

# THE DANIDA-IMLAF PROJECT

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## Newsletter



### SOKOINE UNIVERSITY OF AGRICULTURE IMLAF PROJECT



## INNOVATIONS AND MARKETS FOR LAKE VICTORIA FISHERIES

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### WORDS OF THE PI

Dear readers and stakeholders, It's a great honour to introduce our first biannual issue of the IMLAF project's newsletter to you. This issue highlights some key information on what IMLAF is; does and plans to do. It also gives summaries of what has been done so far and the way forward through our researchers, scholars and affiliates. Find also an interesting story by Mr Zebedayo Baniga in "Fun-Facts". Our upcoming issues are expected to be released every 6 months. We wish you a pleasant reading.



Yours sincerely  
**PROF ROBINSON MDEGELA**  
IMLAF Project Leader

### OVERVIEW ON IMLAF PROJECT

Innovations and Markets for Lake Victoria Fisheries (IMLAF) is a DANIDA-funded project implemented in Lake Victoria basin of Tanzania since January, 2015. The project is collaborative initiative involving Sokoine University of Agriculture (SUA), The Nelson Mandela African Institution of Science and Technology, Danish Technical University and University of Copenhagen. Other collaborative institutions include Fisheries Education and Training Agency (FETA), Tanzania Fisheries Research Institute (TAFIRI) and National Fish Quality Control Laboratory (NFQCL). At SUA, the project is among key projects hosted by the African Centre for Health of Aquatic Resources (ACHAR). The Centre hosts a number of projects related to aquatic environment research including IMLAF, TRAHESA, SAWAFO, CYNOTOX, MORATANZA, NUFU etc. under the leadership of Professor Robinson Mdegela. The IMLAF project aims at studying the small-scale fishery in the Lake Victoria basin in order to minimize constraints and catalyze socio-economic growth through expansion of markets for Nile perch and sardine quality products and employment opportunities. Postharvest losses and presence of biological, physical and chemical hazards which jeopardize the quantity, quality, safety and marketability of fish and fish products will be addressed. The project is also assessing the socioeconomic status of actors at each node of the fisheries marketing chain (from fish and sardines catch to final consumers). The project intends to transform the fishery sector in the Lake Victoria basin to a profitable business of fish and fish products through training and action research. Based on the existing business arrangements and development of the new products, business models will be developed.

## IMLAF Researchers

Prof. Robinson Mdegela (Sokoinie University of Agriculture); Fish Health and Toxicology; Risk Analysis; Overall Project Leader; Researcher and supervisor of students in WP1 Prof. Anders Dalsgaard (UC-HEALTH); Food microbiology Risk Assessment HACCP; Node Leader; Researcher and supervisor of students in WP1 Prof Anita Forslund; Food microbiology Risk Assessment HACCP; Researcher and supervisor of students in WP1 Dr. Jesper Clausen (UC-HEALTH); Food microbiology Risk Assessment HACCP; Researcher and supervisor of students in WP3 Prof. Lughano Kusiluka (NM-AIST/TZ, now at Mzumbe University); Food Microbiology, Risk Assessment; Researcher and supervisor of students in WP1 Mr. Ofred Mhongole, Sokoinie University of Agriculture); Food Microbiology; Post-doc Fellow WP1; Overall supervisor of field work and laboratory analysis at NFQCL Prof. Henry Laswai (Sokoinie University of Agriculture); Food Processing Technology; Researcher and supervisor of students in WP2 Assoc. Prof. Henrik Hauch Nielsen (DTU Food); Food Processing Technology; Researcher and supervisor of students in WP2 Assoc. Prof. Jesper Lassen (UC-SCIENCE); Fisheries economics and markets Researcher and supervisor of students in WP3 Ms. Fausta Mapunda Sokoinie University of Agriculture); Agricultural Economics; Post-doc fellow WP3.

Researcher and supervisor of students in WP2/3 Dr Faith Mabiki (Sokoinie University of Agriculture); Chemical hazards in Food; Researcher and Supervisor of students in WP2 Dr. Liliane Pasape (NM-AIST/TZ); commercialization of Innovations; Researcher and supervisor of students in WP3 Dr Modesta Ntara (TAFI-RI-TZ); Marketing, Governance and Sociology and Anthropology; Researcher and supervisor of students in WP3 Ms Eva Moshiro (Sokoine University of Agriculture); Research Assistant



**Prof. KUSILUKA**  
facilitating a discussion  
at IMLAF meeting

At the left, Prof Laswai  
during one of the  
meeting breaks



IMLAF has an important Technical & Operations personnel; Mr Zephania Sanga. He is the driver engaged by the project, responsible for students, staff and researchers movements within the project's framework.



**Mr Zephania Sanga**  
(Project's Driver)

Project Inception Meeting The IMLAF project was launched during an inception meeting that was held in Mwanza at the NFQCL on 20th and 21st January 2015. At this meeting, all key stakeholders of the project were present. Objectives and activities of the project were presented followed by a distribution of tasks to each project member. Scholarship announcements were thereafter prepared for the enrolment of the various required students.



Project's presentation  
at the inception meeting

Discussion facilitated  
by **Dr Mabiki** at the  
inception meeting



Group photo at the  
inception meeting

## IMLAF scholars

IMLAF has enrolled to date, 2 MSc, 4 PhD students and will engage 2 post-doctoral fellows in WP1 and WP3. They are introduced in this article with their mission in the project and current progress reports.



**Mr. Ofred J. Mhongole**

Mr. Mhongole is a permanent employee of Fisheries Development Division since 2001. He is currently the Head of laboratory in the Microbiology section of the National Fish Quality Control Laboratory, Nyegezi, Mwanza. Mr. Mhongole has a Bachelor's degree in Food Science and Technology from Sokoine University of Agriculture and completed his Masters of Science in Food Science at University of Iceland in 2009. He is currently finalizing his PhD studies in Public Health and Food Safety at the Sokoine University of Agriculture. He has many years of work experiences in the field of fish quality and safety. Mr. Mhongole has attended a number of Laboratory quality and competency workshops, seminars and attachments in food testing facilities. He is trained on the ISO 17025- General Requirements for the Competence of Testing and Calibration Laboratories; Quality Management-ISO 9001 series; Food Safety-ISO 22000; HACCP Principles and Codex Standards and Priorities for Development and Application on Food Safety and Quality at the National level.

After completing his PhD, Mr Mhongole will be involved in the project as a post-doctoral researcher working on “*Nile Perch Products and by-Products from Lake Victoria, Tanzania*”. His focus is quality improvement and safety assurance of sardines or “*dagaa*” (*Rastrineobola argentea*) through the processors in the Lake Victoria basin. Already, Mr Mhongole has started with site visits and preliminary data collection and analyses. He has also recorded some pilot results that are being compiled to generate scientific articles.



**Nile perch by-products (Mapanki) at the processing factory**



**Packaging salted Nile Perch chests and Fins**

Ms Fausta M. Mapunda is a Tanzanian citizen working as a Lecturer in the College of Social Science and Humanities in the Department of Policy, Planning and Management at Sokoine University of Agriculture (SUA). She holds Masters of Science in Agricultural Economics and Bachelor degree in Agricultural Economics and Agribusiness from the same University.



**Ms Fausta M. Mapunda**

Currently Ms Mapunda is finalizing her PhD in Development Economics at Wageningen University, the Netherlands. Ms Mapunda is knowledgeable in advanced econometrics quantitative techniques using STATA software and value chain analysis. She has attended a number of international professional courses including project designing, implementation, monitoring and evaluation of microfinance and agricultural marketing projects using propensity score matching and double difference estimation techniques. Moreover, Ms Mapunda has been actively engaged in research activities in a project titled Increasing employment opportunities and marketability of fish and fish products in the Lake Victoria basin through reduction of post-harvest losses' funded by DANIDA. As a Postdoc in the IMLAF project, Ms Mapunda will be actively engaged in research activities regarding domestic and international market opportunities and business models.

She will facilitate innovation platform involving all stakeholders and undertake market researches. To begin with, Ms Mapunda intends to conduct a study on the economic analysis of the consumer preference and willingness to pay: the case of Lake Victoria Nile Tilapia, Nile perch and sardines. In order to increase fish consumption and its market share, it is important to identify the main attributes which influence consumers' purchasing of fish and sardines as a mechanism to better understand consumer behaviour. Her contribution in the study is two-fold. First, she will contribute knowledge to the existing literature by comparing willingness to pay for fish and sardines from the Lake Victoria; products with different attributes, new products, products with new attributes such as sun dried products, smoked, salted and those dried through green houses. Second, the information generated will have societal and policy relevance. Ms Mapunda has finalised proposal writing and begun data collection and preliminary analyses.



**Mr. Davis N. Chaula**

Mr. Davis Chaula is currently working as a Lecturer at the Sokoine University of Agriculture (SUA). He has a Bachelor degree in Food Science and Technology from the same University and received a Master of Science in Food Technology with bias in Food processing and preservation Engineering from Ghent University in 2011. Mr. Chaula has participated in several training programmes including the Integrated Food Management: farm to fork courses in Haryana- INDIA and the One Health International Summer course in Copenhagen, Denmark. As one of the IMLAF PhD students, Mr Chaula has finalised his proposal and embarked on his studies titled: "Improved handling and processing of Lake Victoria sardines (*Rastrineobola argentea*) for nutritional quality maintenance and enhanced market value". In order to get

acquainted with practices in sardine handling and processing and to adequately design his study, Mr Chaula has visited his study sites in Mwanza. The experiences acquired through the visit were instrumental for proper planning of sampling during the study. He also got in touch with fishers, fish processors and traders at Igombe, Kayenze, Kijiweni landing sites and Kirumba fish market. So far he has made a number of observations which he will use in his PhD thesis. Mr Chaula reported that most fishers dry sardines directly on the ground. He also noticed that high proportions of women are involved in sun-drying of sardines compared to men.



**Sardine Packaging at Kirumba fish market**



**Sand drying of sardines at landing site**



**Mr Alex Wenaty**

Alex Wenaty is a graduate of BSc in Food Science and Technology from Sokoine University of Agriculture (2004). He possesses two Masters degrees, MSc in Food Technology: Quality Assurance from the University of Reading; UK (2012) and MSc in Environmental Technology and Management from Ardhi University (2014). Mr Wenaty has also undertaken different short courses in and outside the country. Currently, he is a PhD student at Sokoine University of Agriculture (SUA) on a sandwich mode with the University of Copenhagen, Denmark under IMLAF Project.

His study is titled “Assessment of persistent organic pollutants in water and fish from Lake Victoria and implications to human health risks”. The main objective is to assess the levels of organochlorine pesticides and 7 indicator PCBs in water and two species of fish (*Lates niloticus* and *Oreochromis niloticus*) from Lake Victoria and implications to human health risks. The compounds have been chosen on the basis of their persistence in the food web and their tendency to biomagnify at higher trophic levels. Through this study, Mr Wenaty is expected to establish prevailing quantities of selected POPs in water and fish in Lake Victoria and assess related human health risks. Specifically; the study aims to establish levels of persistent organic pollutants in water and fish in Lake Victoria quantify residual levels of persistent organic pollutants in existing processed fish products for domestic and international markets and evaluate human health risks associated with consumption of contaminated fish with persistent organic pollutants in the lake.

As a progress, Mr Wenaty has finalised proposal development and started site visits, pilot sampling and analyses.



**Sampling water in Lake Victoria**



**Lates niloticus from Lake Victoria**

### Mr. Zebedayo Baniga



Mr Baniga is a graduate of the University of Dar es Salaam with BSc in Molecular Biology and Biotechnology (2007). He completed his MSc in Public Health and Food Safety in 2015 from Sokoine University of Agriculture. Since 2008, he has been working as Microbiological Analyst at National Fish Quality Control Laboratory, Mwanza. In IMLAF project, Mr Baniga is pursuing a PhD at Sokoine University of Agriculture (SUA) working on “*Bacterial quality of fish from artisanal fishers in Lake Victoria, Tanzania*”. His main task is to determine the sources of faecal pathogens in Nile perch of Lake Victoria through research. His research title is “*Hygienic conditions and food safety of Nile perch (Lates niloticus) in Lake Victoria*”. The study will investigate hygienic conditions and food safety of Nile perch in Lake Victoria fisheries. Specifically, his study intends to contribute knowledge to existing literatures and generate information for policy makers to develop measures that will improve quality and safety of fish from artisanal fishers. While finalizing his proposal for defence as per regulations of Sokoine University of Agriculture,

Mr Baniga has begun field visits and preliminary data collection, archive bacterial strains collection and analyses. During his field visits, he observed many cases of fish being dried on sand with people stepping on it and sometimes birds were seen eating sardines, rendering the product unhygienic for human consumption. He also reported that sardines dried on racks appeared to be of good quality and free of sand and other physical hazards as compared to those dried on the sand. As a way forward Mr. Baniga intends to find out why only a few processors adopt the technology that takes into consideration the safety of the product. He would also establish whether this is due to cost-effectiveness, lack of awareness, or the effectiveness of the drying technology.



**Sardines dried on raised racks**



**Ms Josephine Mkunda**

Ms. Mkunda is a holder of Masters in Agricultural Economics and Bachelor in Food Science and Technology. She works as Assistant Lecturer in the school of Business Studies and Humanities at the

at the Nelson Mandela African Institution of Science and Technology (NM-AIST). Over 8 years, Josephine has been working with different private and intergovernmental organizations including the Eastern Africa Farmers' Federation (EAFF) and the East African Community (EAC). Currently, Josephine is a PhD student under the IMLAF Project in the School of Life Sciences and Bioengineering (Food and Nutrition Sciences) at the Nelson Mandela African Institution of Science and Technology and the Department of Life Sciences at the University of Copenhagen. Her current PhD study is focusing on "Characterizing Market Potentials and Developing Business Models for Fish and Fish Products: Case of the Lake Victoria Basin". The focus will be on analysing the profitable market segments for sardines (*Rastrineobola argentea*) and Nile perch by products and identifying and describing stakeholder roles along the values chains and determining the consumers buying decisions in order to develop inclusive business models to cater for fishers, processors and traders. So far, she has been able to collect data through structured questionnaires from fishers, processors and traders. In addition, focus group discussion for Beach Management Units (MBUs), boat owners, traders, fishers and processors has been conducted in Mwanza, Kagera and Mara regions. Government institutions including National Fish Quality Control Laboratory (NFQCL), Tanzania Fisheries Research Institute (TAFIRI), Fisheries Education Training Agency (FETA) and Tanzania Food and Drugs

Agency (TFDA) have been visited to understand how they are supporting the industry and the opportunities and challenges they face as well as the forecasted development of the fisheries sector based on the Tanzania Fisheries Policy and other related policies. The preliminary findings have shown some constraints in relation post-harvest loss of sardines (*Rastrineobola argentea*) especially during the rainy season, low accessibility to financial credits and low facilitation of the Beach Management Units. She also reported that the available processing methods contribute to low prices as compared to the production costs.



**Deep-fried and packed sardines**

### IMLAF Affiliates

IMLAF annual meetings are usually organised with a side scientific event which engages a number of affiliates researching on fish safety and health of aquatic resources. These affiliates are supported by the project to attend the meetings and present their research findings. Some of the affiliates that attended the previous IMLAF meetings include Mr. Gildas Hounmanou (a Beninese student studying at SUA and supervised by Prof. Mdegela),

Mr Salum Hassan Mkenga (then MSc student who assisted the PI on logistics during the inception meeting), Mr Zebedayo Baniga (before joining the project as a PhD student), Ms Sosthenes Nyambuli (MSc student), Mr Michael Mhina (A chemist at the NFQCL and MSc student).



**Mr Salum Hassan Mkenga (left), welcoming Prof Dalsgaard to the inception meeting**



**Mr Gildas Hounmanou (middle) at the inception meeting**

Another great category of affiliates comprise the technical staff of the NFQCL (the host of IMLAF meetings in Mwanza) and the Director (the zonal officer in-charge).



**Mr Stephen Lukanga, Zonal officer (far right) and the technical staff of NFQCL together with Prof. Mdegela**

## First IMLAF annual meeting

During 3-7 November 2015, IMLAF Project members had the first annual meeting to review the progress in the one year period in terms of activities and financial status. At this meeting, Project members were informed about the progress of all enrolled PhD students. The enrolled students were also present at this meeting and presented their respective concept notes at the meeting. A field visit to study sites around the study area including landing sites, processing areas and markets was organised.



**Visit to Kirumba fish market in Mwanza city during the first meeting**

## Second IMLAF annual meeting

The second annual meeting was held in Mwanza at the NFQCL from 5th to 9th December 2016 among project members. A number of issues were discussed at this meeting regarding the organization of sampling sites and upcoming extra tasks assigned to PhD students. It was also resolved that some laboratory works will be performed at the NFQCL.



**A group photo during field visit during the second annual meeting**



**Prof Anders Dalsgaard giving a report at the second annual meeting**



**Group Photo for participants in the second annual meeting**

## Latest News

IMLAF has a new PhD affiliate, Mr. Gildas Hounmanou registered at University of Copenhagen and **Ms Maria**, a Master student at UCPH who will be supported by IMLAF for sample collection in Tanzania. Moreover, a volunteer Research Assistant, **Ms Anna Mpanyakavili** has recently joined the project management at SUA. The next stay of our PhD students in Copenhagen is scheduled for 1st August to 1st December 2017. The third annual meeting is to be held in Arusha from 8th to 9th December 2017.

## Fun-facts

For this first issue, the Editorial board was honoured to receive in the rubric "*Fun-Facts*" Mr. Baniga, a PhD student in the Project who offers below a brief narrative of his stay in Denmark.

"I started my journey to Denmark on 9th August 2016 from Mwanza airport. It was my first time to travel outside Tanzania and Africa. Since I received the official invitation to travel to Denmark (Europe) I was so excited because I only hear stories about life in Europe and their culture, but this time I was going to experience it myself. I was also quite eager to embark on this trip because it could help me expand my network through new acquaintances. At airports in Dar es Salaam and Doha, I met my fellow students, Mohamed Ally and Josephine Mkunda who are experienced with travelling abroad in different countries; this gave me more confidence on the journey because I was sure I cannot get lost. Upon arrival at Copenhagen Airport, we travelled with Ms Josephine by Metro to Frederiksberg where the Danish Fellowship Centre (DFC) hostels are located. It was my first time to take a metro. On arrival, we found our rooms which had already been reserved for us. In the first days in Denmark, I experienced problems to cope with the Danish cuisine and weather conditions as it was very cold out there. Nevertheless, with the kindness of the Danish people, I got quickly acclimatized and visited many places including Afromarkets where I could buy some foods I was used to. Later on, I became a little bit familiar with Danish foods.

One experience which I will never forget was to taste this Danish dish called “frog legs”. I swear, it was not easy to swallow but I managed to eat it and I realised it tasted very good. The DFC campus has many Africans and it was very pleasant to live in this multicultural environment which becomes very enjoyable during culture nights organised at the DFC. While in Denmark, we visited some areas for learning purposes such as fish auction market, the Queen House building, Christiania open market, etc. and I learnt a lot. I also attended various PhD defence seminars and conferences at the University of Copenhagen. I thank our host, the DFC and specially Anders and Jesper for their support and kindness throughout my amazing stay in Denmark. My first stay out of Tanzania and Africa was unforgettable and I look forward for more.”



**A photo taken during culture night at DFC campus**



**At fish auction market in Northern Denmark (Baniga is the 2nd from left)**

To be our next guest on “Fun-Facts”, please email the editorial at:  
[moshiroeva@yahoo.com](mailto:moshiroeva@yahoo.com) or [gilmahu@yahoo.fr](mailto:gilmahu@yahoo.fr)