fishing. About 71% of the crew did not stay with their families while fishing, especially those working on the islands, while the remainder claimed to be staying with their families/relatives. Of those who did, 26% worked in Dagua and 3% worked in Nile Perch fishery. In-depth field studies found that due to isolation from their families, most crew members had multiple sexual partners. About 77% had visited their home village at least once in the previous six months to one year, and between 2-4% had visited their homes at least once in the past one to three years.

Crewmembers were asked what factors they considered when deciding to work in a certain fishing camp. They said that having a friend at a given fishing camp, for both Nile Perch (57%) and Dagua (45%), was important because crew could easily help each other. Other factors were good nets and a sufficient quantity of nets (Nile Perch: 51% and Dagua: 47%), fair remuneration 58% (Nile Perch) and 64% (Dagua) and polite *tajiri* with a sense of humour. Less of a fishing workload was also mentioned by a few crew, mostly Nile Perch, while Dagua crew said their job was technically known to be tough (Table 6.6).

Table 6.6: Factors considered when crew decide to work in a given fishing camp

Options	Nile Perch (N=105)	Dagua (N=47)	Tilapia (N=2)	Total (N=154)
1. Having a friend at the camp	60 (57%)	21 (45%)	2 (100%)	83 (54%)
2. Sufficient nets in a given boat	54 (51%)	22 (47%)	1 (50%)	77 (50%)
3. Lower workload	9 (9%)	2 (4%)	0 (0%)	11 (7%)
4. Quality fishing equipment	42 (40%)	23 (49%)	0	65 (42%)
5. <i>Tajiri</i> mobile fishing style	11 (10%)	7 (15%)	0	18 (12%)
6. Likelihood of good catches	56 (53%)	27 (57%)	1 (50%)	84 (55%)
7. Fair remuneration	61 (58%)	30 (64%)	1 (50%)	92 (60%)
8. Polite and reputable <i>tajiri</i>	50 (48%)	23 (49%)	2 (100%)	75 (49%)
9. <i>Tajiri</i> with a sense of humour	54 (51%)	27 (57%)	2 (100%)	83 (54%)

Source: Field study (2009- 2011).

When asked what a new and inexperienced crewman would have to do to get work if he came to the landing site, 61% of Nile Perch and 45% of Dagua said that it depended on friends, ethnic members and kinsfolk and that they would have to demonstrate that they knew how to fish. It was also confirmed that getting a job in the fishery was becoming more difficult, particularly for new entrants (Table 6.7).

Table 6.7: Prospects for new entrants to get a crewman's fishing job

Options	Nile Perch (N=105)	Dagaa (N=47)	Tilapia (N=2)	Total (N=154)
1. Have a friend, kinsman or ethnic member	64 (61%)	21 (45%)	0	85 (55%)
2. Have fishing skill	74 (70%)	34 (72%)	1 (50%)	109 (71%)
3. Have good behaviour	29 (28%)	16 (34%)	1 (50%)	46 (30%)
4. Show a letter of introduction from the BMU at a previous site	31 (30%)	13 (28%)	2 (100%)	46 (30%)
5. Be willing to do other jobs	20 (19%)	13 (72%)	1 (50%)	34 (22%)
6. Be a BMU member	1 (1%)	2 (4%)	0	2 (2%)
7. Hold a fishing license	1 (1%)	2 (4%)	1 (50%)	4 (3%)
8. Know owners & supervisors	28 (27%)	19 (40%)	2 (100%)	49 (31%)

Source: Field study (2009-2011).

It is worth noting that most respondents thought that neither a letter of introduction from the crewmember's previous BMU nor a fishing license were necessary for a crewmember. It was also confirmed that there was no need for crew to declare themselves a member of a BMU. Unexpectedly, most crew did not know what BMUs were or what their role was, especially in the islands. Although national and regional BMU guidelines advocate crew involvement in the management of resources and demand that crew and women should constitute 30% of the BMU committee (LVFO/IFMP, 2008:15; Ogwang et al., 2004; URT/LVEMP/WWF, 2005), the data presented here refutes the idea that crew are active and equal partners in Lake Victoria, Tanzania. This has serious implications for the future management of Tanzania's fisheries. Crew mobility, intensive work while in camps, informal enrolment styles, government negligence and managerial passivity, the deprivation of crews' rights and freedoms by the system of *matajiri* control and government authority were some of the reasons mentioned.

6.3 Situational analysis of crew's life in and around the camps

Against the backdrop of labour control and disciplining, *wajeshi* still have a difficult life in most camps. Such difficulties emerge because an important factor in being a successful camp owner is the ability to pass strategic risks and costs on to the crew. Fishing is a risky activity and catch and price variability are major risks for *matajiri*, crew and camp labourers. *Matajiri* try to pass the risks of uncertain catches, uncertain weights and measures and declining fish prices onto the crew by all kind of bylaws that impose control over labour in the production processes. These strategies are more successful through contractual ties with 'anonymous labourers' than with kinsmen, and are designed to ensure that the power to implement highly exploitative working conditions is maintained. Crew have to fish in specified places,⁸⁸ land their catch at specified places and sleep within the camps. A variety of 'stage managing' and labour tying limited incentives are set. Below is a narrative summary from Matala Marwa, delivered on 25/8/2010 at Mchangani, on Kome Island.

⁸⁸These are usually areas which the camp patrol boats can access.

Textbox: 6.1 Experience of brutality and controlled crew career path in Lake Victoria

“I started fishing in 1999 and fished for ‘MK Fishing Camp’ (MKFC) at Chembaya Island in Sengerema District. The owner was a Kurya from Mara region. MKFC had 202 fishing boats, of which 152 were motorized and the remainder were peddled boats, which were pulled out onto the lake by motorboats to various fishing grounds. The camp had more than 700 labourers, including crew, cooks, net menders, mechanics and supervisors. I knew about MKFC because they came to our village to recruit crew. At first, I fished for three months, went home for two months and returned to the same camp for another four months. During that time, the owner was the only person who was a rich man in this lake area. My last fishing trip was in September 2000, when I worked for 9 months. At that time many camps had started to grow and a number of crew had joined new camps. But it was hard to quit fishing for MKCF because crew were not paid if they did not have their supervisor’s and the owner’s consent. We were compelled to work. A bell was used to alert camp dwellers to various things: the time for going out fishing, meals, death or some disaster, or other camp responsibilities, such as cargo loading and off-loading. When the bell was rung, all labourers were supposed to stand still while listening to announcements. It was a serious offence if one was found walking. At one time I was given 30 strokes with a cane, and fined TShs 5,000 for this offence.

MKFC had more than 300 camp bylaws and violation of any one of them may be punished by 10 to 50 cane strokes, depending on the seriousness of the offence. Examples of a few bylaws were:

1. 10 strokes were administered to a crewmember if found eating food which was not intended for him.
2. If a net was lost, each crewmember received 50 strokes and was dismissed without payment.
3. 50 strokes were administered to a crew member found with a stolen fish or swim bladder. In addition, he was taken to a court of law and jailed.
4. 25 strokes and a fine of TShs 3,000 were administered for not untying nets.
5. Cooks were not allowed to sleep outside the camp, on penalty of 30 strokes.
6. Abusive language at the camp could be penalized by 40 strokes and a fine of TShs 5,000.
7. 40 strokes and a fine of TShs 3,000 were administered for not going fishing.

In April 2001 we had a crew strike because of prolonged fishing days which ranged from three months to a year without payment and other stringent working conditions. About 40 people declined to work and their leaders were locked in the office, severely beaten and sent back to Mwanza without pay. While in Mwanza they decided to go to the owner for payment, but the owner claimed not to know them. They took the matter to the Mwanza Regional Commissioner and they were paid a quarter of their total wages. They ended up being so weak due to hunger, injuries and swollen bodies because of beatings.

In May 2001, there was another strike that involved 35 crew, of which I was a part. The work had become much tougher and crew were treated like slaves, with filthy lousy hair. We decided to stop fishing and travelled to Mwanza to see officials but the plan failed. Instead, we saw a Ward Executive Officer (WEO). When the owner was interrogated, he claimed we had lost his equipment’s worth TShs. 40 million. We kept on reporting to the WEO for one week but the problem was unsolved. In the end, 29 crew decided to go back to their homes after being helped by good Samaritans in Mwanza. Six remained behind and I was one of

them. The owner instructed us to go back to the island. Three of us did not agree while three agreed, of which I was one.

We were transported back to Chembaya Island and later moved to Senga fishing camp, in Geita District. In early June 2001, the owner came and called for a reconciliation. He paid each of us TShs 5,000 to cater for our immediate expenditures and in no time the bell rang and we left to fish. When we came back the next morning, he had already left. 38 crew decided to stop fishing and travelled overnight to Geita town. On the way, we found ourselves at the Ashanti Gold Mine and we were immediately seized by armed police officers and taken to Geita police station. We were beaten and asked how we got into the mining area without permission. After two days, the owner came and we were given a chance to re-negotiate but he was too stubborn. He told police officers what they heard was just a small part of what was happening in and around the camps. He finally offered each of us between TShs. 70,000 and TShs 200,000. We were so disappointed. This was well below what we were owed. I got TShs. 170,000 for a total period of nine month's work, while my dues were TShs. 230,000.

With isolation in the camps, prolonged fishing periods and lack of cash, we could only get the things we needed from the owner's shop at the camp, at prices he set. Labourers' expenses and fines from various offences were centralized and deducted when they were paid. If a shirt was valued at TShs. 4,000, it was sold for TShs. 8,000 at the shop; if a fine was TShs 10,000 it was inflated and recorded as TShs. 15,000.

Due to persistent strikes in MKFC, the owner decided to shift his Senga camp to Maisome Island, a very isolated place at that time. Nevertheless, strikes continued. In 2002, a group of influential people emerged and claimed to have lost their sons while they were fishing for the MKFC owner. The owner suspected the case was going to be tough and decided to pay secretly each person who claimed to have lost his son. In this incident, he spent millions. These 'influentials' were his fellow *tajiris* who got tired of him and arranged the accusation with his own crews. This incidence made him change some of his bylaws and punishments. He eventually decided to quit fishing and invested in lake transportation. He now owns about three passenger and cargo ships, which traverse the island and mainland fishing camps. A number of *tajiris* have followed his steps by having tough bylaws, owning the kiosks at their camps, setting different fish prices for crew and owner and controlling their fishing grounds intensively such that a poor fisher cannot trespass on to it.

Some of what was reported by Marwa was confirmed by other respondents. An interview with a Village Executive Officer (VEO) at Lugata in Kome Island revealed more:

"Fishing is now undertaken by powerful people such that the majority of our local fishers are excluded and are becoming extremely poor. Matajiri hire experienced crew and camp supervisors and fishing is conducted every day under tight security. Labourers are fully controlled and deprived of freedom. It scares us in all villages. Wajeshi end up moving to different islands in search of a fortune, leaving nothing behind for their families. My village executive committee has received several complaints from crews' wives because their men disappear for a long time. It is a tough life for most families and we have no means of solving what is happening because the fishing arrangement is complex and we have no power to interfere" (Fikiri Mazige, 17/11/2009).

During the study, crew were asked how likely they thought it was that their occupations would change in the future. 80% did not think their status or occupation would change and had no future expectations. They claimed to face severe poverty in their families. 13% anticipated becoming camp supervisors, 8% to rent a canoe

with fellow crew for joining bait or long-line fishery. Generally, the crew felt that fisheries commoditization had had a profound effect on their career, such that they were no longer protected by social norms. Their career paths face many obstacles. These include mental and physical control, isolation, a poor saving culture, waste of income on alcohol and women, poor and exploitative remuneration systems and buying things from the owner's businesses at inflated prices. Others were the availability of cheap labour with poor negotiation power, lack of freedom, price discrimination, cheating through weights and measures, poverty, a high number of dependants and income drawbacks as a result of stringent camp bylaws.

To other crew, living in camps far from their homes was an adventure, with the freedom to explore different life styles compared to their own village life. The mushrooming of business stalls around the fishing communities, with the influx of many actors, created a town-like atmosphere. In the end, the crew are much influenced by their peer group members. A 23-year-old crewman from Chikuku (Kome Island) explained:

"The further we are from home, the more we do what we would otherwise refrain from doing at home. I may return home empty handed because life is more tempting in the islands, since we are far from our disciplined life. When we receive our incentives, we pretend to be ill and take a day off and spend everything on beer and women. Because of loneliness, our fantasies trigger actions, and these actions trigger habits and such habits have become our lifestyles. Do you see how we create our own circumstances here? We roast ourselves with our own fat. I have the feeling that I will not pull my family out of poverty. At home there is nothing! It's hard to save what I earn, because it is no longer a rural life. We compete for the few women around and share what we earn. There is no bright future for us; we are tied-up by our working conditions and new life style" (Petro Mayalla, Chikuku, per. com: 19/11/2009).

On the one hand, this life style should not only be viewed negatively. Some young crew members seem to be attracted to the islands to whore, drink and exploit opportunities and camp entrepreneurship possibilities. They seem to love it. It is an exciting arena. They get to leave behind the close strictures of their traditional village life. Would this not, then, be a lifestyle choice for them as suggested by Petro? Or are they just driven by circumstances? On the other hand, the crew are not innocent. They seem perfectly capable of entrapping women for sex and some of them appear not to spend too much time worrying about their families at home and sending money back.

An interview with a Fisheries Officer at Igombe confirmed that, while on the islands, crew faced restrictive fishing contracts. Those who fished in his area were better able to achieve their goals as compared to those on the islands.

"Here, there are no camps for crew. Camps are made for cooks only who are responsible for preparing food for crew to take with them when they go fishing. Each crewman stays in his own home or rented rooms and they do a lot for their families and other small businesses together with their partners. They pay school fees for their children and attend to family matters and other social affairs such as weddings, burials, sicknesses and group loans.⁸⁹ But on the islands, they become

⁸⁹A kind of Interest Free Revolving Fund (IFRF), for 'survival economics' to offer emergency loans needed by many rural and the urban poor to meet seasonal and short term needs such as health services or other economic crises (Medard, 2005:173).

forgetful and get partners and when they come home they are far behind' (Marenga, pers. comm 14/6/2011).

Given this diversity in the nature of working conditions in the arena, crew's preferences and the life they find themselves living in and around the camps, some are very optimistic. A statement by a crewman from Bwiro Island (Ukerewe Island District) attests to this:

"I have been so mobile and have worked in several camps because I like to work for a nice boss. But if he is an arsehole, pays low wages, and beats his crewmen, I will look for a new boss, a new tajiri" (Salvatory Kapina, 25/11/2010).

When crew members were asked how many fishing camps they had worked at before the interview date, Nile Perch crew had worked at an average of five camps, with a maximum range of 88 camps; while Dagaa crew had worked in an average of six camps with a range of one to 40 camps (Table 6.8). The fact that the majority of crew had worked between 1-5 five years in Nile Perch and 11-15 years in Dagaa (Table 6.2) suggests very high labour mobility, as well as job insecurity.

Table 6.8: Number of fishing camps crew worked at before interview date, N=154

Fishery type	<i>How many fishing camps have you worked at before?</i>				
	Observations	Mean	Standard deviation	Min	Max
Nile Perch	105	4.55	8.71	1	88
Dagaa	47	6.06	7.95	1	40
Tilapia	2	12.5	6.36	8	17

Source: Field study (2009-2011)

Various factors were identified as reasons for crew mobility: (i) poor working conditions (ii) the search for more income opportunities (iii) theft and piracy (iv) *Tajiri* leaving (v) *Tajiri* mobility and (vi) socio-cultural beliefs and the fear of being hexed. Unfair payment, brutality, cheating, severe bylaws and punishment, and the externalizing of camp costs down to the crew labourers were also reasons for crew mobility (Table 6.9). Nunan (2010:776) also identified the pursuit of food and income as reasons for boat crew members' and female fish traders' mobility on Lake Victoria.

The commoditisation of labour is, of course, not unusual in a capitalist economy. Tanzania's Lake Victoria fishery is, however, little regulated by the state and this has led to extreme inequality between *matajiri* and crew, and the creation of highly exploitative working conditions. At the same time, good working conditions and *matajiri* with a reputation for being benign attract crew to particular camps. So too, social ties appear to be a necessary precondition (Table 6.6 and 6.7) for getting work at fishing camps, as well as an aspirant's experience with fishing. Some *matajiri* strike a careful balance between offering decent employment and overt exploitation of labour. Appearing too rude only serves to repel new crew recruits, and is an incentive for existing crew to leave; but promising too much can also cause the *tajiri* problems when s/he cannot deliver. Low wages (Chapter 7) also compel crew to stay at a fish camp because they cannot afford to stop working; at the same time, the things that many (if not most) crew spend their money on (sex and booze) mean that they are always short of cash and dependent on their *tajiri*. Needless to say, *matajiri*,

through their own or a friend's bar, ensure that prostitutes and alcohol are in plentiful supply. In order to retain crew, they ensure that what is needed by them is available.

Table 6.9: Reasons given for crew members' mobility in various fishing camps

<i>Why would you move from one fishing camp to another?</i>	<i>Frequency</i>	<i>Percent</i>
1.0 <i>Poor working conditions (brutality, cruelty and cheating)</i>	102	41
1.1 Brutality/abusive language, cruel and unfair treatment	28	
1.2 Severe camp bylaws and restrictive conditions	30	
1.3 Cheating through weighing scales and discriminative prices	44	
2.0 <i>Search for more income opportunities</i>	78	32
2.1 Unfair remuneration and share systems	20	
2.2 Searching for higher income	36	
2.3 Fishing seasonality	6	
2.4 Reserve crew have no permanent camps	4	
2.5 Camp owner's mobility in search of high catches	12	
3.0 <i>Theft and piracy</i>	26	10
3.1 Theft offences make them move to new areas	11	
3.2 Sacking by a camp official	9	
3.3 Piracy	6	
4.0 <i>Exiting the fishery: bankruptcy, retirement, death and drunkenness</i>	21	8
4.1 Retirement of the camp owner	2	
4.2 Crew drinking too much, making them unpopular	14	
4.3 Bankruptcy or death of camp owner	5	
5.0 <i>Camp owner's mobility</i>	12	5
5.1 Owner's mobility (catch variability, conflict& involvement in theft of other's property)	9	
5.2 Search for camping and drying space	3	
6.0 Social cultural beliefs	9	4
6.1 Fear of being hexed (bewitched)	9	

Note: Responses were not mutually exclusive

Source: Field study (2009-2011).

In many respects, *matajiri* strategies with their crew are feudal (Chapter 7), and have evolved around the creation of debt and persistent poverty in order to compel crew to stay in their camps. They hold back wages, ensure that crew buy goods from their shops on credit and, sometimes, offer non-monetary incentives, because cash in the pockets of crew is too empowering. Mobility is itself a strategy by crew – the threat of leaving, especially if it is *en masse*, can be a powerful way of leveraging benefits from *matajiri*.

6.3.1: Labour contracts and recruitment processes

(a) Contractual Fishing Arrangement (CFA)

Poppo and Zenger (2002) define contracts as agreements to undertake future transactions under predefined conditions. They also outline a selection of promises, obligations, outcomes, procedures for monitoring dispute resolution, and penalties for non-compliance. Management and marketing literature often recognize two types

of contracts (Chapter 1). On Lake Victoria, a combination of social norms, especially for relative labourers, and those enforced by bylaws predominate as the leading mechanisms governing crew behaviour.

In this section, an example of how *wajeshi* are mobilized and recruited for the Nile Perch and Dagaa fisheries is given, with much focus on the islands, where recruited crew had to sign contracts that specified a particular period, as stated previously (Section 6.1). In both island and mainland locations, *matajiri* and supervisors played an important role to ensure labourers were available for each subsequent fishing session. The section shows that labour enrolment is characterized by strategic practices and unfair negotiations.

I focus on two camp owners, namely, 'Ja' and 'Lyo' on Kome Island. Unlike other camps, these camp owners send out supervisors or relatives into the villages on the mainland to seek out crew and, then, to transport them under escort to Kome. Under this arrangement, crew transport is paid for by the *tajiri*. In most cases, mainland crew normally travel on their own and pay for their own transport costs.

'Ja' and 'Lyo' claimed that enlisting crew from their home villages was not difficult because fishing is perceived as a dependable and potentially lucrative occupation. Success stories about prominent *matajiri* spread fast in rural villages, as do those about successful crew who have acquired assets such as bicycles, plots of land, cattle, radios, roofing sheets, mobile phones and fancy outfits. While recruiting, 'Ja' and 'Lyo' bribe experienced crew ('fishing stars'). During farming seasons, cash temptations increase because of the farming commitments of potential crew. 'Ja' and 'Lyo' and their camp leader assess potential crewmembers in terms of their previous fishing experience, strength and health.

(b) *The camp bylaws*

At Chikuku (Kome Island) at the start of the fishing season, newly recruited crew arrive either in the afternoon or at night, such that not a single fishing day is wasted. Between 10:30-11:00 hrs, crew are served food and, thereafter, a start-of-season meeting is held, involving new crew, supervisors, cashiers, cooks, the patrol team, gear mounters and repairers. At 'Ja's' and 'Lyo's' camps, both *matajiri* attend the start-of-season meeting. It is at these meetings that the camp's bylaws and procedures are explained. Bylaws might be updated during this meeting.

Not all camps hold such meetings. Some simply put up the list of bylaws, regardless of whether or not crew members can read. But where they are held, they serve as social and conversational moments, promoting good relations between *matajiri* and labourers. These can also be moments when crew can contest bylaws. For example, at one such meeting, crew complained that no one was allowed to perform *chomolea* with camp cooks except *tajiri* and net mounters. *Chomolea* is a sexual 'quickie', a rapid sexual encounter with a prostitute and costs between Tshs 5,000 - 10,000 (Textbox 6.2). At Chikuku camp, it was restricted so as to try and ensure that crew and other labourers focussed on their work, and to try and prevent crew from obtaining favours (e.g., bigger food portions) from female cooks.

Interviews with other *matajiri* revealed a number of bylaws and conditions which confined crew such that nothing could intrude on a camp's fishing operations. Other respondents defined such confinement and strictness as 'total servitude' or 'draconian bylaws'. If, for whatever reason, a crewman could not work or he was

sick, he would have to pay a casual crewman – a ‘day worker’ to fill in for him (Textbox 6.2). Below are examples of translated bylaws from the Nile Perch camp at Chikuku.

Textbox 6.2: Example of fishing bylaws from ‘MV Lyo’ camp on Kome Island

Recruitment form no.1 (Nile Perch)

1. Fighting while on the lake: you will be fined TShs. 50,000.
2. Fighting while in the camp: you will be fined TShs. 30,000.
3. Fishing without untying nets: you will be fined TShs. 20,000.
4. Going fishing late without reason: you will be fined TShs 10,000.
5. Abusing each other while fishing or at camp: you will be fined TShs. 15,000.
6. Theft of any kind: your contract will be terminated without pay and you will be taken to court.
7. Tearing nets while hauling or setting: you will be fined TShs. 10,000.
8. Stealing fish while on the lake or at the preservation point: you will be prosecuted and jailed as per national laws.
9. If you cannot fish, it is your responsibility to find a replacement. If you fail to pay him, you will be fined TShs. 10,000 in addition to paying him his TShs 3,000 dues promptly as day worker (*kibani*).
10. A supervisor having a quickie (*‘chomolea’*) with a cook will be fined TShs 15,000.
11. Cooks having quickies (*‘chomolea’*) during working hours will be fined TShs 10,000.
12. Entering the kitchen without permission: you will be fined TShs 20,000.
13. Demanding and keeping food for individual consumption: you will be fined TShs 5,000.
14. Going fishing without bathing after sex: you will be fined TShs 10,000.
15. Having alcohol in a fishing boat: you will be fined TShs 20,000.
16. It is prohibited to land fish at any site other than ‘MV Lyo’ boat packing yard.

Warning: “These are part of MV Lyo camp bylaws. Others may come into force depending on the magnitude of the offence. You are required to respect them all and those that may crop up at any time”.

One notable observation was that with commoditisation, bylaws have diffused amongst Dagaas camps in the same style and with similar severity as described in Textbox 6.3.

Textbox 6.3: Example of bylaws in ‘MV Mwi’ a Dagaas commercial camp at Ikulu Twin Island (Kome Island)

Recruitment form no 1 (Dagaas)

1. Crew caught selling Dagaas will be fired and prosecuted through a court of law.
2. Crew caught fighting at the camp or while fishing will be fined Tshs 10,000.
3. Crew entering the kitchen without permission will be fined TShs 15,000.
4. Crews who do not loosen nets before going fishing will be fined TShs 15,000.
5. Cooks are not allowed to keep food for absent labourers.
6. Crew caught using abusive language will be fined TShs. 10,000.
7. Crew who leave boats idle at the shore without fishing will be fined TShs 50,000.

8. Crew are not allowed to 'own a woman' at the camp. If found, both man and woman will be dismissed from the camp without being paid.⁹⁰
9. Men caught in the women's dormitory (*Gamula*)⁹¹ will be fined TShs 20,000.
10. Crew fishing without a life jacket will be fined TShs. 10,000
11. Crew must bathe after sex with a woman, and before fishing.
12. Crew caught wearing their shoes in the canoes will be fined TShs 5,000.
13. Crew who fall asleep while fishing will be dismissed.
14. It is forbidden to eat food which is not served for you. If found, you will be fined TShs. 5,000.
15. Crew caught arguing will be fined TShs 5,000.
16. Crew must not be late for fishing, and should land back at the camp at the same time as others.
17. Crew caught drunk in the camp or on the lake will be fined TShs. 20,000.
18. Women caught sleeping outside the camp compound will be fined TShs 10,000.
19. Crew caught selling *Dagaa* anywhere else will be dismissed without pay.
20. *Dagaa* processors who do not scare away birds or other animals from stealing the fish while it is being processed will forfeit their share.
21. Processors who do not process their *Dagaa* well will forfeit their share.
22. Crew who mention anything they see while fishing will be fined TShs 10,000.
23. Crew caught stealing fishing equipment will be prosecuted in a court of law.
24. Crew caught stealing the property of others will forfeit their dues.

I...have agreed to work with all the conditions. If I break them I should be punished.

Signature (*Mjeshi*)..... Date:.....Prepared by head of the camp "MV Mwi"

Source: Field study (2009-2011)

An interview with a camp owner at Chikuku (Kome Island) confirms why *matajiri* shape their camps with strict fishing contracts and bylaws:

*"We can't survive without fishing contracts and bylaws. Theft by our crew of nets and fish is common. They can go out fishing and disappear. We are aware of pirates who target engines, boats, money and even fish but the rest of the problems emanate from amongst ourselves and mostly crew. Currently, one hardwood boat costs about TShs 3.5million, and a 9.9 or 15HP engine about TShs. 4.2 million. A single boat is loaded with 70 to 100 nets, each with three panels, worth 4.2 to 6 million. Where do we get the money to replace these if we are not strict? We never receive any support from the government. We work through loans from our fish buyers. We have to find ways to spread such risks and to protect our property. This is the reality" (Intero no 60017: Chikuku, 19/11/2009). Conversely, as another *tajiri* at Chikuku stressed in an interview, "without bylaws, camps would be boxing grounds because fishing is tough and the crews are rough." He also said that many criminals hid amongst the islands to avoid prosecution on the mainland (Interv 60015: 15/11/2009).*

Fishing contracts, camp bylaws, division of labour and time management (Table 6.10), create the ground rules for behaviour and are the means by which anticipated risks, losses, costs and liability are shifted from *tajiri* to crewmembers. Loss of

⁹⁰ Meaning, cooks or *Dagaa* processors should not confine themselves permanently to a single man and should be free to sleep with any man without causing a fight.

⁹¹The '*gamula*' is a dormitory for cooks and female *Dagaa* processors in commercialized camps. Women normally sleep in it at the beginning of the fishing season, before identifying sexual partners, into whose huts they will eventually move. But men are forbidden to sleep in *gamula*.

properties from a fishing unit are deducted from crews' wages and other fishing costs are externalized directly and indirectly (Table 7.9).

(c) *Fishing Contracts and Traceability arrangements*

After going through the bylaws, a 'Fishing Contract and Traceability Form' (FCTF) is handed out to the crew, in which crew provide their personal particulars and commit to the camp bylaws.

(i) Registration of fishing units

This process of 'labelling fishing units' with numbers is carried out so that each boat is allocated three crew, an engine, an equal number of nets and other accessories. Furthermore, each crew is assigned a 'fishing number' (job offer) in order of priority. In a motorized Nile Perch boat, the engine operator is number one, followed by the net setter and, lastly, the person who helps with hauling the nets and draining water from the boat. Later, fishing equipment is registered with the crew, who sign a form to this effect, countersigned by a camp supervisor. The crew become proud of their number assignments, and will boast about their '*ntebe*'⁹² (For an example of a registration and allocation of number and fishing equipment form in a Nile Perch motorized boat (see Chapter 3, Form no. 3).

These crew enrolment formalities are carried out in order to agree on remuneration modalities, to ensure *matajiri* properties are carefully controlled, and to manage and reduce fishing risks, as well as conflicts. Mistrust between *tajiri* and crew is common in fishing units, such that a secret informer is planted to prevent theft of equipment and fish by selling part or all of the catch while on the lake or at another landing site. However, crew from the mainland indicated some difficulties in 'getting a number' because there were so many young men entering the fishery and competition was too great, as indicated previously. At Mwanchimwa, a mainland site, a BMU leader commented:

"Here, new entrants could get to landing sites easily, on foot, unlike the islands. This makes job offers limited" (Kulwa, pers. comm. 16/12/2009).

This also means that most of the crew on the mainland are permanent labourers, and not transients, living with their families or friends in the same or nearby villages. Also, bylaws on the mainland are not as severe as on the islands, which attracts more entrants. Moreover, crew can engage in other, non-fishing economic activities while they wait for their rotation to come around.⁹³ Despite these attractions, however, mainland crew also complained that it was hard to save: ease of access to the landing sites meant that kinsfolk and relatives could easily visit them in search of money. Therefore, for a crew member to save is not only difficult because of spending on women, as asserted by Petro, but also because kinsfolk and relatives come for money.

Another advantage of working on the mainland is the better fish prices, which ultimately mean that crew are paid relatively better than on the islands.

⁹² In Sukuma, Kerewe and Zinza languages, '*ntebe*' refers to someone who asks to be with you. In this case, a camp owner asks a crew member to be with him for a fishing job.

⁹³ Each fishing unit at Mwanchimwa enrolled 6 crew who alternated after 7 days (one getting out and being replaced by another after 7 days).

“Igombe is like a state house,”⁹⁴ says one fish selector. “We know the prices announced at factories before others because we are close to them and the landing site has a high network of potential matajiri. Their main place for inquiry about ongoing prices is here and crew around here benefit more compared to on the island. Here crew fish permanently and stay with their families at home. There is nothing like a camp along the shore. They also alternate and get time to rest” (Pascal Kasigwa, 10/5/2011).

(ii) Divisions of labour, procedure and time management

An organized division of labour was observed, with a clear definition of roles, functions and responsibilities. Camp labourers were obliged to work through their supervisor(s) who ensured fishing equipment and crew were in good order. Below is an activity timeline for a motorized fishing unit with 70-100 triple gill-nets.

The timeline is dependent on weather conditions such as wind direction, water upwelling, rains and storms. Other factors are method of propulsion, distance from the shore, number of nets and panels and amount of fuel. If fishing grounds were distant, crew left between 15.00-16.00 hours, while they would depart between 16:00-17:00 hours if grounds were closer. Typically, crew travelled from 1.30-1.45 hours to the fishing ground, while setting nets took about 1.30-2 hours. Fishing crew shared most tasks while fishing, but selling the fish was strictly done by the supervisors. The skill-based division of labour amongst crew was more important in the Dagaa compared to the Nile Perch fishery.

Such divisions of labour and time management are reinforced by camp bylaws and the number designations described above. These are important, one *tajiri* explained, so as to avoid miscommunication on the lake, and to coordinate efforts:

“I have a large number of crew here and at my various other sub-camps. Crew may be unsure as to what their jobs are, or what is expected of them, and under such conditions mistakes are likely to occur, inefficiencies may be created, and losses incurred. Fishing is now a business and we have had to adjust to a new culture which requires time management, divisions of labour, job specialization and setting equal standards for each fishing unit – gear, amount of fuel, and engine. We have learned from our fish buyers and money lenders what they want and what we should do. This is all about control of the fishing units” (Interv. no.60013, Kome Island 22/11/2009).

⁹⁴ In this context it means a place where the information about fish prices in EPFs is first known or originates, before other places. This also applies to wages for camp supervisors, crewmembers, net repairers, workers in fish collection boats, cooks and truck drivers.

Table 6.10: 24 Hour activity timeline for a Nile Perch gillnet crew in commercial camps

Time	Action	Activity details
11.00-13.00	Eating	Lunch at campsite
13.00-14.00	Ancillary work	Untie nets, fuel engines, collect stone sinkers, bathing
14.45	Organizing	Pick up food from cooks, jackets, torches & depart
15.00 -16.00	Departing	During peak seasons
17.00		During trough seasons
16.30-16.45	Arriving	Long distance fishing ground
17.45-18.00		Short distance fishing ground and/or low catches
16.45-17.45	Setting nets	Early arrival
18.00-19.30		Late arrival and/or short distance
17.45-02.00	Suspending	During moonlight, long distance
19.30-05.00	nets& eating supper	
02.00 -03.30	Hauling	Dry season, during moonlight, windy seasons
05.00-07.30		Wet seasons, moonless nights, calm seasons
06.00-09.00	Back to camp	Travel back to the landing site
09.00-12.00	&landing	Arrive at the shore
09.00-10.00	Offloading	Early offloading, sorting and weighing fish
12.00-12.30		Late offloading, sorting and weighing fish
11.00-12.00	Eating	Lunch at campsite

Source: Field study (2009-2011).

(d) Remuneration and share systems

Remuneration is regarded as a wage on its own, based mainly on days, while share systems are based on other units such as kilos, different price allocations (e.g. discounting prices) and incentives. This section uncovers how crew remuneration and share systems are undertaken in the Nile Perch and Dagua fisheries with a focus on commercial fishing camps. Remuneration is a key factor in shaping fishing organization in Lake Victoria and it tells whether one operates in a commercial or non-commercial fishery. It determines where to go and fish depending on on-going remunerations in a particular area, how to divide the proceeds and entrance into a fishery, among others.

The study found eleven factors that affected crew remuneration and share systems: (i) fishery type; (ii) site/location (island vs mainland); (iii) the market channels through which a *tajiri* sells the catch; (iv) investment capacity and technology (propulsion methods); (v) the *tajiri's* gender; (vi) social relationships between the *tajiri* and labourer(s); (vii) the customary remuneration system in a particular area; (viii) experience and fishing skills (fishing stars vs non-fishing stars)⁹⁵; (ix) number of working days; (x) status of enrolled crew (semi-permanent, day worker, contractual) (xi) *matajiri* cost and risk avoidance strategies within the production hierarchy.

Previously, crew remuneration systems were based on two major systems: flat proportions of fish shared out amongst the crew and owner, after expenses had been

⁹⁵ Skillful and experienced crews often demand for bribe at the beginning of fishing cycle (this is common in *Dagua* fishery, see Chapter 5).

deducted and, secondly, a crew member/fisherman would get his share of fish from his own net in a given boat (Lugata elders, FGDs, 17/11/2009). These systems have now been replaced as a result of commoditisation. It is now fish marketing variables such as fish prices, fish quality and quantity that determine what is given to crew. Acheson (1981:294) identified markets as prerequisites for the rapid development of wage labour, as owners of fishing equipment respond quickly to markets. In some fisheries, however – such as that for *Haplochromis* species – traditional remuneration systems have been maintained. Fish are sold in small piles, fished by a few crewmembers and profits are divided equally between boat owner and crew.

The Nile Perch Fishery

Common remuneration and share systems in commercialized Nile Perch fishing camps fall into the following categories:

(i) Separate fishing days for *tajiri* and crew members: a fishing season lasts between 35-37 days, and of these, 30-32 days' income is allocated to *matajiri* while the remaining 5-7 days are allocated to the crew. Days are counted in order, regardless of poor or better catches. *Matajiri* with small capital investments allocate more days to



Photo 6.2: Crewmembers making stone sinkers at Chikuku

the crew (7 days) compared to those with larger investments. Moreover, those with large capital investments reduce the crew's share when catches are variable, while *matajiri* with smaller capital investments rarely do this. This difference is because peddled canoe owners are faced with great uncertainty when it comes to attracting and keeping crew because the work is so tough, and they, therefore, maintain incentives. Moreover, labour turnover in less capital-intensive camps is high because of poor technology, non-contractual arrangements and lax bylaws. Such *matajiri* have limited negotiation powers and, consequently, a smaller gap between the owner and the crew was observed. One camp owner from Ntama, with two peddled boats, tells more:

"When we recruit crew, they tend to insist on more fishing days during their turn and we have to agree, unlike rich fishers. We also provide incentives regardless of the amount of catch landed and we eat food with the crew from the same pot, something which does not happen at big camps. In

addition, we have limited and more relaxed camp bylaws and we really persuade them to stay with us. We are very tolerant, because crew can become stubborn and ruthless especially when they know that the owner is poor" (Thomas Giza, pers comm: 11/11/ 2009).

It was also emphasized that there was a need for crew to feel happy belonging to a certain camp. This was an important motivational value for poor camp owners. For instance, female camp owners offered more 'labour-tying incentives' and, in some cases, they offered daily fish for food to resident crew for their families.

At mainland locations (Magu District), the agreement between the *tajiri* and the crew was that the season lasted 32 days and, of these, 28 were allocated to the *tajiri*. As stated earlier, on the islands three crew would be contracted while on the mainland six⁹⁶ were contracted. Each group fished for seven days and on the eighth day, crew would be relieved to rest for a week. Permanent and semi-permanent wage labourers, such as gear mounters and repairers, cooks, cashiers and camp supervisors, however, were given a flat fee based on 'on-going rates'.

(ii) A part from the number of days, cash per kilo of Nile Perch is recorded separately in each fishing unit and, therefore, a kilo is a unit around which remuneration is determined, especially for export markets. In local markets, the quantity of fish, with a variety of measurements, such as heaps, bags and pieces, is used.

(iii) Separate fish prices for *matajiri* and crewmembers: Fish caught during the crew's turn are priced at prices lower than on-going prices at the beach level, while the selling price to the Export Processing Factories (EPFs) is always higher. This was observed at both island and mainland sites. For an example of what was allocated to crew and owners see Textbox 6.4 and Table 6.11.

Textbox 6.4: Crew vs *tajiri* price segregation in the Nile Perch fishery

At the camp level, all fish landed during the crew's turn (5-7 days) was priced at between TShs 400-500 per kilo. Thus, if a fishing unit landed 150 kilos during crew days, they earned TShs 75,000, to be shared equally between the three of them. The fish would be bought by the *tajiri*, who would then sell the same fish on at a rate of TShs 3,600 a kilo. In addition, between 2-3 kilos⁹⁷ of fish were taken from each boat to contribute towards camp meals. This means that *tajiri* took an average of 2.5 kilo of fish for each fishing unit, which was equivalent to 9,000. Therefore, total *tajiri* takings per fishing unit were TShs 549,000 (US\$ 366) while takings for each crew member were TShs 25,000 (US\$ 17).

(Field study, 2009-2011)

⁹⁶ Means two sets of three crew each

⁹⁷ Depending on catch availability and number of camp dwellers

Table 6.11: Fish price difference between crew and *tajiri* in Nile Perch commercial camps

Actors: EPF owners, <i>matajiri</i> and crew	TShs	Price difference	Percent
EPFs highest prices at Igombe, Mwanza City*	4,500.00	900	
Price offered to <i>matajiri</i> by EPFs owners	3,600.00		20
Price offered to <i>matajiri</i> by EPFs owners	3,600.00	3,100	86
Price offered to crewmembers by <i>matajiri</i>	500.00		

Note *: The major landing site and reference point for highest prices in Tanzania side of the lake (see Pascal Kasigwa narratives 10/5/2011). All camp owners tend to call *matajiri* in this landing site to inquire about the highest ongoing prices offered by EPFs.

Source: Field Study (2009-2011)

Some *matajiri* explained that the lower crew price was to ‘fill gaps’ and ‘unforeseen costs’ and a variety of overhead costs such as the patrol,⁹⁸ food and catch variability. Others claimed that they sold fish at the so-called ‘delivery price’ to EPF agents which meant that they did not know the price on the day, which would only be revealed later. One *tajiri* from Ukerewe Island explained:

“We normally face price variations when we deliver our fish to the factories. New prices are declared on the notice board to our buyers with no room for negotiations and we sign things without verification. We therefore take precautionary measures to counter unforeseen costs and risks. With Nile Perch, everything is dictated by the factories and no one is above them. They are fish buyers, money lenders, price makers, material providers and quality controllers” (Interv. no 600121).

(iv) Provision of ‘labour-tying incentives’: these are incentives intended to attract crew and to encourage them to stay and to fish efficiently. There are two variants: cash and kind. They are used to encourage intra-boat competition (this is why in some cases I call the incentives ‘stage management incentives’), but with a maximum and minimum cut-off. Typically, incentives are won depending on catch: the higher the catch in kilos, the greater the incentive handed out. Below are incentives observed in two periods between 2009 and 2011 on Kome Island (Table 6.12). Incentive packages increased in size when competition was high.

⁹⁸Because the patrol team was not involved in fish production directly, but used fuel, food and money, their costs were internalized into fishing units.

Table: 6.12: Example of incentives and cut off points in the Nile Perch gillnet fishery

A: June 2009/ July 2010			B: Aug 2010/June 2011			
Kilos of fish	Cash	Each crew	Fish kilo	Cash	Each crew	In Kind
≤10	0	0	≤10	0	0	0
11	1,500	500	11	3,000	1,000	0
20	3,000	1,000	22	5,000	1,665	0
30	4,500	1,500	28	6,500	2,265	0
40	6,000	2,000	33	10,000	3,332	0
50	7,500	2,500	43	12,000	4,000	0
60	9,000	3,000	53	13,000	4,332	1 fish @1500
70	10,500	3,500	63	14,000	4,666	1 fish @1500
80	12,000	4,000	73	16,000	5,333	2 fish @1500
90	13,500	4,500	83	18,000	6,000	2 fish @1500
≥100	15,000	5,000	93	20,000	6,666	2 fish @1500
			≥103	22,000	7,333	2 fish @1500

Source: Field study (2009-2011)

These incentives were handed out whenever a fishing unit landed ten kilos of fish or more, and ensured that crew earned something even on those days that were not allocated to them. All the same, *matajiri* often cheated by tampering with the weighing scales. A BMU leader from Ntama had more to say:

“Crew are heavily exploited. I have weighed fish from one fishing unit by using an official weighing scale for catch records and got 28 kilos. But the camp supervisor wrote 21 kilos in their fishing units catch register. This is why most supervisors get rich because they collaborate with the matajiri to exploit the crew. It is also very hard to get a supervisory job without being a relative or a friend of the tajiri. Most camp supervisors are ruthless. Matajiri need such people to protect their interests. In the end, the crew are losers because wealth is accumulated through cheating” (Bathel Mandevu, 21/11/2009).

Most *matajiri* claimed, however, that there was no profit on any catch below 30 kilos in a fishing unit, although some offered incentives at 11 kilos (Table 6.12). It was, however, reported that, incentives and labourers’ wages were controlled by a wider network of *matajiri*:

“If you pay your labourers more than what others do, you will be sabotaged and excluded from regular fishing. They will bribe your own crew and even powerful camp owners to have you excluded from fishing through theft. Your fishing equipment will be stolen, your good crew bribed and eventually your fishing business will vanish” (Interv no 60010: 23/11/2009).

This justifies what Pascal said about how *matajiri* networks pre-fix labourers’ wages and fish prices.

(v) Fishing costs: All operational costs were *matajiri*'s responsibility and this was mentioned as one of the reasons for allocating more fishing days for them than crew. They claimed variability on catches as a reason for the disparities. Other risks and shortfalls mentioned were theft of fish, nets and engines.

The Dagaa Fishery

In the Dagaa fishery, the main determinant factors for crew remuneration were (a) the financial status of *matajiri* and middlemen (Dagaa buyers); (b) the number of sacks harvested; (c) the quality of the Dagaa (human or animal feed); (d) the price per sack at the camp level and market; and (e) the location (centralized or isolated). The three most common share systems are described below.

(i) Crew wages and all expenses are borne by the owner in what is known as the '*bora*' ('best') system. This system is strictly contractual, with tough bylaws and strict time management during fishing operations. Under this arrangement, each fishing unit is obliged to catch 40 sacks worth of Dagaa (36-46 kilos), which are strictly for the *matajiri*. *Matajiri* claimed this catch was intended to cover each fishing unit's operational costs, including food, fuel, kerosene etc. This unique system was observed at Mchangani, Ito and Ikulu twin islands on Kome, in highly intensive Dagaa camps. Under this arrangement, crew essentially prepaid the *matajiris'* costs and profits indirectly, and would make no money themselves until they had filled the quota. Crew share per bag was priced between TShs. 17,000-18,000⁹⁹ and divided equally between four crew members. Female Dagaa processors were subject to the same price (Medard, 2012 :560-561), while *matajiri* market prices (via Dagaa traders and middlemen) at Kirumba market in Mwanza were said to be between TShs 48,000-50,000 per bag (Tables 5.7 and 5.7b).



Photo 6.3a& b: Thatched huts (*maduku*) for individual *Dagaa* crew

Under the *bora* system, *matajiri* searched for skilled and experienced crew who were given cash incentives to ensure that the 40 sacks of Dagaa were obtained in just a few days within the 21 day fishing cycle. Incentives such as bicycles, radios, mobile phones, watches, roofing sheets, mattresses, beer and many other items were offered. This system, however, was reported by other *matajiri* as a 'wasteful fishing system' (Maugo Bwire, 28/8/2010), because crew mishandled fuel, lost pressure lamps or other accessories and *matajiri* replaced any such loss immediately. About seven (N=42) *matajiri* encountered during this study operated under this system at Kome Island. They were those who were financially capable and did not need any financial

⁹⁹ At beach level and also the 36-40 sacks.

support from their market channels. At the same time, there were those who relied on big Commercial Dagaa Traders (CDTs) and brokers from Kirumba who loaned them cash, equipment, running costs, food and packing materials. Truck and/or Dagaa brokers (relatives and/or non-relatives) at Kirumba also played this role, by receiving Dagaa cargo and undertaking business transactions (see Hofmann, 2011).

(ii) Fish buyers from Kirumba pre-paid camp expenses so as to secure access to Dagaa at favourable prices. Under this arrangement, *matajiri* seemed indentured (working off debt through labour and produce to a creditor), bound by the debts they built up to run the Dagaa fishing camps. The price agreements they negotiated with their buyers meant that prices given to their crew had to be low if they were to make significant profits. They had to keep their profit margins low, as opposed to in the market place, by cheating their crew wherever they could. They would also try to exaggerate the camp running costs to the Dagaa buyers.

Textbox 6.8: Dagaa Crew exploitation through prices and market interaction

This example is drawn from a Dagaa camp at Ikulu (on Kome Island). One *tajiri* owned 20 fishing boats and sold his Dagaa at Kirumba market in Mwanza. In June, 2011, the most successful fishing unit caught 80 sacks of Dagaa (each weighing 36-38 kilos) in total. After the dark phase of the lunar cycle, the *tajiri* was able to send 800 sacks (almost 30 metric tonnes) of Dagaa to Kirumba. Prices were communicated between the *tajiri* and his Dagaa broker at Kirumba. At this time, a sack of Dagaa for animal feed was selling at Kirumba for TShs 60,000-65,000 and TShs 70,000-75,000 for Dagaa for human consumption. The *tajiri* explained to his crews that the Dagaa was of low quality, that it had been contaminated by dust kicked up by the rains, and that it was all being sold as animal feed for TShs 25,000 per sack. In actual fact, he was able to sell the entire cargo for Tshs 72,000 a sack as Dagaa for human consumption.

Let us return to the most successful fishing unit that lunar cycle. At the false price quoted by the *tajiri*, the sale would have yielded TShs 2 million (US\$ 1,333) for 80 sacks. Costs (comprising food and fuel) totalled TShs 1,040,000 (US\$ 693), leaving 960,000 (US\$ 640) to be shared: half to the *tajiri* and half to the crew to divide amongst themselves (US\$ 320/4=80). The *Tajiri* got US\$ 320 plus the proceeds of actual sales.

Source: Field study, (2009-2011)

(iii) Flat proportions after expenses (expenditure share system): this is a share system that has existed for generations, and I refer to it as the 'customary share system'. Under this arrangement, costs (food, kerosene, cook costs, repairs and accessories) and benefits are equally shared between the *tajiri* and the crew of each fishing unit. After drying and packing the Dagaa into sacks or buckets the Dagaa are sold at a price negotiated between a buyer and a camp supervisor, a crew representative and a female Dagaa processor(s). Wages for other labourers such as cooks are borne by the *tajiri* and crew (Medard, 2012 :559). Sales proceeds are kept by the owner or supervisor and divided at the end of dark phase of the fishing cycle based on what was produced by each fishing unit after deducting the costs. Under this arrangement, Dagaa is mostly sold to individual traders (retailers and/or wholesalers) from frontier markets, Kirumba cooperative members and middlemen (*chinga*). This type of share system was applied by many *matajiri* who had only a few motorized boats (1-2) and/or peddled canoes. Most crew preferred this system because sales proceeds

were divided equally between *tajiri* and each fishing unit (4-5 crew). As a consequence, some *matajiri* chose this system to attract crew and labourers.

It is important to note that low wages ensure that incentives assume important proportions in the choices that crew make. Incentives are tantalising: they can compel crew to work harder and longer but, at the same time, it is the camp supervisor or the *tajiri* who can choose when incentives are offered, and how generous they are. *Matajiri* are under no obligation to provide them, but it would be foolhardy not to promise them. Disincentives, such as the threat of witchcraft, corporal punishment, fines and bylaws, also play a role.

6.4 Women Dagua processors and labour arrangements in Lake Victoria

In this section, I consider how women negotiate relations with *matajiri*, crew members, middlemen and illegal fishers, and how they reach agreements as labourers in Dagua fishery. Lake Victoria's fishing economy forms a basis for development, but its potential for the kind of growth that will have returns for future generations rests on appreciating how women conceive of and respond to the opportunities, constraints, and risks of working in this fishery.

The following narrative was provided by two women in their early thirties, Pendo Mwanameka and Faidoo Kabika (pers. comm., Ntama, 20/11/2009). Both worked off-loading and processing Dagua in the migrant fishery on Kome Island. They said that the process of off-loading and drying Dagua has changed. Women off-loaders are expected to offer sex to men in the Dagua fishery, but that there is no shame in it: it is just part of a woman's life and there is no need to hide it. "If you hide a disease, death opens up the curtain," Faidoo said. They confirmed that Dagua off-loading and drying was a "real business" for women, including young women, but they also said it was not easy to get into. "To get the job," Faidoo explained, "we have to buy the position from Dagua *wajeshi*." Women had to pay TShs. 18,000 to be taken on by a boat owner for a single dark phase of the lunar cycle. In part, this is payment for a woman's food and keep at the camp, but often as much as 10,000 shillings of the fee would be divided amongst the crew members in the fishing unit where the women will be working. In some cases, too, mostly at the beginning of the dark phase of the lunar cycle, crewmembers migrated to another boat owner or to a different fishing location. Women deal directly with the boat owner, who is thought to be more reliable.

When the boat lands, female Dagua processors off-load the Dagua and spread it on the ground. The drying process requires at least twelve hours. At the beginning of the dark phase of the lunar cycle, processors are able to get a few hours' sleep, but towards the end, their nights are sleepless because fishing starts late. As Pendo described it:

"We stay around the walls of other people's houses along the beach while waiting for wajeshi to come from the lake. This is risky because at night suspicious men, drunkards, pirates and illegal fishers are on duty."

Off-loading and drying Dagua is not an easy task. It involves working under the sun and in the rain, while keeping an eye out for hungry birds and domestic animals. Faidoo and Pendo admitted that their work with Dagua was better than nothing and

that there were no preferable alternatives in their home villages. "I recognize how this job has sheltered me. I am able to work for two boats at a time. I bought two plots and have kept capital for future business," Pendo stated. They also mentioned other remunerative opportunities. "We always get free Daga for home use," Faidoo said, "but instead we sell it to bait fishers, earning perhaps two thousand shillings per day. We also barter it for tomatoes, onions, vegetables, potatoes, fruit, firewood, and other fish in the local market."

When I asked how much Daga they received, they said some of the large-scale boat owners allocated their share based on the total amount of Daga produced over a single dark phase of the lunar cycle (the '*bora*' system referred to above). For every 18 buckets of dried Daga that she processed, a woman was given one bucket of dried Daga for herself. There are 162 buckets of Daga in a sack. At the end of the fishing cycle, all dried Daga, including the women's share, were packed in polythene sacks and taken by the boat owner to Kirumba Market in Mwanza. Aside from the owner, no one else from the fishing camp is allowed to make sales arrangements. After the Daga had been sold, female processors received a sum for their share that was less than half the market price: TShs 17,000 (US\$12), per sack, while the market price was TShs 48,000-50,000 (US\$ 26-33).

Matajiri who own just a few boats have little investment capital and only a few labourers. Dried Daga for each individual boat are sold to retail buyers at the landing site. Under this system, female processors are paid the same as they are under the *bora* system - one bucket for every 18 processed. They also have to 'buy' their jobs for the same amount: TShs. 18,000 for employment and camp subsistence costs for a single lunar cycle. Negotiations are conducted openly and witnessed by all: the *tajiri* or his supervisor, *wajeshi*, and the female processors.

My interviewees said that it was becoming much harder for women to secure a job: first, they said, because of an influx of young, divorced, widowed, or single women; secondly, because the up-front payment was being increased; and thirdly, because they were increasingly expected to have sexual relations with crew members in order to get a number. "If we agree to have sex with *wajeshi*, we size them up because most crew are drunks, spend their money unwisely, and have no settled life," Faidoo said.

When asked if they managed to pay the sum required every time to get job, Pendo remarked: "Let us tell you the truth! We survive through *washikaji* (boyfriends) around here, and they pay for us when they wish to do so. Without a man and sex you can't get this job, be it as a single mother or a widowed, divorced, or married woman. If you say no, even your fellow women will never understand you! That is how life is for women around here. You must be asked for sexual favours. This is the truth of it: we have no alternative."

6.5 Winners and losers in Lake Victoria fisheries

In both fisheries, crew felt that, they were the greatest losers and were poorly compensated (91%, N=154), whereas *matajiri* and supervisors were reported to be the 'winners'. This is contrary to what was found by Wilson (1998:31) 20 years ago, where 77 per cent of crew who were related to boat owners were satisfied with compensation arrangements. During the same period, Gibbon (1997b:42,43) noted

that crew in Lake Victoria were subjected to discretionary charges for 'breakages and losses', and cheating invariably occurred and involved the artificial inflation of deductions. In his study (1995-1996),¹⁰⁰ a Nile Perch boat owner was estimated to earn TShs 129,000 (US\$235) per individual fishing unit, while individual crew got TShs 35,000 (US\$ 64) per month (Gibbon, 1997a:54;55). Ikiara (1999) found that the average monthly income for a boat owner in Lake Victoria Kenya, was KShs 6,000 (US\$79), while fishing crew earned KShs 1,000-2,000¹⁰¹ (US\$13-26) per month. He concluded that boat owners earned more than crew (Bokea and Ikiara, 2000:17). A regional study conducted in Kenya, Tanzania and Uganda (1998-1999) on Lake Victoria found that boat owners' (*matajiri*) earnings were estimated at US\$80 while crew received US\$16.5 per month (SEDAWOG/LVFRP, 1999:97; 108). Generally, reports on Lake Victoria confirmed that crew are amongst the poorest members of fishing communities (Geheb, 1997; Jansen et al., 1999; Medard, 2012) and they have no ownership or long term commitment towards the resource.

Recent work by Pollard on Lake Victoria (2008:43) calculated that individual Nile Perch crew earned a profit of US\$ 4.92 per trip. But this related to the Ugandan scenario as reported in Odongkara (2002:37) and (FIRRI, 2002) and was mistakenly harmonized for the entire lake (Odongkara, et al., 2005:2). In this study, crew earnings are very slim (Table 7.9 and 7.10) and crew are exposed to conditions of intensifying commercialization. In Nile Perch fishery a single crew member earned TShs 66,000 (US\$ 44) per month in 2010. In Dagua a single crew member earned an average of TShs 53,913 (US\$ 36) in 2010 and TShs. 58,736 (US\$ 39) per month in 2011. More details are revealed in the next chapter in comparison to what *matajiri* earn.

This agrees with the Marxist viewpoint that capitalists obtain profit from two sources (a) by being able to increase their prices for their goods in the market place and (b) by reducing labour costs. But it is a fundamental contradiction of capitalism that if labour wages are too low, then no one can afford to buy the goods. This means, well-paid labour is good for business. But the truth is, globalization has introduced new opportunities to reduce labour costs. For instance, cheap Chinese labour now produces much of what we can buy. In Lake Victoria, however, labour is not the primary market for fish. This is, I think, a crucial fact. Hence, restricting labour costs to maintain profit margins is a viable strategy. The strategy of taking away from labour the right to own the means of production is also important because it takes away the leverage to demand higher wages. It is a process of 'alienating' (to use Ernest Mandel's term) from the ability to possess the resource, which is a fundamental capitalist strategy.

Poor remuneration is also a driver for crew mobility (Table 6.8). One of the livelihood strategies (Medard, 2012 :559; Nunan, 2010:784) is to look for job opportunities and better fish prices. One might argue that if there is a network of *matajiri* who collude to keep wages low, what difference would it make for crew to be mobile because they will get the same wages? The fact is, location is important because of ecological differences in fish abundance. Parker (2008:23) affirms that many fishers in Lake Victoria migrate in pursuit of richer fish production areas. Also,

¹⁰⁰ 1 US\$ was equivalent to TShs 550- In this context it would be equal to US\$86 (TShs 129,000) for the boat owner and US\$ 23 (TShs 35,000) for crew.

¹⁰¹ 1 US\$ was equivalent to KShs 76 in April 1999. <http://www.oanda.com/currency/converter/>

Brugère et al., (2008:7) claim that migration and mobility are geographical components of livelihood diversification. This pattern is not uncommon in many other African fisheries: the Gambia (Mbenga, 1996:43), Ghana (Brugère et al., 2008:7; Mbenga, 1996:68), Lakes Chiuta, Malawi and Malombe (Njaya, 2009:57;122) and Lake Victoria (Geheb, 1997:88; Ikiara and Odink, 2000; Jansen et al., 1999:7; Lwenya and Yongo, 2012:570; Medard and Geheb, 2002:10;Nunan, 2010). De Haan (1999) says that migration may be influenced by socio-cultural institutions that determine who may migrate, from where and in which season. Such practices seem to have died out in Lake Victoria. Because of commodification, young fishers are becoming unwilling to bear with such traditions (see Zinza's, Chapter 3). Apart from mobility, networks are becoming much more effective, particularly for *matajiri* and EPFs, because things can be done through supervisors and agents without their being mobile. A good example is how networks permit investment (Chapter 7) as well as jobs. It enables the fishery to be driven in the way that it is presently formulated.

On the other hand, mobility increases vulnerability in Lake Victoria, particularly for those who are left behind (FikiriMazige, 17/11/2009), a claim which has been asserted by many scholars (Archambault, 2010:920; Gordon, 1981:59; Harris 2002; Kishamawe et al., 2006:601; Mbenga, 1996; Nunan, 2010:777). Such incidences trigger conflicts (ADMIN, 2012; Brugère et al., 2008; Kisiangani, 2011; Medard et al., 2002a:207; Njaya, 2009:54; 175; Sobo, et al., 1996:27) and organizational difficulties (Jansen et al., 1999; LVFO/IFMP, 2006; Medard, 2012 :559; Njaya, 2009; Nunan et al., 2012; Heck et al., 2003; Sobo and Medard, 2004; Sarch and Allison, 2000). It can also create new – potentially unforeseen – vulnerabilities. Women, who might otherwise prefer a sedentary lifestyle, close to home, family and children, from which to work, have to follow mobile *matajiri* and crew if they are to remain in fishing jobs.

6.6 Summary of the chapter

In Tanzania's Lake Victoria fishery, labour relations and market transactions are closely related and are shaped by social networks and marketing determinants. The social networks between boat owners (*matajiri*), *wajeshi* and other camp labourers have been narrowed, which has resulted in the gap between *matajiri* and *wajeshi* growing. Strategic labour enrolment, standardized day to day procedures, remuneration systems and control of the means of production, the central being labour have lessened negotiation power for camp labourers, indicating a higher degree of stratification and integration into the international market and capitalist economy.

Prices, the marketing determinants, have been subjected to continuous manipulation in various ways. *Wajeshi* and other camp labourers are voiceless and are uninformed about marketing aspects as major producers of the resource. They are subjected to hidden and reduced prices, false weights and measures and unknown fish buyers in the fish distribution networks. This affects the camp labourers and crew compensation directly and indirectly.

This chapter has also shown that the chance for *wajeshi* to become future camp owners in the Tanzanian fishing industry is minimal because the traditional career

trajectory¹⁰² in fishing has changed drastically. This is so because there is a decreasing importance of kinship relations, which used to be the main traditional recruitment criterion. *Wajeshi* and other camp labourers are commercialized and, hence, contracted. They own no part of the means of production, other than their labour. This trend is part of commoditization in the fishing sector and the particular nature of entrepreneurship that has emerged in and around Lake Victoria.

Entry into a fishery in Lake Victoria is not dependent on education, as proclaimed by Lokina (2005:20). Experienced and trustworthy *wajeshi* are likely to enter and perform better, all else being equal, as testified by Vedasto Lwandiko, while less experienced and untrustworthy men are likely to fail. With commoditization, however, the path is more fragile and uncertain because competition, theft, cheating and 'sex for job offers' (for women) are rampant. While men manoeuvre to enter fishing through theft, women go for 'sex' and they both become victims¹⁰³ of the social crisis in Lake Victoria.

It is worth emphasizing that the growth and expansion of the export fishing industry and the fishing sector overall, while producing a considerable number of jobs, as well as markets, and has produced jobs that are extremely insecure and risky in nature. It is important to remember the backdrop to this fishery. The lakeside and hinterlands villages of Lake Victoria are poor and rural. Both men and women in Lake Victoria face challenges in finding ways to support themselves and their families, given a major fall in income, and this has had several social consequences. There is very little that can protect the young men and women who enter the fishery in search of an income, food and a future. They have taken on the burden of coping with different forms of social crisis. Their rights as Tanzanian citizens are quickly forgotten in the intensity of the fisheries production dynamics, as they are subjugated to poor and unsafe working conditions and very few employment alternatives.

¹⁰² The crewman could buy a single net and use it in a boat shared with friends, relatives or neighbours. Then he could graduate to renting a boat, before finally buying one.

¹⁰³ Sometimes *matajiri* use crew to steal from their fellow *matajiri* and in the end the crew face the consequences.

CHAPTER 7

FISHING INVESTMENTS, MARKETS AND POWER RELATIONS

7.1 Introduction

This chapter is about the way fishing investments, organization and networks within Tanzania's Lake Victoria fisheries are shaped and re-shaped as a result of global and local transformations. It provides realistic sites of investment encounters in the arena. In particular, the chapter focuses on the control of capital investments, fishing and camping areas (the lake and the land), materials, human labour in the fishery's production systems, the exchange of fish, the distribution of benefits and the relationships that have developed between fish production agents (*matajiri*/camp owners) and fish buyers in the market channels. This is done through financial and material guarantees and other reciprocal arrangements. The chapter also shows how related sectors, such as net factories, fuel and engine suppliers, are becoming key players in fishing and are linked to credit market sources in the organization of the Lake's fishery. Such arrangements were originally initiated by EPFs in the Nile Perch fishery, but they have now been absorbed by CDTs into Dagua fisheries. These trends impact profoundly on the ways in which fishing decisions are made, the resource base is accessed and claimed, costs and risks are managed, information is exchanged and controlled and so too are the ways in which networks are formed, maintained and evolve. These dynamics are mediated by fish and credit markets, power relations and social networks which continually evolve, and which affect and are affected by livelihood systems, and socio-political and governance processes.

There are many diverse types of counter tendencies and various types of resistance reflected in various types of discourses. A few are described here. This is happening because the power asymmetries allow powerful actors in the arena to dictate and control the activities of less powerful networks. The powerless (subordinates) have become dependent on decisions and actions elsewhere in the networks. For Coughlan et al. (2001) power is the ability of one person to get another person to do something s/he might not otherwise do. I will show how EPFs and CDTs wield power and delegate part of it to allow others, such as agents of EPFs and camp owners (*matajiri*), to draw upon it in order to run fish businesses as well as camps. Such devolution of power is done strategically, together with the transfer of risks and costs, while the upper hierarchy maintains influence, coercion, authority, prestige and control. It is not so much a transfer as a management of risks and costs.

It is against this background that the chapter argues that:

- 'The fish markets' and 'credit markets' (financiers and guarantors) are sources of power in the Lake Victoria fisheries. They determine fishing investment decisions and actions, and transform the way in which fishing is organized at the local level.

- In Tanzania, fishing is impossible without engaging in asymmetrical power relationships with financiers and guarantors, who determine who to include and/or exclude in their network. Less powerful actors need to maintain relations to get access to the necessary capital inputs to fish or to undertake business.
- In order to enter, remain and survive in the lake's commercial networks, one needs to be ruthless, fearless, audacious, opportunistic and selfish by externalizing costs and risks to other actors lower in the production and business hierarchy.
- There are emerging tendencies, counter-tendencies, tensions and growing pockets of resistance by powerless and deprived actors within the networks, which ultimately contribute to shaping and re-shaping the way fishing is organized and show how diverse actors and systems co-exist.

The main guiding questions are:

- (i) *What kind of fishing inputs are needed in order to invest in Dagua and Nile Perch fisheries?*
- (ii) *Who bears the costs and risks in fish production and distribution networks?*
- (iii) *How are power processes joined, maintained and devolved in the network to access fish resources?*
- (iv) *What are the drivers behind these power and investment decisions?*
- (v) *What are the counter-tendencies? Where, how and why do they emerge?*

The chapter is organized as follows: Section 7.2 provides a profile of *matajiri*/camp owners and their involvement in Nile Perch, Dagua and Tilapia fisheries. Section 7.3 gives an overview of important capital and material costs required in fishing. Section 7.4 demonstrates how *matajiri* persist through credit market conditions. Section 7.5 shows the costs and challenges met by *matajiri* as a result of their engagement. Section 7.6 is about markets, credit markets and decision-making power. Section 7.7 reveals what *matajiri* do to overcome and to avoid costs and risks as a result of their involvement. Section 7.8 deals with growing tendencies, counter-tendencies and tensions in the arena. Section 7.9 is a summary of the chapter.

7.2 Profile of *matajiri* and their involvement in fishing

A total of 154 *matajiri* camp and boat owners were interviewed. 94% were male and 6% female. The main fish species targeted were Nile Perch (65%; n=100), Dagua (27%; n=42) and Tilapia (8%; n=12). Only 5% (n=7) of respondents invested in both Nile Perch and Dagua and each fishery was organized separately at different camp sites. The largest proportion of *matajiri* had completed primary education (73%), followed by secondary education (16%) and the rest had no or an incomplete primary education. 89% were married, 5% were single, 2% divorced/separated, 2% were co-habiting and 2% were widowed. Of those who were married, only 7% said that their spouse were engaged in a fisheries-related activity. Of those who were married, 68% men had one wife, 14% had two, 3% had three, and 1% had six wives. Of the remainder, 10% were single and 5% declined to answer the question. The majority (66%) of male *matajiri* did not like to have their wives/partners accompanying them

to the fishing camp. If they did have female company, it tended to be semi-permanent girlfriends (Medard, 2012 :562).

The majority of respondents were between 30-39 years, followed by 40-49 years, 20-29 years and a few were 50+ (Table 7.1).

Table 7.1: Camp and boat (*matajiri*) owners' age (in %)

Age bracket	Nile Perch (N=100)	Dagaa (N=42)	Tilapia (N=12)	Total (N=154)
20-29	14	10	17	13
30-39	44	33	50	42
40-49	35	40	33	36
50+	7	17	0	9
Total	100	100	100	100

Source: Field study (2009-2011)

The largest proportion (34%, N=100) of Nile Perch camp owners had been fishing between one and five years and six and ten years (Table 7.2), and the majority owned fishing boats (89%), while 11% (N=17) rented them. About 91 (59%) had 1-5 boats, 53 (34%) owned 6-10 and 10 (16.4%) owned more than 11 boats. Generally males had high investment intensity compared to females. I encountered two male *matajiri* who had more than 200 boats¹⁰⁴ spread across different locations. The richest female¹⁰⁵ *tajiri* had 10 motorized Dagaa boats, followed by one who had seven Nile Perch motorized boats and the rest had one to three boats. While boat renters were permanent operators in beach seine fishery, they were either part-time or seasonal in Nile Perch long line and bait fisheries.

Table 7.2: Number of years fished by *matajiri*

Years	Nile Perch (%; N=100)	Dagaa (%; N=42)	Tilapia (%; N=12)	Total (%; N=154)
1-5	34	29	25	32
6-10	34	36	50	35
11-15	16	14	25	16
16-20	7	7	0	6
21-25	7	7	0	6
26+	2	7	0	5
Total	100	100	100	100

Source: Field study (2009-2011)

When *matajiri* were asked if their families had historically been associated with fishing, 41% said that they had, while 59% said they had not. Of those who said 'yes', friends and neighbours, fathers, brothers and other relatives had encouraged them to join fishing. One explanation for this trend is that there have been many new entrants to the fishery in the past 15 years, whose families were not previously involved in fishing. A number of them also left fishing because of theft, piracy and old age.

When respondents were asked to give two reasons as to which fisheries had attracted most investment in the past 15 years, about 79% of responses were for Nile

¹⁰⁴One was in Kome Island (Ito twin Island), the second was at Igombe.

¹⁰⁵She was coloured, the father was from Greece and the mother from Tanzania.

Perch, 68% for Dagaa and 94% for Tilapia (raft) fisheries¹⁰⁶. This supports the idea that people are still attracted to join fishing.

Table 7.3: Reasons for investing in the current fishing activity (in %)

What are the most important reasons for investing in your current fishery?	%							
	Nile Perch (N=100)		Dagaa (N=42)		Tilapia (N=12)		Total (N=154)	
	Yes	No	Yes	No	Yes	No	Yes	No
1. Good fish prices (high demand)	94	6	90	10	83	17	92	8
2. Fish availability	38	62	29	71	25	75	34	66
3. Fair investment costs	38	62	40	60	83	17	37	63
4. Credit markets and networks	73	27	63	37	75	25	71	29
5. Reliable markets	71	29	60	40	75	25	68	32
6. Easy to catch	40	60	57	43	33	67	45	55
7. Lack of alternatives	15	85	21	79	8	92	16	84

Source: Field study (2009-2011)

The majority of *matajiri* identified fish prices, availability of credit markets, reliable markets and fair investment costs (Textbox 7.4) as the main drivers for investing in their current fisheries (Table 7.3). It was also said, however, that fishing was becoming exceptionally expensive and risky and, therefore, their investments were highly dependent on credit providers (credit markets) and fish buyers. One *tajiri* commented:

“Fishing is going on because of loans from our fish buyers. If buyers stop offering loans, we will not be able to fish. Five years ago, the EPFs loaned us substantial amounts of cash but now they have changed their policy. They give us more assets and materials such as nets, boats, fuel and engines than cash so that they can reassure themselves that we do the intended work” (Interv. no 60082, 31/8/2010).

Interviews about credit markets being the reason for owners to stay in fishing ranked Nile Perch (75%) highest, followed by Dagaa (73%) and finally Tilapia (63%). Tilapia raft fishers were also loaned bait, rice husks and cereal flours (Textbox 7.4). The following section confirms the importance of credit markets in fishing organization in Lake Victoria.

7.3 Capital costs and materials required for fishing in Lake Victoria

When respondents were asked what basic equipment, materials and services they needed to start fishing, the following were mentioned: boats, nets, floaters, pressure lamps, outboard engines, oars and sinkers. Others were fuel, kerosene, oil, food, patrols, security systems and human labour (Appendix 7.1; Table 7.3). As stated earlier (Chapter 1), in the Nile Perch fishery the credit markets had great influence in providing fishing equipment and ensuring fish quality control requirements which include, amongst others, ice flakes, containers for preserving fish, cargo transport boats, insulated trucks and trays for fish handling. In recent years demand for

¹⁰⁶ I observed more than 150 raft (*maboya*) boats and fishers at Mwanchimwa and Nguguta (sub-villages) in Kigangama Village (Magu bay). They fished twice a day, morning and evening and during the dry season the number increased to about 200+.

security is growing, thus bringing in additional investment costs in security (Table 7.3).

20 years ago, Wilson (1996: 229) encountered only 16 outboard engines amongst Nile Perch gill-net fishers, two amongst Dagua fishers and none amongst Nile Perch long-liners, out of 156 sampled boats. Today, engines are perceived as essential in fishing and all Dagua fishers interviewed for this study thought that this was the case. 61% (N=42) used them, as did 86% (N=100) of Nile Perch fishers. The widespread use of engines has arisen because of commercialization and the growing competition for fish between *matajiri* and fish buyers. Engines allow boats to fish deeper and further out in the lake and to return more quickly, thereby preserving the catch. In this case, fish suppliers and fish buyers drive the increase of such investments to improve the quantity as well as the quality of Nile Perch fish. The equipment is made available to *matajiri* through credit arrangements. Table 7.4 summarizes various types of gear and equipment provided through market channels.

Table 7.4: Matajiri acquiring fishing inputs from credit (in %)

Fishing equipment/input	Nile Perch (N=100)	Dagua (N=42)	Tilapia (N=12)
<i>Which equipment/material did you acquire/mobilize through your fish buyer?</i>			
1.Fishing boats	46	24	5
2.Outboard engines	57	22	0
3.Fuel	82	38	0
4.Nets	78	22	0
5.Kerosene/paraffin	NA	64	NA
6.Pressure lamps	NA	32	NA
7.Ice flakes	100	NA	50
8. Packing material	NA	100	12
9.Bait	45	NA	10

Source: Field study (2009-2011); NA= Not Applicable

Broadly, credit support is divided into: (i) capital assets and (ii) materials/consumables. For fish buyers the latter is more beneficial because they are guaranteed fish supplies. Provided the *tajiri* does not pay off his debts,¹⁰⁷ fish buyers can reclaim their assets, thereby effectively creating indentured *matajiri*. All else being equal, such an arrangement may eventually grow into economic and social ties as a result of long-lasting business relationships.

Indenturing camp owners through the provision of credit has been reported in much Lake Victoria literature over the past three decades (Abila and Jansen, 1997:10; Gibbon, 1997a:59; 1997b:26; Hofmann, 2011:32; SEDAWOG/LVFRP,1999; Johnson, 2008, 2010; Kadigi et al., 2007:14; van der Knaap, 2006; Medard and Geheb, 2002:4; Pollard, 2008:41). Through indenturing, EPF agents and Commercial Dagua Traders (CDTs) have created dependencies amongst fish suppliers, reducing their choice of market. Neither camp owners nor their middlemen can sell their catch through alternative market channels other than their creditors'. To ensure that this does not happen, EPF owners monitor their debtors by placing security guards at factory

¹⁰⁷ See quotes from Edward Omkwe in chapter one and narrative, interv. No 60082.

jetties and boats that shuttle between factories and camps. Because *matajiri* look to invest and reinvest in fisheries, this dependent relationship endures.

As catches per unit of effort have declined in recent years (Ngupula and Mlaponi, 2010; Njiru et al., 2009) and Mrosso (a researcher from TAFIRI, pers. comm, Sept, 2013),¹⁰⁸ the credit markets have become more competitive. However, striving to get more fish though, all else being equal, makes investment less profitable. Capital costs in the fisheries are high so fish buyers create the kinds of dependencies they need. For the *matajiri*, the kind of investments needed in order to remain competitive ensures that they must seek credit; and it is difficult for them to extricate themselves from these relationships. The highest capital costs in motorized fisheries are in Nile Perch gillnet, followed by Dagua seine, Nile Perch long line and, lastly, peddled beach seine¹⁰⁹ fishery (Table 7.6a-7.6d). Likewise, high operational costs were observed in all motorized long line Nile Perch fishery, followed by Dagua seine net fishery, Nile Perch gill net fishery and, lastly, beach seine fishery.

7.4 Cost, risks and challenges faced by *matajiri*

Apart from high capital investment and overhead costs, camp owners face a number of uncertainties and challenges: unreliable and reduced prices,¹¹⁰ inflated material and equipment costs, increasing (but potentially false) rates of fish rejection at the factories, false weights and measures, ambiguous business contracts and unfair negotiations. All these contribute to a total dependency on the credit markets. Below, a number of interview sources and the field data confirm these impressions.

Textbox 7.1: The Power of EPFs to manipulate fish catches, prices and costs

"My fishing charter is big.¹¹¹ I own three camps in Sengerema and one in Ukerewe and six other sub-camps. I supply my fish to one of the factories in Mwanza. One lesson I have learnt is that factory owners do not want to work with someone who is well-informed. They want us to be submissive and agree to whatever they say. A few months ago, fuel was selling at TShs 1,600 per litre, but the factory calculated my costs at TShs 2,000 per litre. I was so annoyed. When I called the manager, he told me that the excess of TShs 400 was fuel transportation costs. I complained and told him I could find another person to supply me fuel at a cheaper price. He became worried and invited me to discuss the matter further. It was agreed I should be charged TShs 1,750.- a litre. This means that for every litre I bought, I was paying more than the current market price, and all of this was being added to my loan, and against my name. Since then, in all my camps, when they give me fuel I keep the delivery note and later countercheck when they deduct my loans. This has been my principle. But it has not been easy. Initially, when I showed them my copies of the delivery notes, they were furious and I was told keeping fuel delivery notes was not my job. But I never stopped. Another time, I was told to go and collect engines from one of the shops. A 15 HP engine was selling at TShs 3.2 million at that time.

When I introduced myself, I was sent by a factory manager to collect four engines, and the price changed immediately to TShs 3.5 million. I got mad and called the manager with my bad English. I was told my job was not to negotiate because the payments were to be done later by instalments through them and not in one payment. I was told to accept the engines and to bring the invoice to the factory under my name. I became mad because I knew that, at the end of the day, it all just gets added

¹⁰⁸Lumped catch rates (kg/boat/day) for NP= 19.8, Dagua 48.6, Tilapia 1.4 and Haplos 4.4. Catch Assessment Survey (CAS) conducted in May, 2013 Tanzanian part of Lake Victoria (Mrosso, Pers. Comm. May 2013).

¹⁰⁹ None of the beach seiners used motorboats.

¹¹⁰ Part of the deal with investors

¹¹¹ Meaning that he has many boats and big fishing camps. Details about charters will be provided later.

to my loan. But I had no choice because the engines were supposed to be fixed to my new boats and transported to Ukerewe the next day. Cheating on the weighing scales is another drawback. At one time in 2008, I got fed up and decided to bring my own weighing scale to weigh my fish, but the manager refused. I decided to take the fish to another factory. Since then, when they know it is my fish cargo, they become more attentive. But I know a number of matajiri who are subjected to such losses because factories control all undertakings unfairly. This business is not ours. We labour for Indians” (Interv. no 600123; Ikulu Island, 20/8/2010).

Another camp owner from Ghana Island had more to say:

“When fish are delivered to the factory doors, we are not allowed to enter inside. We just remain at the factory doorway and wait for the weighing outcome of our catches. Later, rejects (unwanted size and rejects) are verified by factory selectors in our absence. We are finally given a form that is written in English to sign. The factory form has three main parts of delivered fish: (i) rejected fish (ii) net cutting and (iii) gross cutting. Such professional jargon confuses us. They always claim to reject some fish, but surprisingly, they keep the rejects and we get paid at a reduced price of TShs 300-500 per kilo. They never give back the fish to us and we never get a chance to verify the grounds for rejection. Later, they fillet reject fish or sell them at Kirumba market to kayabo¹¹² traders from DRC for between TShs 2,800-3,000 per kilo depending on the season. They get a lot of benefits by cheating on the weight and falsely rejecting fish. We are not able to argue with them and they pretend not to understand Kiswahili. We are in the dark with ambiguous contracts that favour them. All sensitive documentation is done in English. If you ask most matajiri and EPF agents about their negotiation tactics, they will tell you that their priority is to learn English. We face a language barrier. I finished secondary education and I understand what they are saying, but knowing the language is not the only solution. We are not united, we are totally disintegrated” (Inter. No. 600122 20/8/2010)

“Factories”, said one respondent from Ukerewe, “possess us”. He went on:

..Running fishing camps is tough and risky. You need a strong spirit to cope with the intolerable conditions. We, from the islands, are oppressed because the factories believe that our operational costs are lower than land based camp owners’. But the problem lies with us. We are treated like children and we play along. If we deliver fish to the factories, each of us is told by managers: ‘You are my best friend and I am offering you a special price different from others because you bring a lot of fish and you are trustworthy. Don’t tell others how much I have offered you’. At the end of the day, each of us is told the same and we never communicate. We think it’s a business secret and feel so proud. Factories know how to manipulate us!” (Interv no. 600125; 25/8/201).

In one FGD, *matajiri*, claimed that there is collusion between EPFs and fuel suppliers, net manufacturers and outboard engine dealers. Whatever the case, this has also served to commoditise materials and financial flows within the fishery.

Variation on fish prices is one of the greatest challenges. Between 2009 and 2011 prices for Nile Perch varied between TShs 2,100-5,500 (US\$ 1.4 –3.6) a kilo, with higher prices being offered in central landing sites. Prices for a 36 Kg sack of Dagaa ranged between TShs 28,000-45,000 (US\$ 19-30), while prices at Kirumba markets were extremely high (Table 5.7a & 5.7b). On a recent occasion, the dissatisfaction of *matajiri* with these circumstances in the fish and credit markets resulted in collective action:

¹¹²Sun-dried and salted Nile Perch.

Textbox 7.2: Strike of agents of EPFs and *matajiri* as a result of variations in Nile Perch prices

In June 2012, *matajiri* and EPF agents held a one week strike in Mwanza to protest a drop in Nile Perch prices from TShs 5,000 to TShs 1,500-2,000 (Sengo, 2012b: News report) but the strike did not have the desired effect. Agent of EPFs and *matajiri* demanded a joint meeting with the EPFs to discuss why the price of Nile Perch had dropped abruptly. Unfortunately, none of the EPF owners attended the meeting. Some owners of EPFs declared on their notice boards that the Nile Perch price was TShs 2,500 because prices in the EU had dropped, without further explanations. More inquiries found that the drop was due to the fact that, cheaper Pangasius fish fillets from China and Vietnam were plentiful in the market (www.navicorp.com.nv). Nile Perch is now competing with Pangasius fish which is produced in large volumes in aquaculture farms. Both agents of EPFs and even some government officials were not aware of this. Also, agents of EPFs and *matajiri* wanted to know why the EPFs were always exaggerating the amount of rejected fish when fish were delivered to their factories and why they offered low prices (TShs 300-400).¹¹³ Because EPFs did not show up, all issues were discussed on their own and forwarded to the Mwanza regional authorities. *Matajiri* and EPF agents claimed that they were in the fishing business because of loans advanced by the EPFs and SACCOs and were not making money because the repayment was contingent to unfair business transactions. The sudden drop in prices had an immense impact because they had bought fish at high prices and, therefore, the sudden fall in prices caused a devastating loss (Sengo, 2012a:news report). During the meeting, one representative spoke passionately: *"I have one request to our government. We need a special body for fishermen. The body should be responsible for providing directives on fish prices for our fish that we sell to the factories. We have a body for cotton growers that determines cotton prices per kilo; we have a body for coffee growers, which determines prices for coffee per kilo; we have a body for SUMATRA which provides directives on public transport and bus fares. We have EWURA which controls and sets prices for fuel. Why are we fishers not considered? We are undermined. Today, we buy fish at TShs 4,000 but in the end we sell it at TShs 2,500. Others have bought for TShs 5,000 and sold it at TShs 3,000. We fishers have a call, especially those of us from the Lake Victoria zone. We request our government to listen* (Ezekiel, Kahungwa; 17/6/2012), in Sengo (2012b:video clip).

The strike did not bear any fruitful results; instead, it was handled politically by the responsible fisheries Minister and a group of parliamentary members and fisheries officials.

As stated earlier, cheating on Dagaa quality and standards is common, especially during the rains (October-January), when Dagaa is caught in large quantities but its quality is poor (they tend to be smaller, drying them is difficult because it is overcast, and the final product tends to be sandy) and most of it is sold for animal feed. Dagaa traders take advantage and offer low prices TShs 28,000-45,000 (US\$ 19-30) per sack, while the prices at Kirumba are relatively high (Table 5.7a & 5.7b). Similar strategies were employed for Nile Perch, for fish which were graded as 'rejects' (Textbox 7.1 & 7.2).

Inflating capital and material costs supplied through EPFs and CDTs was unbearable. Fuel costs were repeatedly manipulated because fishers used several litres on a daily basis. The amount spent per Dagaa fishing trip to deeper waters was reported to range between 20-40 litres (Maugo Bwire, *tajiri* at Ikulu Island,

¹¹³ (US\$ 0.2-0.26)

28/8/2010), while 5-20 litres was used per Nile Perch fishing trip. In 2009-2011, the fuel costs at beach level ranged between TShs 1,800-2,300 (US\$ 1.2-1.5) a litre.

Theft and piracy have a great impact on investment opportunities on Lake Victoria. While crews are at risk of being killed, boats, outboard engines, nets and fish catches are prone to theft. The replacement costs are borne by the *matajiri* and the crew. When respondents were asked what the main fishing investment risks were, 88 per cent identified piracy, 98 per cent theft, 73 per cent water accidents, 62 per cent unknown fishing prices, 79 per cent bad weather and 57 per cent catch variability (responses are not mutually exclusive). 100 per cent of the Nile Perch and 49 per cent of the Dagaa fishers had been victims of theft and piracy 1-5 times (Table 7.5).

Table 7.5: Number of times respondents have been victim to theft or piracy (in%)

Number of times	Theft (N=154)	Piracy (N=154)
1-5	100	49 ¹¹⁴
6-9	72	33
10-14	57	18
15-19	45	10
20+	28	5

Source: Field study (2009-2011)

It was also reported that when fish are transported to the EPFs' doors, they are accompanied by high-powered speed boats with armed security guards, who communicate their position regularly. These 'flotillas' will regularly change their routes, in an attempt to avoid detection by pirates. All the same, Nile Perch fishers spend many hours out on the lake, so as never to leave their nets unattended (Table 7.11), unlike in the days before commoditization when fishers would set their nets, and haul them out the day after (FGDs Lugata elders, 17/11/2009).

Moreover, respondents agreed that (responses are not mutually exclusive), theft (88%) and piracy (85%) were the main causes for fishing exit. Others were old age (68%), lack of financial support (79%), high operational costs (64%), too much spending on beer (56%) and women (63%), unreliable prices (76%), catch variability (63%), competition (62%), poor planning and mismanagement of funds (54%), cheating by crewmembers (21%), social conflicts (19%) and confiscation of gear by government officials (14%). Elders from Lugata affirmed that theft and piracy excluded elderly and local traditional fishers from fishing because it was traditionally unethical. As one commented:

"Theft and piracy have changed our way of life on Lake Victoria. The fishery is dominated by exploitation, revenge and robbery which we old people and traditional fishers cannot abide. People are chased from the lake by powerful, armed fishers like criminals, they are robbed and killed. We can't do that because we have great responsibilities in our communities. It is saddening to see this and we are now totally excluded. Even our own sons don't accept us to fish with them anymore! They tell us 'father stop, leave it to us' to prevent us from seeing what they do to take revenge on others. They know they can't make profits once we get involved because we can't accept their immoral deeds" (Philip Simeon Mtoso: 17/11/2009).

¹¹⁴Many victims were shore-based (fishers, shop owners, bar owner, traders).

Theft and piracy on Lake Victoria have been reported widely by various scholars (Geheb, 1997:107; Geheb et al., 2000:60; Geheb and Binns, 1997:85; Gibbon, 1997b:37;44; Jansen, et al., 1999:14; Medard, 2000:95; 2005a:108; Sobo et al., 2006:5;7; Wilson, 1996:223). This has made security systems in fishing predominant. Jansen et al., (1999:14) reported that in Kenya crew illegally carried guns to protect themselves and also to hold up other boats.

7.5 How *matajiri* persist in fishing activity

Credit, indebtedness and indenturing serves EPFs well. For the *matajiri*, these relationships ensure that credit is available that they might not otherwise have been able to access through formal financial institutions (Medard, 2003b:80; 2005b:179; Heck et al.,2003:41;Wetengere and Kihongo, 2012:211). Interviews with formal bank officials from the National Microfinance Bank (NMB), National Bank of Commerce (NBC) and Azania Bank confirmed that fishing was not a sector they typically provided credit to, given the risky economic environment¹¹⁵ as indicated in (a) - (e) below. Non-profit financing organizations such as the Savings and Credit Cooperative Societies (SACCOs), the Foundation for Community Assistance (FINCA), the Financial Service Association (FSA) and others, however, did issue group and individual loans. The following were reasons given by formal bank officials for not extending loans to fishers:

- (a) There is a high risk of theft, insecurity and piracy in fishing communities.
- (b) Catches are unpredictable and seasonal and so, too, is income.
- (c) Fishers' migration and mobility mitigate against bank traceability and follow-up.
- (d) Banks will need to invest heavily in speedboats, intensive security systems and training in sea safety in order to deal with fishers.
- (e) There is lack of insurance for fishers' boats and other equipment.

While banks seem to envisage operational challenges, EPFs have managed to loan money to fishers for years. EPFs ensure strict loan disbursement such that the loan or costs are carried forward and deducted when catches are delivered. This has been possible because of the direct dependence relations between fishers and EPFs in fish production and markets.

Credit from EPFs however, is not free for all: conditions, including collateral, are set to reduce the risk of anyone absconding. Involvement in fishing (*know-what* is being done), business collateral and social networks (*know-who* is eligible) are important for someone to be eligible for EPF credit support. Moreover, the capital investment needs to be significant and fishers should demonstrate that they are capable of running the fishing camps (Textbox 7.2). Those with less capability need to be embedded in big *tajiri* as sub-contractors (Chapter 3). Consequently, sub-contractors are strictly subjected to indenturing relationship with big *matajiri*

¹¹⁵ FSA Mkolani Branch 23/2/2011: Mzungu, Nunu, Eufasia Chuma and Denis Mathias (Credit Officers). Azania Bank 24/2/2011: Benedetha Makigo (Branch manager), Godfrey Msoka (Assistant Manager) and Msuya Benson (Credit Officer). NBC Bank 23/2/2011: Godfrey Mtawa Branch Manager. NMB Bank 24/2/2011: Nazareth Lebbi (Branch Manager) and Joseph Moshi-NMB (Commercial Manager).

(contractors) through fish-supply and labour tying loans. One *tajiri* at Chikuku tells more:

“It is not possible to get credit directly from EPFs. Many of us, we get loans through big matajiri who supply fish directly to EPFs. In order to do so, we have to work under their empire as sub-contractors through a pre-arranged agreement for us to be able to sell our fish to them and access cash loans and capital assets provided to them by EPFs. This is how we access credit, as well as the market. But you should know that fishing on this lake needs tolerance. It is not only getting loans and capital assets. By working in someone’s empire we learn fair and unfair tactics and how victimization is normalized from the upper to the lower hierarchy in fishing. The coaching is hard but we keep our mouths shut. We have to paint our boats with their charter (colour and logo) so that we can prove that we belong to them in order to access loans, markets and armed security patrols. It is hard to fish if you are not protected on this lake. This is how we survive” (Interv no 60014; 13/11/2009).

In most cases, however, *matajiri* rarely have the required capital available: they have to raise it elsewhere. There are, of course, many other strategies, but this is the heart of how they establish their reputations and their networks and gain access to credit markets.

Some conditions for getting credit imposed by the EPFs are summarized below:

Textbox 7.3: EPF Credit market conditions extended to *matajiri*

- (a) Having a well-established and functional fishing camp with at least five motorized fishing boats. This is regarded as a minimum commitment to fishing because a single Nile Perch fishing boat with accessories is worth about TShs 13.1 million (USD 8,751).
- (b) Details about the number of years applicants have been involved in fishing, areas previously fished and sources of initial capital (to avoid possible loan defaulters).
- (c) Assessment of monthly loan repayment possibilities by considering investment capacity and estimated average amount of fish harvested on a weekly basis.
- (d) The presence of collateral, such as houses, farms, vehicles and business ventures other than fishing. A number of camp owners said that they had surrendered original vehicle registration certificates, certificates of land occupancy and house and farm purchase contracts.
- (e) Applicant connections with at least one person who supplies fish to EPFs for cross-checking credibility and reputation.
- (f) Records of permanent physical addresses, marital status and the name of next of kin for succession and follow up on loan recovery.

Source: Field study (2009-2011)

Once credit relationships have been established between *matajiri* and their fish buyers, they tend to become dependent ones, because very few *matajiri* are able to obtain credit from multiple sources. They are dependent on EPFs. This is why personal characteristics come in to play and, for the successful *matajiri*, shrewdness and guile prevail.

In recent years, *matajiri* are increasingly joining SACCOs for credit access, thus permitting them to engage in dual-investment strategies, diverting and swapping their returns into other, less risky undertakings. Credit from these sources has less to do with relationships and more to do with self-discipline and creditworthiness.

The EPF markets for fish, then, hand down credit and market conditions and encourage significant dependencies. The global markets have their quality and supply conditions. These are passed on to the EPFs, who in turn pass these on to the *matajiri*. But these conditions are all hard to meet, and a quasi-legal structure, based on dependencies and networks, has evolved that collectively seeks to address demands for fish of a particular quality. Creating dependencies serves to reduce risks, particularly in terms of fish supply, and lubricates the system as a whole through the provision of significant credit.

7.6 Credit markets, fish markets and *matajiri* decision making power

This section is based on a series of questions about who makes key decisions in the fishery, so as to understand the drivers of power sources in fishing, and in the commoditized fish and fish product markets. The questions were asked in three areas: (i) fish markets (fish buyers) (ii) credit markets (credit providers) (iii) *matajiri* (camp owners). The answers confirmed that fish buyers and credit providers (EPFs and CDTs) control important activities in fishing. The majority of respondents thought that sourcing capital, deciding which fish to catch, to whom to sell the fish, fish prices, where to purchase fishing equipment and frequent replacement of worn out nets were determined by markets and credit markets (textbox 7.1).

Table 7.6: Respondents' agreement on selected investment decisions

<i>Which factor(s) determines your decision criteria in your fishing camp? (N=154)</i>					
Investment and marketing decision criteria	1=Market factor	2=Credit market	3=Both (1&2)	4= <i>Matajiri</i> decision	5=Others factors
1. Sourcing capital	83	83	71	11	2
2. Which fish to fish	62	68	81	10	2
3. Fish sizes to be caught	49	56	59	6	7
4. Where to fish on a daily basis	0	0	0	3	7
5. Where to camp	38	62	30	72	3
6. Replacement of worn out gear	42	51	34	11	4
7. No. crew to employ in each boat	0	0	0	100	7
8. Whom to hire at the camp	0	0	0	100	7
9. Remuneration system at the camp	8	12	10	83	2
10. Whom to sell fish to	55	70	95	1	1
11. Prices	78	74	80	3	3
12. Where to purchase fishing inputs	90	66	87	22	2
13. Gear type to use	41	81	72	36	2

Source: Field study (2009-2011); Responses are not mutually exclusive

Fish sizes, however, are controlled by credit markets and markets that exist in and around the Lake Victoria - localized, national, regional and global (Medard et al., 2015). Likewise, in Daga fishery, proportions of weight, quality and recipes for mixing Daga for animal feed are determined by markets. Where to camp for a certain period of time is determined by *matajiri* and markets, in order to avail facilities such as fish collection boats, trucks and ice (Table 7.6). Therefore, the relationships between investment and market decision criteria and the driving factors are linear in a number of cases, which proves that the markets are also the credit markets.

Power sources in fishing are also visible in information and communications. When *matajiri* were asked what information they received from fish market channels and which information they supplied to these channels, the majority of Nile Perch respondents replied that the main information received from EPFs were related to size¹¹⁶ of fish required (71%), fish prices (87%), fish quality (77%), loan possibilities (73%), fishing equipment supplies (77%) and related fisheries legislation. Camp owners in turn provided the following information to EPFs: Nile Perch fish availability trends (80%), proper nets required in different depth ranges (73%), available fish sizes (69%), proper fishing methods (89%), the available fish species (75%) and gear theft (74%). The latter occurred frequently and, so, the need for replacement. The same information was requested for Dagaa and Tilapia fisheries.

Table 7.7: Types of information supplied through the market channels (in %)

A: What information do you receive from your fish buyers (EPFs/CDTs)?	Nile Perch N=100		Dagaa N=42		Tilapia N=12	
	Yes	No	Yes	No	Yes	No
1. Proper ¹¹⁷ size of fish to be caught	71	29	86	14	75	25
2. Fish prices	87	13	79	21	58	42
3. Where to go and camp	5	95	10	90	0	100
4. Fish handling	77	23	79	21	75	25
5. Loan possibilities	73	27	62	38	33	67
6. Fishing equipment supplies	77	23	71	29	83	17
7. New legislation	93	7	95	5	83	17
B: What information do you (camp owner) provide to your fish buyers?						
1. Fish availability	80	20	74	26	73	27
2. Proper fishing nets	73	27	60	40	91	9
3. Available fish sizes	69	31	60	40	73	27
4. Proper fishing method	89	11	83	17	100	0
5. Available fish species	75	25	52	48	73	27
6. Gear theft	75	25	48	52	19	81

Source: Field study (2009-2011)

It is important to note that, some information from credit markets was restricted. This included (i) actual cash loans provided to *matajiri* (camp owners) (ii) different fish prices given secretly to *matajiri* and fish suppliers (Textbox 7.1) (iii) records of Nile Perch and Dagaa tonnages transported from fishing camps; and (iv) capital equipment (e.g. boats) supplied directly and indirectly by fish buyers and credit providers to individual camps. This information was basically obscured to hide the

¹¹⁶ With 'slot size' measure (Chapter 2) fish are placed in a slot of the required size and, if they fit, are accepted. The law sets a minimum slot size, so as to ensure a breeding stock of fish, but the markets have greater influence in its implementation. For the EPFs, too small fish are too hard to fillet, while those too big are considered to have lower quality flesh.

¹¹⁷ Recommended size of fish by authorities

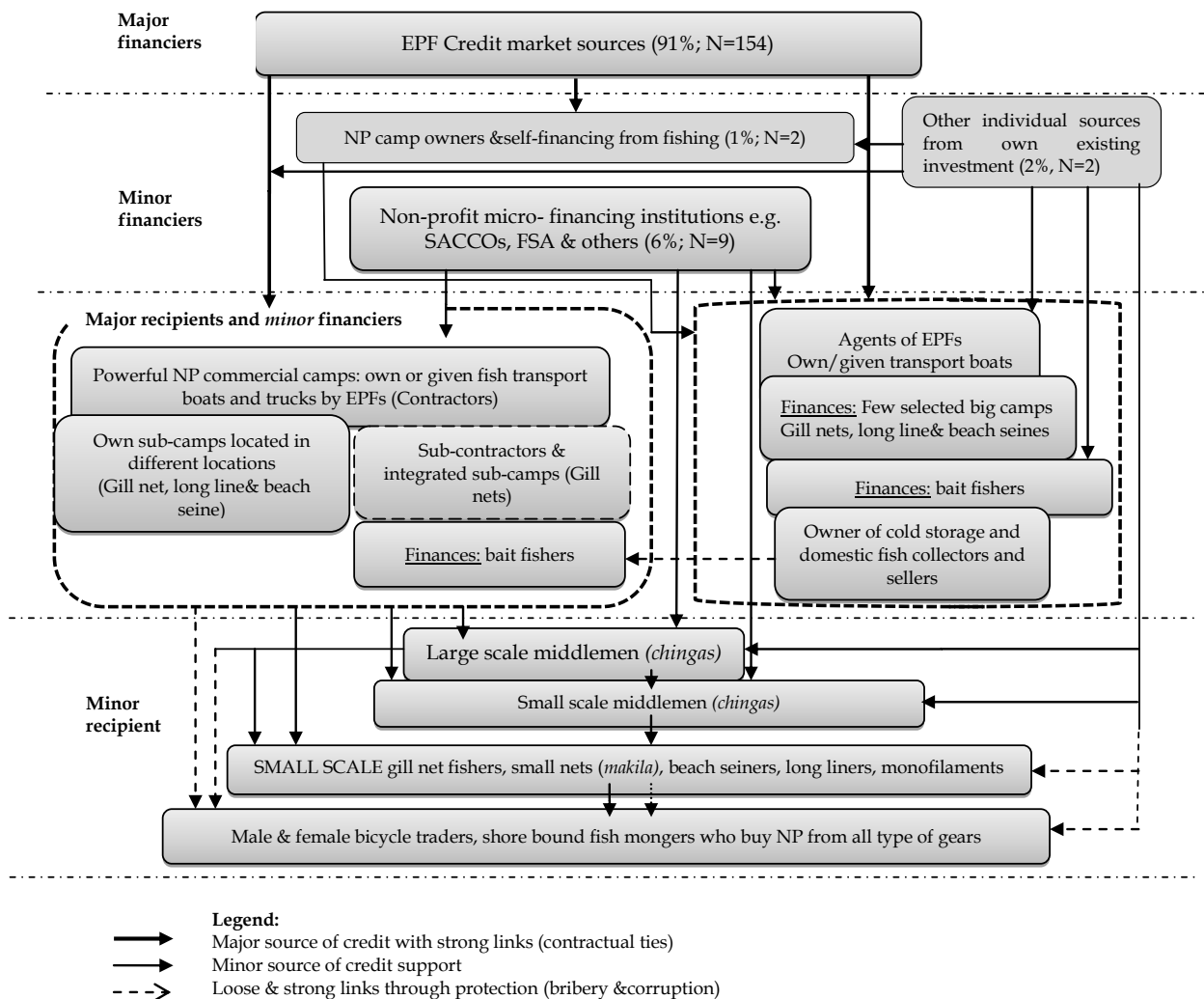


Figure 7.1: Nile Perch credit markets and financing hierarchies

Source: Field study (2009-2011)

tonnages of Nile Perch and Dagaa supplied to EPFs and CDTs; as well as the direct involvement of fish buyers and credit sources (EPFs and CDTs) in fishing, which is not allowed by law and (iii) to evade levies and taxes paid to both local and central governments.

EPFs are key providers of credit support to camp owners (91%). Other sources are SACCOs (6%) and the remaining three per cent is from small alternative sources. The major recipients in the Nile Perch fishery are commercial camp owners (*matajiri*) and agents of EPFs. To exemplify: during the study, one *tajiri* from Magu District received a loan for nets and outboard engines worth TShs 400 million (US\$266,667) from an EPF because of his ability to deliver high tonnages of fish. Such *matajiri* are continually head-hunted and are known as 'giant fish suppliers'. One factory director confirmed this:

"We have been able to assist fishermen and fish suppliers (agents) with over TShs 5 billion in 'easy terms of finance' from our factory for the production of fish and supply of fishing gear of the sizes

stipulated under national regulations. We are now working with 500 fish suppliers and we intend to work with 1,800 more to reach our overall target of 2,300. We do assist them to ensure the fish we receive are of good quality. We are committed as a company and TIFPA¹¹⁸ members to meet the national standards and zero tolerance policy on Nile Perch slot size measures" (Vedagiri, 29/7/2010).

Small recipients of loans in Nile Perch export channels include large-scale *chinga* and shore-bound collectors (small-scale *chingas*) who are provided with portable weighing stands, ice and containers in which to put Nile Perch. Women are also involved as shore-bound fish collectors and are linked to *matajiri*, camp supervisors, large scale *chingas* and crewmembers (Medard et al., 2015).

In the Dagua fishery, CDTs are the main providers of loans (50%) and some own fishing camps and, therefore, do both fishing and financing. The second source of credit is SACCOs¹¹⁹ (46%), the majority of which have offices at Kirumba market and provide services to low and medium income Dagua and *kayabo* traders, offering members a convenient home for their savings and access for loans (Figure 7.2). Very few get credit support from frontier traders (4%) and their own sources (0.5%).

Through SACCOs, small and medium loans, saving plans, payment transfers and other services are provided to members. Most members find the credit risks associated with fishing more acceptable with SACCOs than formal banks, as stated previously. Also, through SACCOs members can learn about and help each other in economic and welfare issues such as education for their children, burial, sickness and serving time by working in groups. In other words, members are able to create social and economic networks for more benefits.

As stated previously, credit markets are diverse and evolve in different modalities. Figure 7.1 and 7.2 are examples of how credit is channelled in the Nile Perch and Dagua fisheries.

¹¹⁸Tanzania Industrial Fish Processors Association

¹¹⁹ Most fisheries SACCOs offices are at Kirumba market

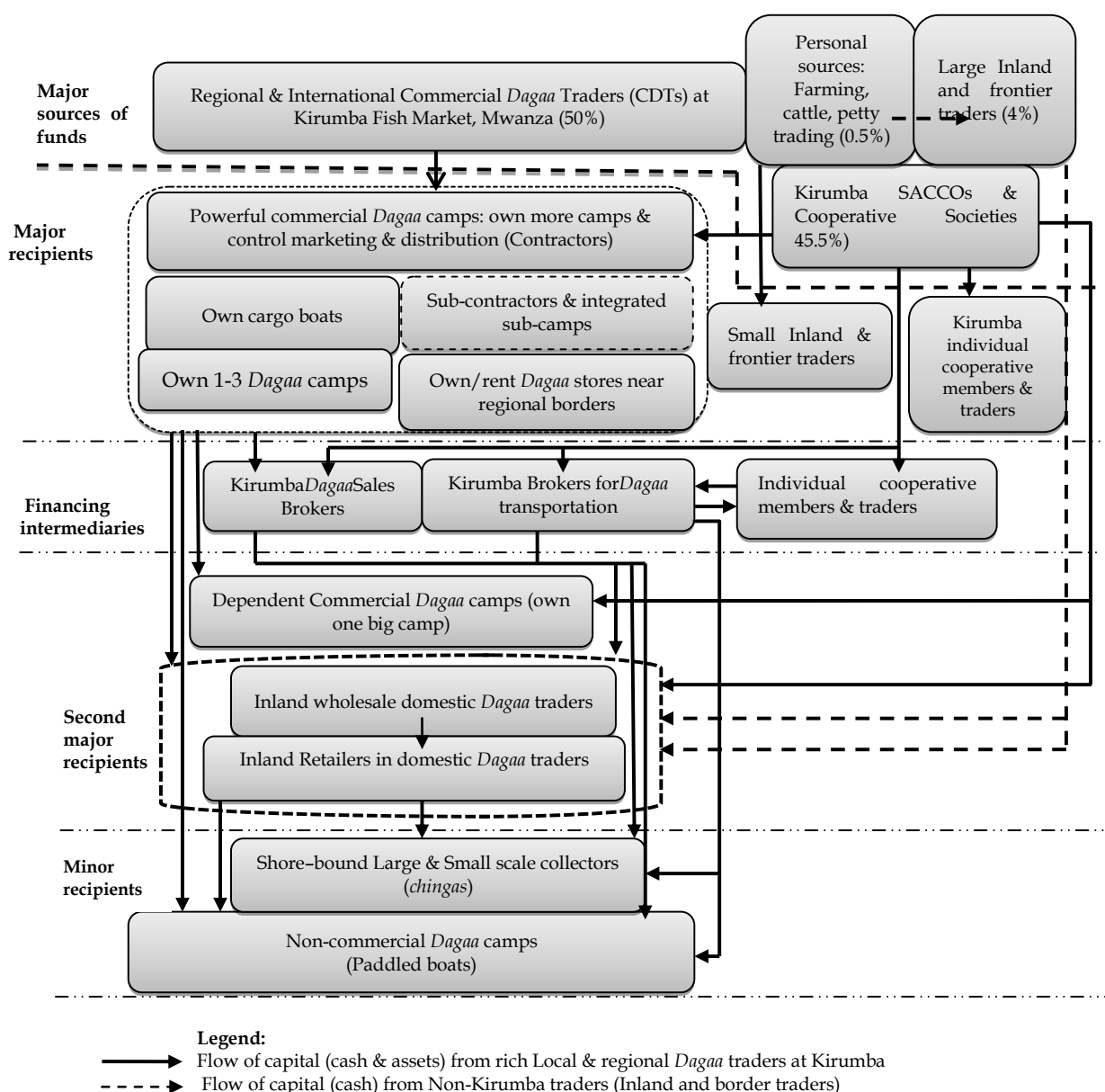


Figure 7.2: Daga credit markets and financing hierarchies

Source: Field study 2009-2011

7.7 Overcoming burdens: How *matajiri* reduce costs and risks

When camp owners were asked what they did to overcome fishing costs, risks and challenges, a diversity of strategies were offered (options were not mutually exclusive): setting camp bylaws to prevent labourers from stealing (100%); having a secret informer in each fishing unit (92%); use of armed patrols (74%); maintaining good relations with fellow *matajiri*, local leaders and community members (72%); and employing relatives or non-relatives as watch-dogs (20%). Efforts to deter theft are made by threatening severe punishment and include imprisonment, job termination, forfeiting labourers' unpaid wages, deductions, replacement of stolen items and even

flogging (Textbox 7.1). Finally, witchcraft and black magic were also used as a deterrent by camp owners. Such deeds were reported to proliferate because of competition to get fish. Equally, thieves and pirates use witchcraft to neutralise such power. One *tajiri* from Ukerewe attests to this:

“At one time, a tajiri who was funding my fishing activity brought a ‘Ha’ witch and traditional healer from Kigoma. He ordered his camp supervisor and the skipper of his cargo boat to be ‘immunized’ with herbs and body insertions for protection against pirates. You won’t believe this, but it is the truth and it works. This was done to protect their transport cargo boats against hijacking when ferrying fish to EPFs or bringing fishing equipment and money to their camps. Boats protected in this way become invisible to pirates. But yet it is counteracted. Many thieves and pirates also use witchcraft to protect themselves against death and being caught. I also had many superstitions while fishing in the past but it didn’t work. Now I am a true Christian and strong and I know I was totally wrong” (Interv no 60029, Galinzila Island: 21/5/2011).

Sorcery and witchcraft are considered more evil than good.

Other strategies also exist, one of which is externalizing costs and risks to sub-contractors and camp labourers by larger chartered camps. The sub-contractors are forced to sell their fish at reduced prices, to accept fake weighing scales, to abide with larger camps bylaws and conditions, and to migrate to another area whenever the owners of larger camps decide so.

Larger chartered camps do not allow poor fishers from small camps to encroach upon larger camps’ fishing grounds or to camp near them if they are not sub-contractors. This allows their empire to be protected. Two Nile Perch boat renters and monofilament (*timba*) and *makila* users at Ntama (Kome Island) explain how this works:

“It is not easy to fish together with powerful fishers. The fishing area is patrolled by armed guards throughout the night, who can knock you into the water. We are not allowed to set nets in their fishing areas. If they go west, we go east, and we never fish off shore waters. Any person who approaches their fishing area is directly connected to theft, and with that you can be jailed or die easily” (Mulengwa Mbutu, pers. comm. 20/11/2009).

“We don’t dare to sleep on the lake because we are poor fishers. We set our nets in the evening and come back for them in the morning. Crews from the big camps use guns while fishing. They are so boastful and brutal. They can shoot you intentionally or accidentally and, when you die, nobody cares. We fish for the mamas who finance us and we don’t expect much” (Soni Luhojo, Kome Island 20/11/2009).

This study also found that *matajiri* survived by setting two different prices: secret prices offered by fish buyers and reduced prices declared to sub-contractors and the camp labourers. With such arrangements, more fish supplies are accrued and labour costs are reduced. The latter is achieved through centralized coordination that helps to broaden the gap between *matajiri* and labourers to curtail negotiations. To prove this fact, catch records, prices and recurrent costs were gathered for a period of one year (2010) from 10 individual Nile Perch fishing units and for two years (2010-2011) in five individual Daga fishing units at Kome Island (Table 7.9 and 7.10) to show how *wajeshi* and *matajiri* income is distributed in favour of the latter.

In the Dagua fishery, *matajiri* would (a) carefully record monthly catches from each fishing unit (b) inflate recurrent costs; and (c) set two different prices. P1 = the selling price (TShs 42,000)¹²⁰ at Kirumba market which was not disclosed to *wajeshi* and sub-contractor camps. During the study, the prices ranged between TShs 42,000 and TShs. 45,000. P2 = the disclosed price at the camp and this determined how proceeds were divided between *wajeshi* and *matajiri* (TShs 19,000) after deducting camp costs. During the study it was between TShs 17,000 and TShs 19,000. The balance (income/loss) was split in half and shared between *tajiri* and four crew in a single fishing unit.

From the table below, hidden income (iii), is undisclosed income to camp labourers at P1 prices. The total of hidden income plus half of the shared income after dividing halfway between the owner and four crew is (iv). Declared income, is the income which is calculated at reduced prices and revealed to camp labourers (v). Declared income minus cost is (vi). Income or loss split in half is (vii): half is for owner and the remainder is for four¹²¹ crew.

¹²⁰ Ca. 36 kg of *Dagua* (loose filling of *Dagua* sack, locally known as *chekencha*)

¹²¹ In a motorized fishing boat and not peddled

Table 7.8: Income and costs (incl. labour) in Dagua commercial camps in five fishing units (2010-2011)

Month	(i) Bags of Dagua	(ii) Operational Costs	(iii) Matajiri hidden income	(iv) Hidden income plus half of shared income	(v) Camp declared income	(vi) Declared minus costs	(vii) Income/loss shared halfway	(viii) Single crew share (out of 4)
Hidden calculations by Matajiri				Declared calculations by Matajiri				
2010	P1= Matajiri market price TShs 42,000(US\$28)			P2= Labourers reduced price TShs 19,000 (US\$13)				
Jan	59	1,341,400	2,478,000	2,367,800	1,121,000	(220,400)	(110,200)	(27,550)
Feb	43	579,000	1,806,000	1,097,900	817,000	238,000	11,900	5,950
March	30	522,500	1,260,000	1,283,750	570,000	47,500	23,750	5,938
April	89	1,676,200	3,738,000	3,745,400	1,691,000	14,800	7,400	3,700
May	109	1,802,998	4,578,000	4,712,001	2,071,000	268,002	134,001	33,500
June	78	1,146,500	3,276,000	3,443,750	1,482,000	335,500	167,750	83,875
July	70	854,100	2,940,000	3,177,950	1,330,000	475,900	237,950	118,975
Aug	94	1,155,700	3,948,000	4,263,150	1,786,000	630,300	315,150	157,575
Sept	86	1,004,300	3,612,000	3,926,850	1,634,000	629,700	314,850	157,425
Oct	131	1,510,300	5,502,000	5,991,350	2,489,000	978,700	489,350	244,675
Nov	36	372,800	1,512,000	1,667,600	684,000	311,200	155,600	77,800
Dec	60	1,369,300	2,520,000	2,405,350	1,140,000	(229,300)	(114,650)	(57,325)
Total	885	13,335,098	37,170,000	41,306,601 (US\$ 27,538)	16,815,000	3,479,902	1,632,851	646,963 (US\$ 431)
Monthly average income for Matajiri				3,442,217(US\$ 2,295)	Monthly average income for a crewmember			53,913(US\$ 36)
2011								
Jan	127	1,468,100	5,334,000	5,806,450	2,413,000	944,900	472,450	118,113
Feb	25	585,000	1,050,000	995,000	475,000	(110,000)	(55,000)	(13,750)
March	32	963,700	1,344,000	1,166,150	608,000	(355,700)	(177,850)	(44,463)
April	15	540,900	630,000	502,050	285,000	(255,900)	(127,950)	(31,988)
May	25	731,800	1,050,000	921,600	475,000	(256,800)	(128,400)	(32,100)
June	90	1,733,500	3,780,000	3,768,250	1,710,000	(23,500)	(11,750)	(2,938)
July	79	1,120,400	3,318,000	3,458,300	1,501,000	280,600	140,300	35,075
Aug	73	1,140,400	3,066,000	3,189,300	1,387,000	246,600	123,300	30,825
Sept	135	1,475,000	5,670,000	6,215,000	2,565,000	1,090,000	545,000	136,250
Oct	121	1,378,000	5,082,000	5,542,500	2,299,000	921,000	460,500	115,125
Nov	108	1,396,000	4,536,000	4,864,000	2,052,000	656,000	328,000	82,000
Dec	139	1,141,500	5,838,000	6,587,750	2,641,000	1,499,500	749,750	187,438
Total	969	13,674,300	40,698,000	43,016,350 (US\$ 28,678)	18,411,000	4,636,700	2,318,350	704,826(US\$ 470)
Monthly average income for Matajiri				3,584,695 (US\$ 2,390)	Monthly average income for a crew member			58,736 (US\$39)

Source: Field Study 2009-2011

Likewise, in the Nile Perch fishery data from ten motorized fishing units were involved and each fishing unit had three *wajeshi* who shared proceeds equally, based on the harvested kilos of fish. *Wajeshi* were offered reduced prices of TShs 500 (US\$ 0.3) per kilo of Nile Perch landed on a daily basis, yielding TShs 167 (US\$ 0.11) per crewmember. Once sold on, however, *matajiri* could fetch between TShs 3,600-4,000 (US\$ 2.4 - 3) per kilo from EPFs.

Table 7.9: Income, costs and reduced prices in 10 Nile Perch fishing units (2010)

Fishing unit	Annual total catches (kg)	Monthly average (kgs)	<i>Tajiri</i> income @TShs. 4,000 per kg	Annual* expenditure/ fishing unit	Crewmember income@ TSh. 500 per kg (reduced price)	Single crew annual income
1	5,475	456.5	21,900,000	21,729,075	2,737,500	912,500
2	5,390	449	21,560,000	22,160,750	2,695,000	898,333
3	5,359	446.5	21,436,000	22,685,657	2,679,500	893,167
4	5,226	435.5	20,904,000	23,258,423	2,613,000	871,000
5	5,327	443.9	21,308,000	21,860,770	2,663,500	887,833
6	6,237	519.7	24,948,000	21,952,770	3,118,500	1,039,500
7	5,324	443.6	21,296,000	22,151,682	2,662,000	887,333
8	5,147	428.9	20,588,000	22,040,891	2,573,500	857,833
9	5,778	481.5	23,112,000	13,191,000	2,889,000	963,000
10	7,292	607.6	29,168,000	10,049,400	3,646,000	1,215,333
Totals	56,555		226,220,000 (US\$150,813)	201,080,418 (US\$ 134,054)	28,277,500 (US\$ 18,852)	9,425,832 (US\$ 6,284)
Average Annual av. Income/month		471.27	18,851,666 (US\$ 12,567)	16,756,702 (US\$ 11,171)	2,356,458 (US\$ 1,571) (US\$ 131)	785,486 (US\$ 524) (US\$ 44)

Note: * Totality of all cost recorded from individual fishing units in selected (two) camps. They include fuel, food, oil, repairs, security, transportation and communication, firewood, shared boat licensing, shared fishing licensing, various donations to district authorities, local government fees, shared cost of bribe to officials, land fee and other minor costs. Although annual cost/fishing unit were higher in some fishing units, costs were manipulated and inflated in favour of *matajiri*. Moreover, crew payments were calculated at reduced price (TShs 500) an indication of *matajiri* exploitation over crewmembers.

Note ** Three crew in each fishing unit

Source: Field Study, 2009-2011 (1 US\$ = TShs. 1,500)

From Table 7.9, the monthly average Nile Perch catch was 471 kg, with a minimum catch of 212 kg and a maximum of 2,100 kg (from two selected camps). Average monthly expenditure was TShs 16,756,702 (US\$ 11,171) with fuel (including security and patrol costs) assuming the largest proportion (51%), followed by food (6%), engine repairs (6%), net repairs (3%), and communications (0.5%). In four camps monthly loan repayments (19%) to credit markets (EPFs) were also counted as camp costs and, therefore, inflated the monthly fishing expenditure. Crew in the Nile Perch fishery actually earned much less than what is indicated in Table 7.9 because the income was based on allotted number of days for *matajiri* and crew (see Chapter 6). Given that the price for Nile Perch declared at the camp was TShs 500 (US\$ 0.3) a kilo, crew's incomes per month were incredibly low (TShs 66,000; US\$ 44).

Therefore, such deeds nullify the claim that '*matajiri* were in the fish business not only because it was a money making activity but because they were tied to the credit markets and fish supply-tying loans' (Textbox 7.1; 7.3 and interv. no 60082). What they do isn't necessarily the externalisation of costs: labour is, after all, a cost. In this sense, costs are *reduced*, but not necessarily externalised. It could be *argued* that *matajiri* generate very significant profit margins by maintaining very low labour costs.

The other way for *matajiri* to subsist in fishing was through spreading/investing their income in other activities, mostly in farming (90%)¹²², education for their children (88%), livestock (40%), livestock products (25%), shops (12%), hotels (8%), transport businesses (6%) and rental and guest houses (35%). Such diversification helped to reduce their total dependence on fishing. In Lake Victoria basin communities, livestock is regarded as a stock of assets. It is not only for meat and milk. Herds function as savings and insurance (Geheb, 1997:35; Medard, et al., 2002a:197; Ocholla-Ayayo, 1976:30). Fishers' investment in education for their children (see sect. 7.5) is part of their long-term exit strategy.

One important thing to consider is the nature of Lake Victoria's fish markets. As argued previously, commodification has arisen because of the high demand for fish in all geographical streams - the local, the regional and the global. Cash obtained from fish trading attracts many and creates diversity of transactions and distribution networks (local and global), thereby enabling commodification and, indeed, commercialisation. These are voracious markets. They cannot be exhausted. The point here is that *they are external to Lake Victoria*. This creates an interesting enigma in the Lake Victoria *arena*. In classic Marxist critiques of capitalism, it is not in the interest of capitalists to under-pay their labour, because their labour is also the market. If workers cannot afford to buy, for example, cars, then there's no point in producing them. But on Lake Victoria, the market is not defined by the labourers, and, therefore, *matajiri* have no interest in increasing their payment. The market is defined by competing fish buyers and credit markets. This seems to me a key aspect of the commodification of this fishery. Likewise, commoditization in Lake Victoria is not just about the markets. A declining fisheries resource base which is characterized by high catch variability (Ngupula and Mlaponi, 2010; Njiru et al., 2009) also contributes. Empire creation would seem to me to be a clear reaction to the fish supply problem.

It is also important to note how interconnected agriculture, livestock keeping and fishing strategies are around the lake. Not only do many people employ multiple income-generating activities across the three economies, but the entire local and regional fish market can be affected by agricultural trends. For example, Geheb et al. (2008:94) describe how, in Bukoba (Tanzania), when the coffee harvest comes in, the price of most consumer goods increases because more cash is available via coffee sales. Similarly, when catches are good, fishers can spend their income on agricultural and other consumer and non-consumer produce. Also, a high unemployment rate (10.7%) in the country¹²³ coupled with the low agricultural

¹²²Response were not mutually exclusive

¹²³ (<http://www.tradingeconomics.com/data-all-countries.aspx>).

potential of the area, has meant that fishing remains a major livelihood economic activity for the lake region.

7.8. Growing tendencies and counter-tendencies in the Lake Victoria's fishing arena

There are emerging tendencies, counter-tendencies and tensions within local communities and among vulnerable fishers who are not sub-contracted by powerful *matajiri*. They all co-exist in this competitive fishery. These fishers are tied-up in a fragile network of relations by 'male and female shore-bound traders', who supply them with small capital costs. A number of fishers have joined the Tilapia fishery and fish with rafts made from reeds. These fishers are beholden to local, domestic and regional Tilapia buyers and auctioneers. Others have joined the bait fishery (for Nile Perch fishing) and fish in critical habitats (Chapter 2). The relationships between all of these actors play out in ways that influence fish exploitation patterns and organization and marketing. They are evidence of the new ways in which the fishery has evolved, pressured by global, regional, national and local demands existing within a wider context of intense rural poverty, poor governance and a declining resource base.

Textbox 7.4: Counter-tendencies: Uncertain *makila* and *mula* (raft) fishers

A *makila* (small illegal mesh gillnets) fishery, which is labelled as an illegal form of Nile Perch fishery, conducted with prohibited nets (Chapter 4, textbox 4.1), is an example of many counter-tendencies and various types of struggle, resistance against dependence, subordination and exclusion from export markets. Fishing in Lake Victoria is shaped by a diversity of fishing relations and networks. Fishers are entangled in other forms of relations, as described below:

'Mula' fishery

'Mula' rafts are made from reeds. The raft supports just a single person, and started on Lake Victoria, Tanzania, in 1995 by the Zinza community from Sengerema District. By 2006, the use of *mula* had spread to other areas, targeting Tilapia. *Mula* replaced dugout canoes made from logs as a result of deforestation and the lack of big trees along the lake shores. To own a *mula*, about TShs 35,000 (US\$ 23) is needed. The fisher uses a maximum of 10 hooks at one time (using both toes and fingers). Each fisher owns a so-called 'fishing plot' which is demarcated by stone sinkers and a floater. Once the plot is established, fishing takes place daily without interference. The plots tend to be located over rocky areas (favourable for Tilapia), with a small portion of sandy bed, onto which bait is dropped to 'charm' or attract fish. *Mula* fishers venture onto the lake twice a day: in the early morning and in the evenings. On average, *mula* fishers earn between TShs 2,500-10,000 per day. In some parts *Mula* fishers in this fishery have financiers and guarantors who auction fish on their behalf, keep their cash and supply them with the rice husks and cereal flour which appears to be the most expensive input in this fishery. The *mula* fishery requires little up-front investment, and recurrent costs are low.

"We joined Tilapia fishery because crew in the Nile Perch fishery are severely exploited. Three crewmen will fish for 21 days without payment, and on the 22nd day, one crewman is paid, takes his rest and is replaced by another crewman. They fish for another 21 days and on the 44th day, a second crewman is paid and the rotation continues. There are two shifts of crew in mainland fishing camps around here, each with three crewmen. Do you see how much time a crewman must suffer without a

job and food for his family? Also, crew earn only TShs 500 (US\$ 0.3) for each kilo of fish that is landed. Fishing in such an arrangement needs young people who have few commitments. I could not tolerate it because I wanted to settle and start a family. This is why crew in Nile Perch fishery steal fish while on the lake. It is because of exploitation. They get tempted to steal and this will never end. When they survive, they get the courage to continue fishing, as well as stealing, but otherwise it is intolerable. Crew in those camps are not allowed to take fish for their home use while this is the immediate protein we have. It is total humiliation. This is what made the majority of us fish independently with *mula*" (Erasto Paul, a *mula* fisherman: Mwanchimwa, 17/9/2009).

Mula boat-crew and bait fishers reported to have better lives: most of them had built houses, bought motorcycles, had good clothes and paid school fees for their children, unlike those who worked as crew for women shore-bound traders and in commercial camps. They identified independence, freedom from camp controls, cruelty and exploitative remuneration systems, and the liberty to catch fish for home consumption as some of the advantages of *mula* fishing. They were also satisfied with the relative flexibility to negotiate prices with fish buyers. The most important satisfaction observed, however, was their contribution to providing fish to the local communities. They had strong support from their communities as a result.



Photo 7.1: A raft (*mula*) and Tilapia fisherman at Nyakasenge (Magu)

These fishing relations are, however, threatened by officials who claim that *mula*, *makila*, *timba* and beach seine nets should be confiscated and set on fire (MCS-TNWG, 2009). They complain that most of them are unlicensed and unregistered. As a consequence, such fishers paid bribes endlessly, if they were to continue fishing. They also faced several additional threats. *Makila* boat-crew are threatened by the theft of their fish because they leave their nets unattended in the water overnight, for fear of armed patrols from larger camps. Moreover, their nets are often snagged by motorized commercial boats when passing through shallow waters.

Lastly, the mushrooming of Nile Perch Cold Storage Facilities (CSFs) which compete with EPFs is a good indicator of counter-tendencies, resistance and struggle in Nile Perch fishery (Chapter, 4). CSFs have gained popularity (Medard et al., 2015) and attracted a number of fishers and fish traders.

“We mostly get our fish supplies at night because our suppliers experience a lot of obstacles during the day from officials who collude with EPFs to victimise us. The latter have informers to monitor their suppliers” (CSFs owner, June, 2012).

7.9 Summary of the chapter

Markets and credit markets are key drivers for investment decisions in Lake Victoria Tanzania and, through them, prices, capital and material inputs, fishing methods and knowledge about fish handling and other information are obtained (Table 7.7). Remuneration and share systems, which are majorly dependent on prices, quality of fish and distribution networks among others, are also influenced by markets and credit markets.

This chapter shows that contractual arrangements initiated by credit providers in the Nile Perch export fishery are continuously reproduced in all other fisheries and fishing relations and they take part in all key decisions in fishing and fish trade. To date, investing in fish production is through *wawezeshaji* (enablers), of which the giant fish buyers and credit providers (EPFs and CDTs) determine whom to work within the networks. This has been possible through reciprocal tendencies whereby resources are mobilized and relations are protected in the credit market structure, fronted by the presence of dependent relations and systems of control implemented by market channels and credit markets. Within these, top actors benefit from lower actors. Although such arrangements have benefited a number of fishers who have accumulated wealth through indenturing, the system is, *inter alia*, characterised by reduced and downward externalisation of costs. EPFs externalise their costs to *matajiri* who, in turn, externalise costs to the *wajeshi* and other camp labourers. Similar systems have been adopted in other fisheries. It shows how the practices in the social arena are diverse, overlap and co-exist. These systems are characterised by high levels of obscurity and subterfuge – the use of two prices for catch, for example, or claims that fish are of sub-standard quality.

Market networks and credit markets dominate and control both fish exploitation and labour processes. In a highly commoditized market such as this one, this may be as it should be, enabling fish of high quality to be caught, quickly landed, preserved and despatched to the EPFs (for Nile Perch), but it also introduces very high levels of both economic and political inequality into the system. The system as a whole has monopolistic tendencies because the credit providers prefer to work with just a few, very powerful, *matajiri* from whom they can get good fish supplies. This limits the number of opportunities available for other fishers, who must work around the edges of the system if they are to gain something from it. It should also be remembered that the networks that dominate this system and its functions are also a resource, access to which is carefully controlled by those within it, for these networks confer the power that each player up and down its hierarchy has and wields. The chapter, therefore, shows what power is, how it is wielded and what emerges as a consequence.

The fish production and marketing systems are, at all times, assailed from both within and without. This prompts adjustments and innovation in an effort to protect the system(s) by those who dominate it. Theft, piracy, corrupt government officers (cf. next chapter), deceit, and intensive competition amongst *matajiri* and *wajeshi* all

conspire to force the system(s) into new directions. On the one hand, this serves to force innovation into the system; but, on the other, it consolidate the positions and dominance of the powerful. The form of such innovations depends on where in the system one looks. The EPFs have developed ways to secure reliable quantities of quality fish, while also seeking to increase their profit margins through deceit; the *matajiri* have developed stringent bylaws and patrol systems, externalized costs and also sought to territorialise the fishery, laying claim to large areas of fishing ground which they deplete before moving on. For the *wajeshi*, innovations focus on ways to beat the system - its scrutiny, patrols and rules - and to steal fish, if they can. Alternatively, the *wajeshi* move into smaller networks where they have more control or negotiating power (such as the *makila*, *timba*, bait and raft fishery), or where they are simply outside of it all, seeking solitude and control away from the privations of the fishery's dominant means of production.

The violence, nefariousness and inequalities inherent in Tanzania's Lake Victoria fishery are not only derived from the demands of a capricious market, but also from the fact that competition is high and increasing. The resource base on which it is founded is under immense pressure, such that the struggle in the arena is upfront. Fish - in the quantities, sizes and quality required - are getting harder and harder to get, and the biological and ecological literature demonstrates this amply. There is no aspect of the current system that is designed to reduce effort or fishing intensity on the lake. It functions as though the demand for, and supply of, Lake Victoria's fish is inexhaustible. It hardly needs stating that this may have very serious implications for the sustainability of this fishery.

CHAPTER 8

GOVERNANCE PRACTICES IN A GLOBALIZED FISHERY

"We as BMU members we have no power. We don't dare to obstruct them from illegal activities because we also contribute to this, otherwise we won't survive. Our lives are in danger because corruption and aggression prevail." (Interv. no. 600122; 20/8/2010, Ukerewe Island).

8.1 Introduction

From the mid-1980s onwards, structural adjustment programmes spearheaded a liberalization of Tanzania's governance systems and the economy. Since then, Tanzania has undergone fundamental political, social and economic changes (URT, 1996, 1998). It has moved from being a centrally planned and controlled one-party socialist state to being a modern, multi-party democratic state with an open economy. Poor performance, inefficiency and corruption in the public sector (URT, 1998:9) have contributed to the pressure to reform, as they have elsewhere in Africa (Olowu, 1999:4). A number of reforms, funded mainly with donor support, have been implemented (Therkildsen, 2000:62). The scope of these reforms varies widely, but all recent ones are based on objectives similar to those of the Civil Service Reform Programme (CSRP), which focuses on administrative reforms. Its objectives are, among others:

"to re-define the roles and function of the Government with a view to hiving-off functions not considered to be core functions and to reduce the scope of government operations to an affordable delivery of public service" (URT, 1996:1);

"to focus on issues of decentralization within the Local Government Authorities (LGAs). Major potential for service improvement (and more democratic governance) lies in the decentralization of powers and resources to the ward, village and service outlet level" (URT, 1996:11).

In the 1990s, the country embarked on the Civil Service Reform Programme (CSRP) and Public Sector Reform Programmes (PSRP). This process marked a definitive policy shift in how the public sector and public services would be organized and managed (URT, 1996:3). The CSRP included reform of local government systems, which led to the launch of a separate reform programme - the Local Government Reform Programme (LGRP) in 1999/2000. The LGRP was preceded in 1995 by the retired President Benjamin Mkapa's strategic electoral policy promises, which were formalised in 1998 in a policy paper on Local Government Reform, which spelled out a policy of Decentralization by Devolution ('D by D') (URT, 1996:3). In the same year, the process to re-enforce Local Government Systems (LGSs) or Local Government Authorities (LGAs) was implemented (URT, 1996:1). These moves were intended to ensure that decision-making about resource allocation, and government services,

were brought closer to the people, where they could be influenced both directly and indirectly, and to make them more responsive to local needs. Governance was, in these ways, intended to be improved.

Governance is a contested term and revolves around making decisions about allocating, managing and using resources efficiently, effectively and equitably (Olowu, 1999; Therkildsen 2001; WB, 1999). This is especially true in states where the policy environment is heavily influenced by the forces of administrative decentralization and government reform, market globalization, political democratization, rural empowerment and infrastructural development.

For Blake (2003:61), governance is the exercise of power by the full spectrum of state, civil society and private sector actors, through formal and informal channels, in domestic and international arenas. Hendrikse (2011) talks about governance mechanisms, which he refers to as tools that are used to coordinate activities between transaction partners or actors. This can all refer to Lake Victoria's fisheries, because different mechanisms and strategies are used through markets, networks and credit market channels to coordinate dependent actors and activities and to govern the resource depending on the pressures and/or incentives that they encounter.

That said, the chapter argues that money is the key driver governing and controlling fishing activities through market mechanisms. The activities are coordinated through networks that depend on motivations of individuals and groups to make money in production, distribution and marketing of fish and fish products. This means, the way in which the resource is managed has little or nothing to do with fisheries management and conservation but much to do with fisheries procurement and sales.

The main guiding questions in this chapter are:

- (i) *How and why* is the government trying to control and govern the fisheries of Lake Victoria?
- (ii) *How* are the fisheries governed and controlled by market drivers and networks in reality?
- (iii) *What* are the counter-tendencies and discourses at local level and how and why do they emerge?

I will discuss how management policy discourse relates to strategies and practices of actors and the consequences thereof in terms of governance of fisheries resources in Lake Victoria, Tanzania. The chapter focuses on how the fisheries management measures in Lake Victoria are designed to meet the needs of the fish export markets and not necessarily those of the fisheries management and the livelihood objectives of local actors. This is demonstrated by a focus on how primary resource users and their social systems (e.g. fisheries regulations and BMUs) are strategically and spontaneously dissolved in markets and networks and how corruption is a governing mechanism in the Lakes' fishery.

Corruption, writes Robbins (2000:424), "...is quite often the predominant organized system governing the use of nature". It is often defined as the abuse of public office for private gain, and bribery may be understood as an insurance policy taken out to avoid paying penalties for illegal activities. The size of a bribe is said to

be equal to the cost of the penalty multiplied by the probability of being caught and punished” (Cohen, 1999, cited in Smith et al. (2003)). This is, in part, true, but the concept is broader than this. It is also a means to reduce transaction costs, avoid fines, prosecution and so on. Corruption is the cost of political negotiation between one more powerful than the other, whether this is a government official and a small-scale farmer, two families debating a bride price, or a woman who skilfully obtains cash from her husband in return for sex (Geheb and Mapedza, 2008). As Olivier de Sardan (1999:35) comments, “[t]here is a continuum rather than a gulf between bribing someone and thanking someone for services rendered”. In any case, “...the price of open conflicts is too high. It is unthinkable to denounce to the police a relative, a neighbour, the relative of a friend, that is, someone with whom one has a personal tie, even a weak one: social disapproval would be too heavy” (Olivier de Sardan, 1999:30). Bribery and corruption, therefore, is much more than an economic, rent-seeking¹²⁴ exercise. The markets for corruption are deeply socialised in Lake Victoria (Chapter 3) and contingent on political power networks that serve to obfuscate regulations and the boundaries between authority and society because the former fails to coordinate actions in the hierarchies. In this context, corruption is also a means to avoid transaction costs.

The chapter is composed of the following domain of analysis. Section 8.2 gives a description of the ministerial structures, governing agencies and decentralization processes that purportedly govern the fishery. It also shows the historical transfer of the fisheries sector over to various ministries – an indication of the struggle within the government for a proper governance structure. Section 8.3 describes the essence of Lake Victoria regional management bodies, the official role of LVFO and the government, and policy objectives and how to achieve these objectives. It also shows the overriding governing power through projects and programmes. Section 8.4 describes Tanzanian governing agencies at national and local levels. Much focus is on local levels, in particular the ‘Beach Management Units’ (BMUs). It shows the level of implementation and how it is hijacked and subverted by its interaction with local realities, the power of markets and corruption, and through state apparatuses. Section 8.5 considers the outcome of these policies, in particular the booming of beach seine fishery, and how unfettered markets, local livelihood systems, networks and corruption determine governance practices in Tanzania’s Lake Victoria fishery. Section 8.6 looks at fish markets, corruption, and networks in the export industry and how the industry is driven by markets and global marketing tools, such as eco-labelling. EPFs are the main role players and the government is dissolved into them. Section 8.7 summarises the chapter.

8.2 Dual Ministerial mandate and bureaucracy

8.2.1 Core fisheries Ministries, related Ministries and complexities

Historically, the fisheries sector in Tanzania has been governed by a variety of ministries such as the Ministry of Agriculture, Forestry and Animals (MAFAs) (from 1962-1968), the Ministry of Agriculture and Cooperatives (MACs) (from 1968-

¹²⁴Rent-seeking is an attempt to obtain [economic rent](#) by manipulating the social or political environment in which economic activities occur, rather than by [creating new wealth](#).

1969) and the Ministry of Agriculture, Food and Cooperatives (MAFCs) (from 1969-1970). In 1964, the mandate for fisheries was given to the newly created Fisheries Department and between 1964-1971 three fisheries training institutes for marine (Mbegani and Kunduchi - Dar Es Salaam) and freshwater (Nyegezi-Mwanza) fisheries were formed. During 1970-1971, fisheries matters were handled by the Ministry of Land, Forestry and Animals (MLFA) before they were put under the Ministry of Natural Resources and Tourism (MNRT) between 1971-1984.

Later, between 1984 and 1985, the Fisheries Division was moved to the Ministry of Land and Natural Resources (MLNR), and from 1985 to 1995 it was placed under the Ministry of Land, Natural Resources and Environment (MLNRE). Between 1995 and 2008 it was once again returned to the MNRT. In December 1997, the first National Fisheries Policy Strategy (NFPS) was formed (URT, 2012a:51; URT/MNRT, 1997). In February 2008, fisheries was positioned under the Ministry of Livestock, Fisheries and Development (MLFD) (URT, 2012b:23), and 'fisheries' became part of ministerial key words, although it continued to be overshadowed by government preoccupations with livestock development.

Because it is a shared water body between East African states, Lake Victoria also has the attention of the Ministry of East African Cooperation (MEAC) as it is a shared resource for which harmonised legislation is required, and over which there are often tensions, such as cross-border conflicts. As an export commodity, fish is linked to the Ministry of Industry and Trade (MIT) which deals with the promotion of investment, product handling, processing, value additions, marketing to guarantee safety and quality standards, management of post-harvest and enhancing effective Public-Private-Partnerships (PPP) for the future management of the lake's fisheries (LVFO/IFMP, 2008:93). The sector is also involved in eco-labelling and other international export procedures and formalities. The Ministry of Environment (ME) is also involved to ensure the sustainable management of the environment, prevention and control of water pollution, liquid and solid waste management, environmental quality standards, factory establishment and environmental compliance. The lake is also relevant to the Ministry of Water and Irrigation (MoWI) to ensure that its water resources are developed and managed sustainably, to facilitate participatory irrigation and enhance sustainable agricultural production, food security, and poverty reduction. In recent years, the Ministry of Transport (MoT) has become involved through the lake's significant transportation utility and its ports. Finally, the police force (Ministry of Home Affairs - MoHA) is actively engaged in fisheries patrols, the confiscation of illegal gears, cross-border conflicts and theft and piracy matters.

At the national level, the fisheries portfolio falls under the Ministry of Livestock, Fisheries and Development (MLFD). But at the local level, fisheries fall under Local Government Authorities (LGAs), which in turn fall under the Prime Minister's Office (PMO), and the Ministry of Regional Administration and Local Government (MRALG). This duality, and the lack of coordination between these ministries, creates a variety of challenges that continue to plague the sector, particularly in terms of defining roles, responsibilities, decision-making and implementation. Low awareness of this duality, mixed objectives and priorities, differing capacities, different reporting lines, continued corruption and lack of joint planning prevails.

Moreover, decisions made by one ministry are often in contradiction to another's priorities, creating indecision, loopholes, ambiguity and scope for corruption.

The Civil Service Reform Programme (CSRP) has sought to improve service delivery at local levels by de-linking local government (LG) personnel from respective ministries and allowing LGAs to recruit their own personnel accountable to city, municipal, district and village councils. While the Fisheries Division is still the main policy maker on fisheries matters, it has no responsibility over the local level personnel who are supposed to implement these. This disempowerment occurs within the MLFD too.

The CSRP involves political decentralisation, which includes power devolution and the establishment of related rules and bylaws within a national legislative framework (URT, 1998:1) and enables the maintenance of law and order on issues of national importance. The LGAs are legally empowered to execute their roles and functions independent of national ministries. The main decision-making bodies at local levels are councils, which are constituted by political councillors and a few heads of departments. Councillors make decisions on budgets, hiring and firing staff, investments and development activities. However, these reforms have created tensions, challenges and problems. Abuse of power through corruption, bribery, nepotism, incompetence, antagonism, ignorance, conflicting interests and politics persists.

One fisheries officer explained to me that:

"It was better when we were in the Ministry of Natural Resources and Tourism. Things were clear and we could run our activities better. In here, our budgets are swallowed in the big basket. We can't plan for fisheries activities like before. Any activity has to be authorized by the topmost official, and you can't execute it if they are not involved. When we moved into this ministry, we were squeezed into an already established livestock framework and protocol. Things are worse. We are totally marginalized and disempowered" (Name Withheld, Dar Es Salaam, 26 May, 2011).

When BMUs were established in Lake Victoria fishing villages, one of the expectations was to empower these units financially and practically through revenue generated from fish and fisheries products through levies and taxes and by allowing fisher communities to plan and decide on their own resource management and developmental activities. CSRP processes, indeed, involve financial decentralization including the devolution of power to levy taxes within cities, towns and district councils. Councils, however, pay much more attention to income generation than management or conservation objectives and, therefore, aggressive individual tax collectors are given more preference for funds mobilization than groups (e.g. BMUs) are, where bribery negotiations might be difficult.

8.3 The role of regional Lake Victoria governance bodies

The regional collaboration on Lake Victoria started in 1927 when an authority was established to collect fisheries statistics (LVFO, 1999:3; Pringle, 2005a:780). The collaboration was cemented in 1947 with the formation of the Lake Victoria Fisheries Service (LVFS), whose responsibility was the collection of fisheries statistics for the whole lake, under the East African High Commission (EAHC). In 1949 the East African Freshwater Fisheries Research Organization (EAFFRO) was formed with its

Headquarters in Jinja, Uganda and other small offices in Kisumu (Kenya) and Mwanza (Tanzania). The LVFS, together with EAFFRO, combined administration and research. In the early 1960s the LVFS was dissolved and its functions were taken over by the newly independent governments of the three riparian countries (LVFO/LVFRP, 2001:3). EAFFRO was strengthened by the formation of the East African Community (EAC) in 1967, but its activities ceased with the sudden collapse of the EAC in 1977. The lake's management shifted to the Food and Agricultural Organization (FAO) of the United Nations (UN), through the Committee for Inland Fisheries of Africa (CIFA) sub-committee for Lake Victoria, which continued to coordinate the activities of the riparian states of Lake Victoria's fisheries (FAO, 1981). CIFA was formed in the 1970s to assist member countries to establish a scientific basis for fisheries regulations and other management measures (LVFO, 1999:3). Between 1991 and 1994, three meetings were held in the Lake Victoria region under the auspices of a FAO-CIFA sub-committee on Lake Victoria to discuss management issues, options and strategies for each of the lake's riparian states. These meetings led to the creation of the Lake Victoria Fisheries Commission (LVFC), which evolved into the Lake Victoria Fisheries Organization (LVFO) at a conference of plenipotentiaries on 30th June 1994 in Kisumu, Kenya (LVFO, 1999:4). The establishment of the LVFO was facilitated by the concerted effort of the three riparian states, the FAO and the EU, through the Lake Victoria Fisheries Research Project (LVFRP Phase I&II), and the World Bank and the Global Environmental Fund (World Bank /GEF) through the Lake Victoria Environmental Management Project (LVEMP- Phase I).

The LVFO is a regional organization under the EAC responsible for coordinating and managing the fisheries resources of Lake Victoria. The organization was formed through a Convention signed in 1994 by the three East African Community (EAC) States, and came into force on 24th May 1996 (LVFO, 2001) with much support from EU/LVFRP Phase II regional project.

The Lake Victoria Basin Commission (LVBC) and LVFO are both EAC agencies. While LVBC (Figure 8.1) focuses on environmental issues, water resources and poverty alleviation, the LVFO focuses on fisheries research and management matters. The LVFO decisions are made by the Council of Ministers responsible for fisheries, while those of LVBCs are made by EAC responsible ministries and other sectorial ministries from the member countries - Kenya, Tanzania, Uganda, Rwanda, and Burundi. The LVBC and LVFO are sometimes involved in a power struggle, competing for and lobbying through the EAC and donors independently to meet organizational ambitions, including the acquisition of funds from donor agencies to implement various programmes (New Vision, 1st August, 2008). This competition has given rise to concerns that there may be a conflict of interests between the LVBC and the LVFO, which has led the LVFO Policy Steering Committee (PSC) to propose a broader functional, institutional and financial analysis of the LVFO and its linkages to the LVBC and other EAC institutions (LVFO/EAC, 2007:12).

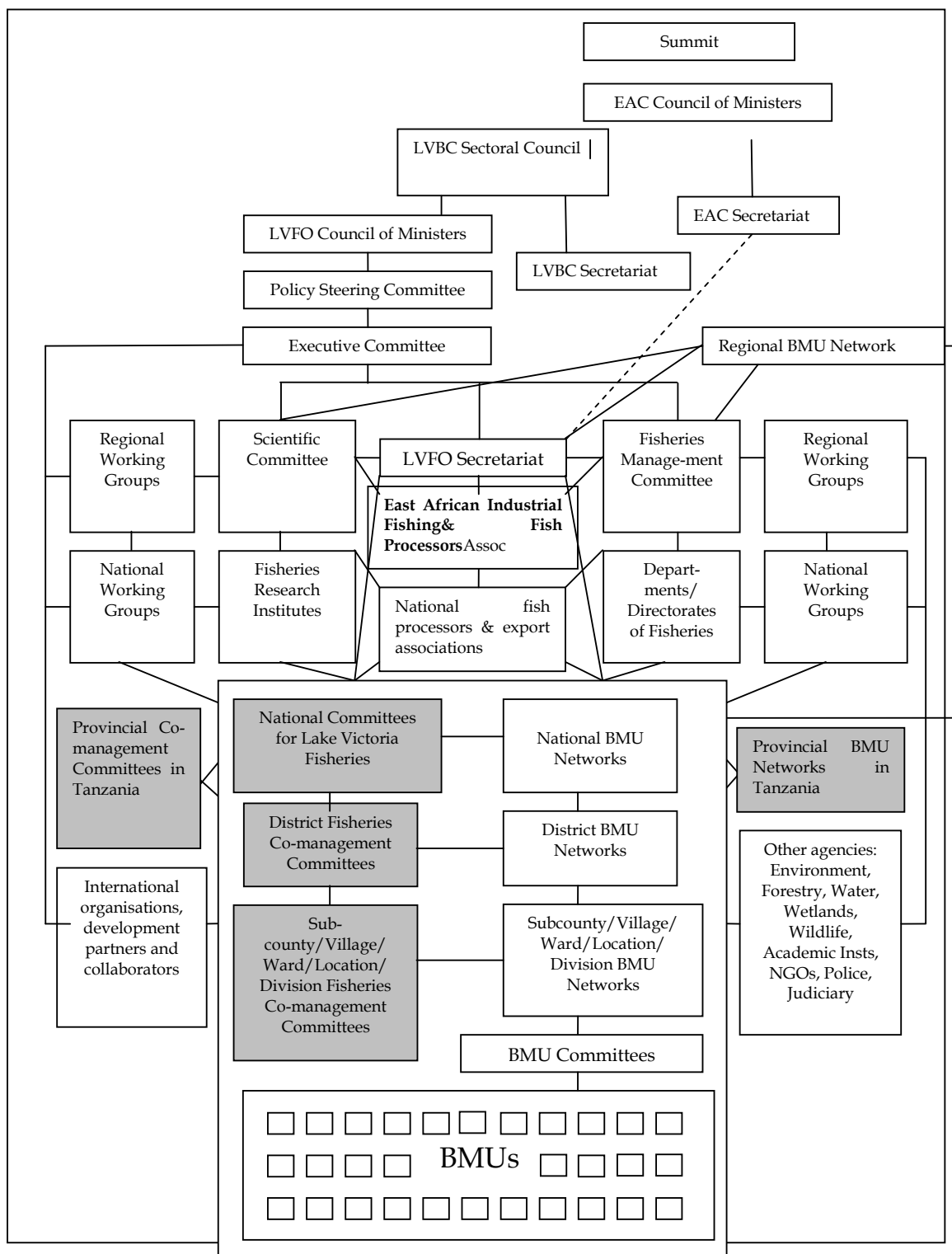


Figure 8.1: Flowchart of the institutional structure and co-management arrangement with linkages to other stakeholders

Note: Grey shaded boxes indicate structures not yet established.

Source: Lake Victoria Fisheries Management Plan 2009-2014 & Operating Procedure for Regional BMU Network (LVFO/IFMP, 2010b:2; LVFO/IFMP, 2010c).

8.3.1 Over-riding governing power through projects and programmes

The LVFO now plays a key role in Lake Victoria's fisheries through projects and programmes that attract fisheries project funds and by devising various mechanisms to implement them in the three African States. Regional fisheries policy agreements are made through the statutory bodies of the LVFO (Figure 8.1), which include the Council of Ministers (CoM), the Policy Steering Committee (PSC), the Executive Committee (EC), the Fisheries Management Committee (FMC), the Scientific Committee (SC) and the Regional and National Technical Working Groups (WGs). The overall management decision-making process of the LVFO is set out in the LVFO Convention (1994). The LVFO statutory organs, with the Council of Ministers as the highest decision-making body, adopt measures and make decisions on the management and conservation of the lake's fisheries. In its first Lake Victoria Fisheries Management Plan (FMP), it states:

"Contracting Parties hereby agree to take all necessary measures including legislative measures when appropriate, in accordance with their respective constitutional procedures and national laws, to implement the decisions of the organisation's Governing bodies" (LVFO, 2001:8). "It is important to note that while agreements are made at regional level through the CoM, implementation occurs at the national level through the national channels and legal instruments" (LVFO/IFMP, 2008:13; Parkes, 2008:17).

Through LVFO, a number of decisions have been endorsed by the CoM. These include Regional Plan of Action for Illegal, Unreported and Unregulated fishing (RPOA-IUU)¹²⁵ on Lake Victoria, agreed upon by FAO member states (Chapter 2). Other agreed issues include:

- (a) A Regional Plan of Action to manage increases in fishing effort and capacity (RPOA-Capacity), including minimum net mesh sizes for gill nets, slot sizes for Nile Perch and minimum sizes for Tilapia (Appendix 3.1).
- (b) The promotion of community participation in fisheries and the implementation of measures designed to ensure sustainable fisheries (LVFO/EAC, 2007:9; LVFO/IFMP, 2008).
- (c) Regionally harmonized BMU guidelines for the fishing communities of the East African States (LVFO/IFMP, 2010a; Ogwang et al., 2004).
- (d) A Regional HIV/AIDS strategy for improving the health status of fishing communities on Lake Victoria (LVFO/IFMP, 2006).
- (e) The formation of Fisheries Co-Management Committees (FCCs) at regional and national levels to foster co-management initiatives (LVFO/IFMP, 2010a).
- (f) The harmonization of guidelines and strategies for Monitoring Control and Surveillance (MCS) (LVFO/IFMP, 2008).
- (g) The development of Standard Operating Procedures (SOPs), guidelines, strategies and action plans for undertaking fisheries research and management (LVFO/EAC, 2007).

¹²⁵ Scientist and Monitoring, Control and Surveillance (MCS) working group around the lake interchange it with Illegal, Unlicensed and Undocumented fishing.

(h) The establishment of an 'LVFO information policy' for data bases and information sharing is amongst forthcoming LVFO ambitions (LVFO/IFMP, 2008).

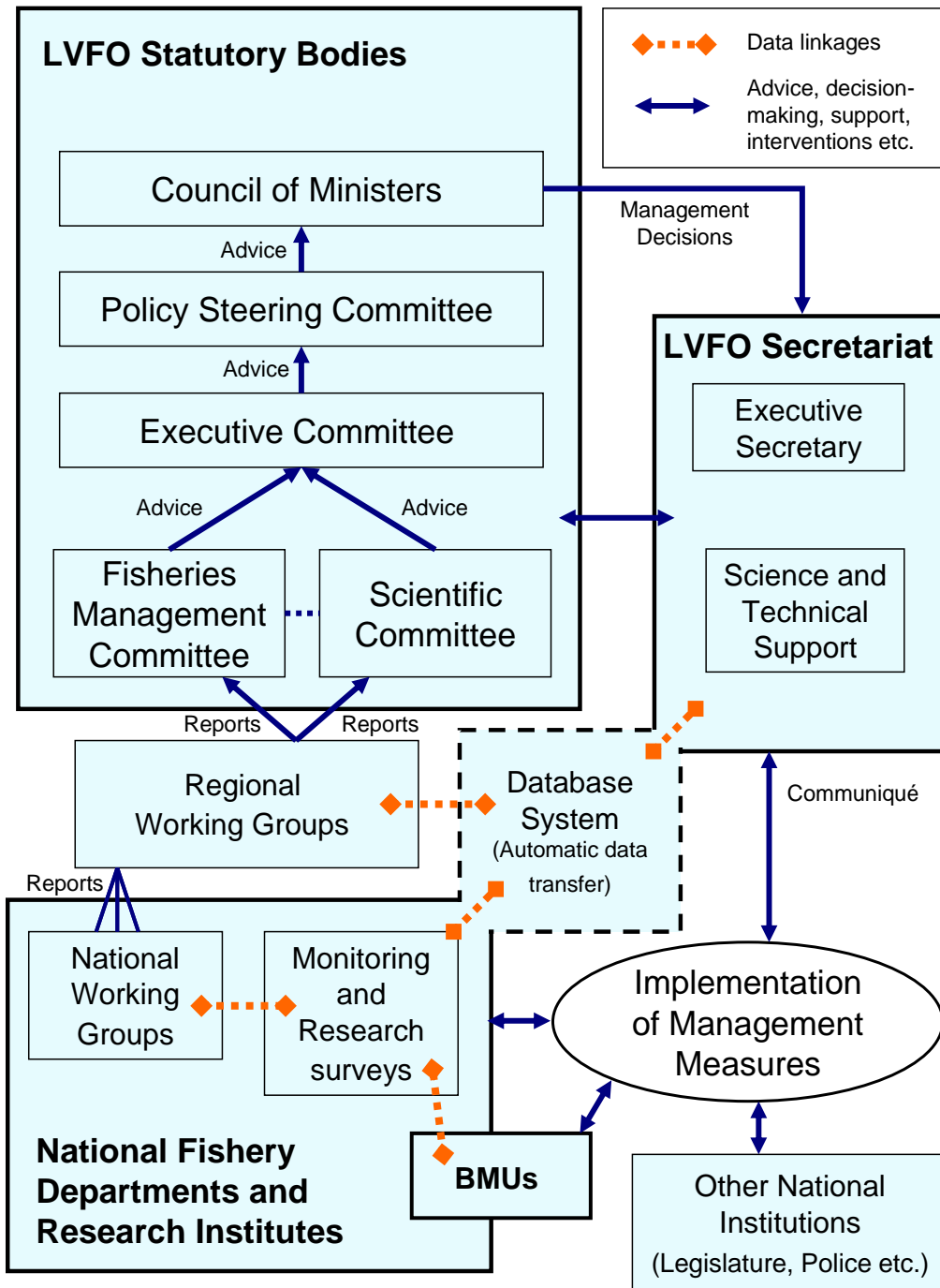


Figure 8.2: LVFO Statutory bodies, flow of data and information and decision-making and management intervention for management of Lake Victoria

Source: LVFO/IFMP (2008).

Ideally, all decisions by the CoM are supposed to arise from the grass-roots level. In Tanzania, they are supposed to emerge from the village councils through the BMUs and channelled to the CoM through fisheries research and management working groups and, finally, to the Fisheries Management Committee (FMC) and the Scientific Committee (SC) (Figure 8.1& 8.2) which provide input to the Executive Committee (EC). Through this protocol, the LVFO Secretariat has considerable power in terms of setting the agenda for CoM decisions, and for dissemination to national institutions. At present, the extent to which LVFO decision processes and implementation are perceived and realized varies from one country to another. In Tanzania, LVFO decisions have met significant challenges. At one FAO/LVFO meeting, the Director of Fisheries in Tanzania clearly stated, "regional harmonization and regulations are not that good" (FAO/LVFO, 2005:7). This remark was due to the fact that the capacities and commitment by individual countries was not the same (LVFO/IFMP, 2008:8). The reality on the ground is very challenging.

During the same meeting, the Director of Fisheries in Tanzania identified key fisheries problems for Lake Victoria: inadequate and untimely information on the Lake Victoria fish resource base; weak links between the Fisheries Department and the Local Government Authorities (LGAs); inadequate capacity to carry out fisheries-related responsibilities; inadequate fisheries data; lack of capital/financial resources; inadequate human resources for data collection; and lack of integration between the socio-economic, biological and ecological and environmental sectors. Others were cross-border conflict, reliance on precautionary approaches because of inadequate data and information, issues related to trade subsidies and insufficient recognition of communities in the management of fisheries (FAO/LVFO, 2005:7).

8.4 Fisheries governance agencies in Tanzania

8.4.1 National governing bodies in Tanzania

The Tanzanian Government addresses fisheries through two key agencies: the Tanzania Fisheries Division (TFD) and the Tanzania Fisheries Research Institute (TAFIRI). The TFD mandate is to regulate, promote, conserve, develop and ensure the sustainable exploitation and utilization of fish and other aquatic living resources for the provision of food, employment, income and export earnings (URT/MNRT, 1997). The Fisheries Division is based in Dar Es Salaam, and its direct influence on Lake Victoria's fisheries ends at three regional fisheries offices, in Mwanza, Mara and Kagera, and focuses on three main components: Monitoring Control and Surveillances (MCS), Community involvement through BMUs and Nile Perch Fish Quality Control and Assurances (FQCA). District level fisheries activities, and all other administrative tiers below, fall under the Ministry of Regional Administration and Local Government (MRALG). The role of TAFIRI is to promote, initiate, collect and collate information from below and disseminate it to various actors. The relationship between the two agencies is characterized by a lack of joint planning, irregular dialogue, a lack of shared and harmonized goals and roles, and weak coordination between research initiatives and management objectives.

The fisheries development in Tanzania is guided by the National Fisheries Policy of 1997, the overall goal of which is to promote conservation, development and the sustainable management of fisheries resources for the benefit of present and future

generations (URT/MNRT, 1997:6). The legal mandate for governing fisheries in Tanzania is guided by the Fisheries Act No 22 of Jan. 2004 (URT, 2003:42), which is currently under review. The implementation of this Act is outlined under Section 57 (URT, 2003:38-41) and the Fisheries Regulations Government Notice No. 308 of 2009 (G.N. No. 308 of 28/8/2009). These regulations have been revised to incorporate the EU fish markets and quality standards (URT, 2009:41-80). They also provide a legal basis for the establishment of local fisheries management bodies or Beach Management Units (BMUs) (URT, 2009:83) and stipulate various fishing gear prohibitions, closed seasons, licensing and registration rules.

8.4.2 Governing bodies at local level

For a long time, the Tanzania Fisheries Department has worked without incorporating other stakeholders within its management framework. Changes were initiated in 1997 when a World Bank-funded project, the Lake Victoria Environmental Programme (LVEMP Phase I), proposed involving local communities in fisheries management structures. Tanzania was the first country to adopt this idea. In exercises carried out between May and June 1998 in three Tanzanian lakeside districts (Mwanza town, Misungwi and Sengerema), Fisheries Department teams created 93 Local Enforcement Units (LEUs), later renamed 'Beach Management Units' (BMUs). Since then, BMUs have been created at all landing sites in the Tanzanian portion of Lake Victoria. These changes occurred at a time when the need for effective fisheries management was growing increasingly important. The growth of the Nile Perch fishery had already begun. In Mwanza and Mara, fish processing factories had been established, ready to take advantage of markets in the EU, Japan and elsewhere. Demand for Nile Perch was – and remains – almost inexhaustible.

In a 1998 report authored by two Fisheries Department officers (Hoza and Mahatane, 1998), it was argued that because weaknesses existed in the enforcement of regulations, better enforcement might be obtained by including fishing communities in the process. Even by the contemporary discussions of the time, the report's interpretation of co-management was still top-down. It foresaw communities implementing *government* regulations, a strategy that the report argued "...has been found to increase the effectiveness of management by increasing the legitimacy of fishing regulations in the eyes of the fishing communities" (URT/MNRT, 1997:7-8). Were this strategy followed through, the report 'guaranteed' the wise use of resources, 'guaranteed' long-term income earnings and 'guaranteed' the rapid recovery of fish species otherwise in danger of extinction (URT/MNRT, 1997:8). The guarantee of power transfers from state to community, however, is not guaranteed in the report, and all portrayals of successful, community-based, co-management of other forms of natural resources management (even at the time) insist on this transfer as a central part of managerial success (Jentoft, 2001; Noble, 2000; Pomeroy et al., 2001). Therefore, the BMUs are merely put into place as enforcement agencies for Tanzania Fisheries Department (TFD).

Tanzanian efforts at reform in the fisheries sector have shied away from a real devolution of powers. These reforms were introduced in Tanzania's National Fisheries Sector Policy and Strategy Statement (URT/MNRT, 1997). The document identified a number of long-term difficulties within the national fisheries sector,

including insufficient community empowerment, “poor interaction between players in the community and community related issues and activities”, scanty information on traditional/local knowledge of the fisheries resources and unfavourable credit conditions from lending institutions (URT/MNRT, 1997:3). Community ‘empowerment’ refers to empowerment ‘in the management and conservation of the fisheries environment by ensuring responsible fishing principles by all’ (URT/MNRT, 1997:5).

The report outlines a number of policy statements, the first of which is “[t]o put to efficient use available resources in order to increase fish production so as to improve fish availability as well as to contribute to the growth of the economy” (URT/MNRT, 1997:8). The document then goes on to recommend the following strategies that will affect fishing communities:

- (a) To encourage ‘self-help’ programmes within communities.
- (b) To encourage fishing communities to establish ‘Fisheries Development Trust Funds’ and credit schemes, as appropriate.
- (c) “To conduct joint surveillance and enforcement in collaboration with other related agencies and communities to ensure effective implementation of the fisheries and related legislation” (URT/MNRT, 1997:8).

It is almost certainly this latter statement that is responsible for the Tanzanian understanding of co-management as a management system in which communities implement and enforce government regulations.

In Policy Statement 12, community participation is specifically dealt with. The Policy seeks to “[i]mprove the involvement of the fisher communities in the planning, development and management of fishery resources” (URT/MNRT, 1997:13), and advocates the following strategies (URT/MNRT, 1997:13-14):

- (a) To encourage the formation of fisher associations, co-operatives and groups and to support their activities.
- (b) To sensitise decision-makers at all levels on the importance of involving fisher communities in the development of the sector’s activities.
- (c) To encourage the involvement of the fisher community in policy formulation and implementation through their relevant institutions, i.e., village councils or associations.
- (d) To identify issues relevant to community participation in the sector and collaborate with other related sectors to enhance this participation.
- (e) To encourage the formulation of projects which aim at promoting the involvement of communities in the management of fisheries resources.
- (f) To facilitate and promote the sharing and exchange of skills and knowledge through extension services.
- (g) To entrust the management responsibilities of landing sites or other facilities or utilities to fisher communities.
- (h) To facilitate the formulation of village bylaws relevant to the fisheries sector to enhance sustainable exploitation and utilisation of resources.

In the policy document’s annexes, it attributes roles to the various stakeholders identified in the fisheries sector. The Fisheries Department is charged with the

formulation of policy and its implementation. Fishing communities are not charged with this responsibility in the Annexes, but in Policy Statement 12 are 'encouraged' to contribute to this process. Fishers are expected to be involved in 'management', which may be assumed to include the implementation and enforcement of regulations, a task to be shared with the Fisheries Department. In the Annexes, the law enforcement role of the fishing communities is restricted to 'bylaws', but their role appears to be somewhat broader under Policy Statement 1 (URT/MNRT, 1997:8).

8.4.3 What are BMUs?

The main vehicle for ensuring local involvement in management and rules enforcement is the BMU. A BMU is an organization at the beach of fisher folk (boat crew, boat owners, managers, charterers, fish processors, fishmongers, local gear makers or repairers and fishing equipment dealers) within a fishing community (LVFO/IFMP, 2010b:iii) who shall have jurisdiction over an area of land that shall be agreed upon by fisher communities, community based organizations, village councils, LGAs, and the Central Government (Tanzania Fisheries Department) and it may include more than one fish landing site (URT, 2009:83).

The BMU is incorporated into village government and is a sub-committee under the village committee for surveillance and security. It has to prepare a 'surveillance programme' on which everyone agrees, and has a jurisdiction, which typically corresponds to the area understood to be the village's land and its waters. Their duties are to enforce the National Fisheries Act and its various supplements. Among other things, they are expected to generate lists providing details about all the fishers on the landing site: their boats, fishing licenses and fishing gear. Unlicensed fishermen are supposed to get their licenses, while prohibited gears are supposed to be surrendered to the relevant authorities. The BMU is supposed to maintain a daily record that summarises 'all illegal [fishing] activities'. At the end of the month, the records are supposed to be submitted to the ward extension fisheries staff, who summarise the reports of all BMUs in their wards, and then pass the report on to the district fisheries officer and so on up the chain of command. In other words, their functions (as stated under Section 134) are as 'go-betweens' (URT, 2009) and they rely entirely on the Fisheries Department to know what they should or should not do.

The BMUs' legal mandate appears to be 'top-down', 'passive', 'instructive' and is subject to 'dependence' on decisions made higher up the chain of command. The day-to-day actual work at beach level and the associated risks and costs are externalized and borne by BMU leaders and the local communities. Part V, Section 18 of the Fisheries Act of 2003 states that "[the] Director [may] enter into management agreements with BMUs of the whole or part of some 'specific fishery'...or with LGAs having jurisdiction..." (URT, 2003:22). There are, however, no legal arrangements between the Fisheries Division and the LGAs where the BMUs are constituted. In Tanzania's Fisheries Regulations (URT, 2009:87) it is stated that "every fisher shall abide by the bylaws and conditions set by the BMUs in their respective areas" (URT, 2009:85). Immigrant fishers (which constitute the majority of fishers, both *matajiri* and crewmembers) and non-citizens shall *not* be allowed to be 'members' of a BMU (URT, 2009:84). The BMU officers must be resident on a beach or landing site, should

be 'ardent conservators of fishery resources', should be able to work on a voluntary basis, be honest and truthful, and may be a member of a Tanzanian local vigilante group ('*sungusungu*') (URT, 2009:84; URT/LVEMP, 2005:6). Any member can be expelled if found not to be trustworthy (URT, 2009). It is also stated that the Director of Fisheries shall provide 'a certificate of registration' for all BMUs; otherwise, a BMU can be dissolved at the Director of Fisheries' discretion (URT, 2009:87).

The ideas behind BMUs are both remarkable and confused. As mentioned earlier, a central tenet of any successful co-managerial regime is the devolution of powers. The decentralisation of national legislative tools to fishing communities does not represent the devolution of powers – if this were the case, fishing communities could define the rules they wished to enforce themselves, how they would do this, and the sanctions they would apply in the event that transgressors were caught. The government apparatus would, in turn, form a supportive framework within which such regulatory systems could evolve and be monitored. The incentive for Tanzanian fishing communities to implement government regulations and legislation remains to this day unclear. The way in which BMUs are currently configured implies that the objective of central government is to retain state discretionary power and rights over the lake's resources, the fishing communities and LGAs, while clothing these reforms in the guise of co-management. In many respects, the creation of BMUs has represented a diminution of community powers by providing the state with cause to scrutinise and evaluate community fisheries activities, in turn opening the way for considerable opportunities to extract graft.¹²⁶

Between 1999 and 2003, the governments of Kenya and Uganda undertook fact-finding missions to Tanzanian landing sites. They approved of the BMU managerial system, which was then applied lake-wide (LVFO/IFMP, 2010b; Ogwang et al., 2004). The BMU roles, as outlined in the regional BMU operational guidelines, reveal that the Tanzanian model – replete with ambiguities – has been adopted more or less wholesale:

- (i) To ensure the beach environment is kept clean.
- (ii) To assist in the collection of data and document fisheries information.
- (iii) To inspect and record visiting boats and ensure that newcomers report to relevant local authorities.
- (iv) To mobilize and ensure financial sustainability to enable the execution of various activities, including to conduct and facilitate monthly meetings.
- (v) To propose fisheries bylaws for endorsement by district authorities and enforce them.
- (vi) To undertake Monitoring, Control and Surveillance (MCS) in collaboration with the relevant authorities.
- (vii) To enforce fisheries laws and regulations.

To date, BMUs have been consolidated under all regional projects and programme activities, such as IUCN (Heck et al., 2003; Sobo et al., 2006), the EU/IFMP (LVFO/IFMP, 2007;2010a) and World Bank/LVEMP(II), in mentoring, restructuring, training and BMU networking (LVFO/IFMP, 2010b:6). According to the BMU regional harmonized guideline, "no person can work in fisheries at a landing site

¹²⁶ A form of political corruption is the unscrupulous use of authority for personal gain.

without being a member of a BMU” (LVFO/IFMP, 2010a:1). A Regional BMU Network (RBN) has been founded (LVFO/IFMP, 2010b:7), whose chairperson is expected to represent other BMUs at high level LVFO meetings. By 2007, a total of 1,069 BMUs were established (some restructured) across the entire lake. Of those, 433 are in Tanzania (LVFO/IFMP, 2010d:3), 281 in Kenya and 355 in Uganda, operating on about 1,424 fish landing sites (LVFO/IFMP, 2010b:6). With the formation of the BMU networking procedure (LVFO/IFMP, 2010b) and formation of Fisheries Co-management Committees (LVFO/IFMP, 2010a) it is assumed that BMUs should become much stronger and more roles have been shifted to them as per regional plans of action. They include:

- (i) To reduce illegal fishing and fish trade in line with the Nile Perch Fisheries Management Plan (NPFMP), other fisheries-specific plans, the RPOA-IUU and the RPOA-Capacity.
- (ii) To negotiate a fair system of fish and fish products pricing for BMU members.
- (iii) To co-ordinate and implement harmonized regional fisheries plans, policies and legislation.
- (iv) To open a Regional BMU Network bank account, set up a transparent financial accounting system and acquire assets to facilitate its operations.

Around the region, BMUs still face the same challenges as when they were incepted (Abila, Lwenya et al., 2000; Geheb and Crean, 2000; Medard and Geheb, 2000; Medard et al., 2002a).

8.5 Booming beach seines: government hyperbole and illegal gear

On paper, BMUs have a clear mandate and considerable powers to govern the fishing in Lake Victoria. In this section I scrutinize how BMUs work in practice and assess their effectiveness at the level of the landing sites and fishing villages. We will see that the BMUs face considerable challenges and are not up to the task envisaged by community members, donor agencies, LVFOs and national governments. In a network communication, William Ojwang, the Kenyan Director of Inland Fisheries, wrote:

“In 2006 the BMU was established and at that time two illegal beach seines were operating in Obenge [a Kenyan landing site]. After the establishment of the BMU this number increased to eight in 2010 (perhaps earlier but no records exist). During a visit in December 2010, the leadership of the BMU was due to be changed and hopes were high that the new Executive Committee would stop the illegal fishing activities. During the visit in June 2012 the new leadership was in place but the number of beach seines had not changed, the reason being that the owners refused to give up their nets because in neighbouring communities the beach seining continued. The BMU Executive Committee appeared powerless against such a group” (Email comm, 24/7/2012).

On Lake Victoria, beach seines have been used for decades. Colonial records from the region reveal that the authorities introduced them into legislation as early as 1953, permitting thirty seines to be used inside the Winham Gulf (in Kenya) (EAHC, 1953). Following concerns that these beach seines were having a negative impact on the fishery, however, they were subsequently banned from Winam Gulf in 1954 (EAHC, 1955). Between April 1954 and the end of June 1955, the Lake Victoria Fisheries Service (LVFS) seized 248 illegal seines (EAHC, 1955); between 1956 and 1957, they

seized 170 seines and 155 gill-nets (EAHC, 1957), while between 1957 and 1958, they seized 352 illegal gill-nets and 225 seines (EAHC, 1958). Since then, beach seines have always been controversial in Lake Victoria's fisheries. The fact that they span the entire water column, rake up the lake bed, and have very small mesh sizes means that all of Lake Victoria's countries have at one time or another sought to ban their use.

In March 1994, commercial trawling, beach seines and other gear types were forbidden in Tanzania's Lake Victoria fishery and by January 1995 they were legally banned (Wilson, et al.,1999:558). While trawling was successfully banned, many other prohibited gear and techniques continued to be used on the lake, including beach seines. The ban on this gear type coincided with a period of very significant transformation: already four Nile Perch EPFs were operating in Mwanza and one was in Musoma (Mara).

The 1994 ban on beach seines did serve to reduce their numbers. By 1996/7 Medard (1998:19) observed 22 beach seines in three fishing villages in the Speke Gulf, a figure which was reported to have declined by 25%. Regional frame surveys across Lake Victoria indicated that there were 8,676 beach seines in 2000. The number declined to 3,743 in 2010 and increased again to 4,375 in 2012, despite the "Regional Plan of Action (RPOA) on Illegal, Unregulated and Un-reported (IUU) fishing, which contains measures to collectively prevent, deter and eliminate IUU, one of which is the beach seine (LVFO/EAC, 2007). In Tanzania, however, their numbers remained fairly stable from 2000 (2,692) to 2004 (2,019) but increased from 4,000 in 2006 to 6,348 in 2012 (Table 8.1). They remain a common and widespread fishing technique in Tanzanian Lake Victoria fisheries.

Table 8.1: Number of beach seines in the Tanzanian part of Lake Victoria, 2000-2012

Region/Year	2000	2002	2004	2006	2008	2010	2012	Total
Mara	260	928	422	333	533	359	541	3,376
Mwanza	1,552	1,024	901	1,054	941	687	1,081	7,240
Kagera	880	384	696	2,613	1,384	1,614	4,726	7,724
Total	2,692	2,336	2,019	4,000	2,854	2,660	6,348	18,340

Source: (URT/LVEMP, 2010;LVBC/LVEMP2, 2012). Field study 2009-2013

To date, beach seines continue to be labelled one of the most destructive fishing gears in Kenya, Uganda and Tanzania (LVFO/IFMP, 2008; URT, 2009). The Mwanza Regional Officer in charge of Monitoring Control and Surveillance (MCS) in Tanzania, in an interview stated:

"We have set our targets. By 31st December, 2009 there will be no more beach seines, under mesh nets, timba (monofilaments) and all kind of illegalities in Tanzania. We are well prepared as a government department as are other agencies such as the police force and BMUs" (Angelous Mahatane: Pers. comm. 27/7/2009).

These remarks arose from decisions made by the LVFO CoMs to implement 'zero tolerance to eradicate illegal fishing and the trade of undersize Nile Perch fish to 100 per cent by 31stDecember 2009' (Mahatane, 2009; Okware, 2009).

Subsequent to the CoM decisions, the Government of Tanzania was the first to release TShs 185 million to fight illegal fishing on Lake Victoria, Tanzania. The Minister of Livestock and Fisheries, the Hon. John Pombe Magufuli, said:

"Let me assure the LVFO secretariat of full commitment to the implementation of measures that would ensure long lasting and socio-economic benefits to our people. Let's consolidate the resolution on illegal fishing to zero tolerance" (The Guardian, Tanzania. 03/2/2009).

Following the CoM decisions, a work plan to implement the decision was drawn up by the MCS and Co-management Regional Working Groups (RWGs) in March 2009. It was agreed that partner states should make monthly reports on the progress of implementation. All directors of fisheries, from Tanzania, Kenya and Uganda, convened meetings with district fisheries officers between April/May 2009 and agreed that district fisheries officers were to 'list all persons by name and location with beach seines and to display these at all landing sites. The owners agreed to surrender them within a specified period'. Among the participants at those meetings were magistrates, regional and district police, criminal investigation officers, state attorneys and regional and district police commanders (Mahatane, 2009; Ogwang, 2009; Okwach, 2009; Okware, 2009).

The use of illegal fishing gear and trading continued, however. In one meeting between the Director of Fisheries and industrial fish processors to review the implementation of measures for the Nile Perch fishery, one official from the Kenya Department of Fisheries remarked:

"LVFO has put in place measures which are under implementation and I am looking forward to the progress achieved and any other measures which will come up from the meeting to ensure the resources are improving" (LVFO, 2010:3).

Despite the hyperbole, there is little to suggest that the individual states actually manage Lake Victoria's fisheries. While the hyperbole serves to suggest that the state is taking action, the perseverance of illegal fishing gear suggests otherwise. There is a significant gap between what the state claims it will do, and what then emerges. One of the reasons is that the LVFO is viewed as positioning itself as an implementing agency and not a coordinating agency. This is why measures are assumed to be put in place by LVFO (see Kenyan official's remarks) and not by community members through their BMUs and village governments. In such a case, the actual legitimacy of the states may be in question because it may be that the government officials fail to provide the services which people want and, therefore, the LVFO secretariat assumes the responsibility.

Textbox 8.1: Example of lessons against BMU imposed institutions

A good lesson of failure of government to provide proper instruments and satisfy the felt needs of the people is the voluntary evolution of *'sungusungu'* in Tanzania. The Sukuma and Nyamwezi are pastoralists occupying land in Tanzania's northwest. In the early 1980s, they began to form vigilante groups called *'sungusungu'* in an effort to control the theft of their cattle. "[T]he development of the *sungusungu* can be read as an indication that people are not satisfied with fundamental aspects of the supply side (duty bearers) of their relationship with the state" (Abrahams, 1989:367). The initiative grew to cover other forms of theft and local-level violence, and the late president of the country, Julius Nyerere, was said to have regarded the *sungusungu* as a 'revolutionary force' to be encouraged, and to have said that they were in a better position to know who criminals were than the police or the courts (Abrahams, 1987). Their formation, Abrahams (1987) argues, was a result of the state's failure to capture rural areas both politically and economically. Friction, naturally enough, began to occur between the *sungusungu* groups and local administrations in Nyamwezi and Sukuma

The *sungusungu* continue to operate in this part of the world. "The long standing presence of such groups...and the sometimes uneasy division of labour between them and the state in one form or another, seems to be a major persistent feature of the Nyamwezi and Sukuma political scene. It can be seen to form part of a continuously monitored and negotiated equilibrium between public service from the centre and freedom and autonomy at the local level" (Abrahams, 1987:193).

For the *sungusungu*, these tensions exist mainly between themselves and the district authorities. "The police and the judiciary...are unhappy with and opposed to *sungusungu* taking the law into their own hands and providing an additional and/or alternative means of social control. Officials of these institutions argue that *sungusungu* members are attempting to turn the clock back to primitive punitive measures...*The competition between the two suggests that Tanzanian state institutions are more concerned with the protection of the legality of monopoly of their powers than with the actual problem of crime*" (Bukurura, 1996:264) (Emphasis added).

Much of the early literature on community involvement in fisheries (and other resources) management specifically tried to show that not only were communities able to perform managerial tasks, but also that they had even developed, implemented and enforced their own institutions (Berkers, 1989; MacCay and Acheson, 1987). This implies that people will always develop their own internal institutions to solve their own difficulties and/or conflicts. The fact is that, because the state has imposed BMUs on Lake Victoria administrative structures, communities perceive these to be governmental in origin and not of their own origin. This means that the choices to which communities will turn in the event that they have certain types of problems or interests will depend on their perception of their rights and ownership of the BMUs and the processes. In most cases, communities will build trust if the state asserts their rights within the government framework to have a stake in the management of Lake Victoria's fisheries. I strongly argue that the failure of BMUs (cf. the next sections) is because they have been created by the state and the policies they are supposed to implement do not match with local realities. Yet the government tries hard to maintain control over them.

In the following section, I show the continued existence of illegality in fishing communities, as well as associated factors such as corruption, bribery and distortion

which show the ground realities of the challenges faced by and the failure of state sponsored institutions to govern the fisheries of Lake Victoria. Moreover, I show how the shift of power from 'government structures' to 'markets' and how these are in control and institutionalized. The same trend is growing for 'corruption', where individuals are networked and govern things strategically.

8.6 The power of markets, corruption and networks in governing Lake Victoria fisheries

Abrahams (1987:180) observed that the existence of *sungusungu* was because communities realised that police were often uninterested in dealing with offences or even, at times, in league with criminals. A similar situation was observed in Lake Victoria when the District Fisheries Officer in Sengerema revealed that beach seines are difficult to eliminate due to corruption and the involvement of law enforcers, particularly police officers:

"We were given a deadline to eliminate beach seine fishing by the end of 2009. Now, we are conducting secret vetting of all beach seine owners but it is a complex game. When I order my fisheries extension officers to provide me with the names and locations of beach seine owners, they compile only a few names and sometimes they provide the wrong locations. Later, during patrols, they may claim that the person migrated to another location. I also use BMU leaders and other individuals to verify the list and get more names than those provided by extension officers. Right now, we know of 119 beach seines in my district, but the list which I got through my staff identified only 62 seines. They are doing this because of the money they get through corruption. Others deceive me by pretending that they have been working hard to confiscate these nets. But the reality is, we are cheating ourselves. Beach seining will never come to an end. On my list, I have four brothers from the same clan and beach seining has been part of their life for generations" (Innocent Shang'wabo: Pers. comm. 28/9/2009).

Likewise, in Magu District, a BMU leader and an EPF agent argued that beach seines would never be eliminated, and that the numbers of beach seines operating was underestimated by the Fisheries Department:

"People take some figures out to prove to their superiors that they are implementing the law precisely, but in reality they don't want the seining to end in their areas because of corruption. When surveillance and patrol money is provided, it is just to pay for their trip to collect more cash from fishers. Here in Magu, there are plenty of beach seines even though it's easier for law enforcement here than it is out on the islands. They pretend to involve BMU leaders, but they normally join hands with those who are corrupt. Even the Catch Assessment Survey (CAS) is not realistic and BMUs do not take it seriously because the government is working like a fire brigade. Some activities, which need to be executed over long periods of time to get realistic data and information, are done in a single day. For instance, BMU are given incentives to collect CAS data when the government has money from donors and when they don't, nothing is done" (EPF agent, Mwanchimwa 14/9/2009).

"There are no fisheries ethics anymore. Data collection is dying and factory agents know more about catches than our fisheries officers. The officers pretend to be active when there are donor-funded

projects being implemented, but when the project money ends, the lake turns into 'a grandmother's farm'¹²⁷ (BMU Leader, Mwanchimwa 14/9/2009).

In textbox 8.2 narratives that I gathered from a BMU leader are summarized, which show the reality of the above assertion. Corruption, bribery, under-reporting and unrepresentative fisheries data and information are manifest.

Textbox 8.2: Dissolved BMUs in a corrupt social field

In August, 2010 a Frame Survey was undertaken across Lake Victoria. The exercise was funded by LVEMP (II) and LVBC through the LVFO Secretariat. A frame survey is a 'fisheries census', aimed at generating fisheries information such as the number of fishers, fishing boats, mode of propulsion, fishing gear, landing sites and other information (LVFO/LVEMP, 2010). It is a top-down process that involves the LVFO Regional Data base Working Group (RWG) and National Working Groups (NWG). Training is conducted at district levels where BMU leaders are also involved.

"On August 13, 2010, I received an invitation from the District Fisheries Officer to attend a two-day frame survey seminar. To my surprise the seminar was held for one day. My money for one day was snaffled by the organizers from Mwanza. From here to the district headquarters is 63 Kms and the return transport cost is TShs 20,000 (\$13.3). When I arrived there, I was given a total of TShs 20,000 only for my fare and night allowance. I was informed that the rate was TShs 5,000 (\$ 3.3) per day. But what I got could not suffice to take me back and pay for a guest house and food while at district Headquarters. The District Fisheries Officer (DFO) who invited me was not involved in financial matters, but his main role was to extend invitations to BMUs and to ensure our attendance. When I got the money, I went to the DFO to complain, but he told me he was instructed to invite BMUs for a two-day seminar, but how much they were supposed to be paid was unknown to him. The DFO lodged my complaints with the seminar organizers, and finally they gave me an additional TShs 10,000 (\$6.7). Every BMU representative complained individually and the DFO was on our side because he knew that to undertake a frame survey in his area without the BMUs was impossible. He was unhappy with the way things were organized. When I arrived back in my area, I had to train two other BMU members to assist me. The first thing they did was to ask for money because they assumed I was well paid and I should have paid them. I had only TShs 500 (\$0.3) left in my pocket. I told them to wait until the end of the day. You know why? I knew within three days we would receive bribes from illegal fishers who own beach seines, unlicensed and unregistered boats, monofilaments and under-sized gill netters. That was the only option. This is no secret because this is how we survive. It is the system we found in fisheries and we are not the ones who started it. What we receive is just peanuts. This job is very risky. A number of us have lost their lives, some have been injured, created enemies in their communities, while others have had their homes burnt. But there is no compensation for these tragedies. We have neither field allowances nor salaries. Surprisingly, when fisheries staff order us to work, they tell us, the money is with fishers not with us, you will find it there'.

During the frame survey, we found 250 fishing boats, of which 196 were operating without a fishing license and 60 (out of the 196) boats were unregistered. We also found 11 beach seines and recorded this. Unexpectedly, when the fisheries extension officer came last evening, he took the records and disappeared for about two hours. When he came back, the sheet which contained beach seine records was removed. Not only that, unlicensed and unregistered boats were reduced to 30 and 5 boats respectively. One of the BMU members informed me he was asked by the officer to go and inform beach seine owners: "let them hand in a big amount of cash; we are many". Last night, beach seiners were busy collecting cash to hand over to him. It is this life that trains us. Not seminars or seniors (Name withheld, 18/8/2010: Kome Island).

¹²⁷ A saying which indicates a resource can be everyone's resource and harvested without discipline.

A former beach seiner who had fished at Kigoto¹²⁸ and who had subsequently joined the long-line fishery at Mihama, in further in-depth interviews, explained that he had decided to quit beach seining because of corruption. The cost of individual bribes was rising, and the demand for bribes was more frequent, as the number of police and fisheries staff increased. He also claimed to have been ambushed and had his net seized many times. To get the net back, he would have to pay between TShs. 50,000-100,000, depending on the number of bribe recipients. The fisher claimed to have become 'extra salary providers' to fisheries staff and police officers.

"You get attuned to the system and sometimes you just give them money without being asked so you can continue fishing, otherwise they will confiscate your net. Bribes are an assurance for us not to be trapped by officials" (Name withheld, 13/6/2011).

In a FGDs in Mwanza town, respondents said that some police and fisheries officers knew all the beach seine owners. They knew what the pulling schedules were, and had the owners' phone numbers. When it was enquired about the role of BMUs in regulating seines, one remarked that 'they all belong to the networks'. Respondents alleged that the local patrols in Mwanza involved the BMU chairman from Kigoto whose area was constantly full of beach seines. The BMU representative's role in the patrol team was to direct fisheries officers and armed police officers where to go and confiscate beach seines from confrontational and non-corrupt fishers, and where not to go. BMU representatives, and even some fisheries officers, were said to alert beach seiners who were tied-up in corrupt networks and would give bribes once reminded to hide their seines. Those who were confrontational and non-corrupt had their seines confiscated and were forced to pay bribes to have their nets released. FGDs with beach seiners and former beach seiners at Bwiro, Lugezi, Mchangani, Mihama and Ntama revealed various reasons why beach seining continued. These are summarised in Table 8.2.

Use of beach seines and gillnets below 5 inches, and fishing and trading of undersized fish were reported to steer corruption and contributed significantly to shaping the governance systems on Lake Victoria. For the majority of poor people in rural areas, poverty was another factor which made beach seines proliferate.

In FGDs with ex-beach seiners at Mihama, however, they praised their BMU leaders for resolving local conflicts among the fishers and creating peace and order. But they also mentioned the existence of unregistered and unlicensed fishing boats. Some patrol boats owned by *matajiri* to protect their fishing fleets against theft and piracy, were reported not to be licensed but they were never seized by officials. Such boats were reported to be 'non-profit fishing units' and many *matajiri* tried to avoid licensing fees. Likewise, most boats used by beach seiners, boat renters, bait fishers, *makila*, monofilament (*timba*) fishers, robbers and pirates were unlicensed and unregistered. Such boats were continuously protected by officials through corrupt networks. Often, district treasurers did not even know the total number of boats in their jurisdiction or whether or not they were registered or licensed. This makes it easier for corrupt officials to manipulate figures through underestimation and/or unreported boats.

¹²⁸ A well-known beach seining station in Mwanza town, located close to the Kigoto police post.

Table 8.2: Reasons stated by fishers as to why beach seine fishing continues

Reasons provided by participants	N	%
1. Corruption and involvement of networks of senior officials	35	16.2
2. Availability of financial and material support from commercial Nile Perch buyers	28	12.9
3. Less labour and other operational costs	25	11.5
4. No gear theft and piracy risks because the seine is not left in the water	24	11.1
5. Moral support from community members despite its prohibition	21	9.7
6. Availability of different sizes of fish for a wider range of market	20	9.2
7. Poverty within the clans, households and individual families	20	9.2
8. Traditional gear inherited by family members for years	12	5.5
9. Financial and social exclusion from intensified commercialized networks	10	4.6
10. Availability of traders at the pull site ensures owners' and pullers' income	9	4.2
11. Majority of communities are 'informers' and work against regulators	7	3.2
12. It is a social activity which is accompanied with drinking, singing and mobility	5	2.3
Total number of response and per cent 216 99.6		

Note: Responses (N) were not mutually exclusive

Source: Field study (2009-2011).

One *tajiri* remarked,

“boat licensing in districts costs about TShs 85,000 (\$57) and it is done annually. If 300 fishers bribe officials with TShs 40,000 (\$27) for each boat instead of paying the full license fee, the district loses TShs 25,500,000 (\$17,000) and the TShs 12,000,000 (\$8,000) goes into individuals' pockets. During boat licensing exercises or frame surveys, we call it 'harvesting season for our fisheries staff'. For instance, if they collect TShs 45 million (\$30,000) they can submit TShs 25 million (\$16,667), less than the collected amount, because there is no accountability (FGDs, Mihama, 13/6/2011).

The beach seine fishery is firmly embedded within credit market channels (Figure 7.1) and social networks. Local fish traders, agents of EPFs, *matajiri*, and local male and female fish traders are the fishery's main guarantors and provide financial, material and safekeeping support systems to it. In addition, low investment costs, compared to gill netting and long lining, as well as cost and risk avoidance tendencies, makes it proliferate (Table 7.6d). Below is a summary of an in-depth interview with a 27 year-old *tajiri* at Mwachimwa (Kigangama Village). It shows how the dynamics of governance practices prevail at local level.

Textbox 9.3: Governance practices and corrupt networks

“.....it is cheap to alter the fish weight in a beach seine. If I get 1,000 kg, I make an extra of 40 kg and make it 1,040 kg because we use forged weighing scales and it is easy with seiners. Without buying fish from a beach seine it is difficult to make a profit. All prominent fishers, EPF agents and *chingas* around here are connected to beach seines and we know each other very well. We can also identify fish that has been caught from a beach seine, gill net or long line. Fish from beach seines have scratch marks around the head, are likely to be alive and have a lot of sand on the body. Fish from long-lines have a hole in their jaw. In this case we know if someone has caught or bought fish from a beach seine or not. We even know if our crewmembers have stolen fish from someone else’s gear. Surprisingly, fisheries officials seem not to know about these things. If they knew, why is the government spending so much money to patrol for beach seines while they can just inspect fish at the weighing scale and identify them? Do they do it on purpose to get allowances, bribes and waste fuel for patrol boats? We believe we have more experience than them. We can look at a fish and know which gear has been used and how much it weighs.

Fish from beach seines are supplied to EPFs, through *chingas*, agents of EPFs, *matajiri*, bicycle traders and small-scale fishers. If I don’t get fish from bicycle traders and my own beach seines for a day or two, I call the supervisors immediately. If it happens my seine supervisors have family matters to tend to, I help them immediately. If there is anything to provide for their parents or wives, I do that to ensure they concentrate on their jobs. I normally get prepared before hand with non-refundable cash to handle their problems and when it exceeds a certain amount I deduct from their payments. We help each other to improve our lives. I have allocated one day per week for my supervisors, but fish weighed for EPFs are sold to me at fixed prices and small fish are shared equally between supervisors and pullers. But for the beach seines that I finance, I guarantee that the net will be replaced if it is damaged or confiscated. In return, they sell their fish to me at agreed upon prices, while the small fish are left to the beach seine owner and his pullers. If beach seines are going to be eliminated by force, there will be a social outcry and a political struggle and many people will join opposition parties.

The beach seine has long networks. Without networks, you cannot survive in the fishery. It will be taken away by an official and sold to another person. I make sure they don’t confiscate my nets, but it is tricky. Between 2004 and 2005, my first two beach seines were set ablaze by officials. Three times, my nets have been confiscated and then returned. My supervisors tell me that they have been spotted hauling the seines by patrols about eleven times, but they were left alone. More than fifteen times, patrol members have secretly informed me that they are coming, and I called my supervisors to tell them to stop hauling and to hide the seines. Bicycle traders also provide a lot of incentives to my beach seiners in return for the right to buy their small fish. They alert my pullers in case of anything. If you go to Shinembo village at Maneto sub-village you will see many bicycle traders crossing to Ijinga Island (Photo 3.22). They get small fish for the local market, while the bigger size are for export. Traders cross over to the island because prices for small fish are cheaper there than on the mainland. They can buy for *jero* (lit., TShs 500) or *buku* (lit. TShs 1,000 = \$0.7) per piece or two pieces, while on the mainland it is TShs 1,500 (\$1) to 2,000 (\$ 1.2).(Interview no. 60057, 12/6/2010).

After two days, in this place, I went to Maneto sub-village in Shinembo village, Magu District, where I stayed for three days interviewing elders, BMU leaders and fish traders. One of the BMU members had the following to say, which validates the above narrative:

"We have many beach seines in this area because patrols and confiscation are superficial. We have nine beach seines here and it is not easy to eliminate them because they are protected by officials. They are the ones who know how to get rid of them and not us. At Ijinga Island, we have about 20 beach seines and many traders go there by bicycle and Nazareth passenger boat. They come from different places such as Masanza Kona, Kwimba, Ndagalu, Sunve, Nyanguge and Mwanza town. Beach seines are big shot projects. We are here to protect their interests by informing them what is happening. If we don't do that, they arrange for another BMU election and we will be removed. Normally, our extension officers get worried if patrols are made by the regional office without informing them or if their seniors visit us without their knowledge. This makes their project and income cease for a while. When you came yesterday, after a few minutes I got a call from our fisheries extension officer who asked what your intention was. When I mentioned research, he asked me how long you would be around. He ordered me to tell the beach seiners to go to a hidden pulling ground while you are here. They have individual informers including the seine owners and fish buyers (BMU member, Maneto, 14/6/2010).

When patrols are known to be about, beach seiners often resort to fishing at night, off secluded beaches, or else they move to areas where there are no known patrols. In a worst case scenario, the seines are removed from the water and hidden in tree canopies, in the bush, in homes, in shallow lake waters and roofs and are, sometimes, buried. On the islands, however, more freedom was noted, and seines were pulled day and night.

FGDs interviews with BMU representatives revealed that beach seine owners paid income taxes to the District Authorities which, to them, legitimated their activities. Here, one narrates:

"We have private tax collectors in this district. These are individuals who have won district tenders to collect levies and taxes on behalf of the District treasurer. These collectors submit about TShs 500 million (\$312,500) income per year to the district treasurers from fish and fisheries products only. More income is also generated from forest products, livestock, farm products, transport and other minor sectors. When the BMUs were formed, we were told to identify sources of funding in our locality for us to execute our activities. By October 2006, we had identified 41 sources of funds, including taxes, fees and fines. In November 2006, we sent our proposal to the District Council through the district fisheries office for approval. Unexpectedly, all that we wrote was hijacked by the district fisheries office. They submitted it as if it was their proposal, so as to gratify their district bosses. If a sector has more funding sources and contributes more cash to the district, the officers there tend to be favoured and protected. Now, we are helpless. We don't have a source of funds and we cannot confiscate any of the gear because seiners pay taxes as well as bribes" (FGDs, site withheld, BMU leaders, 18/11/2009).

It is important to note that district tax collectors are in favour of income generation and not regulations, such as a beach seine ban, that would otherwise interfere with taxable income. The Hon. Fred Mukisa, the Ugandan minister in-charge of fisheries commented on this apparent contradiction between fisheries regulations and tax collection when he blamed district authorities for causing 'free for all' propensities in fishing by licensing all actors regardless of status. *"The problem on Lake Victoria is huge. We have many players licensed to go fishing by local governments. To mitigate this, we are planning to again centralise licensing because local governments are more interested in revenue than conservation"* (New Vision/IRIN¹²⁹, Kampala: 1/8/ 2008). Dambisa Moyo

¹²⁹ Integrated Regional Information Network (IRIN)

(2012:56;57) in her study on the economic implications of China's ascendancy as the leading buyer of the world's resources argues that once governments are guaranteed cash inflow, they care less about what their domestic constituents want and focus more on collecting revenues. This certainly seems to be the case in Tanzania and the whole region, where local tax authorities perceive the taxable incomes generated by the fishery, whether by legal or illegal means, and where taxes from other sectors are on the decline – such as agriculture, affected by drought and low yields.

The creation of the BMUs has also created tremendous discretionary opportunities for gathering bribes. Devolution has focussed these opportunities in the hands of local administrators, bureaucrats and law enforcement officers. Fishers are caught between a rock and a hard place. Those using legal gear types may not have to bribe anyone, but then they cannot compete with the superior catches obtained from illegal gear users; so, they also invest in illegal gear, which in turn forces them into corruption if they are to prevent their gear from being confiscated and possibly destroyed. But survival in the illegal gear fisheries is not just about being able to pay off corrupt officials but also to reduce the risk of detection by being part of tight networks who know whether or not patrols are on their way and ensure that bribery results in seized gear being returned. Once again, the fishery's networks demonstrate how perceived risks are dealt with through these networks that serve to protect fishers' investments on the one hand but do nothing to protect the fishery on the other.

For many powerful *matajiri* on Lake Victoria, bribery is a profound way of realising improved access to a resource. What must be remembered, however, is that cash is but one ingredient amongst many others in the successful negotiation of resource access. Robbins (2000) provides an example from an Indian forest, in which forest guards might allow an old woman to harvest forest products for no bribe at all, perhaps because she is old, a woman, part of the same community as the guards themselves or because the resources she seeks are not highly valuable. A middle-aged man keen to fell a common tree species may be charged a high bribe because he is not from the guards' community, stands to earn a lot of money from the escapade, or because the task of felling is noisy, and hence more likely to be noticed by others. Finally, an influential man bent on felling valuable iron-wood trees might be asked for a small bribe because the guards are keen to ingratiate themselves and earn his favour. As Geheb and Mapedza (2008) point out, bribes, like power, are relational – they depend on the relationship between the bribe-taker and the bribe-giver, and the individual entitlements that they respectively command. The position occupied by the guard is valuable, and there are, therefore, attendant costs. The findings show even the corrupt, it seems, are taxed.

Levels and degrees of bribery and corruption are directly attributable to the weakness or strength of the state. They also occur in higher circles, as indicated below:

Textbox 8.4: Corruption in Nile Perch industry and Ministers' resignations

“Since all but one of the companies systematically under-declared on export values of fillets and fish maws, the anomaly emerged that Zairean exporters of dried salted reject fish were paying export royalties based on a declared export price of \$ 2.50/kg, while factory exporters of frozen fillets were paying royalties on a declared export value of only \$1/KG. The factories had long complained that this level of taxation was ‘penally high’ in relation to Kenya and Uganda, where royalties were nominal or non-existent, and privately justified their under-declaration of value on this basis. The TFPA (now TIFPA) sought a meeting with government ministers to review the royalty level. When the meeting occurred, however, the Deputy Minister of Finance declared that not only was the royalty level not open for discussion but also that henceforth they too would have to declare f.o.b values of \$2.5/kg. The immediate background to this meeting was, apparently, not the requests of the TFPA, but the ‘exposure’ of its members to the newly appointed Prime Minister by a local Member of Parliament. Sometime after this meeting, the TFPA members are said to have hosted a further meeting with the Minister of Finance, the Minister of Tourism and Natural Resources, the Mwanza Regional Commissioner and Regional Development Director. At this meeting a bribe is said to have been offered, and accepted, to waive the proposed change in declaration levels. The outcome was that all the three ministers involved were obliged to resign and it was agreed that henceforth fillet export royalty would be levelled to an imputed f.o.b value of \$ 2/kg (Guardian, 25th August, 1996, 3 October, 1996, 8 November 1996)”.

8.6.1 Markets: A driver for governance in Lake Victoria fishery

The power of the market (see Chapter 2, Figure 2.3) and its influence on local practices can be demonstrated in many ways, one being the EU import ban on Nile Perch fishery between 1997 and 2000. The first ban took place in 1997 as a result of reported *salmonella* being detected in some Nile Perch exports from Lake Victoria to Spain and Italy. The second took place in 1997/1998 as a result of an outbreak of cholera in three countries. Based on the results of inspections and the detection of *salmonella* in Nile Perch consignments, the EU introduced requirements for testing all consignments from the Lake Victoria region for *salmonella*, *Vibrio Cholerae* and *Vibrio parahaemolyticus*. By the end of June 1998, Competent Authorities were obliged to provide a declaration that people handling fish and fishery products had undergone medical checks (Kadigi et al., 2007; WB, 2005). The longest ban lasted from 1999-2000, when the export of Nile Perch fish and fish products from Lake Victoria were prohibited as a result of suspected cases of fishing with poisons. After the lifting of the ban, Tanzania was granted Category ‘A’ status, whereby fish and fishery products go straight to the market without being re-inspected. Once again, in November 2002, the EU threatened to ban fresh fish imports from Tanzania if a new bill on food and drugs was passed by the Tanzanian parliament, which intended to place fish quality control under two authorities, the Tanzania Food and Drug Authority (TFDA) and the Tanzania Fisheries Department (TFD). The EU considered the move a stumbling block to achievements in quality control and safety assurance. They strongly recommended that the TFD be the sole competent authority for overseeing fish quality and control activities in the country, and not the TFDA (WB, 2005). Since then, the TFD regulates fish quality control matters and in the current

Fisheries Regulations fish quality regulations dominate (pgs. 41-82). These stipulate hygienic procedures during fishing, during landing, and after landing, general hygiene in establishments, staff hygiene, distribution of fish and many others.

The EU and the three riparian governments are working hard to improve Nile Perch landing sites for compliance. In 2009/2011, the EU granted the three countries a total of €29.9 million through the LVFO Secretariat to implement the Lake Victoria Fisheries Management Plan (IFMP) through the LVFO/IFMP Project. One finance agreement under this initiative was to improve 18 Nile Perch fish landing stations, six in each country. This is equivalent to 1% (n=602) of the total fish landing sites in Tanzania (URT/LVFO/LVBC, 2012:4). Tanzania received a total of €1,964,003.91, and landing site improvements were carried out in Magu (Kigangama), Sengerema (Kahunda), Musoma (Bwai), Rorya (Sota), Chato (Kikumba Itale) and Bukoba (Malehe) Districts (URT, 2012a, 2012b). The improvements included construction of meeting halls, small house structures for security, modern toilets and bathrooms, stores, waste water soaks and septic tanks, fences, gates, jetties and fish receiving stations with slabs and frames for hanging fish. Other equipment available is floating barges with ramps, chain blocks, sinkers, water pumps and water tanks (URT, 2012a, 2012b). These investments not only improve fish handling, but also income through taxes because fish landing sites have been converted to tax collection points as a result of the massive concentration of boats and other businesses. This has prompted other districts to invest in the so called 'fish market systems improvement'. For instance, in 2009/2010, Sengerema District Authority invested TShs 62,500,800 (US\$ 41,667) to improve Chifunfu/Kijiweni and Mchangani landing sites (LGA, 2009:6).

The power of the market is also shown in how the Nile Perch industry has suffered bad press and the consequences of this for the export market. Alarming IUCN reports that emerged in the late 1990s focussed, in particular, on the trade of so-called 'punks' – Nile Perch skeletons discarded by the EFPs cf. Abila and Jansen, (1997) and Jansen, (1997). These were widely referred to by different scholars, condemning the globalization of the fishery. But these were relatively small protestations, published as project outputs. "Darwin's nightmare" (see Chapter, 1) suffered bad press and worried western liberals chimed in. The noted Lake Victoria academic, Les Kaufman, wrote:

"I have seen the Sauper film three times. It is a very powerful film and to achieve these aesthetics, the makers have used talking heads, and attention to the dark side of the people's lives. But you are not going to have much luck arguing with the facts as presented in the film. The essential points that this film portrays are true. [T]here has been some positive impact from the globalization of the exotic Nile Perch fishery in the Lake Victoria Basin. Of course, that shouldn't be the case: the hundreds of millions of dollars generated by the Nile Perch fishery should be improving lives, advancing education, alleviating poverty across the board. So is it true that this is not happening? Who is responsible for critically testing this assertion?"

German Greenpeace placed the Nile Perch on a "to be avoided by the consumer" index (GTZ et al., 2007:1). "Consumer opinion shifted from 'fish of the month' to an 'African nightmare' based on Sauper's documentary" (Scholz, 2007:11). The film has been politicized nationally, regionally and globally.

In response to Sauper, the LVFO and the IUCN wrote a joint letter dated 08th Dec 2005:

“We sympathize with your motivation to show the flaws of “the globalization of African markets” in Darwin’s Nightmare. But, contrary to your portrayal, the fisheries of Lake Victoria are far from an example of the “deadliest humiliation for the people of this continent”. The conclusions of Darwin’s Nightmare are themselves as corrupt as you accuse the fisheries of Lake Victoria to be. By painting a dark picture of the Lake Victoria fisheries, rather than providing a balanced view that shows the positive and negative sides, we are tempted to conclude that you yourself exploit the misery of the people of Lake Victoria in your documentary, and capitalize on a false image of Africa”(LVFO/IUCN, 2005).

Mkumbo (2012:38)¹³⁰, an LVFO official, has argued that *“people make a living from Nile Perch in many different ways – in this case (Photo: 8.1 shown by her)¹³¹ cutting up bones and heads to be dried and made into chicken feed, while some are fried for human consumption. These people will suffer if Nile Perch collapses and we have to ensure that these activities can continue”*. This means, LVFO and Mkumbo’s in particular, appreciate the view that people around Lake Victoria eat ‘punk’ (Nile Perch skeletons) and its termination will affect a number of households. Nevertheless, the LVFO views do raise important questions. Is eating ‘punk’ not an indication of food insecurity and poverty? While Nile Perch landing sites are being improved to please the EU markets, what plans are there to improve the facilities and hygienic conditions surrounding ‘punk’ processing and sales points?



Photo 8.1: A cross-section of Ugandan punk processors

¹³⁰ 05th October, 2012 Wagenigen, Netherlands

¹³¹ She was a senior scientist; now (2014) a Deputy Executive Secretary of LVFO, Jinja- Uganda.



Photo 8.2: Punk processors at Mkolani (2011)



Photo 8.3: Sun-dried punk (heads) ready for sale at Nyamhongolo (2011)

Other punk processing sites from Tanzania are shown above.

The vision of the Lake Victoria Fisheries Management Plan (FMP 2009-2014) claims that its 'focus is on impacts on the lives of people in fisheries' (LVFO/IFMP, 2008:36) and specific management objectives that will support the achievement of this purpose have been identified (Table 8.4). The plan lays out a prioritisation schematic for a number of management objectives for each of the lake's fisheries. Curiously, the Nile Perch fishery attracts a 'least important' rating when it comes to food security in the region, implying that it is viewed exclusively as an export product market, and that it is the preferences of consumer markets that guide this fishery's management. It also implies that it is somehow acceptable that much of the Nile Perch consumed locally is from fish skeletons, discards from the factories and small sized Nile Perch. It is from such deeds, Medard (2012 :564) has also argued, that the fishery has produced jobs that are extremely insecure and risky. The *punks* portrayed so vividly in Sauper's film are processed in filthy areas (Gibbon, 1997a:48) with a bad smell and rotting carcasses (field observ. at Kirumba, Mkolani and Nyamhongolo).

Table 8.4: Set of objectives in LVFO Fisheries Management Plan, 2009-2014

Subsets	Management objectives	Priority fishery			
		Nile Perch	Dagaa	Tilapia	Haplos
Biological	Optimise sustainable fish production	1	1	1	1
Ecological	a.Minimize impacts of fishing on non-target species, particularly prey species	3	1	1	1
	b.Conserve biodiversity hot spots	3	3	3	1
Economic	a.Maximise contribution to macro-economic growth through foreign exchange generated by exports of fish products	1	3	2	3
	b.Maximise net income of participating artisanal fishers	1	2	1	3
Social	a. Maximise food security within the national markets	3	1	2	3
	b.Optimize utilization of fisheries resources through value addition	2	1	1	3

Note: 1 = most important, 3 = least important

Source: LVFO/IFMP, 2008:14;15; Mkumbo, 2012:29)

(a) Empowered markets through food chain networks and industrial associations

Many authors agree that international Nile Perch and regional Dagaa traders (Gibbon, 1997b) and buyers exercise considerable control over the fishery's management and trade, from fisheries regulations to certifying the safety of Nile Perch processing plants (Gibbon, 1997a; Jansen, 1997; Medard, 2005; Pollard, 2008; Thorpe and Bennet, 2004; Wilson et al., 1999). Global consumer preferences, exercised by the processes and practices of international traders and distributors such as ANOVA, are networked through regional and international companies, such as Vic fish Bukoba Ltd, Vic fish Mwanza Ltd, Tilley (Prime Catch in Musoma), Alpha (Tanzania Fish Processors -TFP Ltd and Musoma Fish Processors - MFP Ltd) and the Victoria Perch Group of Companies (Mwanza Fish Ltd). Access to international financial institutions such as the Africa Development Bank (ADB), the International Financial Corporation (IFC), the Aga Khan Foundation and donor agencies such as NORAD (Abila and Jansen, 1997:7). Knowledge of food processing and handling and the power to lobby and advocate their intent, places this group of actors in a very powerful position.

These companies have high negotiating powers to push their agendas and coordinate activities and relationships between themselves and policy makers. In recent years, the export fish processors associations have been placed close to the LVFO hierarchies (Figure 8.2) under the umbrella of Public-Private-Partnerships (PPPs)(LVFO/IFMP, 2010b:2). Local communities are at the bottom and are represented by one BMU member, who is not always invited. EPFs have their own travel funds to attend meetings and sometimes they push for a presence without necessarily being invited (Pers, observ. Mukono, Uganda, 2003). Moreover, they are able to set their own meetings and call for negotiations with officials from Fisheries Departments, the LVFO and even responsible Ministers.

What worries fish investors, the LVFO and the Governments is that some EPFs have closed down because of a shortage of Nile Perch (Chapter, 2). In 2010, during the stakeholders' eco-labelling round table meeting, the ALFA group of companies (one of the largest freshwater fish processing factories) confirmed that its Mwanza-based factory, which has the capacity to produce 120 metric tonnes per day, was producing only 60 tonnes a day between 2005 and 2009. By 2010, its production had reduced further to 30-35 metric tonnes per day. Likewise, ALFA's Musoma factory, which had an average capacity of 40 tonnes per day, had fallen to 20-25 tonnes per day in 2010 (Vedagiri, 2010). Would these trends not, for example, provide the industry with an incentive to conserve the fishery? Or are they just moving their capacity out? Is eco-labelling in Lake Victoria a solution to this trend? It is not. It has made EPFs more powerful and practical in controlling fish production and marketing endeavours.

(b) Eco-labelling: A market driver for investment intensity in Lake Victoria

"Eco labelling could be a strategy to secure long term market access of fishing that secures the livelihoods of around 150,000 fishers in Nile Perch fishery. An additional pre-requisite would be that consumers in Europe are prepared to pay a premium for eco-labelled Nile Perch and that fishermen involved in better fishing management practices would benefit from this added value" (Scholz, 2007:10;12).

Increasingly, western markets for Nile Perch are concerned with the fisheries' sustainability in the developing world, particularly marine fish stocks. With the FAO claiming that 75% of global fish stocks are fully exploited, over-exploited or depleted, many western retailers are concerned about the bad press surrounding the products they offer for sale, and have therefore insisted that all fish products that they purchase are certified as originating from sustainably managed fish stocks. Wal-Mart, LIDL and METRO claim to no longer purchase un-certified fisheries products (GTZ, 2009). The LVFO believes that, eco-labelling of the Nile Perch fishery "would further demonstrate the commitment of all stakeholders to sustainable management of the fishery and is, therefore, an important process to be followed through the implementation of the Lake Victoria Fisheries Management Plan" (LVFO/IFMP, 2008; Parkes, 2008:98). The former LVFO Executive Secretary also stressed that:

"The EU, which is a major market for fish and fisheries from East Africa, needs eco-labelling in order to ensure the quality of Nile Perch products. The whole lake will be eco-labelled as a single ecosystem, and it is a significant landmark to add value to fish products and promote sustainable fisheries utilization and development" (Nyeko, The New Vision, 26.2. 2008).

This is, of course, a remarkable ambition and commitment. Rather than waiting for eco-labelling pilot projects to judge whether or not the lake's fisheries can qualify for the label, the LVFO's Executive Secretary foresaw the 'entire' lake's being eco-labelled, with all the tight management and regulation that entails. If so, why not ensure that the label is dependent on measures to ensure that Nile Perch, Haplochromis, Tilapia and Dagaa are all captured? I see very high risks to partner states but fishing communities seem to be the main winners at the moment because of what is happening on the ground.

In October 2006, a regional workshop for exploring the ‘feasibility of eco-labelling on Lake Victoria’ was held in Nairobi, Kenya. This meeting attracted a variety of participants, including representatives from regional EFP and Naturland e.V, a German association for certifying organic agriculture and conservation organizations (Kambewa, 2007:134). Thereafter, a number of meetings were held. In one of those an EPF owner said:

“The Nile Perch consumers are far from the place where the fish is landed. Nile Perch is still the top choice of the European consumer because of its nice white fillet, which is available all year round. If existing fishing effort levels are maintained, the industry faces other challenges as well. Major retail chains have announced that they will only source their fish from stocks that are certified as sustainably managed because of growing consumer concerns in industrialized countries about the problem of global over-fishing and environmental damage” (Name withheld, 2010).

The first Nile Perch eco-labelling pilot project on Lake Victoria, Tanzania, was initiated by GTZ (GTZ et al., 2007) in collaboration with ANOVA Food Ltd (Netherlands), a leading supplier of fresh and frozen seafood products to Europe and America; Vicfish Ltd Bukoba (Tanzania), an export fish processing factory that meets with EU and Tanzanian national standards; Naturland e.V and the Aqua Eco. An important component of what was proposed was that this GTZ-led initiative would draw on the FAO’s Code of Conduct for Responsible Fisheries (CCRF) as the base line against which sustainability would be gauged (GTZ, 2009). In addition, eco-labelling also insists on ‘traceability’, i.e., the Nile Perch can be traced from the European consumer’s plate all the way back to the fisher on L. Victoria who landed it. In order to achieve this, the LVFO and national governments (URT, 2009:165) proposed a system of ‘fish movement permits’, which anyone transporting fish from lake shore to EPF would have to have, and which contained details about where the fish was caught, who caught it, the size and other details.

A day after the eco-labelling meeting, the LVFO Secretariat informed the Council of Ministers that eco-labelling had been initiated in collaboration with GTZ and with the concurrence of different stakeholders. The Secretariat saw this as an achievement towards the adoption of the Regional Plan of Action to Manage Fishing Capacity (RPOA Capacity): eco-labelling would provide Lake Victoria Nile Perch with the label that it originated from “a well -managed and sustainable fishery” (LVFO/EAC, 2007:8).

The eco-labelling processes on Lake Victoria, Tanzania, are led by EPFs whose objective is profit maximization. One said: “Eco-labelling is being undertaken by our factory management in an endeavour to enhance sustainable fisheries and to excel in business, and we are the promoters” (Vedagiri, 2010). While some export factories started eco-labelling projects with pilot areas later to be scaled-up (Maiseli, 2011), others have set specific targets for fishing camps to work within in a wider area and have invested directly in fishing camps through the so called ‘eco-labelling projects’. Equipment such as nets, outboard engines, fishing boats and fish handling material are given to camp owners under the project and EU requirements (EU, 2012). A prominent female camp owner at Mchangani, Kome Island attested:

“I have been approached by one of the fish factory directors. They will give me boats, nets, engines and many facilities to implement the eco-labelling project. They want to work with many matajiri to

ensure fish are handled properly. I have been asked to vet and propose other matajiri and they will also benefit through equipment and loans. The factory has sent their employees to train us on how to implement it in our camps and I am one of the hosts in this area" (Name withheld, 26/8/2010).

Through eco-labelling, EPFs have penetrated to landing sites and formed new structures, institutions and networks. This has contributed to changes in the ways in which the Nile Perch fishery is governed at local levels. New institutions, jobs and roles have been created by the factories at the landing sites and they are made more active during EU inspection. They include landing site monitors, who are stationed at various Nile Perch landing sites, landing site controllers, eco-labelling project managers, eco-labelling documentation managers, who work hand in hand with the project managers, production managers and factory directors (Figure 8.3). Through eco-labelling, data and information are collected by landing site monitors. They include (a) monthly Nile Perch catch assessment data per fish supplier; (b) personal details of the fisher/camp owner; and (c) daily catch analysis and composition per boat per trip, which includes the name of the boat owner, registration number, number of crew, kilograms of legally-sized fish, kilograms of undersized fish, by-catch fish, rejects, non-fish species and endangered species (fish and non-fish). The existence of landing site monitors and controllers has to some extent made the BMUs redundant. Conflicts between landing site monitors and BMU leaders were observed at some landing sites over who should own the project first aid kit and office furniture kept in the BMU office, and donated by EPFs through the project. Some BMUs claimed that landing site monitors and controllers had been placed there temporarily (as indicated previously) to impress EU inspectors, and were fired after the EU had left.

The eco-labelling project permits the EPFs to build power and control through close interconnectivity and networking at landing sites. It is an avenue for EPFs to get involved in fishing directly and to make fishing investment decisions. The initiative has created further avenues for investment intensity that contradicts LVFO RPOA-Capacity Initiatives (LVFO/EAC, 2007). The EPFs involved in the project have more knowledge than any other Nile Perch actor about catch trends, which helps to determine their choices as to where to invest. Most EPF eco-labelling projects are concentrated on the islands, where the catches are higher than those from the mainland, while most landing sites along the mainland appear to act as receiving stations. The EPFs work directly with fishing camps. What Bergleiter (2007:7) calls the 'Internal Control System' (ICS), enables factories to monitor closely camp investments, equipment depreciation, theft, replacement and security systems, whilst the division of labour (Figure 8.3) allows efficiency and effectiveness in fish production. During the study, eco-labelling projects were implemented by five factories (Vic Fish Bukoba Ltd, Vic Fish Mwanza Ltd, Nile Perch Ltd, Tanzania Fish Processors Mwanza and Tanzania Fish Processors Musoma Ltd) at the same or different landing sites. Eco-labelling has created more competition between the EPFs because fishers are tied up through credit and loans with even more capital and material assets in the name of the eco-labelling project.

At an eco-labelling stakeholders' roundtable, when I inquired why other factories were not invited, the response was: *"It is not like that in business, what we do is business"* (name withheld, 29/7/2010, Mwanza).

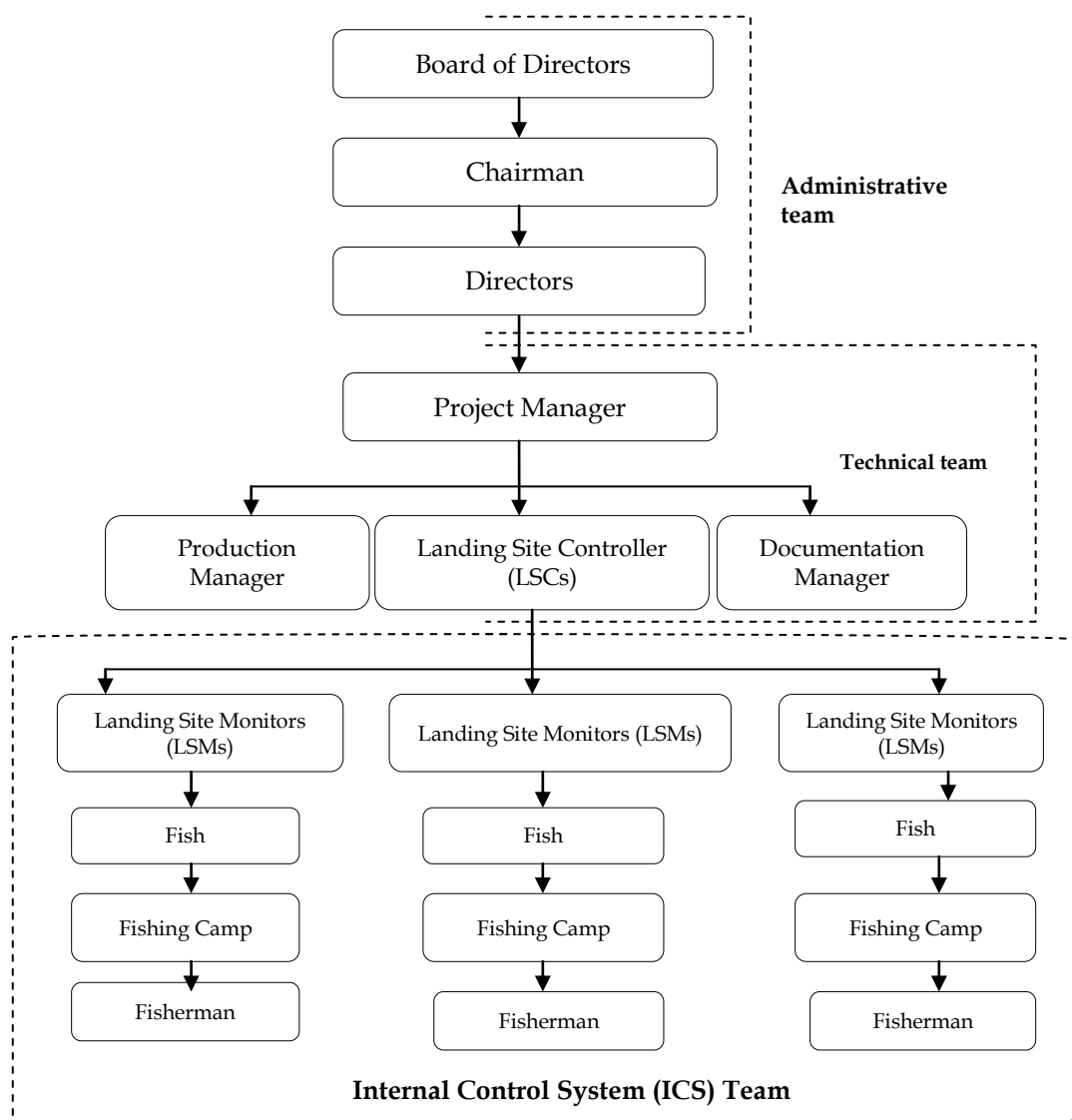


Figure 8.3: Example of eco-labelling structures from EPFs to the fishing camps in Lake Victoria, Tanzania

Source: Adapted and modified from Vedagiri (2010).

Despite these efforts, other stakeholders in Lake Victoria have remained largely silent on the eco-labelling initiative (The New Vision, Uganda, 26.2.2008). There is a feeling that the process will bring more risk to local traders and consumers and they will be excluded from trade and local consumption, while short-lived benefits will be accrued by industrial processors, as well as foreign retailers and distributors.

Through the eco-labelling projects, EPF investment is focused on ‘owners of fishing camps’. Fishing arrangements and information are kept secret and revealed strategically. Catch data from ‘eco-labelled boats’ are ‘not accessible for all’. Access to fishing boats, fish catches and catch records are owned and controlled by ‘project implementers’: the landing site controllers and monitors.

"I am not allowed to share these data with any person other than my factory project managers, otherwise I will be sacked. I don't even share them with my fellow landing site monitors from other factories or BMU leaders. They are secret, but I can show you the unfilled forms for you to understand what we do" (a landing site monitor, name withheld, Igombe, 10/5/2011).

There are two explanations for this. First, EPFs worry because Nile Perch catches have been reported to be on the decline (Mkumbo, 2012; Mkumbo et al., 2007; Muhoozi, 2002; Ngupula and Mlaponi, 2010; Pollard, 2008) which could result in serious measures being taken by the government (e.g. strict slot size control). Secondly, Nile Perch catch records are performance indicators that should be hidden from other factories with which the EPFs compete (see Chapter 7). Factories are, for obvious reasons, bent on maximising the amount of the catch that they can obtain, rather than meeting the sustainability objectives set by eco-labelling. This being the case, catch figures are still manipulated, as one BMU leader explained:

Textbox 8.5: Under-declaration of catch figures to avoid/evade taxes

"According to the fisheries regulations, we are supposed to record all catches which are shipped from our landings to the EPFs. We are entitled to issue 'fish movement permits' which are required for the transportation of fish. We are supposed to verify the tonnage, to stamp and to sign it. When the EPFs ship one tonne, they are supposed to pay TShs 100,000 (\$67) in taxes to the District Authorities, while we collect TShs 3,000 (\$2) as BMU fees regardless of the tonnage. This form is finally submitted to the factory to show where the fish is coming from.

Factories know exactly what is happening and are in favour of under-declaring the tonnages so as to evade taxes. It is a chain of deceit by the factories, matajiri and EPF agents. Today, a tajiri came to ask for a permit to ship his fish to Mwanza. But before writing in the tonnage, he called his agent who is in Mwanza to ask how much he should declare. He had four tonnes, but his agent (financier) told him to declare two tonnes. We have no power to insist that the correct tonnages are recorded. We also put in our pockets what we get as BMU fees. It is also a bribe to us because EPF agents can still ship without paying and we can't stop them. If we appear reluctant, they can just go to another BMU at another site and have it stamped. This is the reality" (Name Withheld, 20/11/2009, Kome Island).

Levies and taxes vary from district to district. They range between TShs 7-100 (\$ 0.0046-0.067) per kilo of raw fish, charged to fish collectors and EPF agents, or *matajiri* when shipping fish cargo to the EPFs. In addition, Mwanza City demands an additional fish levy of Tshs 7 per kg to EPFs, which brings to the total local fish levy per kilogram to between TShs 14-100 before processing.

In an interview a female camp owner explained that handling fish from the landing sites to EPFs could be tricky. *"When I ship my fish to factories, I normally accompany the truck or go by private car and arrive in Mwanza before the cargo. Sometimes I carry a 'fish movement permit', but not always because the factory knows where I get my fish. In most cases, the permits are forged and they don't help. At the factory gate, Mwanza City tax collectors charge TShs 7 (\$0.005) for each kilogram of fish, paid by factories.¹³² This means that if we reveal the true tonnage, the factory will pay the correct tax to the city, but they have all the power to squeeze us by lowering our fish prices or overstating the number of fish they reject. We try to make a fair deal by understating tonnages so they don't have to pay such high taxes, and we hope that they will return the favour. Tax people who are contracted by the city council have no idea about fishing and they don't dare insist on correct declarations. We declare any tonnage we like to them. Sometimes, they ask us for money for lunch or*

¹³² Some factories have negotiated with City/District authorities to pay such taxes by cheque within a given period of time which has given more liberty to factories and excluded tax collectors at their factory doors.

tea because they have nothing. If we give them TShs 1,000 (\$0.67), they feel happy. These are poor hired labourers who are sent by business tycoons contracted by the city council to stand by the factory doors.

When asked about how they work with BMUs in ensuring good catch records, she said: BMUs have no power. We help them every day by giving them fish, paying fares, beer, car rides, breakfast and lunch at the beach. The BMU voters are with us. Some of them own boats, others don't. We help those with boats with cash, nets, fuel and money to make boats. We also give small loans to chingas (middlemen) and they sell fish to us. The truth is, it is we EPF agents who determine who should be a BMU chairman and/or secretary. Camp owners, crew and small fish traders around here rely on us. People are suffering and they also want to win in life. Let them use the gear they can afford and sell and eat fish they can afford because we take the rest. We won't give any chance to anyone who interferes with our businesses or our people's activities". (Mwanchimwa, Magu.Interv.no 60046, 12/6/2010).

Despite the LVFO Secretariat's and Government's commitment to pursue the eco-labelling process, regulatory compliance in the Nile Perch fishery is a problem and the market partners (EPFs) are the main underlying cause. In 2009, the EAC Council of Ministers launched a \$1.8 million drive called 'Operation Save the Nile Perch' (OSNP), which was aimed at bringing Nile Perch catches back from the 331,000 tonnes landed in 2009 to the 1.2 million tonnes catch in 2000. The fish exporters agreed to create an 'Independent Monitoring Team' (IMT) that would regulate their own activities, particularly the purchase of fish below the 'slot size', the minimum legal size of Perch (Kayungi, 2011:3).

By March 2010, the LVFO complained that illegal gear use was still 'rampant' (LVFO, 2010:5). OSNP did not seem to be working, not least because out of the funds committed by the three EAC states, Uganda and Tanzania had not met their financial obligations towards the initiative.

Following the establishment of the IMT, in 2008, seven EPFs in Tanzania were sanctioned, and their processing suspended for a week because they processed fish which were below the required slot size, (see Table 3.3), while one factory was suspended for a month due to repeated offences. In 2009, three factories were suspended for a week and in 2010 two factories were suspended for a week and, of those, one was suspended for one month because of repeated offences (Kayungi, 2011:4).

Change always attracts opposition, and for established interests on Lake Victoria, there is plenty of resistance to the BMUs, the eco-labelling initiative and Operation Save the Nile Perch.

"The fishing which is going on here is illegal – people fish tonnes of small size fish and they take them to the factories. We do not dare obstruct them. We have no power. Corruption and aggression prevail. Powerful fishers have money and firearms and are ready to do anything to protect their interests. All we can do is participate in all of this, and move on. Otherwise our lives will be terminated" (Camp owner interv. no. 600122 20/8/2010, Ukerewe Island).

On 1st Nov 2011, the Daily Newspaper reported that "a huge catch of prohibited fish species" had been seized at the jetty of one of Mwanza's EPFs. 'If it is proved that the said factory is involved in the scam, it will be banned from exporting processed fish for one week and subjected to a one-month export ban if it commits the same offence for the second

time', the chairman of the Tanzania Industrial Fishing and Processing Association was quoted as saying. The EPF claimed that the fish had not been received by the factory, and remained in the hands of the supplier. The controversy quietly disappeared thereafter.

8.7 Summary of the chapter

It is clear that there are certainly efforts to try and curb illegal fishing on Lake Victoria, and to improve its sustainability. But these are very top-down approaches, a far cry from the melee on the lake's fish landing sites, where deals are negotiated, networks evolved and strengthened, and unions forged. On the ground, fisheries governance is very complex because the ability of the state to discipline people is weak and the power of market agencies is stronger.

In 1979 the Australian geographer, Terence McGee, proposed his theory of 'conservation-dissolution', a process characterised by undermining, eroding or destroying former power structures just enough that they do not represent challenges to dominant power structures; and then conserving these in this neutered state. It may be that conservation-dissolution is an unintended outcome on Lake Victoria's landing sites, but it is clear that there have been deliberate attempts at preventing fisher communities (through BMUs) from defining their own rules and regulations, and obtaining *viable* powers over their landing sites. While policies, strategies and initiatives emerge at national and regional levels, those charged with their implementation at the local level are fully integrated into networks and systems that undermine the fishery's sustainability, infuse it with corruption and violence, and which maintain gross levels of inequality.

The institutional and regulatory context of Tanzania's Lake Victoria fisheries is complicated and contradictory. Whereas fisheries authorities focus on BMUs, there is a shift of power and the real power at landing sites lies with markets. Strong and complex institutional orderings of social arena are developed (Figure 8.3). In my estimation, BMUs do not represent an instrument of fisheries governance insofar as this implies maintaining the fishery's sustainability. Fisheries officers issue instructions and the BMUs are obliged to accept and implement these. Village Councils and their BMUs have no say in fisheries issues. This state of affairs is reflected in almost all laws and regulations governing the relationship between the local people and the country's leadership.

This chapter reveals several key points: first and foremost, central and local governments lose substantial amounts of data and income, and government documents are disregarded and mishandled. Tonnages of Nile Perch destined for the factories are underestimated, and more so the export figures. Government laxity, irresponsibility, negligence and corruption prevail. Threats and aggression are aimed at BMU leaders and officials such that they are worried about losing their positions and even their lives. Whatever the case, they remain weak and ineffectual, and have become part of the Corrupt Networks.

Secondly, eco-labelling is a European point of view and a critical stance is needed to draw attention to proper approaches in an attempt to cope with Lake Victoria's complexities. Being a marketing incentive aspect, it plays a part in investment intensity and governance challenges. The main challenge is lack of power to govern

the fishery which is under the control of markets. This has led the government to be overtaken by marketing events and to comply with them.

Thirdly, corruption is the predominant organized system governing the access to fisheries resources and activities, and for many powerful men and women in Lake Victoria, corruption and bribery represent a profound way of realising improved access to the resource and its markets. Government laxity, loopholes, inertia, institutional and technical weaknesses, existing 'parallel governance mechanisms' and private sector control over management and governing authorities prevail. Resource users are also creating new space for themselves within the social arena where they continue to make claims.

The point to understand here is that the global economy represents a staggering power that alters political systems at national, intermediate and local scales, and transforms the way in which resources are exploited, used and managed in the arena. This is a serious problem, for it means that any local level institutions that can play a role in the sound management of a resource is undermined, and state structures as well as 'market based instruments' such as eco-labelling, are used for purposes for which they were not designed. BMUs are surrounded by unrecovered costs and risks which affect how resources are used and the direction in which profit margins flow. The disparity in power between global market networks and local interests is too great to be acceptable, as is the difference between staggering wealth and staggering poverty.

CHAPTER 9

DISCUSSION AND CONCLUSION

9.1 Introduction

This chapter reflects on the questions raised in the first chapter. The purpose of this chapter is to develop a sequential scientific and theoretical storyline of the changes in and dynamics of Lake Victoria's fishery.

The thesis has underpinned the usefulness and relevance of conceptualising Lake Victoria as a social arena. It helps to focus on the ways different social actors, both human and non-human, interact and operate to make a living from the lake's resources and its socio-material environment. As an arena, the lake is not a neutral space, neither socially nor ecologically. Actors, such as local fishing communities, agents of the processing factories and local governments, struggle to dominate space to perform their activities and to gain access to the productive fishing grounds. Global consumer demand for high quality, safe, fresh fish serves to condone certain fishing practices and clamp down on 'destructive' and 'illegal' fishing practices, while the latter are directly and indirectly part of the effect. All these categories of actors in their own ways define fishing arenas and sub-arenas¹³³ by establishing fishing camps, chartered boats and armed patrols and attempting to impose their view of what 'quality' is. Fishing technology is required to maintain standards. Actors construct networks to enforce their claims over fish resources, standards, quality, fishing gear and so on. At local and regional levels, however, actors are choice-less: they buy and sell what is available and affordable (Medard et al., 2015), resulting in a diversity of counter practices. All these different socio-material practices in the social arena are underpinned by the use of a variety of discourses by means of which social actors support and legitimize their actions.

In line with actor-network interpretations of social realities (Law, 2007) the lake is seen as constituted not just by humans and how they interact with each other, but also by non-humans, e.g. the biological resources and, notably, the lake's many fish species. The non-human actors interact in specific ways and this interaction adds to the arena of struggle between the fish species. It is thought that Lake Victoria once comprised over 500 different fish species (Seehausen, 1996). This picture dramatically changed from the 1950s onwards when the Nile Perch (*Lates niloticus*) was introduced. A dramatic increase in the numbers of the predatory Nile Perch has reduced the lake's fisheries from being based on multiple species to being based on three commercially important species: the Nile Perch, the Nile Tilapia (*Oreochromis niloticus*), and the sardine-like Dagaa (*Rastrineobola argentea*). The *Haplochromines* - which previously was the most abundant fish species in the lake - declined substantially; and in the late 1980's, 60% of the species were reported to be on the brink of extinction due to Nile Perch predation (Witte et al. 1992a, 1992b) The

¹³³Within the larger LV arena there are all kinds of sub-arenas, such as camps and sub-camps.

introduction of the Nile Perch, along with a rapidly emerging fishing industry that responded to the opportunity to market the Nile Perch globally, has not just transformed an enormous amount of available bio-mass that used to be for local consumption (notably the *Haplochromis* species): it has changed the entire lake's constitution and composition, with new actors overshadowing those with a longstanding historical claims on the lake. It has created new forms of fishing organization, dependencies, regulation and control. It has also contributed to the commercialisation of the remaining *Haplochromis* and other native fish stocks to serve as bait for the Nile Perch.

The following sections, will recapitulate what is found to be key and interesting findings for this study. I have consistently followed people and how they interact with the lake, its resources and various processes, in this way providing a unique perspective on the lake as a social-ecological space.

9.2. Key issues and processes of change in Lake Victoria's fisheries

9.2.1 *The patronage system is cracking*

The system of patronage that has evolved in Lake Victoria between EPFs and their dependents, such as fish handlers, boat owners and crew, is about including and excluding actors within particular geographical boundaries, and is about controlling what people do and their access to the resource within and beyond these boundaries. Central to this system of patronage relations is a specific form of governance of control and appropriation. It unfolded as a specific mode of ordering, which often required a far-reaching re-ordering of the social and the natural. Van der Ploeg (2008:233) associates such trends with the increased mobility of enlarged flows of capital throughout the globe. This pattern is well reflected in how the fishery is organized on Lake Victoria. Chapters 3, 6 and 7 elaborated on how the formation of the camp system is foremost in controlling people and their relationship to fisheries resources. In and through camps, people are fettered and governed, and their relationship with the resource is shaped and defined by their relationship with markets (EPFs, CDTs and others). I have indicated how such control is exercised in several strategic ways through a variety of means. Money, authority and power, camp leadership, bylaws, divisions of labour, time management and monitoring to control people and their daily activities are the ways in which control is exercised and simultaneously made manifest. All or most of the control mechanisms and practices are embedded in and sanctioned by violence exerted by *matajiri* and camp supervisors.

The patronage system has eliminated the traditional cultural repertoires, transforming them into a 'non-place' because there are already groups which have been excluded from traditional access to the fishery, shifting to more illicit, inshore waters as a reaction to their inability to compete, while powerful actors create 'self-organizing spaces' which allow them to continuously rework their space, to expand it and to organize fish exploitation and trade in ways that are beneficial to them.

The EPF dominated system of patronage is, however, cracking, particularly in the export market tiers. New market networks are emerging that are characterised by new social relationships. EPF networks are contested and their importance is fading

and gradually being replaced by a new system of relationship and power relations. The EPF networks are replaced by new networks built in other markets. The newly emerging networks can be interpreted as counter practices that clearly challenge the current and future Nile Perch export industry. Global safety concerns and the effects of competition in global, regional and local markets are among the major drivers of these changes. These factors alone do not, however, fully explain the crisis that confronts the export industry. Over-capacity, a reduction in production and counter tendencies from all market tiers play a role and operate against the EPFs' power and spatiality.

Fishers and traders have been gradually redirecting their activities away from the EPFs as the latter exert almost complete control over fish prices, petrol and fishing equipment, and offer credit on extremely unfavourable terms. Such actions are contestations of the established pattern of the fishery sector. The power of EPFs and their control over the fishing sector thus appears not absolute and is subject to social struggle 'from below', reworking the impact of global connections and practices of those actors that mediate between the local and the global. Local, domestic and regional markets operate within, and are partly shaped by, the wider global market. These markets are significantly different from global markets in many ways but share a common aim of protecting old market share and opening new market shares and redistributing the fish from Lake Victoria's resources in structurally different ways.

9.2.2 Fish markets and credit markets – a source of power and commoditization

One important aspect of Lake Victoria's fisheries is the nature of the fish and credit markets and their interrelations. The marketing of fish has intensified substantially over the years because of high demand for fish in local, regional and global markets. This has triggered the transformation and intensification of fishing activities, as well as the institutionalisation of a range of controls to streamline and improve production. The markets have created a diversity of transactions and distribution networks thereby enabling a deepening of commoditisation processes generally and, more specifically, a further expansion of markets. These markets are voracious markets whose demand appears difficult to satisfy. The thesis has also brought to the fore that we need to go beyond consumer demand. The markets for capital and labour play significant roles in a specific way as commoditization of Lake Victoria's fish resources takes place. The system of patronage that holds the export tier together is partly embedded in the control of EPFs over labour and capital. Fishing on Lake Victoria is impossible without engaging in unequal power relationships with financiers like the EPFs. In so doing, *matajiri*, agents of EPFs, camp labourers and the government have become included in EPF network goals, rather than their individual/national goals, because ownership of the resources, actions and processes is vested in larger networks of EPFs– a typical power-driven and dependent relation.

These relationships and the extended controls over fish handling and sourcing also mean that entry into the fishery as an independent fisher has become increasingly difficult, if not impossible. Adding to this is the increased competition over the fish resources, coupled with a declining fisheries resource base which manifests in high catch variability (Ngupula & Mlaponi, 2010; Njiru et al., 2009). This

contributes to a further territorialisation of camps and fishing areas, a clear reaction to competition for the resource and to fish supply problems.

It is worth noting that the markets that shape Lake Victoria are not just 'local' or 'global'. Such analytical distinction is not useful. These markets are both *internal* and *external* to Lake Victoria. The 'local' and 'global' markets are interconnected to form one reality: the arena.

9.2.3 Market transactions and processes of social differentiation

Fish market transactions have transformed production processes and the relations of production in the arena. They have transformed the pastoralist and farming societies into commercial fishing societies, while fishing ethnic groups are increasingly excluded. Several ethnographic accounts indicate that the traditional fishing career trajectory is dramatically changing. Chapter 6 has documented that it is becoming harder for *wajeshi* to become co-owners and owners of fishing equipment and fishing camps. The gap between the power of those that own and of those that provide labour is growing and is manifested in strict bylaws to regulate, discipline and sanction camp labourers which restrict their upward mobility. This is in stark contrast to the direct and indirect control that the EPFs, CDTs and *matajiri* exert over fishermen and camp labourers. The previous section highlighted the prime role of the market in the shaping of these relationships. As a result of this, camp labourers' negotiation power has reduced substantially. This indicates that the degree of differentiation correlates with the integration into the global market and wider economy.

9.2.4 Contested gender spaces, risk production and social relations: the market effect

The research has shown that women play a crucial and active role in sustaining the fisheries, as well as their families and the lives of the people in their communities. Men seemingly exercise total command of the resource base and all associated markets and networks. This ensures that women can only take advantage of Lake Victoria's resources along the periphery where the activities, resources and incomes are too small to arouse the interest of men. Women's roles have, however, been largely ignored and underestimated. The thesis underlines that women are not passive bystanders. They contest the fixed gender roles and engage in social struggles with men to also control part of the resource base and to exercise some degree of decision-making power. The thesis has shown that both women and camp labourers struggle to gain access in a highly restrictive and competitive environment.

Women's spaces are prone to various risks because powerful processors, traders and fish handlers prevent women from operating in the rich and profitable fishing grounds. Women's fishing and trading activities are bounded by subsistence oriented fishing and trading operations. Women predominantly engage in illegal fishing and trading practices, risky jobs and risky sex-for-fish relationships. One explanation for such a trend is the expansion of markets that have given rise to a number of competitive strategies. Access to the resource and the ways in which it is used typically have more to do with the relationships, interactions and connections between members of the resource-using community and their relationships with the outside world than they have to do with community relationships with the resource

per se. For instance, where EPFs and agents of EPFs procurement efforts penetrate, there is high concentration of fishing camps, boats, fishing gears and migrant commercial fishers and fish traders. The EPFs become the driving force in the fish market. They make credit available to fishers for fleets of trucks, collection boats and fish collection boxes. These activities reduce fish availability to others – particularly the local community - increase stratification in the industry, and change the relations of production.

9.2.5 Externalizing costs through network and market transactions: the unjust outcome of power and control

With the growing demand in global markets for fish from Lake Victoria and the flexible boundaries and networks, the nature of power in Lake Victoria's fishing societies changes continuously. In the past, power was largely derived from access to resources and ownership of means of production. Now, there are many sources of power, including access to social networks in market and credit market transactions and efforts to downsize and externalize costs to others – a concrete manifestation of globalizing markets. This has been possible through reciprocal and nonreciprocal tendencies where resources are mobilized and relations are produced and protected in credit market structures and networks.

These market and credit markets, in particular, have created dependent relationships, systems of control and, ultimately, imposed a diversity of strategies on how to reduce and/or externalize costs and risks in one dimensional relationships between the market and credit market sources (powerful actors) and down to lower actors in the network -the agents of the EPFs and CDTs, *matajiri* and, finally, to camp labourers.

These trends are evidence of economic exploitation and the marginalization of lower actors by powerful players embedded in unequal social relations of dependency. I have shown how it manifests in the contractual and moral obligations of camp owners and fish agents to sell their catch to buyers to whom they are indebted. There is, also, a degree of mutual benefit and dependence between fish sellers and buyers. Although some individuals have benefited, the system as a whole is characterised by coercive procedures and controls that order a wide range of fishing and trading activities (Chapter 7).

9.2.6 The Lake's biomass turned into an input for a globally marketed commodity

The introduction of the Nile Perch and the resulting fishing industry has drastically transformed an enormous amount of bio-mass, which was previously exploited for local consumption, into bait fish as a global commodity. These native fish species have been indirectly commercialized and transformed into a commercial Nile Perch sub-sector. The native fish species on which the Nile Perch predate have become the input for producing and reproducing a globally marketed commodity. The emergence of this sub-sector has pushed local communities to adopt diverse strategies in bait production and has also from a spatial perspective reorganised fishing activities. Chapter 4 has pointed out that bait fishing is largely concentrated in satellite lakes, wetlands, bays, rivers, lake breeding areas and nursery grounds, rocky areas and permanent and semi-permanent ponds. Moreover, bait

entrepreneurs (individuals, groups, institutions) have evolved and invested along the shore belt, water catchment areas, wetlands and river banks to rear bait for commercial purposes. Consequently, the deforestation of trees and papyrus reeds in catchment areas, and the destruction of wetland buffer zones and native plants are serious problems. All these developments result in serious long-term environmental and ecological impacts, such as the drying-up of wetlands, the destruction of fish habitats, the degradation of riverbanks and the sedimentation of the lake. These developments are driven by Nile Perch export investments. There are calls for the development of appropriate bait investment strategies, respectful of the lake-shore environment, ecologically sound, and participatory based.

9.2.7 The lost trust and empathy in the arena - a governance challenge

The analysis generally shows that mutual trust on Lake Victoria is dying. The lack or absence of trust and empathy has triggered tensions and growing pockets of resistance and helps to explain these. This in turn underpins the starting point of the thesis: to unpack and understand Lake Victoria and its fisheries as an arena. At Kome Island, elders explained that they have lost faith in the Lake's future. They do not enjoy an adequate standard of living derived from their endowed resource base. They argue that they lack capabilities, choices, security and the power necessary to realize and defend their rights. Crewmembers and camp labourers do not fully trust *matajiri* and *matajiri* do not trust camp labourers. Cheating and illegal fishing is a daily activity. Moreover, fish buyers and credit providers (EPFs and CDTs) have no trust amongst each other and, finally, state actors are not trusted either (Chapter 6, 7 and 8) and they, in turn, do not trust BMUs and community members. The end result is that actors seek to benefit from resources today - wisely or unwisely - because tomorrow is uncertain.

9.2.8 Protected power and the denial of community livelihood claims

Throughout the chapters, it is clear that the state, through fishery managers, attempts to own, control and manage exploitation of the lake's resources. The state as actually failed to deliver regulatory and administrative rules in working with local leaders, community members and the BMUs. In Chapter 8, it is stressed that local communities and BMUs have no power and are challenged by fisheries managers who, with their seniors, BMUs, local leaders and *matajiri* engage in corruption and dishonesty. This has instigated illegal fishing and trading practices which then have to be protected, instead of being prevented. Moreover, government officials are worried that engaging local communities and BMUs implies down-sizing their discretionary power. The power to be corrupt and to control people and the resource needs to be retained, maintained and expanded and, hence, it is unlikely that a shift in power from the state to the community will ever happen. This would imply explicit faith in communities' rights to secure their livelihoods, access the resource and decision-making processes. This should be one of the criteria to evaluate Tanzanian fisheries management policy, fisheries managers and the BMUs in terms of their support for people's livelihood claims. But fisheries management and BMU functions are actually beside the point in so far as fishing communities' pursuit of livelihood goals is concerned.

Findings from this study indicate that efforts made to establish and strengthen BMUs have been hijacked by corrupt officials, fishers and fish traders, to safeguard their own individual interests, in turn shaping local practices on Lake Victoria. Very little has been done to ensure that BMUs and community members can gain power, or that they know, claim and realize their rights. In other words, BMUs were never given the power and back-up needed. It was a window-dressings exercise. This means that the presence of BMUs on Lake Victoria has not automatically restructured power in the fishery, and has not prevented officials and powerful actors from regaining control over the resource, the people and their institutions.

9.3 Contribution to the world of science and other future research

9.3.1 *The actor structure debate: unequal power, counter tendencies, resistance and contestation*

The thesis has introduced and added a new debate to the sequence of Lake Victoria's debates explained in the first chapter. The '*actor-structure debate*' configures itself continually in the arena and is related to '*unequal power relations, emerging tendencies, counter-tendencies, contestations, tensions and growing pockets of resistance*' in the arena. It shows that the emerging forms of behaviour and struggle that are practised in and around the lake, are the outcome of actors' inability to secure their livelihoods, to enjoy health and a productive environment and live with dignity. The thesis contributes to this debate because the socio-ecological space - Lake Victoria - is not one-dimensional but fluid, continuously being reshaped. I have unveiled the changes in the organization of fishing, the market dynamics, governance processes and other forces. The Lake's fluidity creates the room for actors to manoeuvre: their place within the system is not pre-determined by the nature of their position in society or certain geographical boundaries. Actors' positions are not fixed, therefore, creating a continuous space for new actions, ideas, interrelationships and values. The space is *reactionary* in which actors react to events and conditions, never able to seek recourse in structures or governing frameworks. It is in this way that the fishery is organised.

Actors, both superior and subordinate, influence each other and the activities or actions in the *arena*. Long and Long (1992:24), while referring to Giddens (1984:16), pointed out that 'all forms of dependences offer some resources whereby those who are subordinate can influence the activities of their superiors'. In this context, however, the subordinate actors' '*will*' and '*actions*' are not only '*influenced*' but also '*controlled*' and '*reinforced*' by different sources of power. I have elaborated on how and why this is happening, since often the superior and subordinate actors both construct their own social realms of power consciously and unconsciously and eventually trigger new, counter-tendential discourses. The subordinates do not simply wait for superiors to decide for them just because of unequal power relationships. They actively set out and struggle to construct a livelihood, finding a space and a future for themselves – be it for better or worse.

I have provided evidence how *makila*, beach seiners and bait fishers have developed innovative knowledge, capabilities and social networks and have created their own space in which they can manoeuvre. This means the actions of social actors are not necessarily driven by the same motivations or by a desire to achieve consensus, e.g., with law enforcers. This means the arena is not a neutral social space.

It is a place in which social actors not only cooperate but also engage in struggle and negotiations. Hardt and Negri (2004) quoted in Van der Ploeg (2008:272) suggests that “*resistance is based on innovativeness.....the capacity to develop new, constitutive potentialities that go beyond reigning forms of domination*”. Many narratives in this study reflect the aggression and anger in the arena, evidence of actors’ confrontations with dominant ideas, knowledge and experience. Long and Long (1992:24) also suggested that “the battle is never over, since all actors exercise some kind of power, even those in highly subordinate positions”. The Lake Victoria arena fits this profile because there are multiple forms of resistance and actors use individual and people’s power (*nguvu ya umma*) collectively to claim their rights. But I have also cautioned that actors and actions on Lake Victoria are weakened by opportunistic behaviour and dependencies which circumvent their solidarity.

9.3.2 Methodological contribution

The thesis has contributed to our knowledge of Lake Victoria, Tanzania through an original piece of work based on a mix of methods, multi-site research and multiple units of analysis of data from Lake Victoria’s fisheries. The data are interpreted through two analytical lenses: one is the arena *that* perceives Lake Victoria as an area of struggle; the second is the role of markets, networks and power in shaping the arena. They all give new insight into the organization of this huge fresh-water fishery.

With reference to the theory and theoretical concepts, I have contributed by viewing and analysing the Lake as an arena, a contested space, socially and materially. The Lake Victoria arena is shaped by social and natural processes: global demand/markets and the available bio-mass become connected through fish networks that interconnect places/spaces across the world (Lake Victoria, Madrid, Amsterdam, London, Tokyo and more). These connections are forged by EPFs and governments (the power holders), and have been built-up through and by patronage, established by controlling capital/credit, boats, crewmembers and other camp labourers, fishing resources, landing sites, markets and transport hubs. But the connections and networks are crumbling. Certain group of actors are challenging and escaping from this dependency, creating new forms of dependencies. We do not yet know how they will look in the near future.

I, therefore, propose that future research looks at power and the networks that are challenging¹³⁴ the current networks powered by the EPFs (Medard et al., 2015). This can help to understand how the power of markets can shift from many points of coordination, and decisions between the most powerful and less powerful players and their consequences.

Methodologically, I have considered Lake Victoria as an arena and a node in the set of interactions that have evolved over time in and around Lake Victoria, connecting fish with consumers, fishers, camp labourers, fisheries officers, BMUs, fish traders and handlers, agents of EPFs, CDTs and so on. Relating the actors’ connections in their social networks (social systems) uncovered how changes from production to marketing occurred and the resulting effect on the organization of fishing, governance processes, the markets and the expanding commoditization of

¹³⁴ The Cold Storage Facilities (CSFs) for frozen Nile Perch and Tilapia and local and regional traders

the fishery. Future research can analyse the same system by looking at the European consumer as a node in the set of interactions between Lake Victoria, fish, fishers and consumers to build on from this work.

Another contribution in relation to my ethnographic view point, is that I was an observer as well as a participant, and the story line is a mixture of conceptual and empirical studies. Here, the conceptual framing refers to the ways in which ecology, economy and culture fit together and interact, creating fault lines of tension and contestation, as well as self-interested collusion and alliance formation unpacked in various narratives. Both qualitative and quantitative methods complemented one another in a coherent fashion and the analysis of social networks and markets provided a comprehensive screen for ordering the data. While the qualitative methods revealed a number of discourses among certain groups of actors, the quantitative methods located these groups in terms of location, gear and fishery type, market distribution networks and group or individual profiles (e.g. crewmembers, camp owners, fishing ethnic groups¹³⁵). This helped to show how the fishery has evolved in such a way as to increase or decrease the group's power.

Another important issue with regards to being a participant is that I have been an actual participant not only for this particular research. I also played a role in the making and shaping BMU and the governance practices in Lake Victoria. I evolved as a BMU implementer, to become a critical researcher. My critique started back in 1999 when I attended a meeting organized by a senior fisheries manager (now retired) from Dar Es Salaam to formulate BMU groups in Musoma in each landing site for a single day. I contested that idea and suggested for more days to be allocated in the process (Medard, 2002:112).

My other call for further research would be for a critical reflection on methodological approaches, whereby multiple units of analysis would be embraced and not the current tradition in studies of fisheries where the fishing unit (boat, owner and/or crew) is considered the centre for social analysis on Lake Victoria. Because of the multiple realities on the ground, and the fluidity of the lake's socio-ecological process, a combination of theories and concepts is a more robust approach to analysing the Lake arena, its problems, and the reasons for changes in its fisheries, markets, governance processes and the general livelihoods of the people.

Beuving (2014:4) also suggested a multi-method research (in Uganda) because the Lake Victoria actors are characterized by diverse in terms of ethnic origin, professional background, socioeconomic status, and straddling fishing and non-fishing activities for both boat owners and crewmembers.

9.3.3 Theoretical and conceptual contribution on power

Based on the above view point, theoretically and conceptually I have contributed to show that power is not necessarily anchored in political and legal administrative structures. It is rather the ability to operationalize and effect changes - positively and/or negatively - of all kind of actors. Market and networks in Lake Victoria hold power because the supportive economic sub-systems or sub-arenas (the camps, the landing sites, the transport hubs and the market tiers) attached to individual social-economic and political ties and their actions are geared towards the maximization of

¹³⁵ Excluded from traditional access to the fishery

and control over their markets, networks and actors. The maximization allows for automatic coordination and enables the market and networks to hold together sub-systems or sub-arenas independent of any intentional effort. The other key aspect to note is that the node (the Lake) and other nodes/sub-arenas (landing sites, transport hubs, camps) relate to each other and are intertwined and overlapping in a consensual or counter-posed manner.

9.3.4 Policy contribution and recommendations

On policy consideration, acritical contribution is made to the debate about the control and governance of fishing on Lake Victoria. The thesis has shown that the whole debate about policies (BMUs, fishery regulations and regulators) is largely irrelevant, and fails to address local realities. The role of government agencies has changed as a result of market influences which govern the economic activities tied to the fish resource. At the same time, the market networks (*matajiri*, agents of EPFs) control the activities. This is about the shift of power from the hands of government agencies to the markets. The agencies become accountable to powerful actors in the market channels and focus on highly capitalised international (Nile Perch) and regional (Dagaa and Nile Perch) markets, where the market transactions are high and money is collected and divided in half between the government and individual pockets through bribes.

This has made the government agencies not accountable to the local communities. They view them as offenders, criminals and people who should be told what to do to manage themselves and their own resource. It is high time that BMUs and community members understand that their problems and struggles emerge from fisheries managers and global players protecting their personal and network interests. Communities and BMUs should not imagine that there is little they can do and that this is what the state expects of them. BMUs and community members should not underestimate their ability to manage the resource.

Some policy issues to overcome 'overfishing' and 'continued use of illegal gear' in Lake Victoria are irrelevant. Overfishing is the outcome of power relations. How the resource is accessed and controlled and how benefits are shared are crucial to Lake Victoria. Measures such as eco-labelling in the Perch fishery do not address these issues; instead, they trigger the expansion of markets by opening up a new market share for global commodities. At the local level, fishing intensity increased in order to get fish for the old initial markets and new market tiers developed as a result of eco-labelling. Through eco-labelling in Lake Victoria, power has shifted from many points of coordination and decision-making into a few hands: those that own the Nile Perch export processing factories.

There is a need to embrace Human Rights Based Approaches (HRBAs) to strengthen BMUs and fishing communities on Lake Victoria and in fisheries in Tanzania. This will help BMUs and community members to understand that their fundamental needs are actually enshrined in specific human rights frameworks: in this case, the Tanzanian constitution (*Katiba ya wananchi wa Tanzania*). Their deprived rights and needs often arise from the denial or violation of specific rights. The framework will help BMUs and fisher communities to analyse and confront power imbalances and use rights-based language to challenge abuses of power and

to hold duty bearers (the government) accountable. HRBA places marginalized people at the centre. It builds on international human rights law and goes beyond a legal or technical approach to rights.

Literature list

- Abila, R. and Jansen, E. (1997). From Local to Global Markets: The Fish Export and Fish meal Industries on Lake Victoria-Structure, Strategies and Socioeconomic Impacts in Kenya. Socio-Economics of the Lake Victoria Fisheries. IUCN Eastern Africa Programme. Working Paper no. 1997, 8 238 pp.
- Abila, R. (2003). Fish Trade and Food Security: Are they Reconcilable in Lake Victoria? Report of the Expert Consultation on International Fish Trade and Food Security. Casablanca, Morocco, 27 – 30 January 2003. FAO Fisheries Report No. 708. Rome: FAO Fisheries and Aquaculture Department, 213 pp.
- Abila, R., Yongo, E., Lwenya, C. and Omwega, R. (1998). Preliminary Report on the 'Surveys on the Nutritional Status, Health and Social Amenities of Lakeside Communities Kisumu-Kenya: KMFRI/LVEMP, 20pp.
- Abila, R. Lwenya, C., Geheb, K. and Crean, K. (2000). An assessment of co-management potentials in the Lake Victoria fisheries of Kenya, in: Geheb, K and K. Crean (eds.), The Co-management survey: co-managerial perspectives for Lake Victoria's fisheries. Jinja, Uganda: Lake Victoria Fisheries Research Project, pp. 136-149. LVFRP Technical Report No.11.
- Abrahams, R. (1987). Sungusungu: Village vigilante groups in Tanzania, *African Affairs*, 86: 179-196.
- Abrahams, R. (1989). Law and order and the state in the Nyamwezi and Sukuma area of Tanzania, *Africa*, 59(3): 356-370.
- Abu-Lughod, L. (1990). Romance of Resistance: Tracing Transformation of Power through Bedouin Women, *American Anthropologist*, 17: 41-55
- Acheson, J. (1981). Anthropology of fishing, *Annual Review of Anthropology*, 10: 275-316.
- ADMIN. (2012). Migingo Island: There should be no dispute between Kenya and Uganda, the case is clear. Kenya Forum. For Kenyans Everywhere. <http://www.kenyaforum.net/?p=3848>.
- ANOVA, Vicfish, GTZ, Naturland e.V, and AquaEco. (2007). Summary of the Planning Workshop on "Eco-Labeling of Nile Perch from Bukoba Landing Sites", Bukoba Kolping Formation Center, Tanzania. 28th- 29th March, 2007.
- Arce, A. and Long, N. (2000). *Anthropology, development and modernities: exploring discourses, counter-tendencies and violence*. London: Routledge.
- Archambault, C. (2010). Women Left Behind? Migration, Spousal Separation and the Autonomy of Rural Women in Ugweno, Tanzania, *Signs: Journal of Women in Culture and Society* 35: 919-942.
- Bachrach, P. and Baratz, M. (1962). Two Faces of Power, *American Political Science Review*, 56: 947-952.
- Barnes, B. (1988). *The Nature of Power*. Urban Ill: University of Illinois Press.

- Bergleiter, S. (2007). Ecolabelling Requirement and Procedure. Paper Presented at the Workshop on Planning workshop of Ecolabelling of Bukoba Landing site for Tanzania and Kenya. Bukoba, March 28-29, 2007, 13 pp.
- Berkers, F. (1989). *Common Property Resources: ecology and community based sustainable development*. London: Belhaven Press.
- Berkers, F. (2010). Paradox of Fisheries Governance: Reconciling the Decentralization experiences vs Community Based Management. Key Note Speech presented at the World Small-Scale Fisheries Congress, October 17-22, Bangkok. 4 pp.
- Bernard, H. R. (1995). *Research Methods in Anthropology: Qualitative and Quantitative approaches*. Oxford, Altamira Press.
- Beuving, J. (2013). Chequered Fortunes in Global Exports: The Sociogenesis of African Entrepreneurship in the Nile Perch Business at Lake Victoria, Uganda, *European Journal of Development Research*, 28: 1-17.
- Beuving, J. (2014). Spatial diversity in small-scale fishing: A socio-cultural interpretation of the Nile Perch sector on Lake Victoria, Uganda, *Tijdschrift voor economische en sociale geografie*, doi:10.1111/tesg.12081.
- Bjerkes, S. (1969). The High God among the Zinza of Northwestern Tanzania, *Numen*, 16: 186-210.
- Bjerkes, S. (1975). The Backwezi Complex and the other Spirit Cults of the Zinza of Northwestern Tanzania. Oslo: Religions Historisk Institutt, University of Oslo.
- Blake, D.R. (2003). The Politics of Regional Governance in the Mekong River Basin, *Global change*, 15 :59-76.
- Bokea, C. and Ikiara, M. (2000). The Macroeconomy of the Export Fishing Industry in Lake Victoria (Kenya). Socio-economics of the Lake Victoria Fisheries. IUCN Eastern Africa Programme. The World Conservation Union (IUCN). Report no. 7. IUCN, Nairobi: 32 pp.
- Bourdieu, P. (1990). *Outline of the Theory of Practice. Handbook of Theory and Research for the Sociology of Education*. Cambridge: Cambridge University Press.
- Bryant, R. and Bailey, S. (1997). *Third world political ecology*. London: Routledge.
- Bryson, J. (2004). What to do when Stakeholders Matter, *Public Management Review*, 6: 21-53.
- Bryson, J. and Crosby, B. (1992). *Leadership for the Common Good: Tackling Public Problems in a Shattered Power World. Encyclopedia of Leadership*. San Fransisco CA: Jossey-Bass.
- Brugère, C., Holvoet, K., and Allison, E. (2008). Livelihood diversification in coastal and inland fishing communities: misconceptions, evidence and implications for fisheries management. Working paper, Sustainable Fisheries Livelihoods Programme (SFLP). Rome: FAO/DFID.
- Bukurura, S. (1995). Indigenous Communication Systems: Lessons and Experience from among the Sukuma and Nyamwezi of West-central Tanzania, *Nordic Journal of African Studies*, 4: 1-16.
- Bukurura, S. (1996). Combating crime among the Sukuma and Nyamwezi of West-Central Tanzania, *Crime, Law and Social Change*, 24: 257-266.
- Burt, R, and Knez, M. (1995). Kinds of Third-Part Effects on Trust, *Rationality and Society*, 7: 255-292.

- Bush, S. (2004). Scales and Sales: Changing social and spatial fish trading nutrition in the Siphandone fishery, Lao PDR, *Singapore Journal of Tropical Geography*, 25: 32-50.
- Cadwalladr, D. (1965). The decline of Labeo Victorianus Blgr. (Cyprinidae) fishery of Lake Victoria and associated deterioration in some indigenous fishing methods in the Nzoia River, Kenya, *East African agriculture and forestry Journal*, 30: 249-246.
- Callon, M. (1999). Actor-Network Theory. The Market test, in: J. Law and J. Hassard (eds.), *Actor Network Theory and After* Basingstoke: Blackwell Publishing
- Callon, M. (2001) Actor Network Theory, in N. Smelser and P. Baltes (eds.), *International Encyclopaedia of the Social and Behavioural Sciences.*, Oxford: Elsevier, pp 62-66.
- Cannon, J. Achrol, R. and Gundlach, G. (2000). Contracts, Norms and Plural Form Governance, *Journal of the Academy of Marketing Science*, 28: 180-194.
- CAS/IFMP. (2008). Technical Report on Catch Assessment Survey (CAS). Tanzania CAS National Working Group. Report Financed by Implementation of Fisheries Management Plan (IFMP). Report submitted to LVFO, Jinja, Feb, 2008.
- Clegg, S. (1989). *Framework of Power*. London: Sage.
- Coser, L. (1956). *Functions of Social Conflict*. New York Siman and Schuster
- Coughlan, A., Anderson, E., Stern, L. and Ansary, E. (2001). *Marketing Channels* [6th Edition]. Englewood Cliffs, NJ: Prentice Hall.
- Cowx, I., van der Knaap, M., Muhoozi, L. , and Othina, A. (2003). Improving fishery catch statistics for Lake Victoria, *Aquatic Ecosystem Health and Management Society*, 6: 299-310.
- Dahl, R. (1957). The Concept of Power, *Behavioral Science*, 2: 201-215.
- Dahl, R. (1961). *Who Governs? Democracy and Power in an American City* New Haven: Yale University Press.
- Desmond, N. (2009). 'Ni kubahatisha tu'. 'It is just a game of chance!' *Adaptation and resignation to Perceived Risks in Rural Tanzania*. Unpublished PhD thesis, Glasgow, University of Glasgow. 355 pp.
- Desmond, N. (2012). Managing risk through treatment-seeking in rural north-western Tanzania: Categorizing health problems as Malaria and Nzoka. *Health, Risk and Society*, 14:149-170.
- De Haan, A. (1999). Livelihoods and poverty: the role of migration. A critical review of the migration literature, *Journal of Development Studies* 36: 1-7.
- EAC. (2008). The East African Community Trade Report. East African Community Secretariat. pp. 231.
- EAHC. (1953). East Africa High Commission. Lake Victoria Fisheries Research Annual Report, 1952, W. Boyd and Co. (Printers), Nairobi.
- EAHC. (1955). East Africa High Commission. East African Fisheries Research Organization. Annual Report 1954/1955. Jonja: EAFRO.
- EAHC. (1957). East Africa High Commission. Lake Victoria Fisheries Service Annual Report 1956/1957, Kampala: Uganda Urgus Ltd.
- EAHC. (1958). East Africa High Commission. Lake Victoria Fisheries Service Annual Report, 1957/1958, Kamala: Uganda Argus Ltd.
- Emirbayer, M. and Goodwin, J. (1994). Networks Analysis, culture and the Problem of Agency, *American Journal of Sociology*, 99: 1411-1154.

- Escobar, A. (2001). Culture sits in places: reflections on globalism and subaltern strategies of localization, *Political Geography*, 20: 139-174.
- Escobar, A. (2006). Difference and Conflict in the Struggle Over Natural Resources: A political ecology framework, *Development*, 49: 6-13.
- Escobar, A. (2010). Histories of development, predicaments of modernity: thinking about globalization from critical development studies perspectives. In N. Long, J. Jingzhong and W. Yihuan (eds.), *Rural transformations and development - China in context : the everyday lives of policies and people*. Cheltenham: Edward Elgar, pp. 25-53.
- EU. (2008). Proposal for a Regulation of the European Parliament and of the Council on a Community Ecolabel Schemes. Commission of the European Communities. Presented by Commission Brussels 16 July 2008 LVFO/EAC. (2011). Regional hydro acoustic survey. 33 pp
- EU. (2012). Guideline for the use of EU Ecolabel Logo. Updated June 2012. http://ec.europa.eu/environment/ecolabel/pdf/regulation/001980_en.pdf.
- FAO. (1981). Review of the Status of the Fisheries of Lake Victoria *Committee for Inland Fisheries of Africa (CIFA). Sub-Committee for the Development and Management of the Fisheries of Lake Victoria* Mwanza, Tanzania: FAO Fisheries Report. 71pp.
- FAO. (2001). Contract farming, Partnership for growth. FAO Agricultural Services, FAO Bulletin 145. Rome: FAO.
- FAO. (2003). Report of the Expert Consultation on the FAO Guidelines for Eco-labelling. Rome, 3-4 March 2008. FAO Fisheries Report. No. 864. Rome: FAO, 21 pp.
- FAO/LVFO. (2005). Report of the First Lake Victoria Fisheries Organization and FAO Regional Technical Workshop on Fishing Effort and Capacity on L. Victoria. FAO Fisheries Report No. 796 SAFR/R796 (En). Dar Es Salaam, United Republic of Tanzania. 12-14 December, 2005, 30 pp.
- FAO. (2008). Present and Future Markets for Fish and Fish Products from Small Scale Fisheries. Case studies from Asia, Africa and Latin America. Food and Agricultural Organization of United Nations (FAO). Available at: <http://www.fao.org/docrep/012/i0230e/i0230e00.htm> [accessed on 13 Feb 2012]. 98 pp.
- FIRRI. (2002). Economic profiles of selected landing sites on Lake Victoria. (Fisheries Resources Research Institute). Research Report. 12pp.
- Foucault, M. (1984). On the genealogy of ethics: an overview of a work in progress, in P. Rabinow (Ed.), *The Foucault reader*. New York: Pantheon, pp. 340-372
- Graham, M (1929). *The Victoria Nyanza and its fisheries. A report on the fishing surveys of Lake Victoria of 1927 to 1928*. London: Crown Agents Colonies, 225 pp.
- Geertz, C. (1973). *Thick description: toward an interpretive theory of culture. The Interpretation of Cultures*. New York: Basic Books.
- Geheb, K. (1997). *The Regulators and the regulated: fisheries management, Options and dynamics in Kenya's Lake Victoria fishery*. Unpublished D.Phil. Brighton, University of Sussex. 161pp.
- Geheb, K. and Binns, T. (1997). Fishing farmers' or 'farming fishermen'? The quest for household income and nutritional security on the Kenyan shores of Lake Victoria. *African Affairs*, 96: 73-93.

- Geheb, K. and Crean, K. (2000). The Co-management Survey report: an executive summary, in: *The Co-management Survey: Co-managerial perspectives for Lake Victoria's fisheries*. Jinja: Lake Victoria Fisheries Research Project. LVFRP Technical Document No. 11, pp. 1-10.
- Geheb, K. (2000a). Fisheries legislation on Lake Victoria: present legislation and new developments, in K. Geheb and K. Crean (eds.), *The co-management survey: co-managerial perspectives for Lake Victoria's fisheries Phase II*. LVFRP Technical Document no. 11. Jinja: The Socio economic Data Working Group of the Lake Victoria Fisheries Research Project.
- Geheb, K. (2000b). Introduction to PRA reports from five Beaches on L. Victoria. Socio-Economic Data Working Group. Lake Victoria Fisheries Research Project Phase II. LVFRP.
- Geheb, K. (Ed.). (2000c). *The Co-management Survey: PRA Reports for Five Beaches on Lake Victoria* (LVFRP/TECH/00/09). Socio-Economic Data Working Group. Jinja-Uganda: Lake Victoria Fisheries Research Project. LVFRP Phase II.
- Geheb, K. and Mapedza, E. (2008). Political ecologies in natural resources management, in: D. Bossio and K. Geheb (eds.), *Conserving Land, Protecting Water: 'Bright Spots' reversing the trends in land and water degradation* Wallingford: CAB International, pp. 51-68.
- Geheb, K., Abila, R., Medard, M., Lwenya, C., Mlahagwa, E., Gongu, J., Onyango, P. (2000). The Co-management Survey: Results of the survey of fishers, in: Geheb, K. and Crean, K. (eds.) 2000. *The Co-management Survey: Co-managerial perspectives for Lake Victoria's Fisheries*. LVFRP Tech. Document 11 LVFRP/00/11, pp. 49-62.
- Geheb, K., Kaloch, Sarah, Medard, Modesta, Nyapendi, Anna-Therese, Lwenya, Caroyne and Kyangwa, Mercy. (2008). Nile perch and the hungry of Lake Victoria: Gender, status and food in an East African fishery. *Food Policy*, 33: 85-98.
- Gerrard, S. (1991). Gender and Kilns. Gender and Change in Developing Countries. In K. Stolen and V. Mariken (eds.) *Gender and Change in Developing Countries*. Oslo: Norwegian University Press. pp. 223-246.
- Getabu, A. Tumwebaze, R. and Maclennan, D.. (2003). Spatial distribution and temporal changes in the fish populations of Lake Victoria, *Aquatic Living Resources*, 16: 159-165.
- Gibbon, P. (1997a). Of saviours and punks: the political economy of the Nile Perch marketing chain in Tanzania. CDR Working Paper 97.3. Copenhagen, Centre for Development Research. 115 pp.
- Gibbon, P. (1997b). The Poor Relation. A Political Economy of the Marketing Chain for Dagaa in Tanzania. Working Paper 97.2. Copenhagen: Danish Institute for International Studies Center. 66 pp.
- Giddens, A. (1984). *The Constitution of Society*. Berkeley: University of California Press.
- Giddens, A. (1987). *Time and Social Organization*: Stanford University Press.
- Gordon, H. (1981). An Analysis of the Impact of Labour Migration on the Lives of Women in Lesotho, *Journal of Development Studies*, 17: 59-76.

- Goudswaard, P, Wanink, J., Witte, F. Katunzi, E., Berger, M. and Postma, D.J. (2004). Diel vertical migration of major fish-species in Lake Victoria, East Africa, *Hydrobiologia*, 513: 141-152.
- Goldschmidt, T. (1998). *Darwin's Dreampond:drama in Lake Victoria*. Cambridge: MA : MIT Press.
- Goldschmidt, T., Witte, F. and Wanink, J. (1993). Cascading effects of the introduced Nile Perch on the detritivorous/phytoplanktivorous species in sublittoral areas of Lake Victoria, *Conservation Biology*, 7: 686-700.
- Goulden, M., Adger, N., Allison, E. and Conway, D. (2013). Limits to Resilience from Livelihood Diversification and Social Capital in Lake Social-Ecological Systems, *Annals of the Association of American Geographers*, 103: 906-924.
- GTZ. (2009). Eco-labelling of small-scale fisheries in developing countries: the example of the Nile Perch fisheries in Bukoba, Tanzania. Lesson Learned No. 10. Deutsche Gesellschaft für Technische Zusammenarbeit, Eschborn, Germany.
- GTZ, ANNOVA and Vicfish. (2007). The Planning Workshop for Eco-labelling of Nile Perch from Bukoba Landing Sites. Bukoba Kolping Formation Center. 28-29th March, 2007. 6 pp.
- Gunderson, F. (2001). From "Dancing with Porcupines" to "Twirling a Hoe": Musical Labor Transformed in Sukumaland, Tanzania, *Africa Today*, 48: 3-25.
- Habermas, J. (1977). Hannah Arendt's Communications Concept of Power, *Social Research*, 44: 3-24.
- Hajer, M.A. (1995). *The Politics of Environmental Discourse-Ecological Modernization and the Policy Process*. Clarendon Press: Oxford.
- Hanf, K and Scharpf, F. (1987). *Interorganizational Policy Making:Limits to Coordination and Central Control*. London: Sage Publications.
- Hardt, M. and Negri, T. (2004). *Multitude. War on democracy in the age of empire*, New York: The Penguin Press.
- Harri, E.(2002). The Village in the City, the City in the Village: Migration in Lilongwe, *Journal of African Studies*, 28 :137-154.
- Harris, C., Wiley, D. and Wilson, D. (1995). Socio-economic impacts of introduced species in Lake Victoria fisheries, in T. Pitcher and P.. Hart (eds.), *The Impact of Species Change in African Lakes* London: Chapman & Hall, pp. 215-242.
- Heck, S., Kirema-Mukasa, C., Nyandat, B. and Owino, J. (2003). The International Workshop on Community Participation in Fisheries Management on Lake Victoria: BMU Development on Lake Victoria, Imperial Hotel, Kisumu, Kenya, 7 - 10 October 2003, viii + 187 pp.
- Hendrikse, G. (2011). Pooling, Access and Countervailing Power in Channel Governance, *Management Science*, 57: 1692-1702.
- Hebinck, P., van Ploeg, J.D. and Schneider, S. (2015). *Rural development and the construction of new markets*. London: Routledge.
- Hofmann, A. (2011). *Social Networks and Power Relations in Daga Business in Mwanza, Tanzania: Daga between collective action and individual operation*. Unpublished Master Thesis, Wageningen: Wageningen University. 91 pp.
- Hoza, R. and Mahatane, A. (1998). Co-management in Mwanza Gulf. Lake Victoria Environment Management Project, Fisheries Management Component. Dar Es

- Salaam, Ministry of Natural Resource and Tourism. Paper Presented at LVEMP Project Implementation Team (PIT). July 1998. Unpublished Report. 15 pp.
- Ikiara, M. (1999). *Sustainability, Livelihoods, Production and Effort Supply in Declining Fishery. The Case of Kenya's Lake Victoria Fisheries*. Unpublished Ph.D. thesis, Amsterdam, University of Amsterdam. 196 pp.
- Ikiara, M. and Odink, J.G. (2000). Fishermen Resistance to Exit Fisheries, *Marine Resource Economics*, 15: 199-213.
- Ikwaput-Nyeko, J. (2004). *Co-Management and Value Chains: The Role of Nile Perch Exports in Poverty Eradication in Lake Victoria Fishing Communities*. Unpublished Master Thesis, Reykjavik, Reykjavik University.
- Imende, S. (2005). Historical Trend of Fisheries Management, Kenya, in: LVEMP Syntheses Report, (2005). Report submitted to LVFO-Jinja, Uganda and LVEMP Regional Secretariat, Dar Es Salaam, Tanzania, pp. 67-72.
- Jansen, E. (1997). Rich Fisheries-Poor Fisherfolk. Some Preliminary Observations About the Effects of Trade and Aid in The Lake Victoria Fisheries. Socio-Economics of the Lake Victoria Fisheries. IUCN Eastern Africa Programme. Report no. 1. The World Conservation Union. Nairobi: IUCN, 16 pp.
- Jansen, E., Abila, R. and Owino, J. (1999). Constraints and Opportunities for Community Participation in the Management of the Lake Victoria Fisheries. IUCN Eastern Africa Programme. International Conservation of Nature (IUCN). Report no. 6. Nairobi-Kenya. 25 pp.
- Jentoft, S (1989). Fisheries co-management, *Marine Policy*, 13: 137-154.
- Jentoft, S. (2001). Fisheries co-management as empowerment, *Marine Policy*, 29(1):1-7.
- Johnson, L (2008). *Of Darwin's Dreams and Nightmares: The Concealed Violence of a Global Whitefish Commodity*. Unpublished Master Thesis. Michigan, University of Michigan. School of Natural Resources and Environment.
- Johnson, L. (2010). From Mfangano to Madrid: The global commodity chain for Kenyan Nile Perch, *Aquatic Ecosystem Health and Management*, 13: 20-27.
- Kabuaye, M. (1975). *Utani* and related cultural institutions of the Sukuma peoples of Shinyanga, in: A. Lucas (ed.). *Utani Relationships in Tanzania*. Dar Es Salaam, University of Dar Es Salaam. 5: 273-348.
- Kadigi, R, Ntengua, S. Mdoe, E. and Mpenda, Z. (2007). The Effect of Food Safety Standards on the Livelihoods of Actors in the Nile Perch Value Chain in Tanzania. Copenhagen: Danish Institute for International Studies. 80 pp.
- Kambewa, E.V. (2007). *Balancing the People, Profit and Planet dimensions in International Marketing Channels. A study on coordinating mechanisms in the Nile Perch channel from Lake Victoria*. Unpublished Ph.D Thesis, Wageningen, Wageningen University. 185 pp.
- Kateka, A. (2010). *Co-Management Challenges in the Lake Victoria Fisheries*. Unpublished Ph.D. thesis. Stockholm, ACTA Universitatis Stockholmiensis. 269 pp
- Kaufman, L. (1992). Catastrophic change in species-rich freshwater ecosystems: the lessons of Lake Victoria, *Bioscience*, 42: 846-858.
- Kayungi, J. (2011). Effectiveness of Slot size Self monitoring. Mwanza: TIFPA and EAIFPA. Report Presented to the Stakeholders Round Table (SRT) for Echo-Labeling Project of Fish Landing sites in Mwanza, Tanzania. Esamo Hotel. 22 January, 2011. 7 pp.

- Kishamawe, C., Vissersb, D., Urrassa, M. C., Isingo, R., Mwaluko, G., Borsboomb, G. J, Der Vlasb, S. (2006). Mobility and HIV in Tanzanian couples: both mobile persons and their partners show increased risk, *AIDS*, 20: 601-608.
- Kisiangani, E. (2011). Dispute over Migingo Escalates. http://www.iss.co.za/iss_today.php?ID=1336.
- Knoke, D. (1993). Networks as political glue: Explaining public policy-making, *Sociology and the public agenda*, 164-184.
- Kolding, J, Medard, M., Mkumbo, O. and van Zwieten, P. (2014). Status, Trends and Management of the Lake Victoria Fisheries, in: R. Welcomme, J. Valbo-Jorgensen and A. Halls (ds.), *Inland fisheries evolution and management. Case studies from four continents. FAO Fisheries and Aquaculture Technical Paper No. 579. ISSN 2070-7010* (p. 49-77). Rome, 2014: Food and Agriculture Organization of the United Nations (FAO). 77 pp.
- Kolding, J., Zwieten, P., van, Mkumbo, O., Silsbe, G., and Hecky, R. (2008). Are the Lake Victoria Fisheries Threatened by Exploitation or Eutrophication? Towards and Ecosystem-based Approach to Management, in G. Bianchi and H. Skjoldal (Eds.), *The Ecosystem Approach to Fisheries*. Wellingford Oxon: CAB International, pp. 309 - 354
- Kotler, P. (1984). *Marketing Management. Analysis, Planning and Control*. [5th edition]. Englewood Cliffs, NJ: Prentice Hall.
- Kudhongania, A. and Cordone, A. (1974). Batho-spatial distribution patterns and biomass estimate of the major demersal fishes in Lake Victoria, *African Journal of Tropical Hydrobiology and Fisheries*, 3: 167-182
- Kumar, R. (2005). *Research methodology: A step-by-step guide for beginners*. [2nd edition]. London: SAGE Publications.
- Kurien, J. (1996). *Industrial Fisheries and Aquaculture: Thoughts on some common features, international and an alternative*. Trivandrum, India: Center for Development Studies..
- Latour, B. (2005). *Reassembling the Social: An Introduction to Actor-Network Theory*. New York: Oxford University Press.
- Law, J. (1992). Notes on the Theory of the Actor-Network: Ordering, Strategy, and Heterogeneity, *Systems Practice*, 5: 379-393.
- Law, J. (2007). Actor Network Theory and Material Semiotics. <http://www.lancs.ac.uk/fass/sociology/paper/law-notes-on-ant.dpf>. Last accessed November 18, 2010.
- Local Government Authority (of Sengerema (2009). Fisheries Report for Sengerema District (Taarifa ya Sekta ya Uvuvi Wilaya ya Sengerema). 36 pp.
- Lokina, R. (2005). *Efficiency, Risks and Regulation Compliance: Application of Lake Victoria Fisheries in Tanzania. Economic studies. Department of Economics.School of Economics and Comercial Law*. Goteborg University, Sweden. 20 pp.
- Long, N. (2000). Exploraring local/global transformation: A view from anthropology. in: A. Arce & N. Long (eds.), *Anthropology, Development and Modernities: Exploring Disources, Counter-tendencies and Violence*. London:Routledge, pp. 184-201.
- Long, N. (2001). *Development Sociology - Actor Perspectives*. London: Routledge.
- Long, N. nad Long, A. (1992). *Battlefields of Knowledge. The interlocking of theory and practice in social research and development*. London: Routledge.

- Long, N. (2008) 'Resistance, Agency, and Counterwork: a theoretical positioning', in: W. Wright and G. Middendorf (eds.) *The Fight over Food : producers, consumers, and activists challenge the global food system*, Pennsylvania: The Pennsylvania State University Press, pp. 69-90.
- Lowen, M. (2014). Kenya's battle to end 'sex for fish' trade, *BBC News for Africa*. Lake Victoria, Western Kenya.
- Lukanga, S. and Mgaya, Y. (2005). Fish Quality Assurance, in: Y. Mgaya (ed.), *Synthesis Report on Fisheries Research and Management*. Lake Victoria Environmental Management Project. Jinja-Uganda: LVEMP/LVFO. Final Report Submitted to LVEMP/LVFO. December, 2005. 250 pp.
- Lukes, S. (1974). *Power: A Radical View*. London: Macmillan.
- LVFO. (1999). Strategic Vision for Lake Victoria (1999-2015). Lake Victoria Fisheries Organization. Jinja-Uganda. 62 pp.
- LVFO. (2001). The Convention for the Establishment of the Lake Victoria Fisheries Organization. LVFO/LVFRP, Jinja, Uganda. 38 pp.
- LVFO. (2010). Report of the Regional Meeting of the Directors of Fisheries and Industrial Fish Processors to Review the Implementation of measures for Nile Perch Fishery (EAIFFPA/CA/LVFO-SEC). Olive Gardens Hotel, Nairobi-Kenya. 25th March 2010. 23 pp.
- LVFO/EAC. (2011). Technical Report: Stock Assessment Regional Working Group. East African Community (EAC) Partnership Fund Support to LVFO for Resource Monitoring Studies. Lake Victoria Fisheries Organization of the EAC. 22nd to 25th November 2011. Ridar Hotel, Seeta, Uganda. 26 pp.
- LVFO/EAC. (2007). Report of the Fourth Special Session of the Council of Ministers, Safari Park Hotel, Nairobi. 30th March, 2007. Lake Victoria Fisheries Organization. East African Community (LVFO/EAC). 22 pp.
- LVFO/EAC (2010). Regional hydro acoustic survey report for L. Victoria Fisheries: Kenya, Tanzania and Uganda. Report submitted to LVFO, Jinja. March 2010. 42 pp.
- LVFO/IFMP. (2006). Regional Synthesis of the Socioeconomic Baseline Survey of the Fishing Communities of L. Victoria. Implementation of Fisheries Management Plan (IFMP) Project for Lake Victoria. Project No. 8 ACP ROR 029. Lake Victoria Fisheries Organization (LVFO) of the East African Community (EAC) Jinja-Uganda. 57 pp.
- LVFO/EAC. (2013). Regional Status Report on Lake Victoria Bi-Ennial Frame Surveys between 2000-2012 for Kenya, Tanzania and Uganda. Report funded by Lake Victoria Basin Commission and Lake Victoria Environmental Management Project Phase II. February, 2013. 65 pp.
- LVFO/LVFRP. (2001). Fisheries Management Plan. Lake Victoria Fisheries Research Phase II. LVFRP/TECH/01/16. Technical Document No. 16. Jinja-Uganda: LVFO. 67 pp.
- LVFO/IFMP (2006) Report of the Regional Workshop on Developing a Regional HIV/AIDS Strategy for Improving the Health Status of Fishing Communities on Lake Victoria. 23rd-24th March, 2006. Ridar Hotel, Seeta, Uganda. EDF Project No. 8 ACP ROR 029. 65 pp.

- LVFO/IFMP. (2007). LVFO Fisheries Technical Report. Measures taken as a result of the Regional Plan of Action to prevent and eliminate illegal, unregulated and unreported fishing. Jinja-Uganda. 15 pp.
- LVFO/IFMP. (2008a). The Fisheries Management Plan for Lake Victoria 2009-2014. PROJECT NUMBER 8 ACP ROR/029. Jinja, Uganda. 108 pp.
- LVFO/IFMP. (2008b). Regional Catch Assessment Survey Synthesis Report for 2005-2011. Lake Victoria Fisheries Organization of the East African Community Muhoozi, L. (eds.) *Lake Victoria Fisheries Organization and Implementation of Fisheries Management Plan Project for Lake Victoria (LVFO/IFMP)*. Jinja-Uganda. 23 pp.
- LVFO/IFMP. (2008c). Regional Status Report on Lake Victoria Bi-annual Frame Surveys between 2000-2008 for Kenya, Tanzania and Uganda. Lake Victoria Fisheries Organization of the East African Community. Implementation of Fisheries Management Project (EU) Jinja - Uganda. 52 pp.
- LVFO/IFMP. (2010a). Operating Procedure for Regional Beach Management Units Network for Lake Victoria. Annex 3. Lake Victoria Fisheries Organization of the East African Community. Jinja-Uganda. 17 pp.
- LVFO/IFMP. (2010b). Regional Status Report on Lake Victoria Bi-Ennial Frame Surveys between 2000-2010. Kenya, Tanzania and Uganda. Supported by IFMP EDF Project Number 8 ACP/ROR/029 and GEF/LVEMP Phase II Project, Jinja-Uganda. 55 pp.
- LVFO/IFMP. (2010c). Formation of Fisheries Co-Management Committee. Annex no 11. Lake Victoria Fisheries Organization of the East African Community. Jinja-Uganda. 6 pp.
- LVFO/IFMP. (2010d). Report of National BMU Performance Monitoring. United Republic of Tanzania, Lake Victoria Fisheries Organization and Implementation of Fisheries Management Plan (IFMP). 23 pp.
- LVFO/IUCN. (2005). LVFO and IUCN letter for Hubert Sauper. 3 pp.
- LVFO/LVEMP. (2005). National Synthesis Report on Fisheries Management and Fisheries Research - KENYA. Supported by Lake Victoria Environmental Management Programme (LVEMP Phase I). Kisumu, Kenya. 102 pp.
- Lwenya, C. (2002). *Gendered in the Management of Lake Victoria Fisheries Resources* Unpublished Mater Thesis. Eldoret, Moi University. 181 pp.
- Lwenya, C. and Yongo, E. (2012). The Fisherman's Wife: Vulnerabilities and Strategies in the Local Economy; The Case of Lake Victoria, Kenya, *Signs*, 37: 566-573.
- MacCay, B. and Acheson, J. (1987). Human Ecology and Commons, in: B. MacCay and J. Acheson (eds.). *The questions of the commons: The culture and Ecology of Communal Resources* (Tucson: The University of Arizona Press, pp. 1-3.
- Massey, D.B. (2004). Geographies of Responsibility, *Human Geography*, 86 :5-18.
- Maembe, T.W. (1990). A Review of the Main Characteristics of Long Distance fish Trade from Lake Victoria, Tanzania. Bujumbura, Rome: FAO and UNDP, 32 pp.
- Mahatane, A.T. (2009). Review Implementation of Zero Tolerance to Illegal Fishing and Fish Trade. Country Report (Tanzania). Regional Workshop to Develop District Fisheries Management Plan in Mwanza. Monitoring Control and Surveillance Groups (MCS National and Regional Working Groups), 10 pp.

- Mandanda, A. (2003). Commercialization and Gender Roles Among Lake Victoria Shore Fishing Communities of Uganda. Research Report. The 14th OSSREA Research Competition on Gender Issues. Addis Ababa Ethiopia. 61 pp.
- Maiseli, J. (2011). Eco-label Project Upscaling Proposal and Baseline Survey Results. Report Presented at Stakeholder Round Table (SRT) for Eco-labeling project of fish landing sites in Mwanza, Tanzania at Isamo Hotel, Mwanza. 22nd January 2011. 12 pp.
- Mbenga, A. (1996). *Marketing and Distribution of Artisanal Fisheries in the Gambia: Women as fish protein Suppliers in The Gambia*. Unpublished Masters Thesis. Tromso, University of Tromso. 103 pp.
- McCay, B, Creed, C. Finlayson, A, Aposte, R. and Mikalsen, K. (1995). Individual Transferable Qotas (ITQ) in Canadian and American Fisheries, *Ocean and Coastal Management* 28: 85-115.
- McGee, R. (2004). Unpacking Policy: Actors, Knowledge and Space, in: K. Brock, R. McGee and J. Gaventa (eds.), *Knowledge, Actors and Spaces in Poverty Reduction in Uganda and Nigeria*, Kampala: Fountain Publishers.
- McGee, T. (1979). Conservation and Dissolution in the Third World City: The 'Shanty Town' as an element of conservation, *Development and change*, 10: 1-22.
- Medard, M. (1998). The Development and Prospects of Experimental and Commercial Trawling in Lake Victoria. Trawling in Lake Victoria. Its History, Status and Effects, in: James Siwo Mbuga and A. Gitabu, Andrew Asila, Modesta Medard, Richard Abila (p. 17-21). Nairobi: IUCN Eastern Africa Programme. Socio-Economics of the Lake Victoria Fisheries. The World Conservation Union.
- Medard, M. (2000). Community based organisations on Lake Victoria: a lesson from Tweyambe Fishing Enterprise in Muleba District, Kagera Region, Tanzania. In: K. Geheb and K. Crean (eds.), *The Co-management Survey: Co-managerial perspectives for Lake Victoria's Fisheries*. Jinja-Uganda: LVFRP Technical. Document 11. LVFRP/TECH/00/11. 95-107. Aquatic Commons (<http://aquaticcommons.org/3743/>)
- Medard, M. (2003a). The Nile Perch processing industry in Tanzania: Trends, issues and development, *The African Journal of Tropical Hydrobiology and Fisheries*, 10: 71-88.
- Medard, M. (2003b). Gender Change and Coping Strategies in a New Globalised Fishery: The Case of Lake Victoria, Tanzania, in: E. Bennett, H. Rey Valette, K. Yacouba Mäiga and M. Medard (eds.), *Room to Manoeuvre: Gender and Copying Strategies in the Fisheries Sector. The Report of a Workshop Held in Cotonou, Benin 1-4 December 2003*. Cotonou, Benin-West Africa IDDRA Ltd, Portsmouth Technopole, Kingston Crescent. PORTSMOUTH PO2 8FA.
- Medard, M. (2002). *Co-Management for the Lake Victoria's Fisheries Resources in Tanzania: Potentials, Obstacles and Sustainability*. Unpublished MPhil. Thesis. Eldoret, Moi University. 163 pp.
- Medard, M. (2012). Relations between People, Relations about Things: Gendered Investment and the Case of the Lake Victoria Fishery, Tanzania, *Signs*, 37: 555-566.
- Medard, M and Geheb, K. (2000). Fisheries management in the social domain: perspectives from Tanzania's Lake Victoria fishery, in: K. Geheb & K. Crean e (eds.). *The Co-management Survey: Co-managerial perspectives for Lake Victoria's*

- Fisheries*. Jinja, Uganda: LVFRP Tech. Document 11. LVFRP/TECH/00/11. pp. 116-134
- Medard, M., Hebinck, P. and van Dijk, H. (2015). In the Shadow of Global Markets: Fish Markets in Mwanza , Tanzania, in: P. Hebinck, J. Ploeg J.D. van der and S. Schneider (eds.), *Markets and Rural Development*, London: Routledge, pp 168-190.
- Medard, M., Itanisa, J., Chacha, V. and van Zwieten, P. (2012a). Sharing the Benefits? "Winners and Losers of Commercial Fishing Lake Victoria". TAFIRI/SEDEC Research Program. DGIS/WOTRO/NWO. Documentary. The Netherlands, Wageningen University. <http://www.wageningenur.nl/en/Research-Results/Projects-and-programmes/SEDEC-1/Publications-2/Video-SEDEC.htm>
- Medard, M., van Dijk, H., Hebinck, P. and Mwaipopo, R. (2012b). The Loss of inheritance: Rapid commercialization of the local fisheries in Tanzania's Lake Victoria region is leading to the disappearance of gifted customs and traditions. YEMAYA: *International Collective in Support of Fishworkers*. http://www.icsf.net/images/yemaya/pdf/english/issue_40/1863_art_yem40_art03.pdf, 40 (ISBN/ISSN 0973-1156), 7-10. (ICSF).
- Medard, M., Geheb, K. and Okeyo-Owour, Joash. (2002a). Conflicts amongst Resource Users: The Case of Kabangaja Fishing and Farming Community on Lake Victoria (Tanzania), in: K. Geheb & M.-T. Sareh (eds.), *Africa's Inland Fisheries: The Management Challenge* (p.195-201). Kampala-Uganda: Fountain Publishers Ltd.
- Medard, M., Lwenya, C. and Nyapendi, A-T. (2002b). Regional Results for LVFRP Nutritional Survey, in: Geheb, K. (Ed.). Report of the LVFRP Nutrition Survey. LVFRP Technical Document No. 18. Jinja, Uganda, Socio-economic Data Working Group of the Lake Victoria Fisheries Research Project. Jinja-Uganda. 13 pp.
- Medard, M. and Mlahagwa, E. (2003). Report on Fishers Perception on slot size tentative measure: The case of Tanzania. Report funded and submitted to LVFO Secretariat Jinja. April 2004. 40 pp.
- Medard, M. (2005a). Women Strategies in the Globalized Lake Victoria Fisheries. In: *Changing Tides: Gender, fisheries and globalisation*, in: Neis, B., Gerrard, S. and Maneschy, N (eds). Nova Scotia: Freenwood Publishing, pp. 78-91.
- Medard, M. (2005b). Women attaining Financial Credit in Microfinance Institutions: Perspectives from L. Victoria Basin, Tanzania, in: K. Frangoudes and J. Pascual-Fernandez (eds.), *Women in Fisheries and Aquaculture: Lessons from the past, current actions and ambitions for the future*. Conference Proceedings. AKTEA Conference, Santiago de Compostela: Asociacion Canaria de Antropologia. pp. 172-182.
- Medard, M., Sobo, F., Ngatunga, T. and Chirwa, S. (2002c). Women and Gender Participation in the Fisheries Sector in Lake Victoria, in: Williams, M., N. Chao, P. Choo, K. Matics, M. Nandeesha, M. Shariff, I. Siason, E. Tech and J. Wong. 2002. *Global Symposium on Women and Fisheries*. Sixth Asian Fisheries Forum, 29 November, 2001, Kaohsiung, Taiwan ICLARM (Vol. Contribution No. 1663. Kaohsiung-Taiwan: The World Fish Center. pp. 155-168.
- Medard, M. and Geheb, K. (2002). 'We do fish as women's groups and individuals': perspectives from Lake Victoria. Paper presented at the International Workshop 'Gender, fisheries and aquaculture: Social capital and knowledge for the transition towards sustainable use of aquatic ecosystems', convened 9-10 December 2002 in

- Brussels, Belgium, at the European Commission's Directorate General for Research, *Samudra*, 13:23-28.
- Medard, M. (2010a). Investment Decision Drivers in a Globalized Fisheries: Markets, Post-harvest Processes, Governance and Livelihood Dynamics in L. Victoria, Tanzania. Paper presented at the World Small-Scale Fisheries Congress, October 17-22, Bangkok. 23 pp.
- Medard, M. (2010b). Risks and Uncertainties. International Collective in Support of fish Worker, *Yemaya*, 34:13-15.
- Merton, R. K., Fiske, M. and Kendall and P. Lake (1990). *The Focused Interview. A manual of Problems and Procedures*. London: Collier Macmillan Publishers.
- MCS-TNWG. (2009). Monitoring Control and Surveillance Regional Workshop on Review of Implementation of Zero Tolerance to Illegal Fishing and Fish Trade. Mwanza Tanzania: Fisheries Division. 10 pp.
- Mkumbo, O.C. (2012). The Fisheries of Lake Victoria in their Broader Socio-Ecological Context. Lake Victoria Fisheries Organization. (LVFO) Jinja, Uganda. Paper Presented at Socio Ecological Drivers for Ecosystem Changes (SEDEC) Symposium, Wageningen University, The Netherlands. 05 October, 2012. 39 pp.
- Mkumbo, O.C., Nsinda, P., Ezekiel, C., Cowx, I.G., and Aeron, M. (2007). Towards sustainable exploitation of Nile Perch consequential to regulated fisheries in Lake Victoria, *Aquatic Ecosystem Health & Management* 10: 449-457.
- MLNRT. (1986). Ministry of Lands, Natural Resources and Tourism (MLNRT), Fisheries Division, Annual Statistics Report.
- MLNRT. (1987). Ministry of Lands, Natural Resources and Tourism (MLNRT), Fisheries Division, Annual Statistics Report.
- MNRT. (1994). Annual Report Statistics. Ministry of Natural Resources and Tourism (MNRT). Fisheries Division. Dar Es Salaam, Tanzania.
- MNRT. (1995). Annual Statistics Report. Ministry of Natural Resource and Tourism. Fisheries Division. Dar Es Salaam, Tanzania.
- Moyo, D. (2012). *Winners Take All: China's Race for Resources and What it Means for the World*: London: Allen Lane.
- MTNRE. (1989). Annual Report Statistics. Ministry of Tourism, Natural Resource and Environment (MTNR&E). Dar Es Salaam, Tanzania.
- MTNRE. (1990). Annual Report Statistics. Ministry of Tourism, Natural Resources and Environment (MTNR&E), Fisheries Division. Dar Es Salaam, Tanzania.
- MTNRE. (1991). Annual Report Statistics, Ministry of Tourism, Natural Resources and Environment (MTNR &E). Fisheries Division. Dar Es Salaam, Tanzania.
- MTNRE. (1993). Annual Report Statistics. Ministry of Tourism, Natural Resource and Environment (MTNR&E). Dar Es Salaam, Tanzania.
- Muhoozi, L.I. (2002). *Exploitation and management of the artisanal fisheries in the Ugandan waters of Lake Victoria*. Unpublished PhD Thesis. Hull, Hull University. 260 pp.
- Munk-Madsen, E. and Larsen, M. (1998). The Norwegian fishing quota system: Another Patriarchal Construction?, *Society and Natural Resource*, 11: 229-240.
- Murdoch, J. (1998). The spaces of Actor-Network Theory, *Geofimm*, 29: 357-374.

- Murdoch, J. (2001). Ecologising Sociology: Actor-Network Theory, Co-constructionism and the Problem of Human Exemptionalism. *Sociology - The Journal of the British Sociological Association*, 35: 111-133.
- Muhoozi, L.I. (2002). *Exploitation and management of the artisanal fisheries in the Ugandan waters of Lake Victoria*. Unpublished PhD Thesis. Hull, Hull University. 260 pp.
- Nanyaro, G.F., Mbilinyi, H.G. and Medard, M. (2004). Consultancy Report on the Dagua production and marketing of value added Dagua fishery products: Lake Victoria, Tanzania. Consultancy Report submitted to LVFO Secretariat, Jinja-Uganda. April 2004. CFC - FAO COMESA/LVFO Project. 40 pp.
- Njaya, J. N. (2009). The Lake Chilwa Fishing Household Strategies in Response to water level changes: Migration, Conflicts and Co-management. Unpublished PhD thesis. Cape Town, University of the Western Cape. 261 pp.
- Ngupula, G. and Mlaponi, E. (2010). Changes in abundance of Nile shrimp, *Caridina nilotica* (Roux) following the decline of Nile Perch and recovery of native haplochromine fishes, Lake Victoria, Tanzanian waters *Aquatic Ecosystem Health and Management* 13 196-202.
- Njiru, M., Getabu, A., Taabu, A.M., E.Mlaponi, Muhoozi, L., and Mkumbo, O.C. (2009). Managing Nile Perch using slot size: is it possible?, *African Journal of Tropical Hydrobiology and Fisheries*, 12: 9-12.
- Njiru, M., Kazungu, J., Ngugi, C., Gichuki, J., and Muhoozi, L. (2008). An Overview of the Current Status of Lake Victoria Fishery: Opportunities, Challenges and Management Strategies, *Lakes and Reservoir: Research and Management*, 13: 1-12.
- Nizami, A. (2013). *Forest Fights in Haripur, Northwest Pakistan*. Unpublished Ph.D. thesis. Wageningen, Wageningen University. 257pp.
- Nunan, F. (2010). Mobility and fisherfolk livelihoods on Lake Victoria: Implications for vulnerability and risk, *Geoforum*, 41: 776-785.
- Nunan, F., Luomba, J., Lwenya, C., Yongo, E., Odongkara, K. and Ntambi, B. (2012). Finding Space for Participation: Fisherfolk Mobility and Co-Management of Lake Victoria Fisheries, *Environmental Management*, 50: 204-216.
- Noble, B.F. (2000). Institutional criteria for co-management, *Marine Policy*, 24: 69-77.
- Ocholla-Ayayo, A. (1976). Traditional Ideology and ethics among the Southern Luo. Uppsala: The Scandinavian Institute of African Studies.
- Odongkara, K., Abila, R. and Onyango, P. (2005). Distribution of Economic Benefits from the Fisheries of Lake Victoria. LVFO (2005). The State of the Fisheries Resources of Lake Victoria and their Management: Proceedings of the Entebbe Regional Stakeholders' Workshop. 24-25 February 2005, Entebbe, Uganda. Unpublished paper 18 pp.
- Odongkara, K., Wegoye, J., Kyangwa, M. and Nyapendi, A. (2002). Globalization and Fish Utilization and Marketing Study. Economic Profiles of Selected Landing Sites on Lake Victoria. Submitted to Mike Dillon Associates Limited, October 2002. 97 pp.
- Ogwang, V. (2009). Inclusion of the National Fisheries Management Committees (Co-Management) in the District Plans to Eliminate Illegal Fishing Gears. 8 pp.
- Ogwang, V., Medard, M. and Ikwaput-Nyeko, J. (2004). *Harmonized Beach Management Unit (BMU) Guidelines for Fishing communities of East African States*.

- Report submitted to LVFO Secretariat and Governments of K/U/T. March 2004. Jinja-Uganda. 16 pp.
- Okaroron, J., Acere, T. and Ocenodongo, D. (1985). The current state of the fisheries in the northern portion of Lake Victoria (Uganda, *FAO Fish. Rep.*, 335: 389-398.
- Okedi, J.Y.O. (1981). The *Engraulicypris "Dagaa"* fishery of Lake Victoria. A pilot study of the Ukerewe Island-complex "Dagaa" fishing industry in: Annual Report 1978-79. Mwanza, Tanzania: Fresh water Fisheries Institute, pp 25-79.
- Okwach, R. (2009). Review Implementation of Zero Tolerance to Illegal Fishing and Fish Trade. Country Report (Kenya). Regional Workshop to Develop District Fisheries Management Plan in Mwanza. Monitoring Control and Surveillance Groups. MCS National and Regional Working Groups. 11 pp.
- Okware, P. (2009). Review Implementation of Zero Tolerance to Illegal Fishing and Fish Trade. Country Report (Uganda). Regional Workshop to Develop District Fisheries Management Plan in Mwanza. March 2010, Monitoring Control and Surveillance Groups. MCS National and Regional Working Groups: 4 pp.
- Okware, P. (2009). Monitoring, Control and Surveillance Progress Report for Uganda. Regional Workshop to Review Implementation of Zero Tolerance to Illegal Fishing and Fish Trade. Mwanza-Tanzania. 16 pp.
- Olivier de Sardan, J.P. (1999). A moral economy of corruption in natural resource management, *Journal of Modern African Studies*, 37: 25-52.
- Olowu, B. (1999). Redesigning African Civil Service Reforms and the World Bank, *Journal of Modern African Studies*, 37: 1-23.
- Ongunja, J.C. (1991). Recent Developments in the Nile Perch and Omena Processing in Kenya. Proceedings of the FAO Experts Consultation on Fish Technology in Africa, Accra -Ghana, 22 -25 October 1991. FAO Fisheries Report No. 467 Rome.
- Parkes, G. (2008). Review and update of L. Victoria. The Lake Victoria Management Plan 2009-2014. Project no 8 ACP ROR/029. Consultancy Report No 38 Report Funded by EU/IFMP project and Submitted to LVFO May 2008. UK: MRAG LTD. 108 pp.
- Pedler, F.J. (1944). Joking relationship in Sukuma, *Africa*, 13: 170-173.
- Pitcher, T., Bundy, A. and Neil, W.E. (1996). The Fishery of *Rastrineobola argentea* in Lake Victoria: estimation of potential yields using a new approximate model based on primary production, *Fisheries Research*, 28: 133-149.
- Pollard, I. (2008). Description and Analysis of Value Chain of the L. Victoria Nile Perch Fishery. Consultancy Report No 42. Funded by EU/IFMP Project. Report submitted to IFMP/LVFO. Implementation of Fisheries Management Plan (IFMP) and Lake Victoria Fisheries Organization (LVFO) of the East African Community. Jinja-Uganda. 76 pp.
- Pomeroy, R.S. and Berkers, F. (1997). Two tango: The role of government in fisheries comanagement, *Marine Policy*, 21: 465-480.
- Pomeroy, R.S., Katon, B.M. and Harkes, I. (2001). Conditions affecting the success of fisheries co-management: lessons from Asia, *Marine Policy*, 25: 197-208.
- Poppo, L. and Zenger, T. (2002). Do formal Contracts and Relational Governance Function as Substitutes or Complements?, *Strategic Management Journal*, 23: 707-725.
- Pringle, R. M. (2005a). The Origin of the Nile Perch, *Biology in History*, 55: 780-787.

- Pringle, R.M. (2005b). The Nile Perch in Lake Victoria: Local Responses and Adaptations, *Africa*, 75: 510-538.
- Renn, O. (1993), The Social Arena Concept of Risk Debates, in: Krimsky S., and Golding, D. (eds.). *Social Theories of Risk*. Westport: Praeger, pp. 179-196.
- Reynolds, J. and Greboval, D. (1988). Socioeconomic Effects of the Evolution of the Nile Perch Fisheries in Lake Victoria: a Review of FAO CIFA Technical Paper no. 17. Rome: FAO Committee for the Inland Fisheries of Africa, Food and Agricultural Organization.
- Reynolds, J. Greboval, D., and P. Mannini. (1995). Thirty years on: the development of the Nile Perch fishery in Lake Victoria, in: T. Pitcher and P. Hart (eds.), *The Impact of Species Changes in African Lakes*. London: Chapman & Hall, 181-214 pp.
- Ribot, J. and Peluso, N. (2003). A Theory of Access, *Rural Sociology*, 68:153-181.
- Robbins, P. (2000). The Rotten Institution: Corruption in natural resource management, *Political Geography*, 19: 423-443
- Sarch, M. and Allison, E. (2000). Fluctuating fisheries in Africa's inland waters: Well adapted livelihoods, mal-adapted management. Paper presented at the Tenth International Fisheries Economics and Trade conference, Oregon State, 10-14 July, 2000.
- Sauper, H. (2004). Darwins Nightmare. Mille et Une Productions.
- Scott, J.C. (1986). Everyday forms of peasant resistance in South-East Asia, *The Journal of peasant Studies*, 13: 5-35.
- Scott, J.C. (1985). *Weapons of the Weak - Everyday Forms of Peasant Resistance*. New Haven and London: Yale University Press.
- SEDAWOG/LVFRP.(1999). Marketing Study. LVFRP/TECH/99/002. Technical Document No 2, LVFO. 130 pp
- SEDEC. (2007). Exploitation or eutrophication as threats for fisheries? Disentangling social and ecological drivers of ecosystem changes in Lake Victoria, Tanzania (SEDEC). 58 pp
- Sengo, A. (2012a). Mgomo wa wafanyabiashara wa samaki wa sangara waingia pabaya/ Strike by NP fishers reaches bad situation). <http://gsengo.blogspot.nl/2012/06/mgomo-wa-wafanyabiashara-wa-samaki-kwa.html?m=1>.
- Sengo, A. (2012b). Wamiliki wa viwanda waingia mitini (lit., No show by Fish industrial processors for the planned meeting). <http://gsengo.blogspot.nl/2012/06/wamiliki-wa-viwanda-waingia-mitini.html>.
- Seehausen, O. (1996). *Lake Victoria Rock Cichlids: Taxonomy, Ecology and Distribution*. Zevenhuize Verduijn Cichlids, 304 pp.
- Seehausen, O., van Alphen, J. and Witte, F. (1997). Cichlid fish diversity threatened by eutrophication that curbs sexual selection, *Science*, 277: 1808-1811.
- Seehausen, O., Witte, F., Katunzi, E.F., Smits, J., and Bouton, N. (1996). Patterns of the remnant cichlid fauna in Southern Lake Victoria, *Conservation Biology*, 11: 890-904.
- Scholz, U. (2007). The Dilemma of the Nile Perch. Ecolabelling Could be a Strategy to secure long-term Market access of a fishing sector that secures the Livelihoods of around 150,000 fishers in the NP Fishery. Eurofish Magazine 6/200; SUMANDRA Report No. 48, pp. 11-12.

- Shivji, I. and Maina, P. (2003). The Village Democracy Initiative: A Review of the Legal and Institutional Framework of Governance at Sub-District Level in the Context of Local Government Reform Programme. Report submitted to Presidents Office, Regional Administration and Local Government (PO-RALG) and United Nations Capital Development Fund (UNCDF) and United Nations Development Programme (UNDP). May 2003. 121 pp.
- Sitoki, L., Gichuki, J., Ezekiel, C., Wanda, F., Mkumbo, O.C, and Marshall, B.E. (2010). The environment of Lake Victoria (East Africa): current status and historical changes, *International Review of Hydrobiology*, 95: 209-223.
- Smith, J. Obidzinski, K. and Sabarudi and Suramenggala, I. (2003). Illegal logging, collusive corruption and gragmented, governments in Kalimantan, Indonesia, *International Forestry Review*, 5: 293-302.
- Sobo, F. and Medard, M. (2004). Country Report on Cross border Fishing and Fish Trade on Lake Victoria. IUCN/LVFO Socio Economics of the Nile Perch Phase II: Fisheries Department and IUCN. 25 pp.
- Sobo, F. Medard, M., Murakwa, D, Yongo, E, Lwenya, C, Ikwaput Nyeko, J, Owino, J. (2006). Resolving border conflict on Lake Victoria through BMUs Exchange Visits, IUCN Eastern Africa Regional Office (Nairobi, Kenya) and Lake Victoris Fisheries Organization (LVFO) Jinja, Uganda, vi + 33 pp.
- Ssentongo, G. and Welcomme, R.L. (1985). *Past history and current trends in the fisheries of Lake Victoria*. Rome: FAO, pp. 123-138
- Taabu, A. (2004). Variation in catch composition of Rastrineobola argentea Pellegrin ("Mukene") fishery in relation to distance from shore on Lake Victoria (Uganda). Dissertation submitted in Partial fulfilment of the Requirements for the award of the Degree of Master of Science in Zoology (Fisheries and Aquatic Sciences) of Makerere University Kampala. August, 2004. 83 pp.
- Therkildsen, O. (2001). Efficiency, Accountability and Implementation Public Sector Reform in East and Southern Africa. Democracy, Governance and Human Rights Programme Paper Number 3 February 2001. Geneva: United Nations Research Institute for Social Development, 55 pp.
- Therkildsen, O. (2000). Public sector reform in a poor, aid-dependent country, Tanzania, *Public Administration and Development*, 20: 61-71.
- Thorpe, A. and Bennet, E. (2004). Market-Driven International Fish Supply Chains: The Case of Nile Perch from Africa's Lake Victoria, *International Food and Agribusiness Management Review (IAMA)*, 7:40-57.
- Tumwebaze, R, Cowx, I.G, Ridgway, S, Getabu, A, & Maclennan, D.N. (2007). Spatial and temporal changes in the distribution of Rastrineobola argentea in Lake Victoria, *Aquatic Ecosystem Health and Management*, 10: 398-406.
- Turner, G., Seehausen, O., Knights, M., Allender, C., and Robinson, L. (2001). How many species of cichlid fishes are there in African lakes?, *Molecular Ecology*, 1: 793-806.
- UFFCA. (2013). Alternative Fisheries Policy and Strategy for Sustainable Fisheries in Uganda. (Managing the Current Crisis in Fisheries). Issue and Strategy Paper for Creating Alternative Fisheries Governance Models and Legislative Alternatives for the Establishment of an Effective Community-Based Fisheries Co-management (CB-FCM) Regime: "Shifting Fisheries Co-management Responsibilities from the

- current BMUs Structures to Fisherfolk Cooperatives/Associations". Uganda. Fisheries and Fish Conservation Association (UFFCA). 32 pp.
- URT. (1996). The Local Government Reform Agenda 1996-2000. The United Republic of Tanzania. Prime Minister's Office. Local Government Reform Component Civil Service Reform Programme. Prepared by: The Civil Service Reform Secretariat. Civil Service Department. President's Office, Dar Es Salaam. 45 pp.
- URT. (1998). Local Government Reform Programme. Policy Paper on Local Government Reform. Dar Es Salaam, Tanzania. 39 pp.
- URT. (2003). The Fisheries Act of 2003. Act No. 22 of 2003. The United Republic of Tanzania (URT). Ministry of Natural Resources and Tourism (MNRT). Dar Es Salaam, Tanzania: Re-prints of 2007. 42 pp.
- URT. (2009). *The Fisheries Regulations (G.N No. 308 of 28/8/2009)*. Government Printer. United Republic of Tanzania (URT). Dar Es Salaam, Tanzania. 246 pp.
- URT. (2012a). Jamhuri ya Muungano wa Tanzania. Hotuba ya Waziri wa Maendeleo ya Mifugo na Uvuvi, Mheshimiwa Dr David Mathayo David (MB) akiwakilisha Bungeni mpango wa Maendeleo na Makadirio ya Matumizi ya Fedha ya Mwanza 2012/2013. August 2012. Dodoma, Tanzania. 161 pp.
- URT. (2012b). Taarifa ya Miaka Hamsini ya Uhuru wa Tanzania Bara (1961-2011) na Matarajio ya Miaka 50 Ijayo (2011-2061): Fifty year of Independence (1961-2011) and the Expectation for the coming fifty years (2011-2061). Wizara ya Maendeleo ya Mifugo na Uvuvi (Ministry of Livestock and Fisheries Development- MLFD). July 2011. Dar Es Salaam, Tanzania. 50 pp.
- URT/LVFO/IFMP. (2010). Report of National BMU Performance Monitoring. United Republic of Tanzania, Lake Victoria Fisheries Organization and Implementation of Fisheries Management Plan (IFMP). 23 pp.
- URT/LVFO/LVBC. (2012). National Status Report on Lake Victoria Bi-Ennial Frame Survey Report. Frame Survey National Working Group. The United Republic of Tanzania. Ministry of Livestock and Fisheries Development. Funded by Lake Victoria Fisheries Organization (LVFO) and Lake Victoria Basin Commission (LVBC). September, 2012. 110 pp.
- URT. (2003a). The Fish Sector Export Development Strategy Board of External Trade. 42 pp.
- URT. (2003b). The Fisheries Act of 2003. Act No. 22 of 2003. The United Republic of Tanzania (URT). Ministry of Natural Resources and Tourism (MNRT). Dar Es Salaam, Tanzania: Re-prints of 2007. 42 pp.
- URT. (2009). *The Fisheries Regulations (G.N No. 308 of 28/8/2009)*. Government Printer. United Republic of Tanzania (URT). Dar Es Salaam, Tanzania. 246 pp.
- URT-FSNWG. (2010). Report on Lake Victoria Fisheries Frame Survey Results for Tanzania. Report submitted to Lake Victoria Fisheries Organization (LVFO) and Lake Victoria Basin Community (LVBC). Fisheries Division of URT. Dar Es Salaam. 50 pp.
- URT/MLFD (2012). Annual Statistics Report for 2011. Ministry of Livestock and Fisheries. Fisheries Development Division..
- URT/MNRT. (1997). National Fisheries Sector Policy and Strategy Statement. Ministry of Natural Resources and Tourism (MNRT). 24 pp.

- URT/LVEMP/WWF. (2005). Operational Manual for Marine Community Based Collaborative Management (Co-Management) in Tanzania 28 pp.
- Uzzi, B. (1996). The Sources and Consequences of Embeddedness for the Economic Performance of Organization: The Network Effect, *American Sociological Review*, 61: 674-698.
- Van der Knaap, M. and Ligtoet, W. (2010). Is Western Consumption of Nile Perch from Lake Victoria sustainable?, *Aquatic Ecosystem Health and Management*, 13: 429-432.
- Van der Knaap, M. (2006). An analysis of the social and economic effects of Western consumption of Nile Perch from Lake Victoria. Maxillion Consultancy. www.maxillion.eu On behalf of the Netherlands Environmental Assessment Agency (MNP). The Netherlands.
- Van der Ploeg, J.D. (2008). *The New Peasantries. Struggle for Autonomy and Sustainability in an Era of Empire and Globalization*. London: Earthscan.
- Vedagiri, G. (2010). Paper presented at stakeholders Workshop on First Standard 'Round Table Meeting' for Eco-labelling Project for Tanzania. Workshop organized by Tanzania Fish Processors (TFP Ltd) and Musoma Fish Processors (MFP Ltd). Workshop Held at Bank of Tanzania, Mwanza. 29-30 July, 2010. 12 pp.
- Wanink, J. H. (1998). *The Pelatic cyprinid Rastrineobola argentea as a crucial link in the disrupted ecosystem of L. Victoria. Dwarfs And Giants - African Adventures*. Unpublished Ph.D. Thesis, University of Leiden, Leiden. 280 pp
- Wanink, J. Kashindye, J. Goudswaard, P. and Witte, F. (2001). Dwelling and the oxycline: does increased stratification provide a predation refugium for the Lake Victoria sardine *Rastrineobola argentea*?, *Freshwater Biology*, 46: 75-85.
- Wanink, J. and Witte, F. (2000a). Rapid morphological changes following niche shift in the zooplanktivorous cyprinid *Rastrineobola Argentea* from Lake Victoria, *Netherlands Journal of Zoology*, 50: 365-372.
- Wanink, J. and Witte, F. (2000b). The Use of Perturbation as a Natural Experiment: Effects of Predator Introduction on the Community Structure of Zooplanktivorous Fish in Lake Victoria, *Advances in Ecological Research*, 31 :553-570.
- Welcomme, R. (1967). Observations on the biology of the introduced speies of Tilapia in the Lake Victoria, *Rev. Zool. Bot. Afr*, 76: 249-279.
- Wetengere, K. and Kihongo, V. (2012). Constraints in Accessing Credit Facilities for Rural Areas: The Case of Fish Farmers in Rural Morogoro, Tanzania, *Journal of Applied Aquaculture*, 2: 107-117.
- Willems, S., Roth, E., and van Roekel, J. (2005). *Changing European Public and Private Food Safety and Quality Requirements: Challenges for Developing Country Fresh Produce and Fish Exporters - European Union Buyers Survey*. Washington DC: The World Bank.
- Wilson, D., 1996. The Critical Human Ecology of the Lake Victoria Fishing industry. Unpublished Ph.D. thesis. Michigan, Michigan State University. 361 pp.
- Wilson, Douglas C. (1998). Markets, Networks and Risk: Analysis of Labor Remuneration in the Lake Victoria Fishing Industry, *Sociological Forum*, 13: 425-456.
- Wilson, D., Medard, M. Harris, C , K. Wiley, and Davis S. (1999). The Implications for Participatory Fisheries Management of Intensified Commercialization on Lake Victoria, *Rural Sociology*, 64:554-572.

- Witte, F., Goldschmidt, T., Goudswaard, P., Ligtoet, W., van Oijen, M., and Wanink, J. (1992a). Species extinction and concomitant ecological changes in Lake Victoria, *Netherlands Journal of Zoology* 42: 214-232.
- Witte, F., Goldschmidt, T., Wanink, J. H., van Oijen, M., Goudswaard, P. Witte-Maas, E. and Bouton, N. (1992b). The destruction of an endemic species flock: quantitative data on the decline of the haplochromine cichlids of Lake Victoria, *Environmental Biology and Fish*, 34:1-28.
- Witte, F. and van Densen, W. (1995). *Fish stocks and fisheries of Lake Victoria. A handbook for field observations*. Cardigan: Samara Publishing Ltd.
- Woods, M. (2007). Engaging the global countryside: Globalization, hybridity and the reconstitution of rural place, *Progress in Human Geography*, 31: 458-507.
- World Bank (1999). Report from the International CBNRM Workshop, Washington, DC: The World Bank. 37 pp.
- World Bank (2005). Tanzania, Diagnostic Trade Integration Study, Volume 2. November 2005, Washington D.C.:The World Bank,.
- World Bank (2009). LVEMP II Project Appraisal Document. Report No. 45313-AFR, 197 pp.
- Zimmerer, K. and Basset, T.J. (2003). *Political Ecology - An Integrative Approach to Geography and Environment Department Studies*. New York and London: The Guilford Press.

Appendices

Appendix 1: Information sheet and consent form



C/o Tanzania Fisheries
Research Institute
P.O.Box 475
Mwanza - Tanzania
June 2009-June 2011

1. Introduction:

Tanzania Fisheries Research Institute (TAFIRI) and Wageningen University are doing a study on Social Ecological Drivers of Ecosystem Changes on Lake Victoria in L. Victoria Districts.

2: What are you expected to do and participation

If you agree to participate in this study, you will be expected to answer some questions related to how fishing is organized in Lake Victoria, in different fishery and gear. We hope you will agree to participate in this study. If you don't accept, you have the right to withdraw from the study at any time. You should also feel free to consult anyone else to discuss this information sheet and to get his or her advice on whether you should participate.

3: Confidentiality

All the information you tell us will be kept secret. Only identification numbers will be written on forms and this information will be used for the purpose of the study and not otherwise. We will not disclose your name unless you agree to do so.

4: Action

Please read this information sheet carefully and make sure you understand. If you are not sure of anything, please ask one of us at any time. If you are willing to participate you will have to sign or thumb print a consent form saying that:

I acknowledge that I have been provided with information on the study purpose, how the information will be used and who will use it

I have had a chance to review the information

I was given the opportunity to ask questions and I was satisfied with the answers that I received

I understand what is involved in taking part in the study

I accept to participate in this study

I understand that the information provided will be kept confidential or released if I suggest so

I understand that I may withdraw from the study at any time or refuse to participate

5: I agree to participate in this study

Signature..... Date (dd/mm/yyyy)

Appendix 2:

Table 1.1: Sample sizes for each set of activities

Type of respondent	Method used	Eligibility criteria	Method of selection	Assumption	Sample size
1. Boat/camp owners (<i>tajiri</i>) <i>Nile Perch fishery</i> <i>Dagaa fishery</i> <i>Tilapia fishery</i>	FFIs, FGDs KIIs, Narratives IIIs, PO Community workshops	Age ≥18 Own fishing camps	Purposive Random Snowball	Represents existing diversity of fishers	154
2. Crewmembers (<i>wajeshi</i>) <i>Nile Perch Gillnetters</i> <i>Nile Perch long liners</i> <i>Hook & line fishers</i> <i>Dagaa seiners</i> <i>Under mesh nets (makila & monofilaments-timba)</i> <i>Beach seines & Bait crew</i>	FFIs, FGDs KIIs, IIIs Narratives IIIs, PO Rap-up Community workshops	Age ≥18 Enrolled in camps Risks & uncertainty	Purposive Random	Represent existing diversity of crew	154
3. Fisheries Managers <i>Regional, District and Ward levels</i>	IIIs, KIIs Workshops	Age ≥18 Experience	Purposive	After 6 IIs and 3 KIIs there will be no new themes emerging (data saturation)	9
4. Fisheries researchers (Mwanza)	IIIs Workshops	Age ≥18 Experience	Purposive	Knowledge base	5
5. Catch trends and recurrent cost <i>Ten boats: Nile Perch camp owners</i> <i>Five boats: Dagaa camp owners</i>	Log books Catch data & expenditure PO	Age ≥18 Experience	Purposive Random Snowball	Kept records before Trustworthiness Accessibility	15
6. Camp owners and supervisors <i>Nile Perch fishery</i> <i>Dagaa fishery</i>	FGDs, KIIs Narratives IIIs; PO Workshops	Age ≥18 Experience	Purposive Random	Knowledge & experience in running commercial camps	20
7. Large scale traders and agents of EPFs and CDTs <i>Agents of NP EPFs</i> <i>Dagaa brokers, Truck drivers</i> <i>Dagaa Cooperative leaders & money lenders</i>	IIIs, FFIs Narratives PO Workshop interaction	Age ≥18 Experience	Purposive	Experience	20

8. Village/local leaders <i>Ward Executives</i> <i>Village executives</i> <i>Committee members</i> <i>Councillors</i>	FGDs, IIIs, KIIs Narratives workshops	Age ≥18 Gender	Purposive Random	Experience Knowledge about the area Knowledge about culture and norms	42
9. Elders	FGDs, IIIs KIIs, Narratives	Age ≥18 Gender	Purposive Random	6-10 Interviews are sufficient to reflect opinion of key community leaders	52
10. Beach Management Units (BMUs)	FGDs, Narratives IIIs, KIIs Workshops	Age ≥18 Experience	Purposive Random	Experience Able to share the reality	55
11. Women and men small scale fish traders processors	FGDs, Narratives IIIs, KIIs Workshops	Gender Risks Roles in fish trade	Purposive Random	8-10 interview sufficient to reflect men and women's position in fish trade	55
12. Cooks at the campsite	KIIs, IIIs, narratives	Age ≥18 Gender, labour relations	Purposive Random	3-5 interview sufficient to reflect the reality	5
13. Boat builders	IIIs, Narratives KIIs	Age ≥18 Experience	Purposive	Experience	6
14. Bait cross-border regional traders	IIIs, Narratives	Age ≥18 Experience	Purposive	Easily identified by local fishers	3
15. Bait fishers and sellers	IIIs, Narratives	Age ≥18 Experience	Purposive	Easily identified	8
16. ECOVIC: Coordinator (Tanzania)	IIIs, Narratives	SEDEC team member	Purposive	Established long-term network	1
17. Workshops & Conferences <i>2-Eco-labeling organized by PPFs</i> <i>World congress (Small scale fisheries)</i> <i>Fisheries Department/ EU/IFMP</i> <i>SEDEC meetings/workshops</i> <i>Community rap-up & feedback meetings</i>	KIIs, IIIs Group Discussions	Experience Proper themes	Purposive Random	Relevance to the study Ability to sieve what is required	150
18. Armed camp security guards	IIIs, Narratives	Age ≥18 Experience	Purposive Random	Provide cooperation	5
19. Bar, guest house owners, attendants and video theatre owners	Narratives IIIs	Age ≥18 Experience	Purposive Random	Provide cooperation	8
20. Export Processing Factory owners	IIIs, KIIs, narratives	Experience	Purposive	Cooperation and experience	5
21. Commercial Dagaa Traders (CDTs)	IIIs, KIIs, narratives	Experience	Purposive	Cooperation and experience	5
22. Formal and informal banks	IIIs, FGDs	Position, experience	Purposive	cooperative	10
Total number of participants					787

Source: Field study (2009-2011)

Appendix: 2.1

Table 2.4: Regionally agreed and nationally implemented management measures applicable to the Nile Perch and Tilapia fishery on Lake Victoria

Regionally agreed management measures		Nationally implemented measures		
		Kenya	Tanzania	Uganda
Practical measures with direct impact on fishing stocks				
Gillnet mesh size restricted to 5 inch	Nile Perch	5inch (127mm)	6 inch (152.4mm)	5inch (127mm)
Nile Perch slot size	50-85 cm (Council of Ministers decision, 2002)	Legislation for 50 – 85 cms	Legislation for 50 – 85 cms	Legislation for 50cm min size
Beach seines	Banned	Banned	Banned	Banned
Trawling	Banned	Banned	Banned	Banned
Hook size for Nile Perch (<i>Lates</i>)	No regionally agreed size	Not specified	8-11	Minimum size 9
Traps and weirs across rivers and river mouths	Banned	Banned	Banned	Banned
Use of cast nets	Banned	Banned	Banned	Banned
Purse seining	No regionally agreed measure	No legislation	No legislation	Banned
Tycoon methods of forcing fish into nets	Banned	Banned	Banned	Banned
Fishing with chemicals and herbicides	Banned	Banned	Banned	Banned
Fishing with dynamite and explosives	Banned	Banned	Banned	Banned
Closed areas & seasons	Enforce	Breeding areas gazetted 1April – 31 July	24 closed areas 1 st Jan-30 June	Not identified or gazetted
Joint licensing	Develop joint licensing mechanisms	No legal provision	No legal provision	No legal provision
Drift nets	Banned			

Regionally agreed management measures		Nationally implemented measures		
		Kenya	Tanzania	Uganda
<i>(Council of Ministers decision, 2004)</i>				
Need to manage fishing capacity and limited fishing effort on Nile Perch at Frame Survey 2006 levels	For implementation	RWG information required before implementation	RWG information required before implementation	RWG information required before implementation
Wider management measures affecting the fishery				
Implementing FAO International Code of Conduct for Responsible Fisheries (CCRF)	Implement	Signatory	Signatory	Signatory
Protection of Environment and Critical habitats	Protect habitats	Provided for in law	Provided for in law	Provided for in law
Fish Quality Assurance and International Fish trade	Ensure fish quality assurance	Fish quality standards and guidelines exist	Regulation exists	Statutory Instruments exist

Source: LVFO/IFMP (2008a:58)

Appendix 5.1

Table 5.3: Kenya animal feed industries and buyers of Daga from Kirumba

Name of Animal Feed Factory	Location
1, Chanie Feeds Co Ltd	Thika, Kenya
2, Modera Feeds Co Ltd	Nakuru, Kenya
3, Wonder Feeds Co Ltd	Nakuru, Kenya
4, Pembe Feeds Co Ltd	Nairobi, Kenya
5, Jubilee Feeds Co Ltd	Thika, Kenya
6, Kitui Millers Co Ltd	Mombasa-Kenya
7, Mombasa Maize Millers Co Ltd	Mombasa- Kenya
8, Aha (K) Ltd	Mombasa, Kenya
9, Economy Farm Co Ltd	Nairobi, Kenya
10, Trust Feeds Co Ltd	Thika, Kenya
11, New days Feeds Co Ltd	Nairobi, Kenya
12, Bindip Enterprise	Thika, Kenya
13, New days Feeds Co Ltd	Nairobi, Kenya
14, May days Feeds Co Ltd	Thika, Kenya
15, Dola Feed Co Ltd	Mombasa, Kenya
16, Migori Feed Co	Migori, Kenya
17, Ahero Feeds Co	Ahero, Kenya

Source: Field Study (2009-2011)

Table 5.8: Major domestic animal feed companies in Tanzania identified at Kirumba

S/n	Name of the Animal Feed Factory/Industry	Location
1	Rajani industry	Pugu - Dar Es Salaam
2	NaPoCo	Dar Es Salaam
3	Interchick	Dar Es Salaam
4	Bakharesha animal feeds	Dar Es Salaam
5	Bagamoyo millers	Dar Es Salaam
6	Buguruni feed co Ltd	Dar Es Salaam
7	Musoma maize millers	Musoma-Mara
8	Morogoro feed co Ltd	Morogoro
9	Arusha miller Co Ltd	Arusha
10	Mbalali Feed Ltd	Iringa
11	Mama kuku feed Ltd	Moshi -Kilimanjaro
12	Tegemea feed co Ltd	Zanzibar
13	Kirumba millers	Mwanza
14	Mkuyuni millers	Mwanza
15	Igogo/Tanesco millers	Mwanza

Source: Field Study (2009-2011)

Appendix 7

Table 7.3: Important equipment and facilities for investing in fishing in Lake Victoria, Tanzania

Type of equipment/ Supplies	NP (N=100)		<i>Dagaa</i> (N=42)		Tilapia (N=12)		Total	
	Yes	No	Yes	No	Yes	No	Yes	No
<i>What are the important fishing inputs do you need to start fishing in the fishery you are engaged with?</i>								
(Percent)								
1.Fishing boat	100	0	100	0	100	0	100	0
2.Fishing net	100	0	NA	NA	NA	NA	65	35
3. <i>Dagaa</i> seine net	NA	NA	100	0	NA	NA	27	72
4.Beach seine*	35	65	NA	NA	100*	0	31	69
5.Long line	55	45	NA	NA	NA	NA	36	64
6.Laborers (crew & others)	100	0	100	0	100	0	100	0
7.Fuel (patrol)	90	10	61	39	NA	NA	75	25
8.Security and patrol	100	0	100	0	0	0	92	8
9.Outboard engine	100	0	100	0	NA	NA	92	8
10.Boyards (floaters)	100	0	100	0	100	0	100	0
11.Hooks and twine	56	44	NA	NA	100	0	44	56
12.Pressure lamps	NA	NA	100	0	NA	NA	27	72
13.Kerosene/ paraffin	NA	NA	100	0	NA	NA	27	72
14.Bait	80	20	NA	NA	100	0	60	42
15.Peddles	100	0	100	0	100	0	100	0
16.Sail	15	85	31	69	NA	NA	18	82
17.Sinker	100	0	100	0	100	0	100	0
18.Oil	100	0	61	39	NA	NA	82	18
18.Ice flakes and ice box	100	0	NA	NA	NA	NA	65	35
20.Boat for shipment of fish	100	0	100	0	NA	NA	92	8
21.Truck for transporting fish	100	0	NA	NA	NA	NA	65	35
22.Weighing scale(s)	100	0	25	75	NA	NA	72	27
23.Trays for fish handling	100	0	NA	NA	NA	NA	65	35
24. Patrol boat & gunmen	100	0	56	44	NA	NA	81	19

Source: Field study (2009-2011); NA= Not Applicable; * big and small beach seines

Table 7.6a: Overview of investment costs in a motorized Nile Perch gill net fishery

A: Estimated costs per Fishing Unit	TShs 1US\$ = TShs 1,500
1.Fishing boat (hard wood)	3,000,000
2.Gill nets e.g. (90nets x3=270 pcs of nets): 90 panelled nets x 60,000 (78 meshes, 6" & 9 ply)	5,400,000
3. Boyars (12 pcs x 90 panelled nets) x TShs 200	216,000
4.Outboard engine (9.9 & 15 HP)	4,200,000
5.Life jackets (TShs 30,000 x 3 crew)	90,000
6.Anchor and twine	100,000
7. Peddles (3x3,000)	9,000
8.Plastic sheet (6 meters)	15,000
9.Plastic floaters (gallons): 45x1,200	54,000
10.Thread for tying plastic floaters and sleeping place (bed)	40,000
11. Bucket for carrying food (crew)	3,000
Total (A)	13,127,000 (US\$8,751)
B: Estimated variable costs per fishing unit/ day (Motorized NP Gillnet fishery)	
1.Petrol*& Oil (TShs 2,800 x 30 litres) & oil	84,000
2.Food (3 crew)	6,000
3. Batteries, knife & other ancillary costs	5,000
Total (B)	95,000 (US\$67)

Source: (Field study: 2009-2011); *includes petrol for patrol boat

Table 7.6b: Overview of investment costs in a motorized Daga fishery

A: Estimated costs per Fishing Unit (21 days)	TShs (1US\$=TShs 1,500)
1.Fishing boat (hard wood but much capacity)	3,500,000
2.One seine net (11 panels)	540,000
3.Outboard engine (9.9 or 15 HP)	4,200,000
4.Boyers (500 x200)	100,000
5.Thread of 6mm, 8mm, 10mm (TShs 30,000+38,000+40,000)	108,000
6.Six pressure lumps (@ TShs.50,000=350,000+four stand (TShs.8,000) + accessories 20 dz @ TShs 1,000=TShs 20,000	378,000
7.Life jackets (4 crew x 30,000) + plastic sheet (5 m) TShs 10,000	130,000
8.Six rolls of thread (Shs 6,000)+2 plastic gallons (Shs 20,000)+ 2 plugs (Shs 20,000)+2 <i>dongos</i> (TShs 1,000)+ needles (Shs 1,000)	48,000
9. Long pole ¹³⁶ (TShs 10,000)+blanket ¹³⁷ (TShs 6,000)+threat do mend the net (TShs 14,000)+spotlight TShs 50,000+ spade 6,000	86,000
Total (A)	9,090,000 (US\$ 6,060)
B: Estimated variable costs per Fishing Unit (in 21 days) (Daga fishery)	
1.Petrol (380 ¹³⁸ litres x TShs 2,800)=Sh1,064,000 + oil (Sh 50,000)	53,047
2. Kerosene (150 litres) in 21 days	50,000
3.Food - 4 crew: (6 bucket cassava flour TShs 95,000)+maize flour Shs 7,000)=TShs 165,000/21 days	7,857
4. Battery (TShs 3,000) + needle 1 pckt (TSh 1,000) + pump (TShs 1000)	5,000
Total (B)	115,904 (US\$ 77)

*include petrol for patrol boat

Source: Field study (2009-2011);

¹³⁶ Locally it is called *mwalimu* used to adjust pressure lamps

¹³⁷ Function like fire extinguisher

¹³⁸ In maximum of 21 days (lunar cycle)

Table 7.6c: Overview of investment costs in Nile Perch long line fishery

A: Estimated costs per Fishing Unit	Motorized	Non-motorized
	TShs (1 US\$ = TShs 1,500)	
1.Fishing boat (paddle range: 500,000-1million)	3,000,000	800,000
2.Outboard engine	4,200,000	NA
3.Hooks (motorized 1500-2000); paddled (600-800)	40,000	8,000
4.Anchor and twine (10mm)+ tin of paint	350,000	350,000
5.Plastic sheet, bucket for bait, twine, basket for hooks, flip-flop	160,000	80,000
6.Life jackets (4 crew motorized)	120,000	NA
7.Sail (cotton material, black plastic sheets ¹³⁹)	NA	50,000
8. Peddles: (4 crew x 30,000); (5 crew x 30,000);	120,000	150,000
Total (A)	7,990,000 (US\$5,327)	1,438,000 (US\$ 959)

B: Estimated variable costs per Fishing Unit	Trip (3-4 days)	Per trip (hours)
1. Fuel: (80 litres for 3 days x2,800)	224,000	NA
2. Hook mounters and polythene bags	35,000	20,000
3. Bait (25,000 pcs motorized); 700 pcs paddled	375,000	105,000
4. Food (3-4 days motorized); (1 day paddled)	50,000	6,000
Total (B)	684,000 (US\$ 456)	131,000 (US\$ 87)

Source: Field study (2009-2011)

Table 7. 6d: Overview of investment costs in NP beach seine fishery

Type of cost	Big size		Medium size		Small size	
	Min	Max	Min	Max	Min	Max
A:Estimated costs per boat	(1US\$=TShs 1,500)		(1US\$=TShs 1,500)		(1US\$=TShs 1,500)	
Beach seine	1,500,000	3,000,000	800,000	1,200,00	450,000	600,000
Paddle boat	500,000	500,000	500,000	500,000	400,000	400,000
Boyars	120,000	210,000	200,000	200,000	100,000	120,000
Peddles	90,000	90,000	90,000	90,000	90,000	90,000
Total (A)	2,210,000	3,800,000	1,590,000	1,990,000	1,040,000	1,210,000
	US\$ 1,473	US\$ 2,533	US\$ 1,060	US\$ 1,327	US\$ 693	US\$ 807

B:Estimated variable costs per day/ boat						
Crew food	15,000	20,000	8,000	15,000	6,000	10,000
Security ¹⁴⁰	500	500	500	500	500	500
Cook ¹⁴¹	1,000	1,000	1,000	1,000	1,000	1,000
Total (B)	16,500	21,500	9,500	16,500	7,500	11,500
	US\$ 11	US\$ 14	US\$ 6	US\$ 11	US\$ 5	US\$ 8

Source: (Field study: 2009-2011); *includes petrol for patrol boat

¹³⁹ Small both pointed boats use plastic sheet while big boat use piece of cloth

¹⁴⁰ Against seizure by government agencies

¹⁴¹ In beach seine cook is paid daily

Appendix 8: Glossary of Kerewe, Jita, Luo, Zinza, Sukuma Kiswahili terms used in this study.

All words in the left hand column are from the above ethnic groups in LV, Tanzania unless otherwise stated. Those in Kiswahili will be noted as ('Kisw.'). Latin names for fish species are derived from Graham (1929) and Witte and van Densen (1995).

<i>Athumani</i>	Literally, it is an Islamic name for males. In this study, it is a big ship which travels on the lake at night. Fishing ethnic groups believe that the ship is a ghost with has two colours. If it is seen in red it is a bad luck and they will get low catches while blue colour is a good luck (high catches).
<i>Babu; Mababu</i> (pl) (Kisw.)	Grandfather (an old man); ancestors'.
<i>Balozi</i> (Kisw.)	A ten cell leader, headman/woman at the first government administration level in Tanzania. In recent years, it is losing its prominence and taken over by hamlet or sub-village (<i>kitongoji</i>). <i>Balozi</i> can also mean ambassador.
<i>Balunshi</i>	Is a person who is assisting <i>Ntwale</i> (the one who is assisting <i>Ntemi</i> or Chief)
<i>Boma</i> (Kisw.)	A domain, a widely used Masai ethnic term, used to refer to homestead.
<i>Bangi</i> (Kisw.)	Marijuana
<i>Bibi</i> (Kisw.)	Grand mother
<i>Bhugika</i>	A traditional dance for Sukuma
<i>Bhugalu</i>	A traditional dance for Sukuma
<i>Bugobogobo</i>	A traditional dance for Sukuma
<i>Buzwilili</i>	A traditional dance for Sukuma
<i>Chai</i> (Kisw.)	Literally it is drinking tea. In this study it has two meaning: incentive given to crew or a bribe
<i>Chagulaga</i>	A Sukuma way of seducing a lady - which is still the case in rural communities.
<i>Chinga ; Wa-machinga</i> (pl.)	A famous name in Tanzania for a hawker and itinerant trader. It originates from a village called Nchinga in Lindi (Southern part of Tanzania) where young males migrated to Dar Es Salaam City for hawking in search of a better life. Eventually all street hawkers are labelled as <i>wamachinga</i> . Today, <i>wamachinga</i> are part of a well-known informal sector and have gained prominence even in Tanzania's fishing industry. In this context, a <i>chinga</i> is either a male or a female fish trader.
<i>Combat or vibora</i>	A nickname for dotted <i>Clarias spp.</i>
<i>Dagaa</i> (Kisw.)	<i>Rastrineobola argentea</i> is a silvery zooplanktivorous cyprinid, a small sardine-like fish. It is known as 'Dagaa'

<i>Daladala</i> (Kisw.)	in Tanzania, 'Omena' in Kenya, and 'Mukene' in Uganda. Literally, public minivans that come and go along the busy streets. In this study, a smaller beach seines which can be rapidly set, hauled, catch emptied, and the net set once again
<i>Ebyai or ebigoye</i>	Grassland found in Eastern part of the LV in Tanzania (Kagera) used for roofing and making fishing twine
<i>ekinswi</i>	Grassland found in Eastern part of the LV in Tanzania (Kagera) used for roofing and fishing twine
<i>Furu</i>	Any fish of the <i>Haplochromis</i> spp.
<i>Gogogo</i>	<i>Synodontis</i> spp.
<i>Hongwe or Mboju</i>	<i>Bagrus</i> spp.
<i>Jakubumba</i>	A nickname for <i>Clarias</i> spp. without dots
<i>Kamanda</i> (Kisw.)	Literally it means commander. Someone with authority.
<i>Kamongo</i>	Lung fish, <i>Protopterus Aethiopicus</i>
<i>Kayabo</i>	Sun-dried and salted Nile Perch
<i>Kibarua</i> (Kisw.)	Laborers or day worker
<i>Kiferezi</i>	Increased water turbidity which results to fish kills
<i>Kikolakole</i>	Indigenous tree - <i>Ricinuscommunis</i> spp. Its twine is used to make beach seine ropes and other household use by Haya ethnic group.
<i>Kokolo la Sangara</i>	Beach seine net for catching Nile Perch
<i>Kokolo la Daga</i> (Kisw.)	A beach seine using mosquito nets (6-10mm) used to capture Daga. Others (smaller in mesh and size) are used to catch bait fish (<i>Haplos</i> and <i>Mumi</i>) in fish breeding areas.
<i>Koo</i> (Kisw.)	Clan; Kinship
<i>Kuber or Khaini</i>	An addictive, intoxicating drug sold under the brand name 'Kuber' also known as Khaini. It is a smokeless chewing tobacco which is very popular in India. In this study crewmembers chew during leisure time.
<i>Kutegeruka/mtegeruko</i>	End of fishing session/crew shift in a camp
<i>Kuturujiwa</i>	Literally, ostracization or exclusion in which an offender does not get any support from his/her community
' <i>Kwenye miti hakuna wajenzi</i> ' (Kisw.)	A swahili saying, 'Where there are trees, there are no builders'. In this context, the Zinza meant, they are there but not fishers (especially after commoditization).
<i>Kwetu</i>	Our place
<i>Lambo; Malambo</i> (pl.)	Tilled land in form of ponds for preserving water, usually rain water. In lake zone, community uses them for watering cattle and other domestic use.
<i>Luganda</i>	A farming system in Sukuma whereby peer groups or different household members join together and farm communally.
<i>Lugoga</i>	Algae blooms. The lake water becomes greenish. In fishing it becomes harder for Nile Perch to see the bait.
<i>Luswigilo</i>	A river line traditional trap made by strong wooden sticks

	mostly used by Sukuma ethnic members.
<i>Lutego</i>	A cast used by Zinza against a thief and can cause death, create hardship, loss of job, unhappy life and psychological problems. Only gifted elders could do such punishment after consultation with other clan elders. But <i>Lutego</i> is a discerning. If the spell is cast against someone wrongly accused, then the spell caster and his/her clan will die.
<i>Malehe or hangachalo</i>	A special tree in Sukuma society which is used to provide courage to perform various economic duties e.g. cattle keeping. Sukuma use the tree to be 'cleared' by ancestors to perform a certain economic and social activity.
<i>Mmasa; wamasai (pl.) (Kisw.)</i>	A pastrolist ethnic group from eastern part of Tanzania (Arusha).
<i>Mshavu ya kokolo (Kisw.)</i>	Beach seine wings
<i>Mbalamwezi (Kisw.)</i>	Moon
<i>Mchoji; wachoji (pl.)</i>	Beach seine haulers or pullers
<i>Mbete or Domodomo</i>	A Mormyrid <i>spp.</i>
<i>Meja (Kisw.)</i>	Literally is major, a name from the military rank. In this study a beach seine supervisor is called 'a <i>major</i> '.
<i>Mgambo (Kisw.)</i>	Ward and village based militia under the village government's peace and security sub-committees in Tanzania.
<i>Mgongo wazi (Kisw.)</i>	Kenyan swahili jargon for NP skeleton.
<i>Migomba ya ndizi (Kisw.)</i>	Stalks of plantain
<i>Mgonzo; Migonzo (pl.)</i>	Long line fishing gear for catching Nile Perch
<i>Mwiko; miiko (pl.)</i>	Taboo(s) and belief(s)
<i>Mmiliki wa kokolo (Kisw.)</i>	Beach seine owner
<i>Mzimu; Mizimu (pl.) (Kisw.)</i>	Ancestral spirit(s)
<i>Mjenzi ; Wajenzi (pl.) (Kisw.)</i>	Builder; builders
<i>Mjeshi; Wajeshi (pl.)</i>	Literally it means soldier; soldiers. In this thesis is means crewmember who go out fishing. The name was invented in early 2004 in the Tanzanian part of the lake.
<i>Mkombozi (Kisw.)</i>	Savior
<i>Mkokozi ; Wakokozi (pl.)</i>	Beach seine hauler(s) or puller(s)
<i>Mkurugenzi; Wakurugenzi (pl.) (Kisw.)</i>	The leader(s). In this study it is ancestral spirit.
<i>Msimbe; wasimbe (pl.)</i>	Divorced or unmarried woman; and may have children.
<i>Mtemi (Kisw.)</i>	A chief in most ethnic groups in Tanzania.
<i>Mti; Miti (pl.)</i>	Tree; trees.
<i>Mtwale; Batwale (pl.)</i>	Someone who is assisting chief (<i>Mtemi</i>) in Sukuma chiefdom.
<i>Mumi</i>	Cat fish, <i>Clarias spp.</i>

<i>Mugika and Ngalu</i>	The fans of Sukuma traditional dance <i>Bhugalu</i> are known as ' <i>ngalu</i> ' while <i>bhugika</i> are ' <i>mugika</i> '. They compete as in football matches (' <i>ngalu</i> vs <i>mugikas</i> ').
<i>Muvi nyota</i> (Kisw.)	Skillful crewman who is nicknamed as 'star'.
<i>Mzee</i> (Kisw.)	An old man, can also be a term for respect to a man
<i>Ndagu</i>	Sukuma magic for wealth and even killing (evil traditional medicine) which is associated with 'banned acts' of which the believer should follow. It is performed by traditional healers and witchdoctors.
<i>Nembe</i>	A fish, <i>Schilbe</i> .
<i>Nfumu; Bafumu</i> (pl.)	People gifted with healing power (traditional healers).
<i>Ngoma</i> (Kisw.)	Traditional dance.
<i>Ningu</i>	A fish, <i>Labeo spp.</i>
<i>Nisaidie, nimekwama</i>	I need your help, I am stuck.
<i>Nkhomezi</i>	Type of wind, not in favor of Dagaa and long line fishery.
<i>Ntemi ; Batemi</i> (pl.)	A chief in Sukuma
<i>Nyama choma</i> (Kisw.)	Literally 'burned meat' - meat roasted on a fire.
<i>Nyamrerwa</i>	Each boat is believed to have its own priest - <i>nyamrerwa</i> in Luo society.
<i>Nyasi-yie</i>	The launching of the boat ceremony. The boat is regarded like a married daughter coming home in Luo society.
<i>Nyota za ndimira</i>	Stars used to determine 'annual fishing calendar' by traditional fishers. With commercialization, however, the calendar is obsolete.
<i>Nyumba ndogo</i> (Kisw.)	Literally, is a small home. In this context it is a household where men spend and sleep with their female sexual partners other than their wives or girlfriends.
<i>Nzenzo</i>	A conceptual nucleus around which Sukuma culture, tradition and society revolves. It accounts for both livelihoods and for social formations and structures.
<i>'O-msambwa'</i> ,	'An adoring place, a camping place, a living place.
<i>Omubugo</i>	A totality of Zinza clan spirits, souls and ghosts, which is worshipped at a sacred site located within the clan's land.
<i>Riso</i>	Indigenous tree - <i>Ficus spp.</i> Its twine is used to make beach seine fishing ropes and for other household use.
<i>Sangara</i>	The ceremony that takes place before the launching of a boat in Luo society.
<i>Sato</i>	Nile Perch
<i>Siaga</i>	Originally specific to one of the two indigenous Tilapia to Lake Victoria, <i>Oreochromis esculenta</i> ; now, normally a generic term for all Tilapia <i>spp.</i>
<i>Soke</i>	Type of wind, not in favor of Dagaa and long line fishery
<i>Sungusungu</i> (Kisw.)	A dangerous water tornados, accompanied by violent weather.
	Literally it refers to a species of large black biting ants. In

	this study it is vigilante groups formed in early 1980s, by Sukuma and Nyamwezi ethnic groups in an effort to control the theft of their cattle.
<i>Viwanda vya wazawa</i> (Kisw.)	The natives' factories. In this context fish cold storage managed by Tanzanians by origin.
<i>Viwanda vya uwani</i> (Kisw.)	Back-yard factories. In this context it means, unauthorized factories.
<i>Kitongoji; vitongoji</i> (pl.) (Kisw.)	Harmlets or sub-village.
<i>Mdau; wadau</i> (pl.) (Kisw.)	Stakeholders/ actors.
<i>Mdhamini; wadhanini</i> (pl.) (Kisw.)	Guarantor(s); financier(s).
<i>Wakati wa giza</i> (Kisw.)	During moonless – fishing season for Dagaa.
<i>Wakati wa mbalamwezi</i> (Kisw.)	During full moon – off season for Dagaa.
<i>Mlanguzi; walanguzi</i> (pl.) (Kisw.)	Wholesale traders who buy large quantity of commodities at low price and sell at high prices in another market. In this study, fish traders.
<i>Wapenda maendeleo</i> (Kisw.)	Funny of development
<i>Muwezes haji; wawezeshaji</i> (pl.) (Kisw.)	Enabler(s) or guarantor(s)
<i>Mtoto; watoto</i> (pl.) (Kisw.)	Child; children
<i>Watu wa kuja</i> (Kisw.)	migrants or outsiders
<i>Wavuta bangi</i> (Kisw.)	Marijuana smokers
<i>Mzungu; wazungu</i> (pl.) (Kisw.)	European(s).
<i>Wigashe</i>	Type of traditional dance for Sukuma
<i>Tajiri</i>	Literally it means rich person. In this study is the owner of fishing camp.
<i>Tega laza</i> (Kisw.)	Setting long lines at night during the full moon when hungry fish are able to see the baitfish and hauled in the morning. Fishing is conducted in deeper (dry and wet season) and shallow waters – wet season.
<i>Tega zibua</i> (Kisw.)	Setting long line during the day or night but close to the shore (mainly during wet season). Also done in deeper waters by commercial camp owners.
<i>Tulibahamo</i>	Death is not localized.
<i>Tirubuuza</i>	Death does not ask who should be taken.
<i>Tirunganyila</i>	Seeking God's protection against death.
<i>Tirutoza</i>	Death does not select a peer group.
<i>Tirwirukwa</i>	You cannot run away from death.
<i>'Uovu wa kuwezes hwa'</i> (Kisw.)	Fishing arrangement which is supported by enablers/financiers (mainly fish buyers).
<i>Ugali</i> (Kisw.)	A stiff porridge made from maize flour often mixed with cassava flour.

Ujamaa (Kisw.)

A social and economic system characterized by [social ownership](#) of the [means of production](#) and co-operative management of the economy (e.g. 'villagization' settlement scheme).

Zindiko (Kisw.)

Traditional rites.

Summary

The central argument of the thesis is that, the global market for exotic species, notably the Nile Perch (*Lates niloticus*), which were introduced to the Lake in the 1950s to more efficiently exploit the Lake's fish resources, is a significant driver of change in Lake Victoria's fisheries. The incorporation of the Lake's resources into the global market dramatically transformed Lake Victoria's fishery landscape. It contributed to the reorientation of a barter and local market oriented economy to one that is increasingly shaped by global market demands for Nile Perch and even indigenous species like Dagaa (*Rastrineobola argentea*) and *Haplochromines* spp. (Haplos). The combination of global and local forces has produced a very specific site of struggle between actors, in their attempts to reap the benefits of the biological and social resources of the lake and to exploit the opportunities created especially when it was discovered that Nile Perch is a sought-after fish which thrives in Lake Victoria. In addition, while it may seem that 'local' fish species escaped all these transformations, Dagaa fishing and trading strategies have been transformed in similar ways. Nile Perch and Dagaa do, thus, not simply co-exist biologically but their fishing practices and market organisations are similarly organised. The social arena emerging from these processes has been transformed dramatically. New sets and categories of social actors (often foreign owners of Nile Perch Export Processing Factories [EPFs], commercial fishers, middlemen, fish handlers and Beach Management Units) have entered the arena and now interact, collaborate and compete with those that historically used the lake for their livelihood (e.g. fishers and their families, community members and local traders).

A striking emergent property is the development of a rather aggressive form of entrepreneurship that has gradually remodelled the socio-technical organisation of fishing, through the introduction of motorised fishing and multi-panelled nets, but has also remoulded the fishing camps into large and small fishing empires. This entrepreneurship gradually established a system of control over resources to the benefit of the centralized organizer that controls access to the resource and the resource itself. This includes controlling fishers, their fishing methods, and fish handlers and the disciplining of camp labourers. This system of control extends from centralized to isolated locales, on islands and mainland landing sites, reconfiguring existing networks and creating new forms of dependency through market access and credit provision.

The entrepreneurs have managed to manipulate and circumvent recent policy initiatives designed to govern the Lake's fish resources and to achieve quality standards. Resource access, and fishing and trading arrangements are vested in large groups in the local, regional and export market channels. This has made the Lake Victoria landscape a hybrid one, influenced and shaped by complex interactions between the Lake's many peoples, and their interactions with the outside world. This

landscape defies reduction to a simple reproducible form because of its multiple hybridity: it is made (and constantly remade) through the entanglement and interaction of the social and the natural, the human and the non-human, the rural and the non-rural, and the local and the global.

The formation of the camp empire is foremost about controlling people and their relationship to fisheries resources. In and through camps, people are fettered and governed, and their relationship to the resource is shaped and defined by their relationships with markets (e.g. Export Processing Factories and Commercial Dagaa Traders). This control is exercised in several strategic ways with a variety of means. Money, authority and power, camp leadership structure, byelaws, divisions of labour, time management and monitoring to control people and their daily activities are the ways in which control is exercised and simultaneously made manifest. All or most of the control mechanisms and practices are embedded in and sanctioned by violence exerted by *matajiri* and camp supervisors.

The system of patronage that has evolved between EPFs, CDTs and their dependents such as fish handlers, *matajiri* and crew in Lake Victoria is about including and excluding actors within particular geographical boundaries and networks, and is about controlling what people do and their access to the resource within and beyond these boundaries and networks. Central to this system of patronage relations is a specific form of governance of control and appropriation. It unfolds as a specific mode of ordering, which often require a far-reaching re-ordering of the social and the natural. Van der Ploeg (2008:233) associates such trends with an increased mobility of enlarged flows of capital throughout the globe. This pattern is well reflected in how the fishery is organized on Lake Victoria.

The markets have created a diversity of transactions and distribution networks thereby enabling a deepening of commoditisation processes generally and more specifically a further expansion of markets. These markets are voracious markets whose demand appears difficult to satisfy. The thesis has also brought to the fore that we need to go beyond consumer demand only. The market for capital and labour play a significant role in the specific way as commoditization of Lake Victoria's fish resources takes place. The system of patronage that holds the export tier together is partly embedded in the control of EPF's over labour and capital. This is feasible because fishing on Lake Victoria is impossible without engaging in unequal power relationships with financiers like the EPF's. In so doing, *matajiri*, agents of EPFs, camp labourers and the government have become included in EPF network goals – rather than their individual/national goals - because ownership of the resources, actions and processes are vested in larger networks of EPFs– a typical power-driven and dependent relation.

The thesis argues that those social actors and their fishery practices that have a long historical record of occupying the Lake's social and ecological space position

themselves differently and are increasingly excluded. They practise contrasting discourses of development. Thus, despite the fact that the globalisation of Lake Vitoria's resources has increased the competition for these resources amongst the different social actors, globalisation does not completely shape local development processes. The local is not simply a deviation from the global and its political economic fabric: the local rather emerges as a social space with a locally, historically and culturally specific dynamic, which at times co-exists with global dynamics. They also mutually transform one another with multiple realities and practices, rather than one reality and practice, characterise Lake Vitoria's social and ecological perspectives.

The thesis is organized in nine chapters. Chapter 2 gives a detailed account of the historical background of Lake Victoria fisheries. It looks at the role of Lake Victoria's fisheries in the country's economy, fish production trends, processing, marketing, the position of fish in the country's food policy, management and regulatory issues and the current management effort enforced from global, regional and local processes. Chapter 3 shows how the modern and traditional cultural repertoires continue to co-exist. It explores the local dimensions of fishing with a view to analysing how the local operates as a social space in which practices and processes take place that make fishing more than only shaped by and responding to global processes. Chapter 4 and Chapter 5 provide a descriptive analysis of Nile Perch and *Dagaa* fisheries. They show how they are organised, and why the two fisheries are organized the way they are. Chapter 6 provides an opportunity to understand the interaction of social networks and markets in a globalized fishery through the exploitation of labour as part of the investment input.

Chapter 7 shows the power of fish markets and credit markets and how they shape the organization of Lake Victoria fisheries. It also reveals counter tendencies and various types of opposition reflected in various types of discourses. Chapter 8 shows how the Tanzanian government is trying to govern the Lake Victoria fisheries on paper versus on-the-ground realities. It stresses that governance in Lake Victoria fisheries is not a linear process and is not generated by the state. The state cannot produce meaningful outcomes. It shows how money coordinates actions through market mechanisms. Chapter 9 concludes and summarizes the outcomes of the combined chapters to create a synthesis at empirical and theoretical level. It contributes to academic and societal policy, has practical relevance and makes future research and policy recommendations.

Summary in Swahili

DHANA KUU YA KITABU HIKI KWA KIFUPI KATIKA LUGHA YA KISWAHILI

Dhana kuu ya kitabu hiki ni juu ya samaki aina ya Sangara ambaye alipandikizwa katika Ziwa Victoria mnamo mwaka 1950. Sangara amekuwa ni chimbuko la mabadiliko mengi katika Ziwa Victoria. Kitabu hiki kinazungumzia soko ka Sangara na Dagaa (*Rastrineobola argentea*) na jinsi yalivyo na nguvu za kumiliki rasilimali za uvuvi, mitaji, makambi ya uvuvi na wafanyakazi wake kwa kutumia mitaji, nyenzo na mitandao yenye nguvu inayosimamia utekelezaji wa matakwa ya wawekezaji na wafanyabiashara wa samaki wenye nguvu katika sekta hii. Kuwepo kwa masoko ya ndani ya nchi, nchi jirani na Ulaya kumesababisha shughuli za samaki kuwa na ushindani mkubwa.

Jamii na wavuvi asilia kama wajita, wakerewe na wazinza ambao walizoea kutumia ziwa kwa shughuli mbali mbali ikiwemo kuvua samaki kwa ajili ya chakula wamepoteza mwelekeo na hawajui wafanye nini kwani hawawezi kushindana na wamiliki wa makambi na wafanyabiashara wakubwa. Wazee katika jamii asilia wamekata tamaa. Mila na desturi zao zimepotoshwa kwani vijana wao ambao wanamiliki vyombo vya uvuvi wameingia katika rushwa, udanganyifu, wizi, dhuluma na ukandamizaji kwa wale wanaowafanyia kazi katika mitumbwi (wajeshi).

Ushindani katika uvuvi na ufanyaji biashara katika sekta ya uvuvi umedhoofisha jamii kwani chombo kilichoanzishwa ili kutetea maslahi ya jamii ya kando ya ziwa (Beach Management Units – BMU) ili kuhakikisha inafaidika hakina nguvu. Dhana ya kuanzisha BMU ili kutetea maslahi ya jamii imepotoshwa. BMU zinafanya kazi za idara ya uvuvi kwa kuambiwa nini wafanye na nini wasifanye na si kwa matakwa ya jamii. Rushwa na hofu kwa watendaji wa serikali kuzipa mamlaka na madaraka BMU ni kikwazo kikubwa.

Jambo jingine ni kwamba uvuvi umekuwa wa ‘kuwezesha’ na ‘kudhaminiwa’. Matajiri wanaomiliki makambi makubwa ya uvuvi hukopeshwa petroli, nyavu, mafuta ya taa, barafu, injini, boti za kusafirishia samaki, mitumbwi ya kuvulia na pesa za kuendesha makambi. Uwezeshwaji huu unafanywa na wenye viwanda vya usindikaji minofu ya Sangara na wauzaji wakubwa wa tani za Dagaa wa ndani na nje ya nchi. Mitandao ya uzalishaji, ukusanyaji na usafirishaji wa Sangara na Dagaa inadhibiti kazi hizi kwa ustadi mkubwa. Hali hii imesababisa ubabe, ukandamizaji na uonevu. Mitandao imesambaa katika vijiji na visiwa vyote katika Ziwa Victoria na kuhakikisha bei za Sangara na Dagaa zinadhibitiwa ili kupata faida.

Kutokana na uwezo wa ‘wawezeshaji’ kifedha, kinyenzo na kimtandao, wamekuwa na ushawishi mkubwa katika kubadili sera na taratibu katika sekta ya uvuvi kulingana na matakwa yao. Kwa ujumla mfumo uliopo unasababisha wamiliki wa makambi (matajiri) na wafanyakazi wao kudhibitiwa kimwili, kiakili na kiutendaji. Kwa kupitia mitandao, wamiliki wa viwanda wanaelekeza gharama za ukusanyaji na ununuzi wa samaki kwa matajiri na maajenti wakati huo huo matajiri wanaelekeza gharama hizo kwa wajeshi, waanika Dagua, wapishi na vibarua katika kambi za uvuvi kitendo kinachodhihirisha ukandamizaji. Ingawa baadhi ya wavuvi wamefaidika, wengi wanakiri maisha yao yamebadilishwa na wengine wamekata tamaa na kuiona ajira katika kambi za uvuvi ni kama utumwa na ufungwa.

Badiliko jingine kuu katika sekta ya uvuvi ni kuenea kwa mbinu na mikakati ya uvuvi na ufanyaji wa biashara ya samaki ulioanza katika uvuvi wa Sangara katika aina zote za uvuvi na hasa wa Dagua. Baadhi ya mbinu hizo ni umiliki wa makambi makubwa, utoaji wa mikopo, kupanga na kudhibiti bei ya kununua na kuuza Sangara na Dagua, kuwa na mitandao yenye nguvu na uundaji wa sheria kali katika kambi za uvuvi ili kudhibiti wafanyakazi, kuzuia wizi na kuongeza uzalishaji.

Kitabu hiki kina sehemu kuu tisa (9). Sehemu ya kwanza inatoa dhana na msimamo wa kile kinachozungumziwa. Sehemu ya pili inaongelea juu ya hali halisi ya mabadiliko makubwa yaliyotokea katika Ziwa Victoria, uvuvi, viwanda, masoko na sera mbalimbali za uvuvi. Sehemu ya tatu ni juu ya mabadiliko yaliyotokea katika jamii ya uvuvi, mila na desturi na hasa katika shughuli za uvuvi. Sehemu ya nne na ya tano ni jinsi uvuvi wa Sangara na wa Dagua unavyofanyika. Sehemu ya sita kinazungumzia maisha ya wajeshi na mahusiano yao na matajiri. Sehemu ya saba ni juu ya uwekezaji wa matajiri (wenye kambi za uvuvi) na mahusiano yao katika shughuli za uvuvi na mauzo ya samaki na wafadhili au wawezeshaji wao. Sehemu ya nane ni masuala ya mifumo iliyopo na utawala bora na vipi soko la samaki limegeuka kuwa ndio dira ya mabadiliko na hata utungaji wa sera, sheria na kanuni katika sekta ya uvuvi Tanzania. Sehemu ya tisa ni majumuisho.

Samenvatting

EEN SOCIALE ANALYSE VAN BETWISTE VISSERIJ ACTIVITIETEN ROND HET VICTORIAMEER IN TANZANIA

Het centrale argument van dit proefschrift is dat de wereldmarkt voor vis, met name die voor de Victoria baars, die in de 50-er jaren werd geïntroduceerd om de productiviteit van de visserij te verhogen, een belangrijke motor voor verandering is in de organisatie van de visserij in het Victoriameer. De opname van de voorraden vis in het meer in de wereldmarkt heeft de visserij dramatisch veranderd. Deze droeg bij aan een heroriëntatie van een economie die op ruil en lokale markten was gericht, naar een economie die gedreven wordt door de mondiale vraag naar Victoria baars en zelfs van inheemse vissoorten zoals Dagaa (*Rastrineobola argentea*) en Haplos (*Haplochromines spp.*). The combinatie van mondiale en lokale krachten hielp mee een specifieke arena voor de strijd tussen de diverse actoren die participeren in de visserij vorm te geven, die pogen te profiteren van de biologische en sociale hulpbronnen van het meer en gebruik te maken van de mogelijkheden die beschikbaar kwamen toen werd ontdekt dat er een grote vraag was naar Victoria baars, die het erg goed deed in het Victoria meer. Daar bovenop, hoewel het leek alsof de visserij van 'inheemse' vissoorten aan deze veranderingen zou ontsnappen, zijn de strategieën om naar Dagaa te vissen en die te verhandelen op vergelijkbare wijze veranderd. Victoria baars en Dagaa bevolken dus niet alleen samen het Victoria meer, maar hebben ook vergelijkbare wijze van organisatie van de visserij en de handel. De sociale arena die is ontstaan uit deze transformaties onderging dramatische veranderingen. Nieuwe categorieën van sociale actoren (vaak buitenlandse eigenaren van visverwerkende exportbedrijven (EPFs), commerciële vissers, tussenhandelaren, visverwerkers en lokale comités voor het beheer van de visserij zijn deel geworden van deze arena, en interacteren, werken samen, maar zijn ook in een strijd gewikkeld met degenen die historisch gezien het meer exploiteerden om in hun levensonderhoud te voorzien (vissers, en hun families, leden van lokale gemeenschappen en lokale handelaren)

Een opvallend opkomend fenomeen is de ontwikkeling van een nogal agressieve vorm van ondernemerschap, die langzamerhand de socio-technische organisatie van de visserij heeft geremodelleerd, via de introductie van boten met krachtige motoren en netten met meer panelen, en de transformatie van kleine visserskampen in kleine en grote visserij territoria. Dit ondernemerschap heeft langzamerhand een systeem van control over de aanwezige hulpbronnen ontwikkeld die in het voordeel is van centrale organisatoren, die de toegang tot de hulpbron en de hulpbron zelf controleren. Dit houdt in controle over de vissers, de wijze van visserij, de visverwerkers en de disciplineren van arbeiders in de visserijkampen. Dit systeem van controle strekt zich uit van centrale naar geïsoleerde aanlandingsplaatsen op

eilanden en kampen op het vasteland. Hierdoor worden bestaande netwerken opnieuw geconfigureerd en nieuwe vormen van afhankelijkheid gecreëerd door de toegang tot de markt en krediet te controleren.

Deze nieuwe ondernemers zijn er ook in geslaagd om nieuwe beleidsinitiatieven voor het beheer van de visserij en het bereiken van kwaliteitsnormen te manipuleren en te omzeilen. De toegang tot vis en de organisatie van de visserij en de handel. Dit maakt dat het landschap van een hybride vorm heeft gekregen dat wordt beïnvloedt door complexe interacties tussen de vele bevolkingsgroepen rond het meer en hun interacties met de buitenwereld. Dit sociale en ecologische landschap kan niet gereduceerd worden tot één enkele vorm van organisatie vanwege de veelvormige hybriditeit: dit landschap wordt geproduceerd (en opnieuw vorm gegeven) via de vervlechting en interactie tussen het sociale en het ecologische, het menselijke en het materiële, het rurale en het urbane, en het lokale versus het mondiale.

De vorming van visserskampen als koninkrijkjes draait om het verkrijgen van controle over mensen en hun relatie tot de hulpbronnen van het meer in de vorm van vis. In en rondom de kampen worden mensen gebonden en bestuurd door hun relaties met de markten (bijvoorbeeld via de visverwerkende industrie voor Victoria baars en grote handelaren in Dagaa). Deze controle wordt uitgeoefend via verschillende zorgvuldige bedachte strategieën en hulpmiddelen. Geld, autoriteit en macht, de hiërarchische structuur van de kampen, statuten, arbeidsverdeling en controlesystemen over de tijdsbesteding van mensen en de aard van hun dagelijkse activiteiten vormen de wijze waarop mensen gecontroleerd worden en zichtbaar gemaakt wordt. Alle of de meeste controlemechanismen en -praktijken zijn ingebed en worden gesanctioneerd door geweld uitgeoefend door de kampeigenaren (*matajiri*) en hun gedelegeerde supervisors.

Dit systeem van patronage dat zich ontwikkeld heeft tussen visverwerkende industrieën, handelaren in Dagaa en hun gedelegeerden zoals tussenpersonen, *matajiri*, en bemanningen berust op relaties van in- en uitsluiting binnen zekere geografische en territoriale grenzen en netwerken, en draait om de controle over mensen, wat zij doen, en hun toegang tot de hulpbron binnen en buiten deze territoriale entiteiten. Centraal in dit systeem van patronage is een specifieke vorm van beheer en bestuur (governance) en toe-eigening. Dit ontwikkelt zich als een specifieke vorm van sociale en politieke ordening, die vaak een vergaande reorganisatie van het sociale en het ecologische met zich mee brengt. Van der Ploeg (2008:233) verbindt soortgelijke ontwikkelingen aan een toenemende mobiliteit van steeds grotere stromen van kapitaal over de wereld, Dit patroon is goed herkenbaar in hoe de visserij van het Victoria meer is georganiseerd.

De markten hebben een diversiteit aan transactie- en distributienetwerken gecreëerd die verdere commercialiseringsprocessen in het algemeen en de verdere expansie

van markten in het bijzonder bevorderen. These markten zijn vraatzuchtig en hun vraag naar vis is moeilijk om te beantwoorden. Het proefschrift laat zien dat we daarin verder moeten kijken dan alleen de belangen van consumenten. De markten voor kapitaal en arbeid spelen een belangrijke rol in de wijze waarop de verdere commercialisering van de visserij zich ontwikkelt. Het systeem van patronage dat de exportsector bij elkaar houdt is gedeeltelijk ingebed in de controle van de visverwerkende exportbedrijven over arbeid en kapitaal. Dit vindt plaats vanwege het feit dat het nu onmogelijk is te vissen in het Victoria meer zonder deel uit te maken van de ongelijke machtsrelaties tussen financiers van de visserij zoals de exportbedrijven. Op deze wijze zijn de *matajiri*, de agenten van de exportbedrijven, arbeiders in de kampen en zelfs de overheid deel geworden van de netwerkdoelen van de exportbedrijven – in plaats van hun eigen individuele en nationale doelen – omdat de eigendom en controle over de hulpbronnen, handelingspraktijken en – processen onderdeel zijn geworden van de netwerken van de exportbedrijven in een relatie die door macht en afhankelijkheid wordt gedreven.

In het proefschrift wordt beargumenteerd dat sociale actoren en de visserijpraktijken die een lange geschiedenis hebben in het gebruiken van de sociale en ecologische ruimte van het Victoria meer zich anders in dit proces plaatsen en in toenemende mate worden uitgesloten. Zij formuleren andere visies en vertogen over ontwikkeling. Ondanks het feit dat de globalisering van de exploitatie van de hulpbronnen van het Victoria meer de concurrentie tussen de verschillende actoren heeft vergroot, heeft dit proces niet volledig de aard en de vorm bepaald van lokale ontwikkelingsprocessen. Het lokale wordt niet simpel gedetermineerd door het mondiale en haar politiek-economische structuur: het lokale ontwikkelt zich als een sociale ruimte met haar eigen lokale, historisch specifieke dynamiek, die bestaat naast en met deze mondiale transformatieprocessen. Zij beïnvloeden elkaar wederkerig in meervoudige realiteiten en praktijken, in plaats van dat je kunt spreken dat het Victoria meer de locatie is van een enkelvoudige ongedeelde sociale en ecologische realiteit.

Het proefschrift bestaat uit 9 hoofdstukken. Hoofdstuk bevat een algemene inleiding op het onderzoeksprobleem, theoretisch kader en onderzoeksmethodologie en methoden. Hoofdstuk 2 geeft een gedetailleerde historische achtergrond bij de visserij in het Victoria meer. Het kijkt naar de rol van de visserij in de economie van Tanzania, trends in de productie van vis, visverwerking en de vermarkting, de rol van vis in Tanzania's voedselbeleid, het beheer en de dilemma's van regelgeving en de huidige pogingen op mondiaal, nationaal en lokaal niveau om beter beheer af te dwingen. Hoofdstuk 3 laat zien hoe traditionele en moderne visserijpraktijken naast elkaar voortbestaan. Het verkent de lokale dimensies van de visserij om te analyseren hoe het lokale als een sociale ruimte functioneert en hoe lokale praktijken en processen meer zijn dan alleen gedetermineerd of een antwoord zijn op mondiale

processen van commercialisering. Hoofdstuk 4 en 5 geven een uitgebreide beschrijving en analyse van de Victoria baar en de Daga visserij. Ze laten zien hoe die zijn georganiseerd, en wat de redenen zijn voor de specifieke vorm van deze organisatie. Hoofdstuk 6 geeft inzicht in de wijze waarop sociale netwerken en markten interacteren in een gemondialiseerde visserij via de lens van een analyse van de organisatie en exploitatie van arbeid als onderdeel van de investeringen in de visserij.

Hoofdstuk 7 bevat een beschouwing van de macht van de vis- en kredietmarkten en hoe die vorm geven aan de organisatie van de visserij. Daarbij hoort ook een analyse van de tegenbewegingen en vormen van verzet die vorm krijgen in diverse vertegenwoordigers. Hoofdstuk 8 laat zien hoe de Tanzaniaanse overheid het beheer op papier probeert vorm te geven in confrontatie met de dagelijkse realiteit. Het besturen van de visserij in het Victoria meer is geen lineair proces en wordt ook niet vormgegeven door de staat. De laatste is niet bij machte grip te krijgen op de ontwikkeling van de visserij en dat geld en kapitaal de belangrijkste coördinatie-mechanismen zijn. Hoofdstuk 9 bevat de conclusie en combineert de uitkomsten van alle hoofdstukken in een aantal empirische en theoretische conclusies. Hiermee wordt een bijdrage geleverd aan het maatschappelijke en academische debat en geeft praktische relevantie aan de studie via een aantal aanbevelingen voor onderzoek en beleid.

About the Author

Modesta Medard was born in December, 1966 at Peramiho, Songea in Ruvuma Region (Tanzania). She attended Songea Girls and later joined Weruweru Girls in Moshi, Kilimanjaro for HSc. She graduated from the University of Dar Es Salaam with a Bachelor's Degree in Marketing in 1991, and thereafter obtained a Masters of Philosophy (M.Phil) in Environmental Planning and Management from Moi University, Kenya in 2002, sponsored by EU/Lake Victoria Fisheries Research Project. She has an exemplary academic career as a student, researcher and a professional innatural resources management, collaborative management (co-management) in the fisheries sector, environmental planning and management, Environmental Impact Assessments, cross-border resource management and conflict resolution, fisheries globalization, climate change adaptations, Institutional development of Lake Victoria fisheries organizations, marketing studies and eco-labeling, institutional management, rural Governance and social accountability and Gender issues.



Modesta first worked with Tanzania Fisheries Research Institute (TAFIRI) from 1991-2004 as the first social scientist in TAFIRI and the entire Fisheries sector in Tanzania. TAFIRI being an institution traditionally dominated by biologists, she worked hard to ensure the social science discipline was recognized in the fisheries sector. As a result of her dedicated effort a socio-economic department was finally created for the entire organization. In June 2004 she left TAFIRI and joined WWF Eastern Africa Marine Ecoregion Programme (EARPO, Nairobi/Dar Es Salaam), responsible for programme management and providing thematic and technical support to implementing partners and community members. She has done consultancy work with credible organizations, including WWF, LVFO/COMESA, FAO, DANIDA, SIDA and ILO, and has been extensively engaged in resource management and policy reforms and other policy dialogues related to fisheries, natural resources and rural communities at national and regional level.

Modesta has more than 20 years projects/programme management and research experience gained while at WWF and TAFIRI. Her professional contributions include working under the Project of Lakes of East Africa (PLEA), a collaborative arrangement between Michigan State University and TAFIRI (1992-1994); EU Lake Victoria Fisheries Research Project (1994-2003); Socioeconomics of Nile Perch by IUCN (2002-2004); Lake Victoria Environmental Management Project (LVEMP Phase I) (1997-2004) and WWF/EAME Programme (2004-2008).

Modesta has published a lot of articles in international journals and books and some of her work is to be found in the following books: 'African Inland Fisheries - The Management Challenges' (2002); 'Changing Tides: Gender, Fisheries and Globalization' (2005); 'Inland fisheries evolution and management. Case studies from four continents. FAO Fisheries and Aquaculture', Technical Paper No. 579 (2014) and 'Rural development and the construction of new markets (2015). She has travelled extensively around the Great Lakes region (Africa) and globally to contribute to scientific debates and conferences. Modesta received a highly competitive scholarship funded by the Netherlands Organization for Scientific

Research (WOTRO/NWO) in July 2008 to undertake Ph.D studies at Wageningen University, which she completed successfully. She now shares her achievements in this book.

Modesta Medard Ntara
Wageningen School of Social Sciences (WASS)
Completed Training and Supervision Plan



Wageningen School
of Social Sciences

Name of the learning activity	Department/Institute	Year	ECTS 1=28 hrs
A) Project related competences			
Introduction to Technology, agro-ecology and development (TAD 20804)	WUR	2008	4.0
Property Rights, Natural Resources and Conflict (LAW 31306)	WUR	2009	6.0
Writing PhD Research Proposal	WUR	2008	6.0
B) General research related competences			
Research Methodology: From topic to proposal	WASS	2008	4.0
Information Literacy PhD including Endnote Introduction	WUR Library	2008	0.6
Academic Scientific Writing	WGS	2009	0.4
C) Career related competences/personal development			
Presentation Skills	WGS	2009	1.0
Writing PhD thesis and proposition	WGS	2011	0.5
Project and Time Management	WGS	2009	1.5
'Investment Decision Drivers in Lake Victoria'	SEDEC, AFI	2008	0.6
'Identification of study objectives and measurable indicators in L. Victoria'	SEDEC, AFI	2008	0.6
'Socio-ecological reasons for selected study sites and its implications for the SEDEC project'	SEDEC, AFI	2008	0.6
'Social cultural factors and the changing LV fisheries'	SEDEC, Wageningen	2009	0.6
'Strengthening SEDEC project linkages for enhancing collaboration'	SEDEC	2009	0.6
'The social ecological drivers: Fishers investment Decision drivers'	TAFIRI	2009	0.6
'How Nile perch fishing is organised in L. Victoria, Tanzania'	Sense Symposium, Wageningen	2008	0.6
'How Nile perch and Dagua fisheries are organized in L. Victoria, Tanzania'	SEDEC, Mwanza	2010	0.6
'Investment Decision Drivers in Globalized fisheries: Markets, Governance and Livelihood Dynamics in Lake Victoria'	World Small Scale Fisheries, Bangkok	2010	0.6
'Key preliminary findings for social ecological drivers for ecosystem changes in LV, Tanzania'	'SEDEC, Wageningen	2011	0.6
'Fishers choices, motives and strategies for food security, trade and export in LV, Tanzania'	SEDEC, Tanzania	2012	0.6
'Fisheries and Globalizations: Markets and Governance in Lake Victoria, Tanzania'	WUR, Wageningen	2012	0.6
WUR MSc student Field Supervision	Tanzania	2011	1.5
Total			32.7

