CLEAT/Hali ya Hewa
Kick-off Meeting Report

March 2015

Contents

Participants present

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Photos from the meeting

Stakeholder meeting

Dr. Kimirei giving interviews. The project was reported on by Star TV, and ITV. It was also aired on Radio Free Africa and Radio One Stereo.

Breakout group during the workshop.

Out sampling on the RV Echo

Our research team

Agenda and activities

DAY 1: Tuesday 17 March, TAFIRI		
Time	**Activity**	**Facilitator**
8:30	Welcome and brief orientation to TAFIRI	Ishmael
	Introductions of people and the project	Peter
	WP leaders present the objectives, tasks, and deliverable of the WP	Ishmael
	Engagement with the Project – interesting, transformative, challenges	Catherine

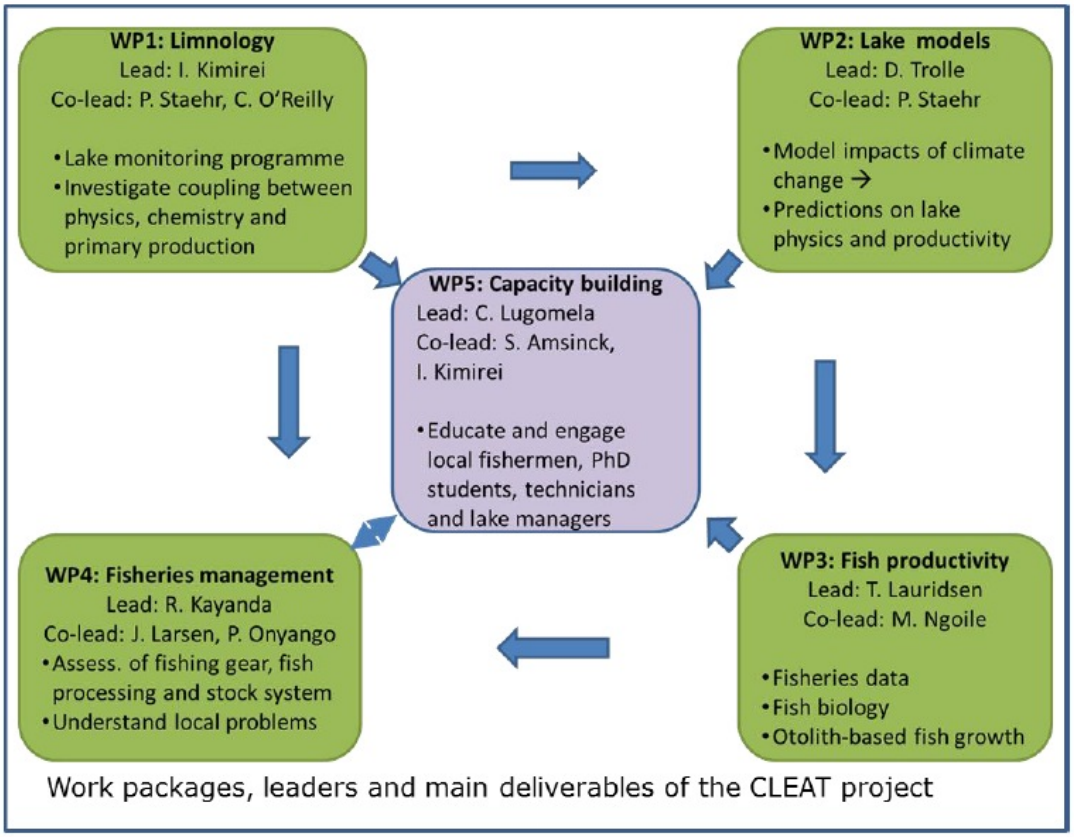
DAY 2: Wednesday 18 March, TAFIRI		
Time	**Activity**	**Facilitator**
7:30	Fish market visit (Katonga)	Mathias
	Effective communication	Catherine
	WP planning	WP leaders
	Community Engagement	Paul

DAY 3: Thursday 19 March, Lake Tanganyika Hotel		
Time	**Activity**	**Facilitator**
8:30	Fish market visit (Kibirizi) or Meeting about logistics for Ph.D. students	Mathias/Charles
	Stakeholder Launch Meeting	Ishmael
	Lunch with stakeholders, interviews, photo	
	Policies/concerns	Catherine
	Jakobsen's Beach trip	

DAY 4: Friday 20 March, TAFIRI, Student workshop		
Time	**Activity**	**Facilitator**
8:30	Ben Kraemer presentation	Peter
	Concept Maps and discussion	Catherine
	Defining the 4 objectives for each Ph.D. project	WP leaders

DAY 5: Saturday 21 March, TAFIRI, Student workshop		
Time	**Activity**	**Facilitator**
8:30	Boat trip	Ishmael
	Planning the timeline for the proposal process	Catherine
	Defining the 4 objectives for each Ph.D. project	WP leaders

Overview of the project



Work packages, leaders and main deliverables of the CLEAT project

Project Manager: Peter Staehr

- The people who live around the lake and the fish that they depend on are the main focus. The dependence of people on the lake and its fishery makes many people sensitive to the changes to the fishery. The fishery is under threat from climate change and sedimentation.
- Underlying hypothesis: climate change-driven shifts in temperature affects mixing regimes and reduces fish production. This is a major topic to be investigated by this project.
- We also have the goal of forecasting what will happen to the lake under various climate change scenarios.
- We can't study everything in 5 years, but we can make an important contribution to people's lives and we can be a platform for future work by others who take what we learn and build off of it. For example, the modelling output from the project could be built upon by future researchers.
- The outreach, capacity building, and education side of the project is important: PhD studentships, education for us in the room, education for people living along the lake's shore.
- A major success criteria will be whether or not the project has enough momentum to be a south-driven project, which would be the next type of funding available from Danida

- The project is divided into 5 working packages (WPs)
    - WP1: Limnology
    - WP2: Modelling
    - WP3: Fish Productivity
    - WP4: Fisheries Management
    - WP5: Capacity Building and Outreach
- Project timeline: The existing timeline lacks the detail that will be needed to accomplish our goals. We must think carefully about how to fill out the details. Filling out the details will be a goal of this project. It is important that we keep on our timeline and meet our obligations to the project.
    - We have already registered the PhD students at UDSM. Together with the post docs, the full time project participants will be an extraordinarily important part of the project. It is largely on them to provide momentum for the project
    - Lake monitoring is already happening, data have been collected already, we will need to have a discussion about sharing our data. Improve the monitoring as much as possible.
- CLEAT is not only a "buoy project." But the buoy is a big part.
- Website is up and running, but still in development stage.
- We must think of ourselves as a team. If we are a team, we must trust each other, be open-minded, and optimize our efforts across and within WPs.
    - Expectations of participants:
        - Have an open mind
        - Willing to share
        - Take responsibility, finish the job.
    - Expectations of project leader:
        - Dedicated
        - He will listen
        - Clear communication
        - Poor sense of humor
        - Can't sing
        - But he can dance though
- Messages to the public should be discussed at the stakeholder meeting. It will be important to tamper expectations about the potential of the project to solve people's day to day problems.

WP Presentations

WP1: Limnology

WP Leader: Ishmael Kimerei
Graduate Student: Prisca Mziray
Activities:

1. Buoy deployment
2. Upgrade RV Echo
3. Routine fieldwork and buoy maintenance (2 times/month)
4. Data transfer to database (monthly)

Questions and comments from the group:

- Make sure that the data which have been uploaded have a clear description about what has been done (e.g. description of QA/QC process).
- Will derived data be included in the database?
    - Response: yes.
- TAFIRI will be here forever, can it establish consistent research protocols that can be followed by different groups?
    - Response: The protocol must be robust, data must be accessible. We should explore whether data from past projects can be included in our database.
- Geographic scope, do we incorporate researchers from other countries?
    - Response: The immediate geographic scope will be the buoys in Kigoma and Mahale. We will also use satellite imagery to explore lakewide patterns in temperature and chl-a through our collaboration with Globolakes (http://www.globolakes.ac.uk/). The lake monitoring capacity on the DRC side of the lake is severely limited, but there is some lake monitoring in Uvira (DRC) and in Mpulungu (Zambian) that have been occurring for several years.
- Data sharing and use policy will be discussed this week (see section below on 'Policies and Concerns')
- Which sensors will be included in the sampling and buoy monitoring?
    - Bimonthly monitoring every 20 meters down to 100 meters for Si, phosphates, chl-a, secchi, phytoplankton and zooplankton, temperature, dissolved oxygen (DO), conductivity, pH, weather variables. Plans to add primary productivity, lake stability indexes.
    - Buoy sensors (shallow depth (oxygen light, chl-a, temperatures) profiles of DO and temperature.) all loggers will measure every 10 minutes.
    - The sensors which are eventually included are flexible and based on the needs of the group.
- Working with the communities will be important for this working group for the success of the buoy to ensure that the buoys are not tampered with. We might need to ask fishers for the cues that they use to decide whether to go fishing, and use the buoy to measure those things.
- How far back do the data exist?

- There are three levels of data usability. Usability to the researchers in the group, usability by fishers, and usability to the broader scientific community.
- Beach management units, school outreach, it is important to get every stakeholder on board, feel ownership over the project.
    - We are interested in the development of an app that can be used by fishers to know the state of the lake.
- Has anyone gathered the protocols that have been used by various lake monitoring project?
    - The protocols are still in paper form in the original publications that resulted from different projects.
- Sustainability of the buoys: important to discuss with the Tanzania Meteorology Agency (TMA), it would be good to get the port authority and other organizations that could buy into the weather monitoring by the project.
    - Port Authority and TMA will be attending the stakeholder meeting.
- BMUs are a good place to start with fish landing data and interfacing with the community.
- Integrating with the community will be a part of all of the WPs. It is not the job of any single WP to do this.

WP2: Modelling

WP leader: Dennis Trolle
Graduate student: Prisca Mziray
We can also help from Karsten Bonding—Danish model expert.
Activities:

- Three main goals
    1. Lake model development
    2. Model validation
    3. Running the models with climate change scenarios
- What is a mathematical model? It is a mathematical representation of lake dynamics.
- "All models are wrong but some are useful."
- Use to test hypothesis such as:
    - P versus N limitation
    - Virtual laboratories to test the effect of warming by manipulating future weather patterns
    - What happened to Lake Ecosystem under overfishing scenarios?
- Model inputs: weather data, bathymetry, inflows, outflows
- 3 dimensional model will provide rich insights into dynamics of the lake.
- Which model should we use? We will use the FABM framework for aquatic biological models
- Timeline
    - We must start with our activities this year. Learn about the model properties and which data are needed and which data are available. If

there are data needs that aren't meat, we can feed that information into WP1.

- Output: PhD thesis (Prisca), and the model itself.

Questions and comments from the group:

- It would be fantastic if we could compare the process understanding from the buoy (productivity) with that of the model. Important to use the model to test what the mechanisms are underlying the effects of climate change on the lake.
- We will have to discuss the expectations for the students and how they fit into the WPs.
    - Response: PhD planner might be useful for the students to organize and make sure that the basic obligations to the project and to their university (UDSM), and to the development of their own careers are met. Our expectations of students must be reasonable and achievable.
    - Response: TAFIRI will need to play an important supporting role for the students in terms of nutrient analysis, modeling efforts.
- We could explore having 2-3 day workshops about lake modeling so that it is not just grad students who learn how to use the model. This would be a good "deliverable" for the project.
- Dennis's main goals in the meeting are to meet Prisca, and to get a sense of her interest in the modelling aspect of the project. Plan for data collection for most important data sources for the model.
- Considerations for the most deliverable products from the modeling group form the perspective of the Tanzanian Government.

WP3: Fisheries Production

WP leader: Torben Laurdisen
Graduate student: Huruma Mgana
There are many interdependent aspects of this WP with other WPs as well
Activities:

- Collect historical data and assemble them into a useable format.
- Establish empirical relationships between fish growth and temperature using otoliths to estimate growth
- Set up an Ecopath ecosystem model for the fish communities
- How we work in Denmark and Europe and how it might relate to Tanganyika:
    - Increase in planktivorous fish with nutrient levels
    - Their goal is to reduce nutrient loading to the lakes
    - Interest in comparison of historical zooplankton and phytoplankton data to contemporary estimates.
    - Temperature in Danish lakes has been increasing. Consequences of this include: increase in proportion of small sized ciprinids, an increase in the proportion of small sized perch. As phosphorus decreases, we would expect fish to become larger. Thus, Increase in

temperature may have opposite effects on fish size distributions that eutrophication has.
    - Decrease in size is consistent across Denmark and across Europe.
    - Lake Geneva: Increase in temperature and reduction in total phosphorus have led to changes in fish communities: from cold water species to warm water species.
    - Temperature is also a key variable controlling phytoplankton and zooplankton
    - There was a correlation between catch per unit effort (CPUE) for sardines and chla in the south basin but it is unclear whether this is a correlation or causation. The increase in sardine CPUE most likely reflects fish movements and their catchability not necessarily population dynamics.
- Timeline:
    - This year: planning
    - Next year: Otolith and fish sampling
    - Collect data on historical water temperature data.

Questions and comments from the group:

- What type of data are required for the Ecopath model that will help guide research in WP 1 and 2?
- Lates stappersi have been observed moving to the south.
- It is difficult to determine whether climate change or overfishing is the primary factor driving changes in the geographical distribution of fish and the size distribution of the fish.

WP4: Fisheries Management

WP leader: Robert Kayanda
Graduate student: Gideon Bulengela
Activities:

- Regional trade of Tanganyika fish
- Fish Supply
- Disseminate information to fish sellers and buyers
- Fish consumption preferences
- Investigate the possibility of processing techniques that minimize losses. Solar dryers have potential here.
- Collect data on current fishing practices.
- Train and facilitate local BMU members to collect data at landing sites. The project might be able to help the BMUs get organized at the district and regional levels.
- The most important gears are gill nets followed by lift nets.
- Three landing sites have been selected for the project, but these are flexible.

Questions and comments from the group:

- At fish landings, is it possible to collect data on where fish were caught in addition to species, and size?

    - Response: Yes, this might be possible by training fishers how to use GPS to track their paths on the lake while fishing.
- Could long-term changes from lift nets to gill nets be indicative of poor offshore fisheries productivity?
- It was suggested that the buoy include an algorithm that produces a daily estimate of the oxycline depth that will help fishermen decide how deep to send their nets.
- The word "fishermen," might not describe all of the people who go out on a fishing boat. They might include a boat driver and relatives of fishermen who are not necessarily fishers themselves

WP5: Capacity building and dissemination

WP leader: Charles Lugomela
This WP depends on the input from all of the other WPs as well.
Activities:

- Strengthening the research and management capacity
- 3 PhD students: Prisca will work on physical and biogeochemical dynamics advised by Charles, Huruma will work on fisheries biology and will be advised by Magnus and Ismael, and Gideon will work on fisheries sustainability and be advised by Paul.
- Conduct PhD courses covering themes of lake ecology and fisheries. Already planning to offer stream ecology and limnology courses.
- Integrate students and scientists into existing network for communication thus exposing them to international communities of students and scientists (e.g. GLEON http://gleon.org/).
- Outreach to everyone that is reachable with the products of the project.
- Open stakeholder's workshop about the current state of the lake.
- Introduce fishermen to the concept of sustainability and fisheries management. Buoy app was mentioned.
- Training of local school children about the lake and why people depend on the fisheries.
- Media (TV, Radio, etc).

Questions and comments from the group:

- What will the timeline be for the first year? What initial steps would you be interested in taking?
- It was suggested that there might be some low hanging fruits including the creation of a pamphlet or poster about project goals. And don't restrict yourself to the timeline presented in the project outline
- It is important to establish who will be the primary advisor to each PhD student. Primary advisors have been identified but this might change as the student projects are developed.

Engagement with the Project – interesting, transformative, challenges

- What part of the project do you think is most interesting?
    - Multidisciplinary nature of the project
    - Data from historical to today
    - Buoy and buoy data
    - Ecosystem based approach
    - *Models to predict the future*
    - *Efficiency of fishery – improvements*
    - *High-resolution data*
    - *Working in a unique system*
- What do you think is the most potentially transformative aspect of the project? Who will feel that impact?
    - Demonstrate to fishermen, improve practices
    - Communicate all the information to stakeholders
    - Our project groups (WPs) and how we will work together
    - Completing the project together
    - *Scientific impact*
    - *Potential management impact*
    - *Local-regional capacity building*
    - *Model – ability to predict the future*
    - *App – buoy data provided for fishermen*
    - *Enhancing, value-added fishery*
- What do you see as the most challenging aspect?
    - Data – getting it all together, especially the historical data.
    - Getting the community to participate (they have different interests)
    - How to best disseminate results
    - *Data - access and management*
    - *Our group dynamics – keeping diverse set of projects moving forward*
    - *Buoy deployment*
    - *Working in a system so large*
- We conducted this exercise by splitting up into teams of 3 or 4 people. Teams were exclusively Tanzanians or non-Tanzanians. In the text above, perspectives from the *non-Tanzanians* are distinguished in italics.
- While there was a lot of overlap in what people thought, it seemed that in general, the Tanzanian's perspectives focused more on engaging the community and the broader impacts of the project, whereas the non-Tanzanians were more interested in science and details of the system. It is important to note that most people on the project (both Tanzanians and non-Tanzanians) do not have much prior experience working on the lake, so this difference in perspective is not driven by prior knowledge. As we move forward on this project, it might be useful to remember that people do seem to be approaching this work with different perspectives.

- Too Big to Ignore – A research network focused on small-scale fisheries. It would be good to get involved with them, especially the students. https://www.facebook.com/toobigtoignore

Effective communication - face-to-face, email, Skype

Good oral communication:

- Look at person
- Tone of voice
- Visualize your message
- Ask questions – other also might not understand
- Ask opinions of others ("what do you think?")
- Be well prepared → clear goals of communication. What should be achieved (clear agenda, note taker, moderator ,tasks, assignments, who, when, next step actions)
- Keep it simple, clear and relevant – (visualize, avoid long complicated sentences)
- Speak slowly, avoid complicated language / jargon and allow people time to digest message
- Listen carefully / consider other opinions
- Allow people time to reply.
- Good body language (facial contact, show enthusiasm) and voice
- Be sensitive to your audience (level of competence, cultural setting)
- Ask questions to clarify or restating what people said (this also validates and confirms that you were listening)
- Avoid multitasking (be present, have meetings away from office, don't be on your computer)
- If you raise a problem, try to suggest a solution or at least be open to solutions.
- Respect the moderator/leader of meeting – don't interrupt

Good written communication:

- Use emails for simple issues – use oral communication if topic is complicated / controversial.
- Only involve relevant persons
- Avoid long emails – attach document with details
- Be clear about what you expect – needed feedback and timelines
- Use clear font and highlights
- Make "subject" heading relevant/appropriate – put CLEAT first, perhaps. If using 'reply-all' remember to change the subject heading if necessary.
- Reply promptly (within a few days, but depends on the matter)
- Auto reply when needed
- Avoid jargon, abbreviations, acronyms, and technical words

Good Skype communication:

- Tone of voice – bright, enlivening
- Make an agenda, email it in advance.
- Have a moderator/facilitator, a note taker
- Speak slowly and clearly.
- Be brief. Do not dominate.
- Ask opinions of others
- Respect others, don't interrupt
- If you can't hear or don't understand say so, other people are probably also having issues trying to understand
- Have equipment which works –
- Use the mute option on the microphone to reduce background noise
- Try to be somewhere with a quiet background
- Use IM/text option in skype to share files or figure or text that may be discussed.
- Avoid multi-tasking, try to be fully present in the meeting. (Close other files and windows on your computer.)
- Summarize the skype meeting in an email follow-up.

Additional Take Home Message on communication:

Lack of dominance by any one member, equal interactions among all members, open and encouraging body language, and members' tone of voice - these aspects of communication are more important than the content of communication for predicting team productivity

Prior work on Lake Tanganyika and access to historical data

- *Lake Tanganyika and its Life,* edited by G.W. Coulter – book that provide great summary of the lake, based on work done up until the 1980s. No longer in print, PDF version of each chapter available in DropBox.
- LTR / FAO fish project (early 1990ies), all around the lake – basic fish measurement. Basic limnology, fisheries, fish biology, socio-economic study. Acoustic work. Special issue in Hydrobiologia. Finnish project. This is the most extensive dataset relevant to our project. CATHERINE will contact people on this project about access to the data (by end of March).
  Reports are available online under 'Results'
  http://www.fao.org/fi/oldsite/ltr/index.htm
- CLIMFISH/CLIMLAKE (1993-1997 later?) – similar to FAO project.
- LTBP (mid 1990ies)– impacts of sedimentation – near shore effect on benthic community and focus on biodiversity. Some side reports done on river inflow, otoliths, fish gear. Reports are online. CATHERINE and ISHMAEL will email to ask about permission to access these data (end of March). Some data is already available at TAFIRI in hard copy.
  http://www.ltbp.org/eindex.htm

- Nyanza project (1995-2007). Student training program, where students did short research projects during July/August. Some data available. Student papers are online under 'Past Projects' http://www.geo.arizona.edu/nyanza/
- McIntyre/Ben Kraemer project – littoral fish community focus, but with some pelagic temperature and oxygen data
- LTER –TAFIRI/Chinese monitoring 2 places in the lake (water chemistry, CTD, phytoplankton, zooplankton)
- Capacity development/outreach – none available. Perhaps pamphlets?
- Old reports from Belgium people
- Projects in 1980ies – Bob Hecky, John Melack, MacIntyre, Primary production
- Beach Petroleum – buoy data, water chemistry. PETER will ask if we can get access to these data.
- Bathymetric map, apparently Geoff Schladow has the best one. BEN has emailed him to ask if we could have it.
- Ministry – fisheries data. ROBERT will look into this (end of March)
- TAFIRI library – many reports from past projects are available in the TAFIRI library. PRISCA/HURUMA will look at this (end of May)
- Meteorological data – PRISCA will look into getting this from Tanzania Meteorological Authorities, who have a station in Kigoma (end of May)

Digitizing data - Ben offered to show people how to digitize data with a free software. We still need to develop a clearer policy about how to get access to historic data. In general, the idea is to contact to authors to ask for the data or for permission to digitize the data.

Community Engagement

Plan to Engage the Community

- Small group/team moves around to introduce the project. Can be done in conjunction with the Iceland/smoker project. Can distribute leaflet and letter this way.
- Letter about the project is distributed to BMUs, villages, appropriate parties
- Simple message – the project should develop a simple message that can be used in the letter and in a leaflet. Leaflet should mention key components (buoy) and have logos. PAUL will work on the simple message, with a draft out to the rest of the group by the end next week, comments from all, and finalized by end of March. CATHERINE and CHARLES will work on the leaflet, to be completed by end of April.

Ideas for Community Engagement

- Goal for WP1,2 – for them to know what we are putting out and leave the buoy alone.
- Sign/banner

- Develop collaboration with fishermen – maybe they can measure something for us
- BMU training, for catch assessment, how to use these data
- Fish info to fishermen
- Interface with 'smoker' project run by TAFIRI
- Test their lights, collaborate with The Nature Conservancy project who has funding for this now.
- Wave sensor
- App – data on lake conditions.
- Fish assessment reports via phone app (developed from Lake Victoria project).
- BMU conference to invite to annual meetings, along with a training workshop that could include information on the lake
- Public competition to name the buoy
- Kigoma region Advisory board?
- Engagement with schools – provide material to teachers, interface with existing Roots and Shoots Program

Policies and concerns

Policies to develop:

- Code of conduct
- Authorship
- Collaboration agreement
- Data sharing
- Intellectual property

What are you most worried about?

- Researchers at TAFIRI being treated as equal collaborators and able to become co-authors
- Responsible progress reporting in a timely manner
    - Peter will provide a template for quarterly reporting
- Managing other scientists/scientific interests
- Putting students interests first
- Equal treatment respect of all
- Should we digitize data – maybe not without permission
- Security/safely of our team
- Student activities – how the budget will work
- Data ownership, data sharing
- Including data from anyone else working on Tanganyika
- Academic integrity
- Clarifying budget lines
- Where is the data kept?
- 1st authorship for students

- student-collected data – how this can be used by others, consent/permission
- 'chai'/bribes
- students should have project ownership of data and priority (include M.S. students), which some sense of a timeline until the data can then be published with another person as a lead author.

Using these comments, CATHERINE will generate the first draft of these documents and circulate to all.

Student workshop, Friday-Saturday, 20-21 March 2015

Dennis, Torben, Ben, Ishmael, Catherine, Hans, Peter, Gideon, Prisca

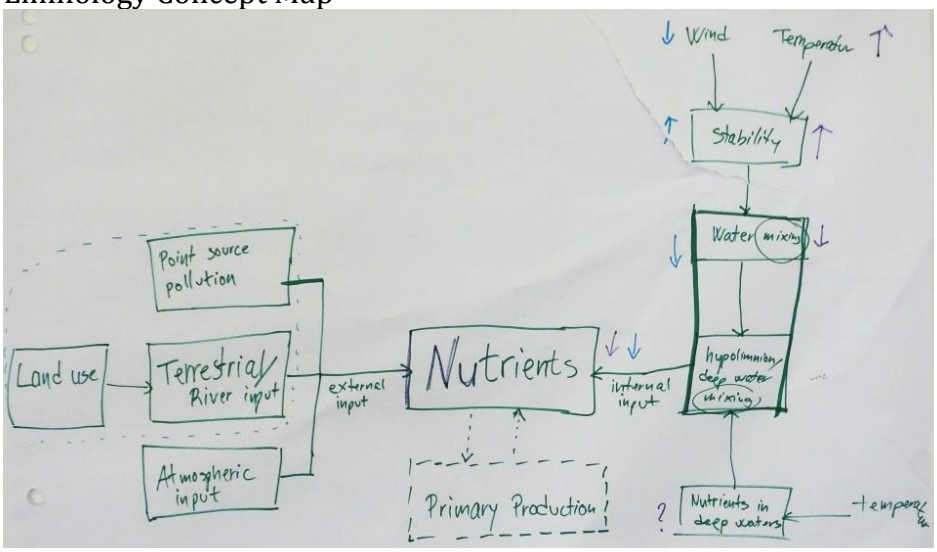
Student workshop agenda:

- Plan timeline
    - Visits to Denmark – The first visit will likely occur Aug-Sept 2016. This matches the time when students working on Lake Volta, Ghana, will be in Denmark, making it easier to develop specific courses. The students will also then have a year of data and could start writing.
    - Conferences – possible ones are GLEON, SIL in 2016
    - Communication (how frequent) – will be weekly for Prisca as she works on her proposal (with Peter and Dennis)
    - Proposal hearing date, and plan back from there – In general, Prisca hopes to do the hearing in July and Gideon hopes to do it in August. We expect that Huruma will be on a timeline similar to Gideon. A more detailed schedule for them is listed below.
- Supervisors
    - Prisca – Charles, Ishmael, Dennis
    - Gideon – Paul, someone else at UDSM (to be chosen in consultation with Paul), someone else with relevant expertise in Denmark or USA (PETER and CATHERINE will look into what is available at their institutions).
    - Huruma – Magnus, Torben, someone else at USDM?
    - Mbonde – Charles, Ishmael, ?
- Proposal/research
    - Big Picture Research question
    - Concept maps (see figures below)
    - 4 main objectives for the proposal (see below)
    - Draft writing – editing and review – how to use Track Changes and Comments
- Advice – original intention was to have a panel
- Courses
    - Wish list: GIS, modeling, writing, data analysis
    - What is available – Peter will be looking into this

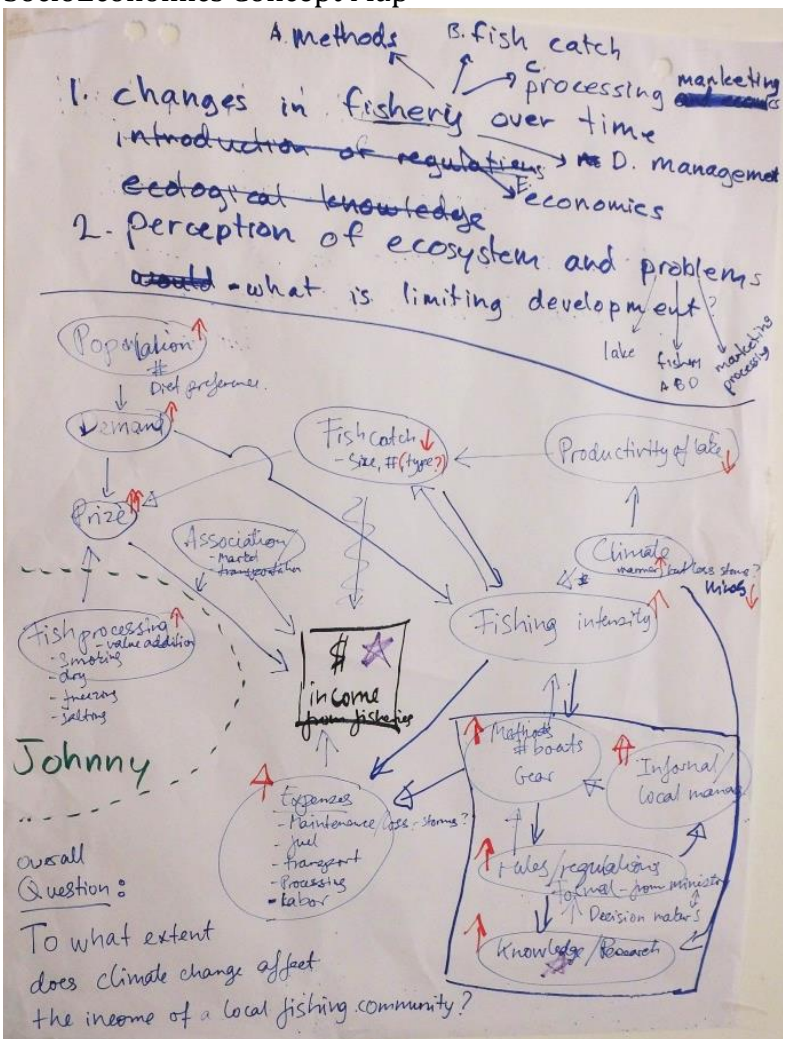
    - Plan for future courses – options are to provide courses when the students visit Denmark (in conjunction with the Lake Volta students), in association with next year's meeting, or as short-courses at University of Dar es Salaam.
- Data digitization
    - Policy, flowchart, example emails – maybe TORBEN can work on this?

Concept Maps

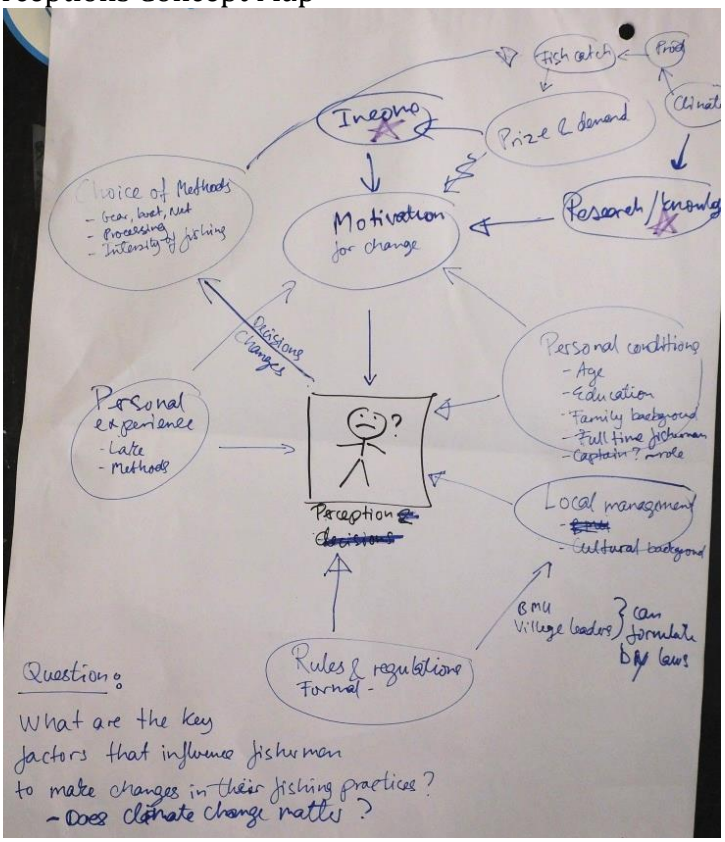
Limnology Concept Map



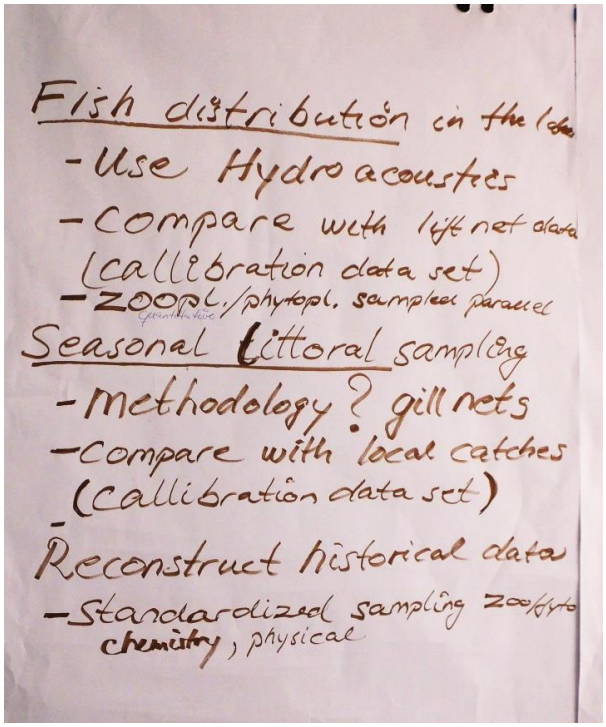
SocioEconomics Concept Map

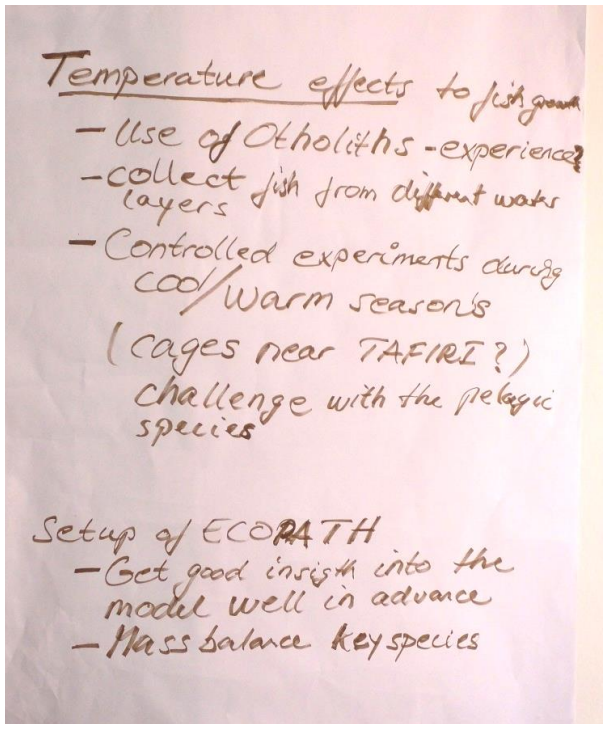


Perceptions Concept Map

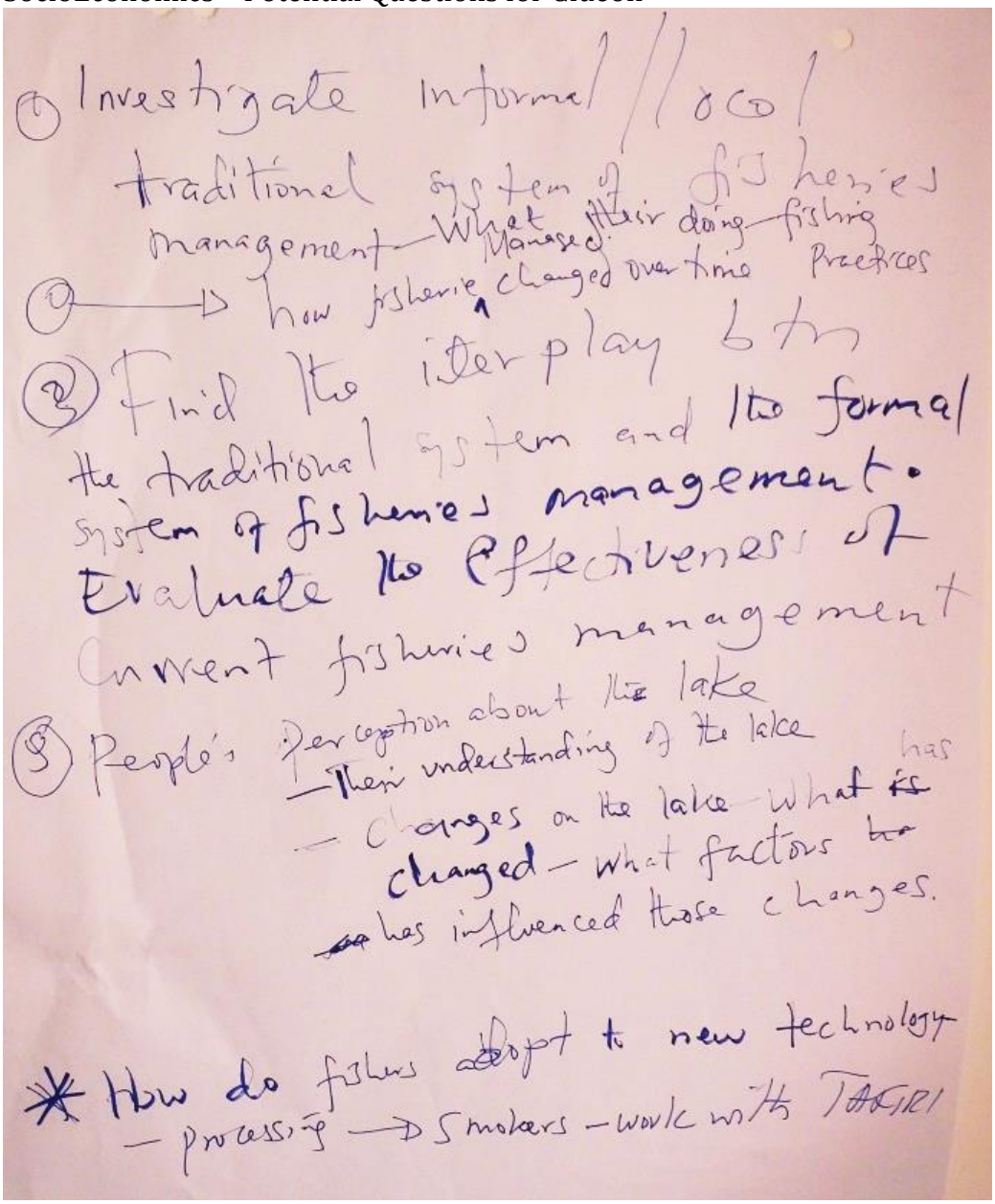


Fisheries – Potential Questions for Huruma

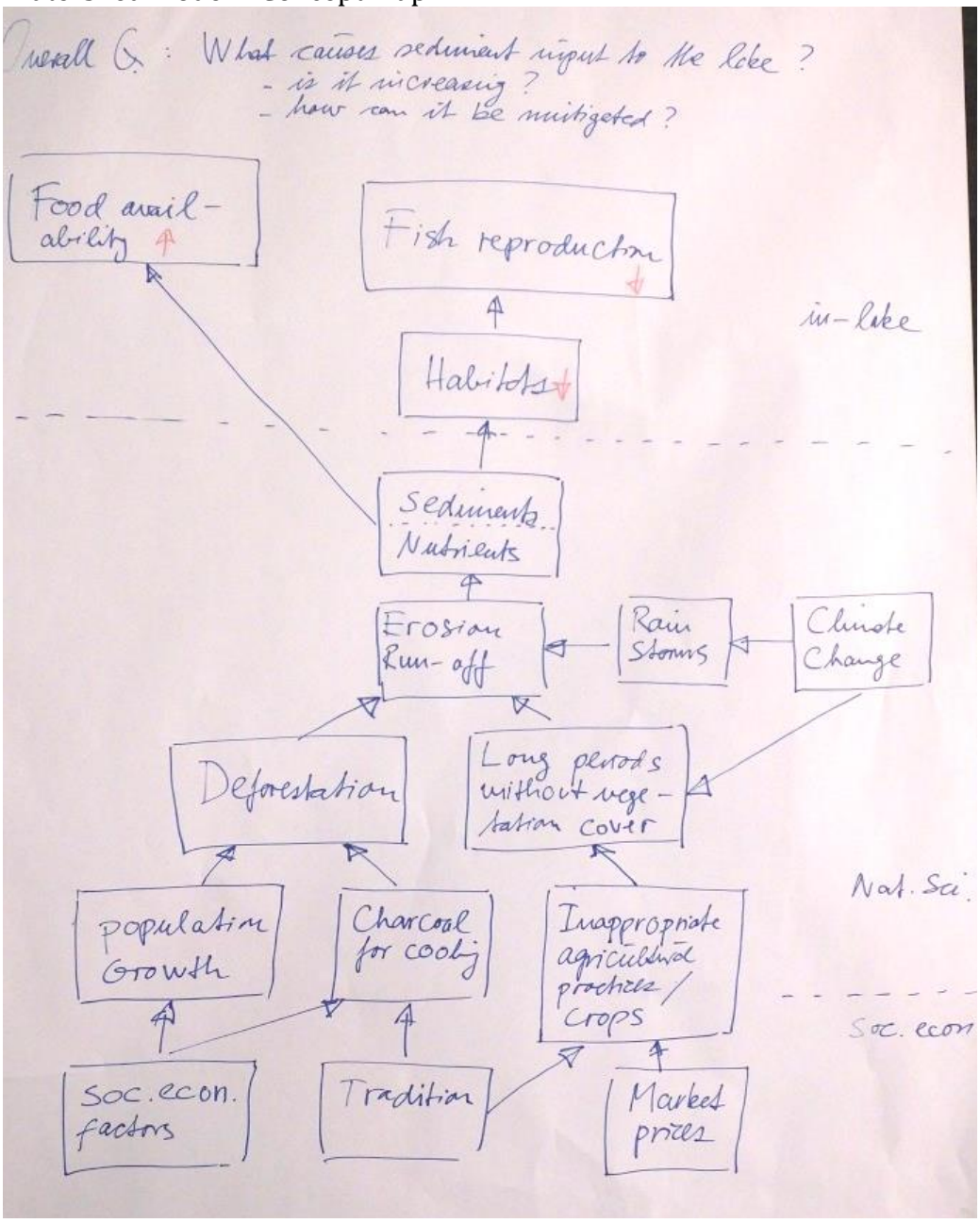




SocioEconomics – Potential Questions for Gideon



Watershed Model – Concept Map



Stakeholder meeting agenda and speeches

19 March, Opening of the Project, Lake Tanganyika Beach Hotel		
Time	**Activity**	**Facilitator**
10:30	Registration and coffee	TAFIRI
11:00	Welcome note by TAFIRI – Center Director and Director General	
11:10	Remarks by Director General TAFIRI	
11:20	Remarks by UDSM Representative (Prof. Charles Lugomela)	
11:25	Remarks from Executive Director, Lake Tanganyika Authority	
11:35	Remarks by the Permanent Secretary, MLFD	
11:45	Opening speech by the Regional Commisioner Kigoma	
12:05	Thank you speech by TAFIRI Mwanza Center Eirector and CLEAT participant	
12:30	Presentations about Lake Tanganyika (15 min + 5 min questions) Ishmael (climate change and fisheries) Catherine (climate change and how it's affecting the lake) Peter (what will be done in the CLEAT project) Group photo	
13:30-14:30	Lunch with everyone Media interviews (selected people only)	all

1. REMARKS FROM THE DIRECTOR GENERAL, TAFIRI

Hon. The Regional Commissioner – Kigoma Region
Mr Jean-Marie Nibiruntije, Executive Director – Lake Tanganyika Authority
Representative of the Permanent Secretary, Ministry of Livestock and Fisheries Development
Representative of the Director of Fisheries, Tanzania
Mr Peter Anthony, Coordinator of the CLEAT Project
Researchers from Participating Institutions

Distinguished invited Guests,
Ladies and Gentlemen,

It is with pleasure that I welcome you all to the kick-off meeting of the Project on Projections of climate change effects on Lake Tanganyika (CLEAT). The goal of this project is to "improve regional knowledge about changes in water quality and fisheries in Lake Tanganyika". It is a five year project commencing in 2015, and terminating in December 2019. It is highly anticipated that this project will enable Tanzania and the Lake Tanganyika Authority to develop and manage sustainable fisheries and continue studies of the effects of climate change in Lake Tanganyika.

Hon Guest of Honour and distinguished participants,
This project is a joint initiative of five partners: TAFIRI, Department of Aquatic Sciences and Fisheries of the University of Dar es Salaam, Department of Bioscience

at Aarhus University (Denmark), Department of Geology & Geography, Illinois State University (USA) and Enavigo Consult a/s, Denmark. The project is financed by the Government of Denmark through the Danish International Development Agency (DANIDA), to whom we are grateful.

Hon Guest of Honour and distinguished participants,
As we all know, climate change is a complex and spatially heterogeneous and gradual process which, apart from global or regional warming, manifests itself through various other phenomena, including changes in the frequency of extreme weather events, the potential for large-scale phase shifts, and from risks that lie outside the realm of present day experience. All these phenomena pose multiple risks to fishery dependent communities including declining fish catches.

Hon Guest of Honour and distinguished participants,
The challenge for us as scientists is therefore to successfully implement this project and accordingly provide advice on the sustainable development and management of the lake resources in view of the changing local, regional and global climate.

Lastly Guest of Honour and distinguished participants,
TAFIRI as one of the five implementing partners in this project and as a local host, is committed to an active collaboration with the other partners and all other stakeholders in ensuring that the goals and objectives of this project are met.

Thank you very much.

2. REMARKS BY THE EXECUTIVE DIRECTOR OF THE LAKE TANGANYIKA AUTHORITY (LTA), DURING THE KICKOFF MEETING OF THE PROJECT ON PROJECTIONS OF CLIMATE CHANGE EFFECTS ON LAKE TANGANYIKA, HELD AT LAKE TANGANYIKA BEACH HOTEL, KIGOMA ON 19TH MARCH 2015,

Honorable guest of honor, the Regional Commissioner of Kigoma Region, Permanent Secretary, Ministry of Livestock and Fisheries Development, Director of Fisheries-Tanzania, Director General of the Tanzania Fisheries Research Institute,
Project Leader – CLEAT project,
Scientists from CLEAT project,
Invited guests,
Ladies and gentlemen,
All protocols observed.

Good morning. Allow me to extend special thanks to the Government of the United Republic of Tanzania and the organizers of this meeting for the invitation to attend this important meeting. Also please allow me to extend my gratitude to the Danish Government for funding this important project in Lake Tanganyika. The LTA is very happy to be part of this effort, and as such, would like to renew to the Government

of Tanzania, and the CLEAT Project for that matter, the assurance of our highest consideration.

Honorable Guest of Honor,
The Lake Tanganyika Authority published the Strategic Action Programme (SAP) for the Protection of Biodiversity and Sustainable Management of the Natural Resources in Lake Tanganyika in February 2012. The SAP was first endorsed by the four LTA Partner States in 2000. The SAP clearly acknowledges the danger of continued deterioration of the lake's environment and catchment, and declines in its fisheries resources. It is therefore in our interest, as it is for all of us sitting in this room that the causes of the decline in the fisheries are sought and proper policies are formulated.

That is why; Honorable Guest of Honor, the LTA did not hesitate to write a letter to DANIDA to support the application by the project partners. We are very happy that finally this project is taking-off into acquiring the data that will be used to illuminate some of the problems we are experiencing in the lake, especially the declines in fisheries catches.

Honorable Guest of Honor,
It pleases me a lot to learn that the project will collect satellite data so that by using lake models, the findings of the project will be scaled to the whole lake. This is important and we believe it will help not only the Tanzanian authorities but the LTA to implement some of the items in the SAP; and through coordination with other riparian states to manage the lake's fisheries sustainably.
Honorable Guest of Honor, I do not intend to take up all your time, but please allow me to once again thank you for the invitation and for letting LTA be part of this noble and transformative vision to solve some of the most critical issues in our Lake. Please keep us informed of your progress and do not hesitate to contact us in case you need our assistance.
Thank you for your attention

3. WELCOME STATEMENT – DIRECTOR OF FISHERIES DEVELOPMENT
Honourable, Regional Commissioner, Kigoma
Permanent Secretary Representative for the MLFD,
Executive Director for LTA,
Director General TAFIRI,
Project Coordinator,
Collaborating Researchers from Illinois State University, Aarhus University, Enavigo Consult,TAFIRI and UDSM
Distinguished invited Guests,
Members from Media,
Ladies and Gentlemen.

May I take this opportunity first of all to thank our Almighty God for keeping us in good health till today when we are gathering here for the Launching of studies on projections of climate change effects on Lake Tanganyika.
Honourable Guest of Honour and Distinguished Participants,
We are told that the project will be conducted in collaboration between UDSM, TAFIRI, Illinois State University (USA), Aarhus University (Denmark) and Enavigo Consult (Denmark) with financing from Danida. The overall aim of the project is to improve on regional knowledge about changes in water quality and fisheries in Lake Tanganyika. This will allow Tanzania and the Lake Tanganyika Authority to develop and manage sustainable fisheries and continue studies of the effects of climate change.
Honourable Guest of Honour and Distinguished Participants,
As you all know Fisheries ecosystems are very fragile and this affects fisheries resources in general. Currently we are experiencing decline of catches in all of our water bodies, including Lake Tanganyika. The decline is partly due to illegal fishing but also may be contributed by climate change.
The Fisheries sector employs 183,800 full time fishers of which Lake Tanganyika has 26,612 fishers. More than 4 million people are employed in fisheries related activities. When fisheries are affected, the consequences ultimately affects food security, employment, income, as well as government revenue.
Honourable Guest of Honour and Distinguished Participants,
Climate change is a global challenge and often poses challenges on addressing it. We appreciate to note that this project will provide fundamental information regarding the extent to which climate – driven changes are influencing the dwindling pelagic catches in Lake Tanganyika.
We welcome this project as it will provide information on some of the challenges we are facing in managing fisheries resources so as to continue benefiting our people and the economies of the riparian states. We are waiting for feedbacks on the studies, not only for fisheries department consumption to guide management on decision making, but also for consumption by the fisher community at large.
I once again wish you good health.
Thank you for your attention.

4. SPEECH BY THE PERMANENT SECRETARY OF THE MINISTRY OF LIVESTOCK AND FISHERIES DEVELOPMENT, Dr. YOHANA BUDEBA DURING THE KICK-OFF MEETING OF THE PROJECTIONS OF CLIMATE CHANGE EFFECTS ON LAKE TANGANYIKA (CLEAT) PROJECT ON THE 19th MARCH 2015-LAKE TANGANYIKA BEACH HOTEL-KIGOMA

Honourable guest of honour, the Regional Commissioner of Kigoma, Director of Fisheries-Tanzania, Director General of Tanzania Fisheries Research Institute, distinguished guests from fisheries related ministries,
Executive Secretary-LTA
Project Leader – CLEAT project,
Scientists from CLEAT project,
Invited guests,

Ladies and gentlemen,
All protocols observed.

May I first take this opportunity to welcome you to Tanzania and particular in Kigoma. On behalf of the people of the United Republic of Tanzania I wish to extend our sincere welcome to you all. Please peacefully enjoy your stay in Kigoma and the hospitality of the Tanzanians.

Ladies and Gentlemen,
I'm really pleased to be here with you on this kick-off meeting for the PROJECTIONS OF CLIMATE CHANGE EFFECTS ON LAKE TANGANYIKA (CLEAT) Project. First and foremost, I would like to express my appreciation and gratitude to the Danish government and in particular DANIDA for funding this important project.

Ladies and Gentlemen,
The Fisheries sector is very important to our country, as it contributes about 2.6% of the national GDP. It provides animal protein, income and employment to the people and hence very important to the livelihood of the surrounding communities. Therefore, this calls for effective management of the fisheries resources so that they continue to provide benefits for this generation and many more to come.

Guest of honour
Lake Tanganyika fish catches are dwindling mainly due to increased fishing efforts and environmental changes. This has caused increased in fish price and reduced employment opportunities to local communities. Therefore, this project by using modern technology will generate new knowledge which will be very important in making management decision for sustainability of our fisheries resources.

Ladies and Gentlemen,
I wish you all fruitful deliberations, reflection and way forward for the CLEAT project. Also be assured that you have a full back up from the ministry which will accord all necessary support to ensure that the project is successful

Thank you for your attention.

5. OPENING REMARKS BY THE KIGOMA REGIONAL COMMISSIONER, COL (RT) ISSA MACHIBYA, DURING THE KICKOFF MEETING OF THE PROJECT ON PROJECTIONS OF CLIMATE CHANGE EFFECTS ON LAKE TANGANYIKA, HELD AT LAKE TANGANYIKA BEACH HOTEL, KIGOMA ON 19TH MARCH 2015,

Chairperson,
Representative of the Permanent Secretary – Ministry of Livestock and Fisheries Development (MLFD),
Representative of the Director of Fisheries (Tanzania)
Executive Director, Lake Tanganyika Authority Secretariat,

Representative of the Director General – TAFIRI
Project Leader –CLEAT
Scientists from the CLEAT Project
Distinguished delegates,
Ladies and gentlemen

Good morning. Allow me to extend a special welcome to all delegates, especially to our beloved brothers and sister from Denmark and USA, and Burundi. You are most welcome to Tanzania, Kigoma Region in particular; and as we say in Kiswahili, Karibuni Sana. I am indeed delighted to be with you this morning and make a few opening remarks before we kick-start the project on Projections of climate change effects on Lake Tanganyika (CLEAT).

Also allow me to express the gratitude of the Government of the United Republic of Tanzania and her people to the Danish Government which is funding this project through DANIDA. I wish to express my appreciation to the Danish International Development Agency (DANIDA) for their support; I am told they are the ones funding this project.

Mr. Chairperson,
It is an undeniable truth that Lake Tanganyika plays a major role in the economies of the Riparian Countries, especially through its productive fisheries. The number of people employed by the fisheries sector is increasing each year and the socio-economic impact therefore is high. Notwithstanding however, the Lake ecosystem is under threat from multiple stressors; including point and non-point source pollution, over-fishing of especially the pelagic fish resources, and various unsustainable economic activities in the lake's catchment such as agriculture, livestock keeping and mining practices, each posing its own management challenge. And on top of all these, there is also the impact of climate change which has in the recent past, been shown to cause a decline of the productivity of the lake, ultimately causing decline of fish production in the lake. In this regard, we must work together to address these challenges for the sustainable management of natural resources within Lake Tanganyika and its basin.

Mr. Chairperson,
I am told that there are currently two schools of thoughts about the declining fish catches in Lake Tanganyika. There are those who say it is over-fishing, because of too much fishing effort. These have their reasons, and looking at the number of fishers from the 2011 frame survey, which was nearly Twenty Seven thousands (20,000s), and sampling the fishers' catches, one may be inclined to agree with this school. However, there are those who say it is climate change. These contend that because of warming, the lake is receiving very little nutrients from deep water layer, which is causing poor production of food for fish, and therefore poor reproduction and growth.

Mr. Chairperson,

I am not an expert in any of these issues, but I know one thing, that our people are suffering from increasing fish prices which is caused by declining fish catches. I also know that fishers are injecting a lot of money into the fisheries and receiving very little returns from it, which may impact the number of people employed by the fisheries sector. I also know that any successful management of any resource must be backed by concrete evidences; evidences which I define as 'truths'. Truths that resource managers and policy makers need to make informed management policies of that particular resource. Galileo Galilei once said, I quote: "All truths are easy to understand once they are discovered; the point is to discover them": end of quote.
Mr. Chairperson,
I am told that this meeting is packed with researchers/scientists from all over the world. I am also told that this is a kickoff meeting for a project which is seeking to understand the cause of declining fish catches in Lake Tanganyika. I am also told that this project will run for five years, and intends to provide education to our people, as well as real-time information to our fishers about the lake condition and productivity so that fishers can make informed decisions before they go out fishing. I am also informed that you will produce a model that will forecast the productivity of the lake under different future climate scenarios. It is my belief therefore that such a gathering of great minds, working on well-defined goals and objectives such as these will surely discover the truths we need to make informed management policies for the entire lake rather than parts of it. I would like to emphasize here that we need to see and understand the truths necessary for a lasting solution to the management problems of the Lake Tanganyika resources. We entrust the searchlight into your hands, so find those truths. Let me remind you also that while you are working towards a common ground, you need to be meticulous in the analysis and discussions of the agenda items before you, as well as in planning and charting out the next steps.
Mr. Chairperson,
Before I conclude, I wish to welcome the delegation to visit the various attractions in the Kigoma Town at the end of your meeting. Take a tour to Ujiji and see Dr. Livingstone and Stanley memorable meeting place under the mango tree close to the beach, and how the water have receded over time from its level at the time the two met.

Distinguished Delegates, ladies and gentlemen, I now have the privilege to declare the Project on Projections of Climate Change Effects of Lake Tanganyika (CLEAT) officially started. I wish you fruitful deliberations in your meeting, and implementation of the project to its successful completion.

I thank you for your attention