

## CTCN assistance in Uganda

### Adaptation to climate change through improved information and planning tools for Lake Victoria

Deliverable 2 (activity 1.1) Minutes from National Workshop held on 15 June in Kampala, Uganda



Final 24 of August 2017

This report has been prepared under the DHI Business Management System certified by Bureau Veritas to comply with ISO 9001 (Quality Management)



Approved by

28-08-2017

X 

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Head of Projects, Water resources  
Signed by: Oluf Zeilund Jessen

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### **Adaptation to climate change through improved information and planning tools for Lake Victoria**

Deliverable 2 (activity 1.1) Minutes from National workshop

Prepared for            **UNEP**  
Represented by       **Mr. Manfredi Caltagirone**

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## CONTENTS

<b>1</b>	<b>Background .....</b>	<b>2</b>
<b>2</b>	<b>Purpose of the workshop .....</b>	<b>3</b>
<b>3</b>	<b>Participating Institutions .....</b>	<b>3</b>
<b>4</b>	<b>Minutes from the meeting.....</b>	<b>4</b>
4.1	Agenda.....	4
4.2	Opening.....	4
4.3	General presentation of CTCN .....	5
4.4	Presentation of past and existing projects by LVBC.....	5
4.5	Presentation of objectives and outcomes of the CTCN technical assistance .....	7
4.6	Roundtable discussion.....	9
4.6.1	Outcome from the discussion .....	9
<b>5</b>	<b>Key outcomes from the workshop.....</b>	<b>12</b>

## Acronyms and Abbreviations

CTCN	Climate Technology Centre & Network
DHI	DHI - see more at <a href="http://www.dhigoup.com">www.dhigoup.com</a>
GCF	Green Climate Fund
IUCEA	Inter-University Council for East Africa
LVBC	Lake Victor Basin Commission
LVEMP	Lake Victoria Environmental Management Project
MUST	Mbarara University of Science Technology
MWE CCD	Ministry of Water and Environment Climate Change Department
MWE ESSD	Ministry of Water and Environment Environment Support Services Department
MWE DWRM	Ministry of Water and Environment Water Directorate of Resources Management
NAPE	National Association of Professional Environmentalists
NBI	Nile Basin Initiative
NDE	National Designated Entity
NELSAP	Nile Equatorial Lakes Subsidiary Action Program
MGLSD	Ministry of Gender Labour and Social Development
RAN	Resilient Africa Network
STEPUP	STEPUP Standard Limited
UNCST	Uganda National Council for Science and Technology
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNMA	Uganda National Meteorology Authority

# Minutes from National Workshop

This document gives an overview of the content and main outcome of the national workshop, which was held at the Uganda National Council for Science and Technology (UNCST) in Kampala on the 15<sup>th</sup> of June, 2017.

## 1 Background

The national workshop marked the initiation of the Climate Technology Centre and Network (CTCN) funded technical assistance on “**Adaptation to climate change through improved information and planning tools for Lake Victoria**”. The workshop was held at the UNCST in Kampala, Uganda on June 15<sup>th</sup>, 2017.

The workshop was scheduled for a full day, in which participants from various institutions came together for a presentation of the scope and content of the CTCN technical assistance and for discussions of how the outcomes could be further tailored to benefit the water and energy sector in Uganda.

The CTCN funded assistance relates to technology and guidelines for strengthening planning in the water resources and energy sectors in Uganda, at both long-term and seasonal timescales. The objective is to facilitate transfer and capacity building for climate change adaptation focusing on planning related to the Lake Victoria. The proposed support will utilise existing knowledge and capacity and further develop and validate these for applications to local issues within Uganda.

The following aspects will be included in the technical assistance:

- **Data accessibility:** Access to state-of-the-art climate change projections is critical for water resources planning. In addition, seasonal forecast data are useful for operational planning at shorter time scales. Information from the latest climate projections and seasonal forecasts will be made available for stakeholders as part of the CTCN assistance.
- **Impact assessment:** Impact assessment models are useful for the assessment of water resource management and infrastructure plans, and have gained acceptance for evaluating impacts within the complex hydrological setting of Lake Victoria. The CTCN assistance will evaluate the existing water resource model located at LVBC and recommend refinements to make the tool more useful for climate change impact assessment.
- **Planning:** Planning application enabling stakeholders to evaluate existing or future investments within the Lake Victoria region will be established as part of the CTCN assistance.
- **Decision making under uncertainty.** The assistance will provide guidelines for decision making under uncertainty about climate change and other drivers. The guidelines will explain how to use uncertainty about climate change, as represented by ensemble projections, in a decision-making process.
- **Dissemination and outreach.** Dissemination and outreach will take place through workshops and training courses. The technical assistance will develop a program of appropriate dissemination and outreach activities through collaboration with the stakeholders.

The expected outputs of the workshop are feedbacks from the participants in relation to their challenges in providing (or contributing to) planning on short on long term within the water resources or energy sector.

## 2 Purpose of the workshop

The purpose of the workshop is to:

- Present the scope of the CTCN technical assistance to relevant national stakeholders;
- Identify the current specific gaps related to planning towards the water resources and energy sector in Uganda;
- Update the inventory of past, existing, and planned similar activities within Uganda based on the participants' knowledge.

The outcome of the workshop will guide the detailed content and planning of the CTCN assistance to be presented in the next scheduled deliverables.

## 3 Participating Institutions

The following institutions participated in the workshop:

- LVBC - Lake Victor Basin Commission
- LVEMP - Lake Victoria Environmental Management Project
- MUST - Mbarara University of Science Technology
- MWE DCC - Ministry of Water and Environment Climate Change Department
- MWE DESS - Ministry of Water and Environment Environment Support Services Department
- MWE DWRM - Ministry of Water and Environment Water Directorate of Resources Management
- NAPE - National Association of Professional Environmentalists
- NBI - Nile Basin Initiative
- MGLSD - Ministry of Gender Labour and Social Development
- RAN – Resilient Africa Network
- STEPUP - STEPUP Standard Limited
- UNCST - Uganda National Council for Science and Technology
- UNMA - Uganda National Meteorology Authority

List of participants is shown in Appendix 1.

## 4 Minutes from the meeting

### 4.1 Agenda

<b>National workshop</b>		
Presentation of the scope, objectives and outcomes		
<b>Time</b>	<b>Title</b>	<b>Responsible</b>
09.00 – 09.30	Registration	
09.30 – 09.40	Welcome and presentation of the objective with the workshop	Dr Maxwell, CTCN focal point in Uganda
09.40 – 10.00	Presentation of participants	
10.00 – 10.15	Presentation of CTCN <ul style="list-style-type: none"> <li>• Objectives</li> <li>• Ongoing projects</li> <li>• Opportunities for CTCN support</li> </ul>	Dr Maxwell, CTCN focal point in Uganda
10.15 – 10.30	Background for the CTCN assistance <ul style="list-style-type: none"> <li>• Key issues and ongoing programmes related to the CTCN assistance</li> </ul>	Raymond Mngodo, LVBC
10.30 – 10.45	Q&A	
10.45 – 11.00	Break	
11.00 – 11.30	Objectives and scope with the CTCN technical assistance <ul style="list-style-type: none"> <li>• Objectives and outcomes</li> <li>• Workplan</li> </ul>	DHI
11.30 – 12.30	Q&A	
12.30 – 13.30	Lunch	
13.30 – 15.30	Roundtable discussions <ul style="list-style-type: none"> <li>• Requirements for planning within the water resource or energy sector with focus on Lake Victoria</li> <li>• Previous experience in Uganda and the region</li> <li>• Feedback on scope and content</li> </ul>	DHI
15.30 – 15.45	Break	
15.45 – 16.30	Discussion and wrap up <ul style="list-style-type: none"> <li>• Feedback</li> <li>• Questions</li> </ul>	

### 4.2 Opening

**Presenter:** Dr Maxwell, CTCN focal point in Uganda (UNCST) representing the host organisation

**Key messages:**

- Opening of the meeting
- Individual presentation of the participants
- Highlighted the objective of this meeting: *receive input from stakeholders in order to shape the technical assistance to strengthen the scope.*

## 4.3 General presentation of CTCN

**Presenter:** Dr Maxwell, CTCN focal point in Uganda (UNCST)

**Key messages:**

- Presentation with the following agenda points: origins of CTCN, CTCN mission, CTCN structure, overview of CTCN functions and services, core functions services, CTCN technical assistance cycle, Generating a request and previous and pending Requests submitted by Uganda
- Mission: stimulate technology cooperation and enhance development of transfer of technologies to developing country parties at their request.
- Functions and services: Technical assistance, information and knowledge, collaboration and networking
- Ultimate goals: reduce greenhouse gas emission and increase resilience to climate change
- Technical committee to be established to secure a high standard for the CTCN requests originating from Uganda.
- Organisations in Uganda are welcomed to apply for uptake as CTCN membership organisations
- Entities are welcome to access the CTCN funding opportunity, reach out for opportunities; also fellowships for young officers of entities are available.
- Considering the prospects for upscaling of the assistance, Uganda is in a privileged position to work as a pilot for a potential upscaling of the assistance.

Presentation is included in Appendix 2.

**Questions:**

- No questions to the general presentation of CTCN

## 4.4 Presentation of past and existing projects by LVBC

**Presenter:** Raymond Mngodo, LVBC

**Key messages:**

- Presentation of past projects focussing on the Lake Victoria.
- Upcoming UNEP implemented project on climate change adaptation with a budget of 5 mio USD to be implemented during the late part of 2017. Project description is currently under development, and the specific details of components and activities are not known at this stage.
- LVBC to implement a rescue and security organisation for the lake. The head quarter will be in Mwanza, Tanzania, but with offices across the lake.
- Examples of projects being implemented by the LVBC:
  - Bathymetric survey of the lake

- improvement of port infrastructure
- passenger transport activities restoration
- increase navigation safety
- communication within the lake
- rescue substations on ports
- signaling for large vessel navigation
- sewage treatment plants, three water supply schemes (largest 3 million Litres)

Presentation is included in Appendix 2.

**Questions:**

- **UNCST:** Could you mention examples of implementations within the Lake Victoria from some of the previous projects?
  - **LVBC:** One of the most important measures are the implementation of solar powered navigation lights on Lake Victoria. These aims at reducing the number of incidents on the lake and increase the security for the transportation sector in general.
- **NAPE:** The fishing sector in Uganda is regulated but are the rules applied in the same way in the other countries across the lake?
  - **LVBC:** the fishery across the lakes is regulated in more or less the same way; all countries have invested in policing activities to control illegal fishing.
- **NAPE:** National power production agreements in Uganda are blocking access to companies willing to invest in solar energy projects, and other type of CC mitigation technology dissemination. What could be done?
  - **LVBC:** No specific comments to add.
- **UNMA:** The Severe Weather project by WMO in Tanzania, Kenya and Uganda through UNMA related to issuing weather reports and alarms to fishermen via mobile phone in the Katanga district. Is there a possibility to collaborate with LVBC to scale this initiative up?
  - **LVBC:** The LVBC already has a similar basin wide project about to be implemented; will discuss further potential for collaboration.
- **UNCST:** Pointed out the need for CTCN to strengthen the NDE by providing funds, for better assistance in proposal preparation and associated efforts.
- **NBI:** How can the NBI benefit from the LVBC CTCN request? By sharing climate projection data? There would also be areas where the NBI could benefit, for example. model wetlands in the Nile Basin.
  - **LVBC:** The LVBC already has a similar basin wide project about to be implemented; will discuss further potential for collaboration.
- **NBI:** Regarding details of energy sector projects, suggestion to contact NELSAP.
- **UNCST:** Pointed out they would like to see institutions or consultants in Uganda also being able to respond to these types of requests from Ugandan institutions.
- **NAPE CC:** There is a need for mapping out of wetland degradation.

- **NAPE:** Over fishing carried out by small boats who need this activity to survive and have no other source of income. How could this be addressed?
  - **LVBC:** By providing alternative means such as aquaculture or farming alternatives and activities outside of the lake. Another ongoing project involves placing beacons to prevent passage into areas where illegal sand mining is taking place. In addition, wetland conversion monitoring is being implemented; Ecosan toilets installed as a beach management to tackle public health issue of the lake beaches due to lack of sanitation facilities; and finally, gender issue is being considered in all activities.
- **UNCST:** Discussion on how to upscale the technical assistance. The Ministry of Finance is the focal point for Green Climate Fund (GCF) and UNEP is an accredited institution. Per country, there are 700,000 USD for proposal preparation and 300,000 USD available for capacity building. Call to prepare proposals with stakeholders to access GCF funds.

## 4.5 Presentation of objectives and outcomes of the CTCN technical assistance

**Presenter:** Oluf Jessen (DHI)

### **Key messages:**

- **Agenda:** DHI – short introduction, climate change on Lake Victoria, background for the CTCN assistance, objectives and background, work plan and activities, outcomes from the technical assistance.
- One of the key objectives with the current workshop is to identify gaps and needs with respect to climate change adaptation within the Lake Victoria region.
- Linkages to previous or ongoing projects will be of great value for the implementation of the CTCN assistance.
- **Climate change impact on lake Victoria**
  - Very sensitive to climate change impact due to the delicate balance between rainfall and evaporation on the lake itself.
  - Existing projections points to reduced net basin supply due to reduced rainfall and increased evaporation
- **Objectives and background**
  - Presentation of the objectives and the process of developing the technical assistance
  - Presentation of the activities and deliverables

Presentation is included in Appendix 2.

### **Questions:**

- **MWE:** What is the geographical scope of the CTCN assistance?

- DHI: The CTCN assistance focusses on Uganda as its responding to a national request, but as the Lake Victoria is a transboundary water body there will be focus on dissemination and outreach within the whole region.
- UNMA/NAPE/MWE: At what level should the different organisations participate?
  - DHI: The local organisations play a very important role as partner organisations in the CTCN assistance and as the main beneficiaries of the assistance. The main role in the inception phase are in identifying the relevant gaps and needs to be addressed by the CTCN assistance. During the execution of the CTCN assistance, the partner organisations will have the opportunity to review and comment on all the outputs from the CTCN assistance. After the implementation of the CTCN assistance all the outputs from the CTCN assistance will be freely available for all the partner organisations.
- MWE/NAPE: Are there available funding for the local organisations within the CTCN assistance?
  - DHI: The CTCN assistance is focussing on transfer of technology and knowledge connected to climate change adaptation and the outputs relates to technical tools, guidelines and workshops and training sessions. There is no scope within the CTCN assistance to provide funding to local organisations.
- MWE: What is meant by climate technology development is it hard technology soft technology? Are impacts downstream considered? Technology cannot be developed to serve our interests alone, it must consider downstream users as well. In order to identify gaps about energy projects, contact Dr Jackson form the Ministry of Water and Environment. There is one project for the incorporation of Climate Change into tools, which had challenges in the final usage of forecast data.
  - DHI: Presentation on examples of the type of technology to follow. This technical assistance is about developing technology, as opposed to carrying out and implementing specific studies. Noted the importance of downstream impacts.
- RAN: There are different research projects with outputs in the areas of water purification amongst other technologies for climate change mitigation that need to be scaled up. Discuss further the potential for partnerships with UNEP-DHI.
- UNMA: Data for mitigation such as climate change atlas; wind maps; radiation maps for identifying areas suitable for solar energy development; interpretation of climate change data for management of agricultural impacts.
- UNCST: Climate change awareness is an issue across sectors such as Infrastructure. Climate change is not prioritized. Considering the short period of the project, what do you mean when you say development of technology?
  - DHI: In the case of the Lake Victoria we can build on prior developments which have been done already to which we have proprietary rights, such as the water resources model we can alter and adjust. The knowledge and technology transferred under this assistance has no license, is open access and freely available.
- UNCST: What happens if UNEP-DHI does not have access to prior models that exist how do you approach this situation?

- DHI: In this situation, either we have a good relationship with entities who do have prior developments or this might be a reason to not go through with the response.
- MWE: Climate change can affect spread of waterborne disease and shifting areas affected by Malaria; both public health issues. Land degradation due to subsistence agriculture practices draining wetlands and heavy dependence on charcoal wood as source of fuel.



Figure 1 Participants listening to the presentations

UNFCC focal point joined the meeting for a brief intervention with an introduction and challenges faced in Uganda with regards to accessing funding.

## 4.6 Roundtable discussion

The afternoon of the workshop was used for discussions on a number of relevant topics related to the technical assistance. The objectives were to:

- Discuss related programmes, initiatives or projects in Uganda and lessons learnt
- Provide feedback to the scope and outcomes of the presented CTCN technical assistance

The participants stayed in the main meeting room and discussions on the topics were done with all participants.

### 4.6.1 Outcome from the discussion

The roundtable discussion was initiated by a short introduction where the two topics for discussion were presented:.

Topic 1: Previous experiences in Uganda and the region (30 min)

- a) Are you aware of ongoing or previous programmes related to climate change with focus on Lake Victoria?
- b) Are they still in operation and if not then why?
- c) Lesson learned from previous programmes to be used for this technical assistance?

Topic 2: Discuss and present concrete examples of interventions for the water sector and for the energy sector related to (30 min)

- a) long-term planning;
- b) seasonal planning; and
- c) where success or failure of the intervention is likely to be affected by climate.

Key messages:

The following tables summarize the results from the discussion of both topics. There were more participants from the water sector than the energy sector represented by only one participant from the renewable private sector. This imbalance is reflected in the results obtained, it was suggested by the participants that the team request details regarding hydropower projects from the relevant national energy institutions.

<b>TOPIC 1: Previous experiences in Uganda and the region</b>			
<b>No.</b>	<b>Programme or project</b>	<b>Institution</b>	<b>Challenges/lessons learned</b>
1	VicRes project focusing on livelihood in Lake Victoria. Historical perspective of Climate Change (CC) / Policy implementation	IUCEA	<ul style="list-style-type: none"> <li>- Main challenge is lack of data</li> <li>- Need to scale up the projects</li> <li>- Capacity building needed for interpreting, reading, applying datasets</li> <li>- Translation into project portfolio and implementation of catchment level studies unknown; need for monitoring.</li> </ul>
2	Severe Weather Project WMO (Lake Victoria safety)	MNA	
3	UK Metoffice climate model of Lake Victoria providing 24h forecast	MNA	
4	CC projections 20/50/100 years provided by MNA	MNA	
5	Project for blending of satellite data with station data	MNA	
6	Baseline and situation studies by MWE, focus on dropping water levels in Wamala/Rwizi catchments	MWE	
7	Catchment Management Plans Rwizi/ Katonga, have some focus on CC impact	MWE	
8	Wetland coverage dataset for monitoring purposes	MWE	
9	Project for incorporation of CC into Catchment Management Plans	MWE	
10	Nile Water Allocation Tool Study	NBI	
11	Incorporation of CC in NBI water resources model	NBI	
12	Qualitative study of resilience of community against flood drought and land slide; Community survey conducted	RAN	
13	Training on gender mainstreaming emphasized within RAN activities	RAN	
<b>TOPIC 2: Discuss and present concrete examples of interventions for the water sector and for the energy sector</b>			
	<b>Long-term planning</b>	<b>Seasonal planning</b>	<b>Success/failure affected by CC</b>
1	Hydropower	Hydropower, water level fluctuations, operation challenge to meet target power production	Quantity and quality of municipal water supply systems Masaka Kampala Jinja
2	Land restoration and conservation efforts		Wetland interventions and management
3			Beach management; sanitation control and health hazards

## 5 Key outcomes from the workshop

The workshop was very successful with participation of all the invited stakeholders except most of the energy sector (only one private sector participant). The project will try to arrange a separate meeting during the next mission to Uganda.

The key outcomes from the first national workshop are:

- All participating institutions appreciated the CTCN initiative and offered to support the technical assistance through possible future stakeholder meetings and through review of relevant project outputs.
- Uptake of new technology focussing on climate change adaptation is lacking in Uganda and this technical assistance could provide a first step towards increasing the capacity with access to data, new state of the art tools and guidelines. The CTCN assistance will not be able to solve all the existing issues and should be seen as a first step towards in increased capacity within the area.
- From the discussion, an overview was obtained of a number of ongoing projects with focus on climate change, or some climate change oriented activity within the water sector. This overview is not all inclusive but can serve as an indicator on which projects to focus on. Action to collect information regarding these projects is needed to obtain details.
- There is a gap between the scientific knowledge on climate change adaptation within Uganda, and the practical implementation, and specific focus on how the dissemination towards these sectors could be improved needs to be include in the assistance.
- Action to request information from energy sector government and regulatory entities to fill in the gaps regarding energy sector related projects and needs.



## APPENDICES

## APPENDIX 1: List of participants

	Name	Organisation	Position	Email
1	Sowed Wamala	NBI		swamala@nilebasin.org
2	Fiston Muneza	RAN		famuneza@gmail.com
3	Geoffrey Kamese	NAPE	Senior Program Officer for projects	kamese@nape.or.ug
4	Jennifer Amejja	NAPE	Secretary to the Executive Director	jenni@nape.or.ug
5	Dr Raymond Mngodo	LVBC	Coordinator	mngodo@lvbcom.org
6	Henry Rbosa	MWE		
7	Caroline Nakalyango	MWE DWRM	Senior water officer, information management	caroline.nakalyango@gmail.com
8	Privar Twesi	MGLSD		privartwesie@gmail.com
9	Dickson Avutia	UNCST	Alternative Resource Mobilizer	
10	Deborah Kasule	UNCST	Head S&T Outreach Unit; Climate action focal point H2020	d.kasule@uncst.go.ug debicash@gmail.com
11	Karl Kaddu	UNCST	Communications Officer	
12	Loi Namugenyi	UNCST	Information manager	l.namugenyi@uncst.go.ug
13	Bashir Kagere	UNCST	Policy analyst	kagsbash05@yahoo.com
14	Davis Tumusiime	UNCST		
15	Linda Mwesigwa	Stepup Standard limited		Linda.mwesigwa@stepupstandard.com
16	James Bataze	UNMA	Senior Meteorologist	batazej@gmail.com
17	Paul Isabirye	UNMA	Director Networks and Observations	Paul.isabirye@unma.go.ug

18	Julius Lejju	MUST	Associate Professor Biology Department	<a href="mailto:ilejju@must.ac.ug">ilejju@must.ac.ug</a>
19	Irene Semakula Seryazi	UNCST	Science Officer	<a href="mailto:irene.semakula@yahoo.com">irene.semakula@yahoo.com</a>
20	Sowed Sewagudde	MWE/LVEMP	DWRM	<a href="mailto:sewaguddes@yahoo.co.uk">sewaguddes@yahoo.co.uk</a> <a href="mailto:sowed.sewagudde@mwe.go.ug">sowed.sewagudde@mwe.go.ug</a>
21	Chebet Maikut	MWE	UNFCCC focal point	<a href="mailto:chmaikut@gmail.com">chmaikut@gmail.com</a>
22	Bob Natifu	MWE CCD	Senior Climate Change Officer- Outreach	<a href="mailto:bob.natifu@gmail.com">bob.natifu@gmail.com</a>
23	Julius Mafumbo	MWE		<a href="mailto:Mfmjul009@yahoo.co.uk">Mfmjul009@yahoo.co.uk</a>
24	Maxwel Otim Onapa	UNCST	Deputy Executive Secretary, CTCN focal point	<a href="mailto:maxwell.otim@gmail.com">maxwell.otim@gmail.com</a>
25	Daphine Ninsiima	UNCST	Administrative Assistant	
26	Nalumansi Proscovia	UNCST	Human Resources Officer	<a href="mailto:p.nalumansi@uncst.go.ug">p.nalumansi@uncst.go.ug</a>
27	Oluf Jessen	DHI	Project manager	<a href="mailto:ozj@dhigroup.com">ozj@dhigroup.com</a>
28	Sílvia Leirião	DHI	Water resources specialist	<a href="mailto:sls@dhigroup.com">sls@dhigroup.com</a>

## APPENDIX 2: Presentations




# EAST AFRICA COMMUNITY LAKE VICTORIA BASIN COMMISSION




## Overview of LVBC: Projects/ Programs and Key Achievements

Presented by:  
**Dr. Raymond Mngodo**  
Regional Project Coordinator, LVEMP II, LVBC

At the CTCN Workshop Kampala, Uganda



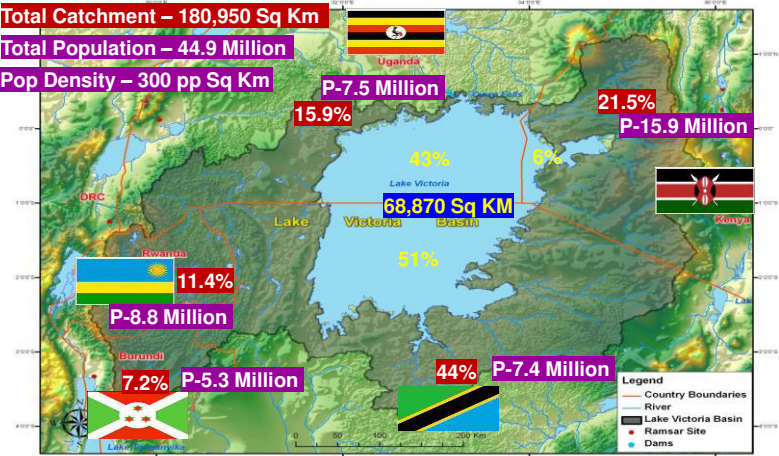
## Lake Victoria Basin




**Total Catchment – 180,950 Sq Km**

**Total Population – 44.9 Million**


**Pop Density – 300 pp Sq Km**





Country	Population (Million)	Percentage of Basin Population
Uganda	7.5	15.9%
Kenya	15.9	21.5%
Rwanda	8.8	11.4%
Burundi	5.3	7.2%
Tanzania	7.4	44%




## MORE FACTS ABOUT LAKE VICTORIA




Parameter	Figures
Surface Area	68,870 Km <sup>2</sup>
Average Depth	40m
Maximum Depth	84 Meters
Shore line length	4828 Km
Volume	2,750 Cubic Kilometers
Source of water	Precipitation- 82% Rivers – 18%
Loss of water	Evaporation – 76% River Nile Outflow – 24%
Water Residence Time	23 Years (P in P out)
Flushing Time	123 Years (renewal)









## LVB'S POTENTIALS – WATER FOR DOMESTIC & INDUSTRIAL



- A source of water for domestic, industrial, irrigation and hydropower (3 cities + medium and urban growth centres)
- Commercial water supply; e.g. 90% of NWSC total water supply is from Lake Victoria with total revenue estimate \$ 60 million annually




## LVB's POTENTIALS – WILDLIFE




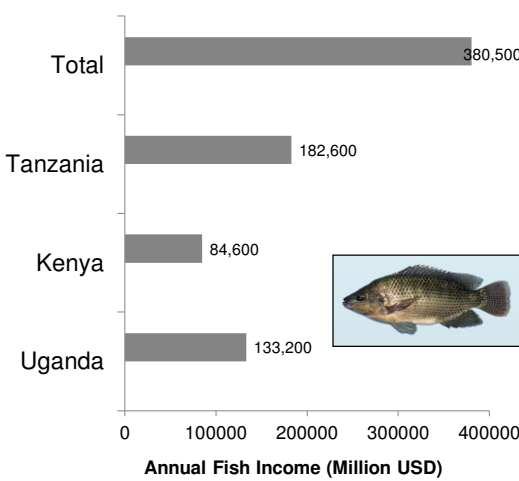
- Has the most of world class wildlife habitats including the Mara/Serengeti (Estimated income USD 270 Million annually)
- Huge biodiversity – terrestrial & aquatic



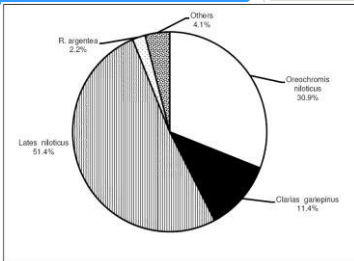




## LVB's POTENTIALS – FISHERIES RESOURCES





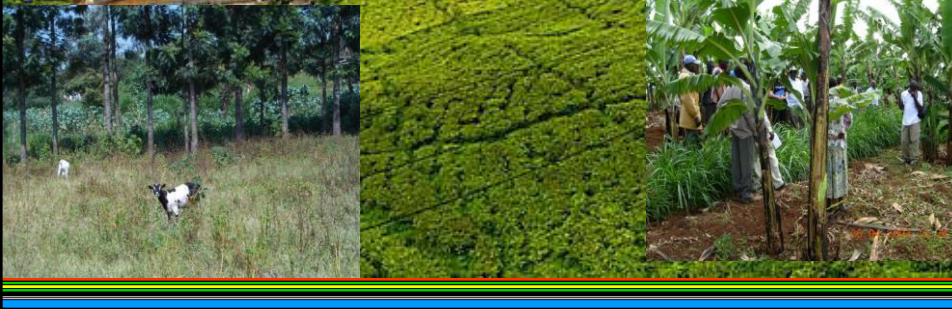
Country	Annual Fish Income (Million USD)
Total	380,500
Tanzania	182,600
Kenya	84,600
Uganda	133,200

Rich fishery resource (2011: yield > 1 million MT annually, Income earning ~ US \$ 350-400 Million at beach level), Forex ~ US \$ 250 million

## LVB'S POTENTIALS – RICH AGRICULTURAL SOILS

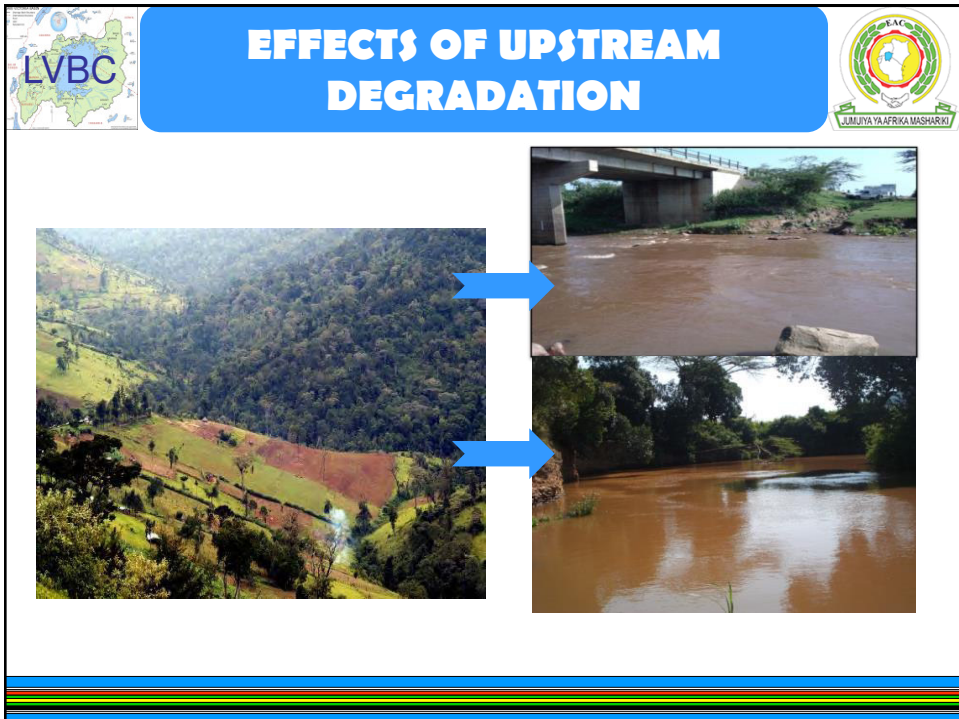
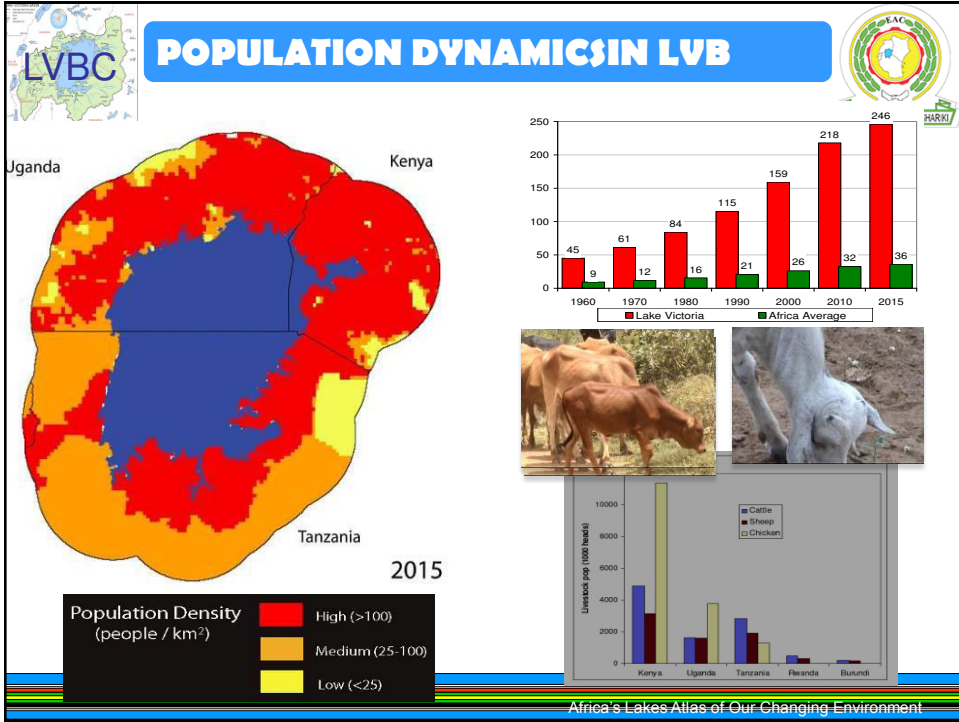
LVB is endowed with fertile soils ideal for a wide range of crops. It also falls within a good agro-climatic zone. And is strategically connected through all modes of transport to outside market.




## CHALLENGES TO SUSTAINABLE DEVELOPMENT IN LVB




- Stresses within the lake – over-fishing, Water quality, fluctuating water level
- Stresses on littoral zones – construction and farming in shoreline, conversion of wetlands,
- Stresses from the basin – land degradation, deforestation, sediment loads
- Stresses from outside the basin – nutrients (N and P) transported into the basin by air,
- Climate change (floods and severe droughts)
- Population Explosion







## LAKE VICTORIA BASIN COMMISSION



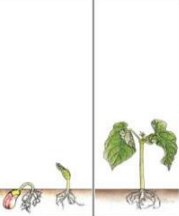


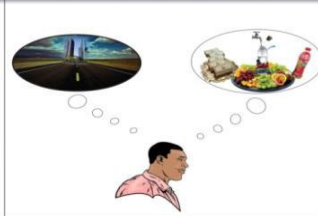
- LVBC is a specialized institution of the EAC
- Establishment of the Commission is provided for under Article 114 of EAC Treaty (1999).
- The operations of the Commission is governed by the Protocol for Sustainable Development of LVB (2003)
- Other guiding documents include: the Shared Vision, LVBC Strategic Plan – normally derived from the EAC Development Strategy and the Council's Decisions & Directives

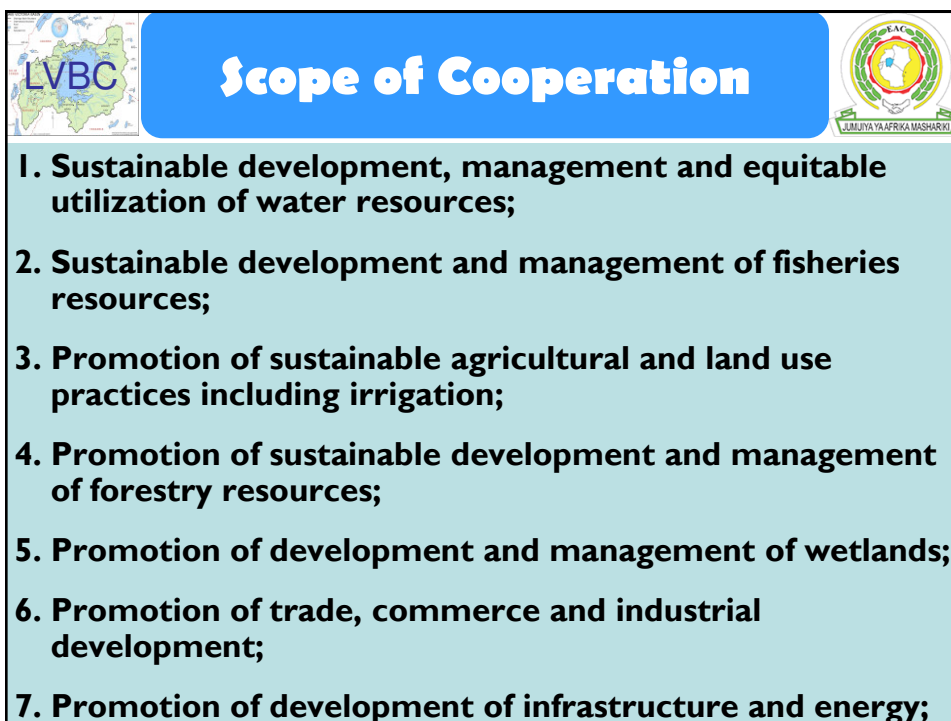
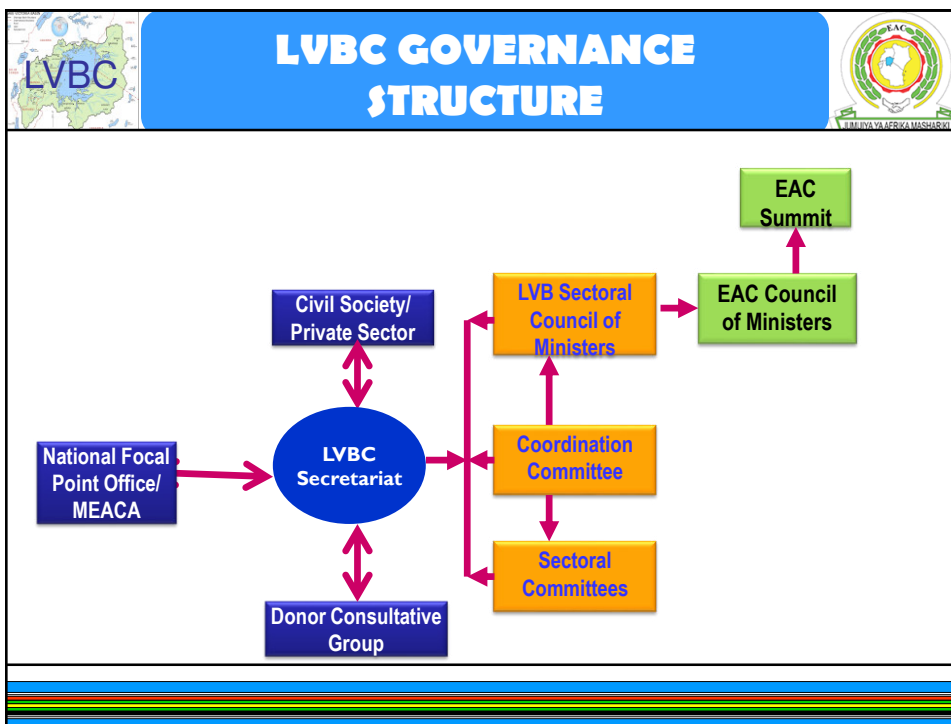


## LVBC'S VISION & MISSION



<b>Vision</b>	<b>“A prosperous population living in a healthy and sustainably managed environment providing equitable opportunities &amp; benefits”</b>
<b>Mission</b>	<b>to promote, facilitate and coordinate activities of different actors in the LVB.</b>
<b>Objective</b>	<b>To promote equitable economic growth, poverty eradication, sust. use &amp; mgt. of NR, Env. Protection and Safety of Nav.</b>





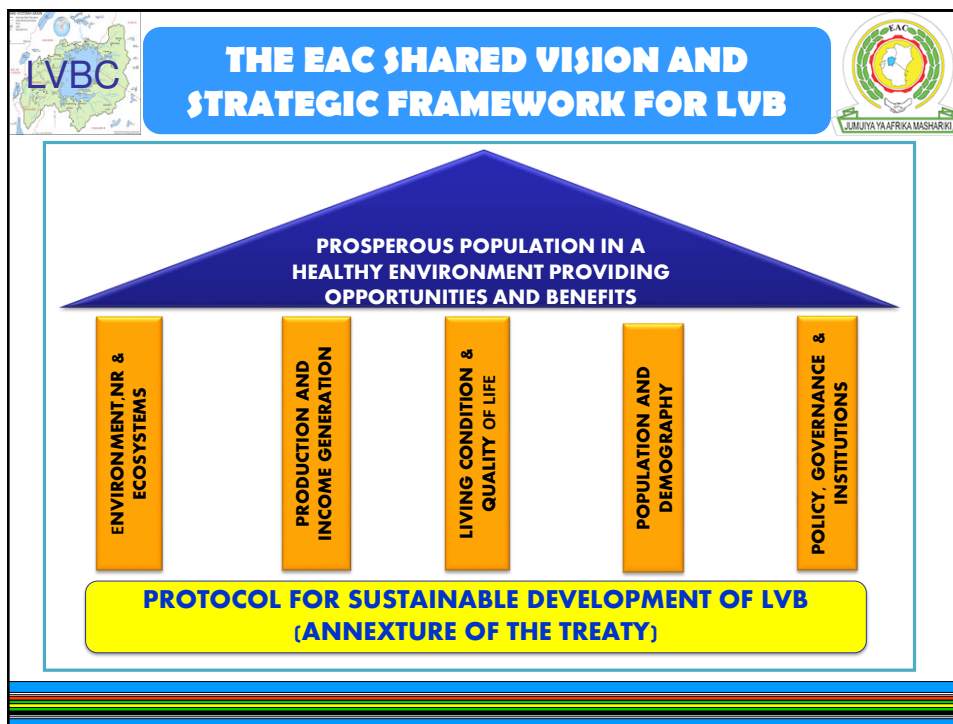

## Scope of Cooperation

- 8. Maintenance of navigational safety and maritime security;**
- 9. Improvement in public health with specific reference to sanitation;**
- 10. Promotion of research, capacity building and information exchange;**
- 11. Environmental protection and management of the Basin'**
- 12. Promotion of Public participation in planning and decision-making;**
- 13. Integration of gender concerns in all activities in the Basin; and**
- 14. Promotion of wildlife conservation and sustainable tourism development.**




## Policy Areas in the Shared Vision and Strategy Framework for Mgt. & Dev. Of LVB


- 1) Ecosystems, Natural Resources & Environment;
- 2) Production and Income Generation;
- 3) Living Conditions and Quality of Life;
- 4) Population and Demography; &
- 5) Governance, Institutions and Policies




<b>PROJECTS/PROGRAM</b>	<b>AREAS OF PROGRAM FOCUS</b>
<b>LVEMP II (WB, SIDA, GEF)</b>	Environmental sustainability & Livelihood improvement and Policy harmonization
<b>LVWATSAN II (AFDB)</b>	MDG target on WATSAN and Environmental Hygiene in 15 Secondary Towns (KE-Kericho, Keroka & Isebania)
<b>PHE Program (USAID)</b>	Promoting the integration of population, health and environmental conservation initiatives
<b>PREPARED (USAID)</b>	Biodiversity, WASH and Climate Change
The EAC/AMREF LVB HIV&AIDS Partnership (EALP) Program	establish a framework for improving the effectiveness of HIV and AIDS responses for mobile populations within the Lake Victoria Basin
<b>TWBHH-MRB (USAID)</b>	Providing potable water, improved sanitation & hygiene to MRB communities
<b>MERECIP (NORAD)</b>	Linking biodiversity and Environmental conservation to livelihood – through a landscape approach
<b>PA &amp; PF - NEG</b>	Institutional Strengthening, Resource Mobilization and Investment Promotion

LVBC		PIPELINE PROJECTS			EAC JUMUJA YA AFRIKA MASHARIKI	
PROJECT	FOCUS	ESTIMATED COST	DEV PARTNER(S)	COVERAGE		
LVB - IWRM	IWRM + HPIs	EURO 20 Million	KfW, EU/EDF11	BR, KEN, RW, TZ, UG		
MERECIP II	Biodiversity, NR (PA & NPA), Livelihood	USD 10 Million + Private Sector & CSO	Norway/NORAD	KEN & UG		
MNLVCT	Maritime Communication & Transport	USD 28 Million	AfDB + EU-AIF	KEN, TZ, UG		
LVBC HQs	Institutional capacity	USD 7 Million	China, KfW	N/a		
LVB CC Adaptation	Climate change adaptation	USD 5 Million	Adaptation Fund	BR, KEN, RW, TZ, UG		
Integrated Corridor dev - LVP	Inter-modal transport	USD 450 Million	WB + Partners	BR, KEN, RW, TZ, UG ++		


LVBC		Strategic Focus over the next 5 Year			EAC JUMUJA YA AFRIKA MASHARIKI	
<ul style="list-style-type: none"> <li>i. Promotion of sustainable environment and natural resources management;</li> <li>ii. Promotion of Integrated Water Resource Management and Development;</li> <li>iii. Promote, facilitate and enhance Maritime Transport Safety and Security on Lake Victoria;</li> <li>iv. Promotion of Social Development Services;</li> <li>v. Improving Investments and Economic Productivity in LVB; &amp;</li> <li>vi. Strengthen Institutional and Coordination Capacity of LVBC</li> </ul>						




## CTCN FUND ASSISTANCE



- The CTCN fund assistance relates to technology and guidelines for strengthening planning in the water resources and energy sectors in Uganda, at both long-term and seasonal time scales.



## Objective of assistance



- To facilitate transfer and capacity building for climate change adaptation focusing on planning related to the Lake Victoria.
- The proposed support will utilise existing knowledge and capacity and further develop and validate these for applications to local issues within Uganda



## Why Partner with us



- Broad mandate (14 areas of coop) - accommodative
- Predictable policy, legal and administrative environment anchored on the EAC Treaty/LVB Protocol & supported by the adoption & use of various harmonized instruments for TNRM in LVB;
- Regional convening power and pioneers of Integrated PHE appr;
- Opportunity to work with five Partner States and a wide array of other Partners in the basin;
- Joint resource mobilization;
- Potential to impact on a huge and needy population of 44.9 Million people including the hard to reach areas;
- Well developed institutional, coordination, management and oversight structures at all levels (operation to policy);



# Thank You

CTCN technical assistance on:

# Adaptation to climate change through improved information and planning tools for Lake Victoria

*Kampala, 15<sup>th</sup> of June 2017*

Oluf Z. Jessen - DHI  
Sílvia Leirião - DHI  
Niels Riegels - DHI  
Per B. Hansen - DHI



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## Agenda

- **DHI – short introduction**
- **Project background**
- **Project objectives**
- **Project work plan and activities**
  - Work plan and activities
  - Project outcomes

## Questions



## Project overview



Request from **Lake Victoria Basin Commission** through the Climate Technology Network Center for technical assistance on:

- **Strengthen planning** in the water resource and energy sector at long term and seasonal timescales
- **Increased capacity and technologies** through workshops and trainings



### Uganda

**Applicant:** Lake Victoria Basin Commission

**National Designated Entity:** Dr. Maxwell Otim Onapa, Uganda National Council for Science and Technology

**Duration:** 12 months

**Status:** Under implementation

**Budget:** 230,000 USD

**Technical assistance planned by:** UNEP-DHI Partnership

**Implemented by:** UNEP-DHI Partnership

## DHI in short



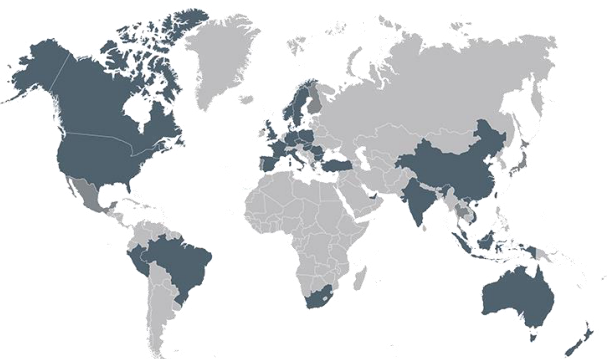
## DHI in short



We're an independent, private and not-for-profit organisation

## • We are global

- Our network of offices spans more than 30 countries worldwide
- We have experience from projects in over 150 countries



## DHI in short



### Areas of expertise:



Aquaculture and agriculture



Energy



Climate change



Coast and marine



Surface and ground water



Urban water



Industry



Environment and ecosystems



Product safety and environmental risk

[www.dhigroup.com](http://www.dhigroup.com)



## DHI in short



### Experts in project team:



#### Oluf Jessen

- Project manager
- 20 years of experience



#### Sílvia Leirião

- Water resources expert
- 10 years of experience



#### Per Hansen

- Institutional expert
- > 30 years of experience



#### Niels Riegels

- Water resources expert
- 15 years of experience



## Project background



## Project background



Request from **Lake Victoria Basin Commission** in through the Climate Technology Network Center for technical assistance on:

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## Background – Lake Victoria



Lake Victoria has great socio-economic importance at national and regional level where the main sectors relying on the lake are:

- **Hydropower**, especially Uganda are hugely dependent on the power supply from Nalubale, Kiria and Bujagali. All located on the Victoria Nile and depending on the outflow from Lake Victoria.
- **Fisheries**. Lake Victoria is the largest inland fishing resource in the region. In Uganda fishing is one of the most important export items, and many people are depending on the fisheries business.
- **Inland water transport**, the lake provides numerous important linkages for transport on national and regional level.

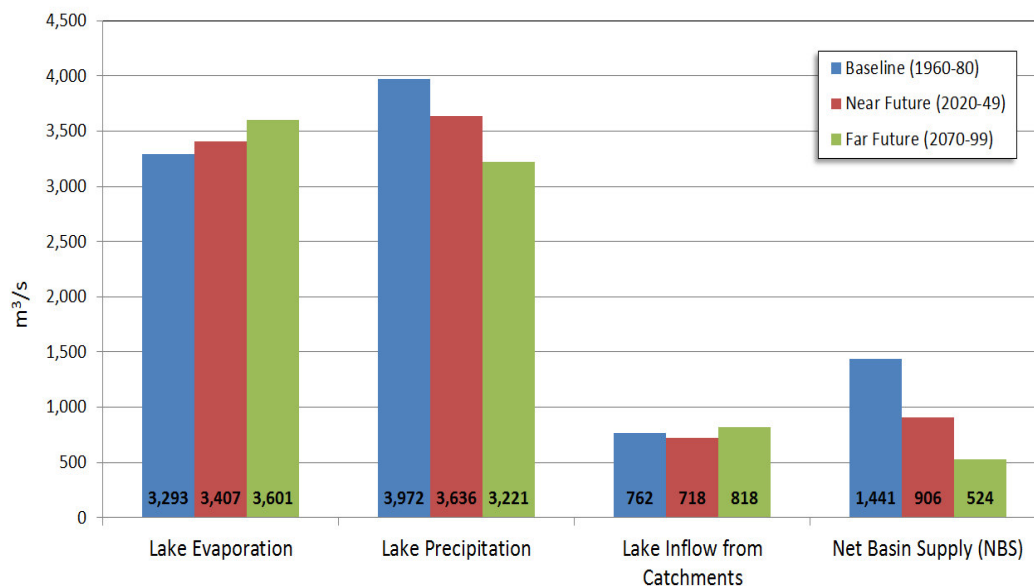
## Background – Lake Victoria



The hydrology of Lake Victoria are dominated by i) rainfall on the lake, ii) evaporation from the lake surface, iii) inflow from the catchments and iv) runoff through Victoria Nile. Rainfall accounts for 82 % of the total inflow and evaporation accounts for 76% of the losses from the lake.

Process	1950-2000 Flow (mm)	2001-2004 Flow (mm)	1950-2004 Flow (mm)
<b>Inflow</b>			
Rainfall	1655.4	1670.3	1656.5
Catchment discharge	369.1	314.5	365.1
<b>Outflow</b>			
Evaporation from lake	1526.3	1529.8	1526.5
Victoria Nile	479.5	550.9	484.8
<b>Sum</b>	<b>18.7</b>	<b>-95.9</b>	<b>10.3</b>

## Background – Lake Victoria



## Background – Lake Victoria



### Key messages:

- Lake Victoria water balance very sensitive to climate change
- Available model projections suggest reduced net water balance over the next century
- A reduced net water balance would have direct effects on hydropower and downstream water availability
- Need to include the uncertainty of future climate impacts in today's planning efforts

## Project objectives

## Project objectives



- **Strengthen the capability** for climate change related planning with specific focus on water resource and energy sectors
- **Enhance the capacity** of relevant local government agencies to address climate change issues
- **Provide scientific based technology** for climate change assessment within Uganda and the Lake Victoria region

## Project outcomes



Tools and guidelines supporting planning with focus on climate change impact on the water resource and energy sector.

Specific project outcomes:

1. **Access to state-of-the-art** climate projections, seasonal forecast and historical data
2. **Planning application** enabling stakeholders to develop and evaluate planning options for the Lake Victoria region
3. **Guidelines** for decision making using climate projection information
4. **Training and capacity building** workshops

## Project work plan and activities

### Project activities



#### **Activity 1 – Stakeholders outreach**

Present the scope of the project scope to a wide range of stakeholders in Uganda and identify the needs for improved technologies for climate change planning.

#### **Activity 2 – Technology implementation**

Develop, Test and validate the technical components of the CTCN assistance

#### **Activity 3 – Dissemination and outreach**

Ensuring the transfer of knowledge and technology to the local and regional stakeholders

## Activity 1 – Stakeholders outreach



### Activity 1.1 – Presentation of CTCN assistance and consultation of national stakeholders

- Present the scope of the CTCN project
- Identify the current gaps related to the assistance
- Stakeholder feedback on project scope

Deliverables	Delivery date
<i>List of relevant stakeholders drafted</i>	<i>31 May 2017</i>
<i>National workshop (minutes from workshop) reports</i>	<i>31 August 2017</i>
<i>Assessment report (maximum of 30 pages)</i>	<i>31 August 2017</i>

### Activity 1.2 – Description of outcomes and identification of case studies

- Map specific needs and requirements for the CTCN assistance
- Identification of case studies for demonstration and testing

Deliverables	Delivery date
<i>Technology specification report (maximum of 50 pages)</i>	<i>15 November 2017</i>
<i>Methodology for testing and demonstration</i>	<i>15 November 2017</i>

## Activity 2 – Technology implementation



### Activity 2.1 – Implementation of technical components

- Development of the required technologies

Deliverables	Delivery date
<i>First version of the tools for quality assurance and testing to LVBC and the key stakeholders</i>	<i>15 January 2018</i>

### Activity 2.2 – Testing, demonstration, and documentation

- Validated on a selected use case
- Ensure validated outcomes
- Ensure outcomes can support the relevant stakeholders

Deliverables	Delivery date
<i>Review and comments from LVBC</i>	<i>31 March 2018</i>
<i>Technology testing and demonstration report</i>	<i>30 April 2018</i>
<i>Documentation and user guide</i>	<i>30 April 2018</i>

## Activity 3 – Dissemination and outreach



### Activity 3.1 – Presentation of case studies and related results

- Present the outcomes of the CTCN project
- Create awareness and knowledge of the outcomes

Deliverables	Delivery date
Summary report of the second national workshop	31 May 2018

### Activity 3.2 – Technical consultation

- Provide detailed knowledge and capacity

Deliverables	Delivery date
Summary report of the technical consultation	31 May 2018

### Activity 3.3 – Regional dissemination to all countries in the Lake Victoria region

- Regional dissemination
- Road map for upscaling and further development

Deliverables	Delivery date
Lesson learned and recommendation report (maximum of 30 pages)	15 June 2018
Roadmap documentation in transfer of technology and scale up (maximum of 20 pages)	15 June 2018
Minutes and recommendations from the bilateral meetings.	15 June 2018

## Project work plan



Activity	Weeks											
	4	9	13	17	22	26	31	36	40	44	49	52
<b>1 Stakeholder consultation</b>												
1.1 National workshop to identify priorities for the CTCN assistance												
1.2 Technology description												
<b>2 Technology development</b>												
2.1 Technology development to local conditions												
2.2 Technology testing and validation												
<b>3 Technology transfer and dissemination</b>												
3.1 Second national workshop to create awareness and knowledge of the outcomes												
3.2 Technical training												
3.3 Outreach and dissemination												

## Expected targets of CTCN project



- The outcomes **to be used for seasonal and long term planning** within the water and energy sectors in Uganda.
- The outcomes of the CTCN assistance to be used in Uganda and within the region for **assessment of climate change impacts**.
- Project outcomes to **support funding for upscaling** of concept within Uganda and the region.

**Thank you - Questions?**

