

## CTCN assistance in Uganda

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

Deliverable 7 & 8 (activities 3.1 and 3.2) Summary report

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Prepared for **UNEP**  
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## Acronyms and Abbreviations

ASI	Agricultural Stress Index
CEDAW	Convention on Elimination of Discrimination Against Women
CFS	Climate Forecast System
CGLS	Copernicus Global Land Service
CIESIN	Intergovernmental Panel on Climate Change Science Information Network
CORDEX	Coordinated Regional Climate Downscaling Experiment
CTCN	Climate Technology Centre & Network
EAC	East African Community
EDI	Effective Drought Index
FAO	Food and Agriculture Organization of the United Nations
GALS	Gender Action Learning Systems' methodology
GAD	Gender and Development
GAP	Gender Action Plan
GCF	Green Climate Fund
GDP	Gross Domestic Product
GFSAD	Global Food Security Support Analysis Data
IUCEA	Inter-University Council for East Africa
JAXA	Japanese Aerospace Exploration Agency
LMCS	Land Monitoring Core Service
LVBC	Lake Victoria 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 SSD	Ministry of Water and Environment Support Services Department
MWE DWRM	Ministry of Water and Environment Directorate of Water Resources Management
NAPE	National Association of Professional Environmentalists
NASA	National Aeronautics and Space Administration
NBI	Nile Basin Initiative
NCEP	National Centers for Environmental Prediction
NDE	National Designated Entity
NDVI	Normalized Difference Vegetation Index
NELSAP	Nile Equatorial Lakes Subsidiary Action Program
NOAA	National Oceanic and Atmospheric Administration
NWSC	National Water and Sewerage Corporation
MEaSURES	Making Earth System Data Records for Use in Research Environments
MGLSD	Ministry of Gender Labour and Social Development
OPM	Office of the Prime Minister
RAN	Resilient Africa Network
RCP	Radiative Concentration Pathway
SEDAC	Socioeconomic Data and Applications Center
SPI	Standardised Precipitation Index
SRES	Special Report on Emissions Scenarios
STEPUP	STEPUP Standard Limited
SVI	Standardised vegetation index
SWI	Soil Water Index
TRMM	Tropical Rainfall Measuring Mission
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
VCI	Vegetation Condition Index
WCRP	World Climate Research Programme
WRIS	Water Resources Information System



## Activity 3.1 and 3.2 summary report

The technical assistance is being implemented through three main activities forming the scope of work and key deliverables: Activity 1 – Stakeholder outreach; Activity 2 – Data access, model refinement, and development of guidelines for decision support; and Activity 3 – Dissemination and outreach. For more background information please refer to Activity 1 & 2 reports.

The main purpose of Activity 3 is to help stakeholders make use of the components of the technical assistance, and the formulated output from Activity 3 is:

**Increased national and regional capacity for planning with focus on climate change impact on Lake Victoria. Roadmap describing recommendations for national and regional upscaling.**

The four activities and deliverables of Activity 3 are the following:

- Activity 3.1 – Second national workshop to inform relevant stakeholders and organisations in Uganda about the outputs of the CTCN assistance.
- Activity 3.2 – Technical training to provide detailed knowledge and capacity in using the products of the technical assistance in Uganda on an ongoing basis.
- Activity 3.3 – Regional dissemination to all countries in the Lake Victoria region aims at providing awareness and knowledge of the technology to relevant organizations within the Lake Victoria region. This activity includes:
  - Regional dissemination to key organisations within the Lake Victoria basin through the council of ministers' meetings by the LVBC; dissemination of materials to all relevant national and regional stakeholders through LVBC web site.
  - Lessons learned report; Roadmap documentation describing recommendations for regional transfer of the technology and scaling up within future projects; including an evaluation of funding options through regional partnerships and donors for post response interventions.
- Activity 3.4 Evaluation and Learning will produce a monitoring and evaluation plan to monitor and evaluate the timeliness and appropriateness of the implementation; the update of the CTCN Impact Description; and a closure report.

This report is the deliverable under **Activities 3.1 and 3.2** holding a summary of the national workshop and technical training events.

The first chapter provides a very brief background to the Climate Technology Centre and Network (CTCN) technical assistance. The second chapter explains the approach and lists the participating organizations. The third chapter summarizes the final workshop (1 day) followed by the last chapter summarizing the final technical training (2 days).

The Appendices hold the event agendas and attendance registers.

# 1 Brief introduction

Upon a request by the Lake Victoria Basin Commission (LVBC), the CTCN funded technical assistance on “Adaptation to climate change through improved information and planning tools for Lake Victoria”. The technical assistance kicked off in June 2017 with the objective to strengthen planning in the water resources and energy sectors in Uganda, at both long-term and seasonal timescales. In February 2018 a web portal was deployed making the data, information, tools and guidelines produced freely accessible online to all national stakeholders. The web portal titled **Adaptation to Climate Change portal – Lake Victoria and Uganda**<sup>1</sup>, constitutes the platform provided by the technical assistance used to deliver embedded applications, namely:

Data and information – application providing free access to near real time data and information of relevance for the CTCN assistance

Basin planning – supporting basin planning through evaluation of existing and new investments, climate change and population pressure

Drought assessment – supporting the identification of areas with drought hazard and evaluating the impact on vulnerable sectors or areas

RDM tool and decision-making guidelines –supporting the decision process taking the uncertainty associated with climate change into consideration

Reporting – application to support dissemination of reports or bulletins to stakeholders

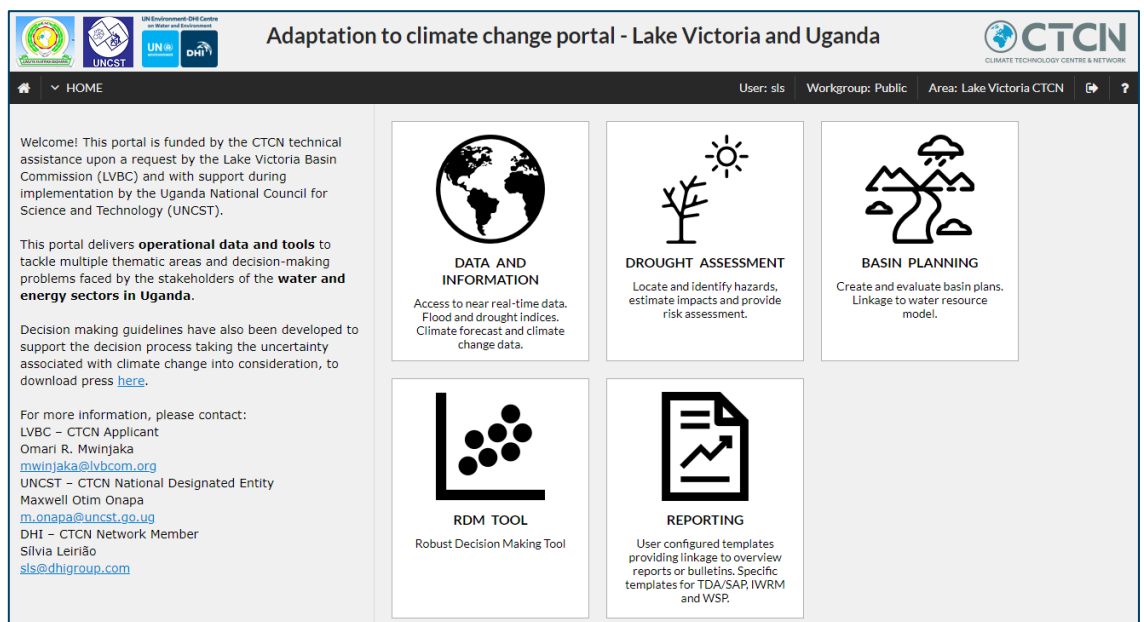


Figure 1 Screenshot of the home page of the web portal displaying the introductory welcome message, the link to the guidelines document and the four data and tool applications.

Simultaneously, the LVBC Water Resources Information System has been updated with static data consisting of climate change projections, and a procedure has been put in place to outline the import of seasonal forecast data monthly.

<sup>1</sup> Portal address: <http://www.flooddroughtmonitor.com>

Engagement and preparation meetings with stakeholder institutions in Uganda – 5<sup>th</sup> to 9<sup>th</sup> of February 2018 – followed by a testing, validation and demonstration workshop – 21<sup>st</sup> and 22<sup>nd</sup> of March 2018 – with LVBC staff held at the UNCST premises.

Finally, since early on during this technical assistance, a series of information sheets were sent off weekly, about the data, information and tools. Each information sheet or Infosheet for short, consists of a two-page note on different aspects related to the deliverables such as: access to the time series and spatially distributed data for Uganda and the Lake Victoria Basin area, in near real time; climate data, seasonal forecasts and a variety of indicators; or applications such as the drought assessment, reporting and basin planning. Others regarding the functioning of the web portal. This weekly interaction grew and formed a community of interested parties within each organization.

Activity 3 will draw to an end on the 30<sup>th</sup> of June bringing this technical assistance to closure.

## 2 Approach and participants

From the 5<sup>th</sup> to 7<sup>th</sup> of June 2018 the final workshop and technical training took place in Entebbe and this report summarizes those activities. It was required that the workshop included a maximum of 15 participants for a duration of 1 day; and that the technical training in turn included staff within the key organizations, a maximum 5 organisations and a total of 15 participants, with the duration of 2 days.

Participation of women was heavily emphasized in the training although, 7 women and 12 males took part which is 36% female participation. More women would be brought on board for dissemination of information than at the data entry and analysis stage.

With accumulated experience throughout this assistance, it was found that the best and most encompassing approach to benefit institutions would be to combine both events and hold them during the same week outside of Kampala. Entebbe was chosen due to ease of accessibility to all, including the LVBC and the one upcountry national participant. Therefore, the same participants were in attendance to both the workshop and technical training that followed gathering a total of 21 participants from 9 institutions.

Participant institutions were the following:

- **Lake Victoria Basin Commission**
- **Uganda National Meteorological Authority**
- **Ministry of Water and Environment, Climate Change Department**
- **Ministry of Energy & Mineral Development, Energy Resources Development, GIS Unit**
- **Makerere University School of Public Health**
- **Mbarara University of Science and Technology**
- **National Association of Professional Environmentalists**
- **Nile Basin Initiative Secretariat**
- **Uganda National Council for Science and Technology**

Two entities could not take part in the event, that are part of the portal community include **Stepup Standard Limited** and **Resilient Africa Network**. In the case of the later institution however, there is a link to Makerere University School of Public Health and dissemination can be furthered through it. All workshop and training materials were disseminated in the community.

### 3 Second national stakeholder workshop

At the workshop, the use cases were presented in detail in order to demonstrate how the assistance could be used to support decision-making.

The LVBC opened the workshop by welcoming the participants and expressing gratitude for their engagement throughout the technical assistance. The LVBC expressed their commitment to work towards the sustainability and future of the portal.

The DHI team continued the morning session with a presentation and discussion of the technical assistance deliverables and the key portal features.

Firstly, an introduction was given by the team's gender expert, raising awareness and explaining the methodology which would be followed during the final workshop and training days, to carry out gender sensitivity assessment.

Regarding the data and information application, special emphasis was placed on climate change datasets and seasonal forecasts. A brief overview was provided for the drought assessment, reporting and the basin planning application.

A presentation and discussion of the testing and validation results took place next. The team presented the Lake Victoria water balance, along with results of an investigation of rainfall patterns over the lake surface.

LVBC representatives said that lake level variations are of highest concern. LVBC also mentioned the importance of water quality.

UNMA mentioned that significant spatial variation exists with respect to rainfall patterns over Lake Victoria, at different time scales. The team explained how spatially distributed data can be retrieved from the web portal. UNMA stressed the need for comprehensive validation.

The DHI team then provided an overview of quality checks on and comparisons of global rainfall data sets, including GPM, CHIRPS and TRMM, and according to the team's analysis the conclusion was that CHIRPS performs the best. The team also presented diurnal rainfall patterns visible in the TRMM rainfall dataset, along with storm frequencies. The presentation of storm frequencies addressed the great concern expressed during the first national workshop regarding the high number of fishermen deaths occurring during Lake Victoria storm events.

During the second half of the morning session, the stakeholders began to present their own applications of data, information and tools.

The UNMA team presented comparison of CHIRPS data to observed data held at UNMA. Comparisons were presented for average monthly rainfall at five locations for 1981-2016.

- **Entebbe station:** Correlation was better earlier in the 1981-2016 comparison period.
- **Kasese station:** Some correlation.
- **Arua station:** Reasonable correlation except in 1995-2009 period.
- **Soroti station:** Good correlation earlier in the comparison period, weaker correlation after 2005.
- **Mbarara station:** Good correlation except during 2005-2009.

In summary, UNMA concluded that CHIRPS rainfall underestimates observed rainfall, but correlation is reasonable.

A UNMA team member suggested looking at analysis of rainfall patterns in mountain regions and other places where topography exerts a strong influence on rainfall. It was also noted that 2005-2010 was a dry period in Uganda and Lake Victoria, which may contribute to the poor correlation observed in this period.

The next presentation was made by the MEMD team. Due to the team's expertise in GIS, their presentation focused on GIS data available through the web portal. The first part of the presentation had a training focus, with information on the following topics:

- The difference between raster and vectors;
- How to transform coordinate systems;
- How to view attributes of vector layers; and
- How to display labels.

The MEMD also presented information on the energy distribution system, and demonstrated how department makes plans for new development of power lines. MEMD pointed out that 80% of energy generation in Uganda is hydropower, and water levels have strong impacts on generation.

The MEMD is interested in information about spatial distribution of visible light at night, as this is an important indicator of energy use. MEMD is also interested in the correlation between population and energy use, as this is useful for identifying areas that may lack adequate access to energy.

The last team to present was the MWE CCD team. Their presentation focused on how they apply data and information from the portal to map vulnerability to climate change. During the presentation, the team:

- Explained department's approach to vulnerability mapping:  
*Exposure + Sensitivity - Adaptive capacity*
- Provided overview of data sets that look interesting to CCD;
- Described the use of CC projections in portal in a policy brief to the MWE leadership. Used envelope plots and spatial plots;
- Presented the development of vulnerability maps using GIS tools; and expressed a wish to develop more detailed vulnerability maps;
- Presented summary results of a national vulnerability assessment, which suggests vulnerability is highest in northeast of Uganda.

At the conclusion of the workshop, the DHI team gave an introduction to the decision making guidelines and the RDM portal tool. The presentation focused on how RDM can support decision making by reducing the need to agree on assumptions at the outset of a decision-making process. The DHI team demonstrated how the RDM tool facilitates exploration of how different assumptions might affect a decision outcome, including assumptions about external drivers (including climate change), objectives, and risk preferences.

The overall response was of great interest in the usefulness of the tool. Notably, the UNMA mentioned that they would like to use technical tools like this in their advisories to farmers. In the discussion that followed the presentation, some of the questions and comments included:

- "Are we risk averse or risk seeking?"
- "How can I have 95% confidence in a decision?"

- “Aren’t there other types of uncertainty that are important, besides rainfall?”
- “Ensembles (of uncertain external factors) do not capture all possible uncertainties.”

The workshop day concluded with this discussion, setting the scene for the technical training sessions in the next days, including the culminating session on the RDM tool in the afternoon of the second and last day.



Figure 2 Group photo at the end of final workshop on the 5<sup>th</sup> of June 2018, held in Entebbe.

## 4 Technical training

Activity 3.2 corresponds to 2-day technical training event, with the following output:

### **Capacity and knowledge for using the project outcomes on future climate adaptation projects**

During both days participants used the portal with a sequence on hands-on exercises designed as step-by-step guides to all sections of the portal. Participants worked individually but were also asked to split into groups, ensuring that every group has a member from a different institution. Each group also had a different catchment from the focus area, and was asked to go select a representative and present the findings on the catchment to all.

The first day focused on data & information, indicators and drought. It was kick started with a presentation providing an overview of rainfall data sets available in the web portal, with emphasis on seasonal forecasts (overview of CFSv2) and climate projections (overview of CORDEX ensembles).

Evapotranspiration (CRU) and temperature datasets were also discussed. Vegetation related and soil moisture related indices were presented and understood namely the NDVI and SWI.

Drought hazard indices were presented as well as the available socio-economic indicators which can be used in vulnerability analysis.

In the data and information hands-on exercise, participants learnt the basic functionality within the data and information application, and were introduced to the different functionalities and how data could be shown and downloaded.

Participants were provided with an overview of the main functionality, and the different options for visualising and downloading time series data. The table tool showing different statistical information of the data was used as well as advanced plotting options in the form of “Envelope plot” and “Column chart”. Participants explored spatially distributed raster datasets as well as station based data types.

Next followed the hands-on exercise, on how different data sources could be used to provide an overview of the current and historic climate as well as potential climate hazards in the area. The participants were assigned different sub-catchments, they were then asked to select a group member to relay their findings to all (see Figure 3 through to Figure 6).



Figure 3 Groupwork during the data and information exercise on the first day of the technical training on the 6<sup>th</sup> of June 2018 in Entebbe, here participants from UNCST, MWE CCD and NAPE.

A long discussion on how to use the delta change factors for precipitation, evapotranspiration and temperature sparked, as well as why RCP 4.5 and 8.5 have been chosen.

It was observed that the seasonal forecast is more uncertain as the lead time of the forecast increases, as well as the uncertainty of forecasting, by participants.

When downloaded, time series data is in CSV format. Participants also learned how to view this format and convert it into a spreadsheet.



Figure 4 Two groups at work during the hands-on exercises: first group to the left gathering participants from UNMA, MWE CCD and MEMD; second group with participants from MEMD, MUSPH and MUST.

Key remarks by the different groups during the second half of the first day of training are collected in the following list:

- Suggestion for the tool to use radio buttons instead of check boxes when only one selection is possible (for example, for raster data).
- The percentage plots were easier to interpret than the raw values, because users could easily recognize dry and wet periods. However, not all groups found the percentage plots straightforward to interpret.
- Many groups commented on how it is difficult to interpret the longer-term SPI values (3 month and 6 month) because these indicators combine wet and dry season values, which can vary differently.
- Some groups noted that the 6-month SPI showed moved daily variation than the 3-month SPI during some periods, which they found to be counter-intuitive.
- Some groups suggested that SPI-3 could be a useful indicator for planting because it may be correlated with soil moisture storage.



Figure 5 Groupwork on the data and information exercise, here participants from LVBC, NBI and UNCST.



Figure 6 Participants focus on the data and information exercise, on the first day of the technical training, here showing participants from MWE CCD, UNMA and NAPE.

The second day of training started out with a report generating exercise. The workgroup functionality was explained, including adding members to user-defined groups. A demonstration was carried out using a template report developed during the testing and demonstration phase of the technical assistance.

After cloning and generating their own report templates, participants set up automatic update and emailing functionality with the frequency of their choice.

Finally, two technical issues were identified by participants that require attention and fixing:

- Some participants found that figure/chart links from templates were not imported to the correct row in the table of charts and figures.

- Others found that the table of charts and figures was not resizing to fit the browser window, which results in the table being pushed out of sight at the bottom of the window.

These are being addressed at the time of submission of this summary report.

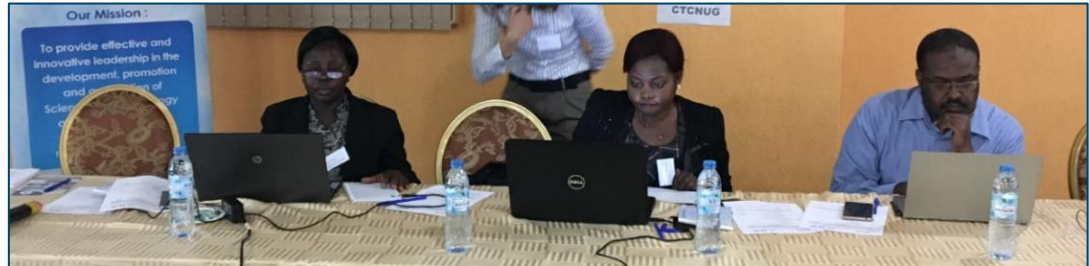


Figure 7 Participants focus on the reporting exercise, on the second day of the technical training on the 7<sup>th</sup> of June 2018 in Entebbe, here showing participants from NAPE, MEMD and NBI.

After the reporting exercise, the remainder of the morning was spent on basin planning and the relevant section in the portal.

Firstly, there was a presentation regarding the baseline model and plan, investment types and indicators. Also, the creation of new plans using cloning was covered. The evaluation of plans in the tool takes place by comparing different plans against the baseline and each other. In this way a measure of the impacts of each plan can be obtained. Participants observed how the Basin Planning application works, including the associated concepts and workflow.

The afternoon session on the second day of training concluded with an exercise using the robust decision-making tool. Participants were taken through the RDM workflow using outputs from the basin planning application on the web portal.

The purpose of the RDM methodology is to help decision makers and stakeholders explore how different sets assumptions may impact on the potential performance of plans and investments. In the RDM exercise, participants used the RDM tool to explore how investments might be vulnerable to factors outside of the control of decision makers, such as climate change. The participants learned how the tool can help identify investments that are likely to perform well regardless of future conditions or, in other words, “robust” investments. The RDM exercise included the following steps:

- **Ensemble import:** The participants imported ensemble simulation results for two plans from the planning tool. The results were organized in a table that included a plan identifier, external factor identifiers, and output indicators for each ensemble member.
- **Identification of failure thresholds:** Participants were prompted to identify failure thresholds for all output indicators or, in other words, minimum acceptable values.
- **Plan comparison:** The two plans were compared according to different metrics, and ensemble results were compared to failure thresholds.
- **Vulnerability analysis:** The participants used plotting tools in the RDM tool to help identify combinations of external factor values likely to cause plans to fail. During this part of the exercise, many expressed interest in vulnerability to climate change and asked about climate change uncertainty is represented in the ensemble simulations produced by the planning tool.



Figure 8 Technical assistance community photograph at the end of the three-day event in Uganda.

In concluding remarks, the CTCN NDE, expressed satisfaction with the deliverables and that the purpose of the workshop and training were met. A recommendation for more agencies are not involved, such as the Ministry of Agriculture. A great desire that cooperation continues was also expressed and the level of engagement during the workshop and training was highly praised.

All recommendations by participants were captured, and will be added on to the recommendations incorporated in Deliverable 9 & 10 Roadmap and lessons learned.

## 5 Gender mainstreaming

During the first session in the morning of the workshop day, the team's gender expert introduced to participants gender mainstreaming concepts and a sample checklist that had been drawn from the use of the Gender Action Learning System Methodology (GALS) as one of the household methodologies for assessing gender sensitivity (Figure 9). The table below shows an example of a checklist that can be used as a tool to assess that an intervention/ policy/ strategy/ training/ program is gender sensitive.

Table 1 Sample of a gender checklist

Gender indicator	Yes	No	Explanation
Does the intervention/ Document capture many members' visions/aspirations.			
Acknowledges positives and strength within first			
Encourages Working together like planning together, budgeting, Incorporates sharing of proceeds to all the interested parties.			
Promotes the "rewarding of self" concept.			
Ability of the intervention to contribute to property ownership of the most admired property in a community.			
Ability of the intervention to enable people make decisions.			
Respect for each other's opinions.			
Allows observation of the smallest change within the Group (look at every detail).			
Ability to identify best performers and their related appreciations.			
Identifying individuals' potentials to decide selection of beneficiaries.			
Allows members to freely express themselves.			
Enables members to balance the three sections of life (fulfilment of the economic, relations and personal development).			
With interventions that help build confidence of participants.			
Contributes to realization of freedom expressed under Convention on Elimination of Discrimination against Women (CEDAW) Provisions.			
Points out at least 3 gender affirmative actions			

During stakeholder presentations, the participation was active and members could brainstorm on the reasons for the slight differences in the trends for the different datasets and observed data such as missing data at entry. "...the trends in the low lands are near each other for all the datasets we have compared to those in mountainous areas". It was resolved that care must be taken during data collection and entry especially in insecure places such as in Kasese district by 1981.

Despite the fact that, the four project outcomes do not mention gender, the love to focus on it was emphasised in the remaining part of the assignment. There were plans to have stakeholder outreach which was a good indicator of information sharing. In addition, the plan to develop, test and validate the technical components contribute to ownership of the technology by the users and the entire Gender And Development (GAD) concept.

In terms of scientific technical deliverables, gender is not specifically present, therefore it is recommended that if possible some data layers such as population, could be added to with layers that have a gender breakdown. Others could be female specific such as the percentage of females in farmer workforce. It is also recommended that advice to advisors to others using the portal is prepared with gender sensitive guidance, specifically regarding use of gender sensitive mechanisms for dissemination women groups, time slots appropriate during the day, etc); mention women farmers in choice of crop; emphasize and identify the most preferred crop by women.

Regarding data and information, during the training course the need to look at the past to inform the future was emphasized, following guidance obtained during the first day of workshop. Additionally, allowing freedom of expression and recognition of inputs was also emphasized.

Within decision making and use of data and information; the process should be cognizant of the different gender e.g. the youth, the women, and how they help people achieve the most desired goal of the region for example, earning 2 dollars a day.

For increased ownership of the portal and information, catchment data for independent districts could be summarized and emphasised for specific dissemination. This attracts the attention of the leaders including Members of Parliament (MPs). Similarly, the simplicity in identifying places matters and the indicators here include, presentation of centre names in alphabet, sustained colour definitions that are related to the known ones. In addition, pictorials also need more emphasis within the results to interest use of the analyses and ease dissemination among the uneducated.



Figure 9 Team's gender expert during the workshop on the 5<sup>th</sup> of June 2018, introducing gender mainstreaming concepts and checklist for assessing gender sensitivity.

During the team meeting discussions, it was found that the tools and training were very practical and that one-on-one work with technical people was effective. This was elaborated in the expression by participants to have the known water vulnerability areas such as cattle corridor, Bududa and Soroti Districts.

It was very positive that each breakout group included a female and that groups were enthusiastic about presenting their experiences during the workshop as well as actively engaged in discussions during the hands-on exercises. Group presentations were done voluntarily with those who wanted to share first given the opportunity.

During the exercises specifically, the planning and decision making, it is recommended that investments are translated into local currency. It was also found that the irrigation scheme is a practical problem of great interest to stakeholders. This was found to be in harmony with the principles of adaptive capacity to which a contribution to the asset base and forward thinking are part.

It is highlighted that many different perspectives were present in the room, clearly contributing to freedom of expression. Participants noted that Issues of climate have no boundaries and it would be good to incorporate more line Ministries departments and agencies if time allows. These would include; the Office of the Prime Minister (OPM), National Water and Sewerage

Corporation (NWSC), Directorate of water, Agriculture, National Planning Authority among others.



Figure 10 Team meeting discussing gender sensitivity assessment results as well as lessons learned.

Despite the fact that “...there is need to continue interpreting the results....” as pointed out, participants appreciated that the entire action is a contribution to ensuring that the Uganda National Meteorological Authority (UNMA), its control room, control tower and the Civil Aviation Authority in Entebbe fulfil the requirements for attaining the certificate of gender and equality which has an implication on the public budget allocation to the meteorological sector.

Among the recommendation for increased gender mainstreaming was the desire to develop a strong communications strategy within the public institutions for others to effectively share information. The strategy shall need to look at the different groupings including data collectors, data entrants, observers of weather-civil aviation, planners, decision makers, risk managers and disseminators. This will contribute to the right of giving thought under the Convention on Elimination of Discrimination Against Women (CEDAW).

Finally, it is noteworthy the linkages to the Uganda’s Intended Nationally Determined Contribution (NDC) of the deliverables of the technical assistance namely:

- Providing alternatives to guide decision making in Uganda’s prioritized NDC adaptation and mitigation options of the agriculture (expanding climate information and early warning systems) and energy sector respectively.
- Contributing to the realization of Priority Area A of the UNFCCC Gender Action Plan (GAP) (Capacity building, Knowledge sharing and Communication) specifically on enhancing the capacity of Parties and stakeholders to develop gender-responsive policies, plans and programmes on adaptation, mitigation, capacity-building, technology and finance.
- Contributing to Priority D subsection b (gender-responsive implementation and means of implementation) which focuses on cooperation with the UNEP DTU Partnership and the Climate Technology Centre and Network, invite interested stakeholders to share information on the incorporation of gender into technology needs assessments.
- And Priority area E sub section b) on monitoring and reporting specifically responding to “Integration of gender considerations into adaptation, mitigation, capacity-building, Action for Climate Empowerment, technology and finance policies, plans and actions”.

## APPENDIX A

### Agenda



**Adaptation to climate change through improved information and planning tools for Lake Victoria and Uganda – Final workshop and training**

Imperial Golf View Hotel<sup>1</sup>, Entebbe<sup>1</sup>, Uganda – 5<sup>th</sup> to 7<sup>th</sup> June 2018

Day 1 Final technical assistance workshop		
Time	Title	Responsible
09.00 – 09.15	Registration.	
09.15 – 10.00	Welcome and presentation of the work sessions. Presentation of participants.	UNCST <sup>1</sup> & LVBC <sup>11</sup>
10.00 – 11.00	<b>Overview and key features of the portal</b> <i>This includes what type of outputs are produced and how these need to be interpreted.</i>  Presentation of the platform provided by the technical assistance with the following embedded applications: <ul style="list-style-type: none"> <li>• Data and information</li> <li>• Reporting</li> <li>• Basin planning</li> <li>• Drought assessment</li> </ul>	DHI
11.00 – 11.20	Tea break	
11.20 – 12.00	<b>Presentation of testing results</b> <i>Testing of data and information from the portal, focus on the Lake Victoria basin.</i>  Results from testing of the portal data and information <ul style="list-style-type: none"> <li>• Comparison of rainfall data sources</li> <li>• Rainfall over Lake Victoria</li> <li>• Water level</li> <li>• Day and night time variation of rainfall</li> </ul>	DHI
12.00 – 13.00	<b>Presentation of demonstration results</b> <i>Stakeholders to demonstrate use of the portal.</i>  Presentation of use case by stakeholders, including the following: <ul style="list-style-type: none"> <li>• Validation with observed data</li> <li>• Data and information used in activities</li> <li>• Automatic reporting</li> <li>• Basin planning</li> </ul>	Stakeholders <sup>2</sup> / DHI
13.00 – 14.00	Lunch	
14.00 – 15.00	<b>Presentation of demonstration results (cont.)</b> <i>Stakeholders to demonstrate use of the portal and extended Q&amp;A with all participants.</i>	Stakeholders / DHI
15.00 – 15.20	Tea break	
15.20 – 16.00	<b>Introduction to decision making guidelines</b> Demonstration using seasonal planning case study.	DHI
16.00 – 16.30	Wrap up and closing of the workshop.	All/DHI

<sup>1</sup> Check in for participants on the 4<sup>th</sup> of June.

<sup>2</sup> Stakeholders presenting include UNMA; MWE CCD; MEMD amongst others.

Day 2 Technical training		
Time	Title	Responsible
09.00 – 09.30	Objective and agenda for training sessions.	DHI
09.30 – 10.20	<b>Data and information</b> <i>Overview and understand available near real time data and climate change information.</i> <ul style="list-style-type: none"> <li>• Introduction to satellite data (presentation)</li> <li>• Demo of the data and information application</li> </ul>	DHI
10.20 – 11.00	<b>Exercises</b> <i>Understanding functionality and the different data types.</i> <ul style="list-style-type: none"> <li>• Hands-on exercises – based on the Data and Information app.</li> <li>• Introduction to climate related drought indices and hazards</li> <li>• Identify historic climate related hazards</li> </ul>	All
11.00 – 11.20	Tea break	
11.20 – 13.00	<b>Drought assessment</b> <i>In depth understanding of key indicators to be used for drought assessment.</i> <ul style="list-style-type: none"> <li>• Introduction to the steps in a drought assessment process</li> <li>• Hands-on exercises – based on the Drought Assessment app.</li> <li>• Identify location and severity of drought hazards</li> </ul>	DHI/All
13.00 – 14.00	Lunch	
14.00 – 15.00	<b>Reporting application</b> <i>Understand how reports or bulletins for dissemination could be generated.</i> <ul style="list-style-type: none"> <li>• Demo of the reporting application and template reports generated</li> <li>• Hands-on exercises – use and setup of the reporting application</li> </ul>	DHI/All
15.00 – 15.20	Tea break	
15.20 – 16.15	<b>Basin planning application</b> <i>Presentation of the basin planning application</i> <ul style="list-style-type: none"> <li>• Background to planning application</li> <li>• Terminology and concepts workflow</li> <li>• Hands-on exercises – Results tab</li> </ul>	DHI/All
16:15 – 16:30	Discussion and wrap up	DHI

Day 3 Technical training		
Time	Title	Responsible
09.00 – 09.30	Recap from previous session and agenda for training sessions.	DHI
09.30 – 10.00	<b>Basin planning application</b> <i>Presentation of the basin planning application and plans generated based on stakeholder feedback</i> <ul style="list-style-type: none"> <li>• Understanding the baseline and existing plans</li> <li>• Understanding indicators available</li> </ul>	DHI
10.00 – 11.00	<b>Exercises</b> <i>Use of the planning application by the stakeholders.</i> <ul style="list-style-type: none"> <li>• Viewing results using the table, chart and map</li> <li>• Creating strategies and analysis</li> </ul>	All
11.00 – 11.20	Tea break	
11.20 – 13.00	<b>Exercises</b> <i>Preparation of output to be used with decision making guidelines.</i> <ul style="list-style-type: none"> <li>• Creating new investments and plan</li> <li>• Adding uncertainty to inputs</li> <li>• Exporting of results</li> </ul>	All
13.00 – 14.00	Lunch	
14.00 – 15.20	<b>Guidelines for decision making</b> <i>Demonstration and exercise using basin planning application.</i> <p>The exercise will use a case study focused on irrigation and hydropower, where participants will be able to use the guidelines and tool to incorporate uncertainty in a decision-making process.</p>	DHI/All
15.20 – 15.40	Tea break	
15.40 – 16.00	Final remarks and closing	DHI & UNCST

<sup>i</sup> <http://www.imperialhotels.co.ug/ImperialGolfViewHotel.html>

<sup>ii</sup> UNCST: Uganda National Council for Science and Technology

<sup>iii</sup> LVBC: Lake Victoria Basin Commission



## APPENDIX B

### Attendance registers







## Attendance register Day 1

 Adaptation to climate change through improved information and planning tools for Lake Victoria and Uganda –  
 Final workshop and training

 Imperial Golf View Hotel Entebbe, Uganda – 5<sup>th</sup> to 7<sup>th</sup> June 2018

## Registration Form

Day 1








No.	Name	Institution	Phone Number and Email	Signature
1	Kaaya Christine	Parliamentary Commission CC	+256 772 576095 kaaya@pmc.gov.ug	
2	MUCHIRUWA MICHAEL	MWE/CCD	+256 783215882 mugonirwa.michael@gmail.com	
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5	DEBORAH KACUCE	UNCST	+256 772 454 466 d.kacuce@uncst.go.ug debicash@gmail.com	
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7	Julius Kajiira	MUST	jlejiira@must.ac.ug	

**Adaptation to climate change through improved information and planning tools for Lake Victoria and Uganda –  
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Imperial Golf View Hotel Entebbe, Uganda – 5<sup>th</sup> to 7<sup>th</sup> June 2018

Registration Form

Day 1

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14	MIELS RIEGELS	DHI	+4541245652 mriegels@gmail.com	

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 Final workshop and training

Imperial Golf View Hotel Entebbe, Uganda – 5<sup>th</sup> to 7<sup>th</sup> June 2018

Registration Form

Day 1

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17	Namugengi boi	UNCST	namugengi10@gmail.com 0772559334	Boige
18	Maxwell Simbwa	UNCST	maxwell@uncst.go.ug 0772994450	J
19	Christine Muhumura	Naresp4 DAA	cmuhumura@musph. ac.ug 0772658876	ATR








## Attendance register Day 2

 Adaptation to climate change through improved information and planning tools for Lake Victoria and Uganda –  
 Final workshop and training

 Imperial Golf View Hotel Entebbe, Uganda – 5<sup>th</sup> to 7<sup>th</sup> June 2018

Registration Form

Day 2


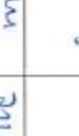





No.	Name	Institution	Phone Number and Email	Signature
01	MUSA SSEMUSU	Uganda National Meteorological Authority	052495122 samujumusa@yahoo.com	
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03	Kaaya Christine	Bender Expert	0772570095 kaayaact@gmail.com	
04	Christine Mulumba	Makerepe University School of Public Health	cmulumba@msph.ac.ug mulumba@raglab.org 0772658878	
05	Jennifer Ameja	National Association of Prof. Environmentalists	0776527667 jenni@nape.or.ug jameffa@gmail.com	
06	DEBORAH KASULE	UNCST	+256 772 454 466 d.kasule@uncst.go.ug debicash@gmail.com	
07	Maxwell Chim Onwapa	UNCST	Mr. Onwapa@uncst.go.ug 0772697450	

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Imperial Golf View Hotel Entebbe, Uganda – 5<sup>th</sup> to 7<sup>th</sup> June 2018

Registration Form

Day 2






No.	Name	Institution	Phone Number and Email	Signature
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10	Julius Kajju	MUST	jlejiu@must.ac.ug	
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13	Prisy Ahumwe	M FMD	0776439534 natasha.prisa@nbi.org.ug	
14	KAMESSE GEOFFREY	NAPE	0774609190 kamesse@nape.or.ug	

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Imperial Golf View Hotel Entebbe, Uganda – 5<sup>th</sup> to 7<sup>th</sup> June 2018

Registration Form

Day 2

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20	Calistus Quincy	EAC/LVBC	quincy@lvbcom.org +254726986710	
21				








## Attendance register Day 3

 Adaptation to climate change through improved information and planning tools for Lake Victoria and Uganda –  
 Final workshop and training

 Imperial Golf View Hotel Entebbe, Uganda – 5<sup>th</sup> to 7<sup>th</sup> June 2018

Registration Form

Day 3








No.	Name	Institution	Phone Number and Email	Signature
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4	ISHE ORINA	MWE/CCD	0775583089 00kior@gmail.com	
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 Final workshop and training

Imperial Golf View Hotel Entebbe, Uganda – 5<sup>th</sup> to 7<sup>th</sup> June 2018

Registration Form

Day 3





No.	Name	Institution	Phone Number and Email	Signature
9	Kaaya Christine	Gender Expert DHI Group	072570095	
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12	Martin Kretchner	MEMD	0788663949 m.kretschmer@gmail.com	
13	Prisy Ahuware	MEMD	0774439834 netasaprasah@vsnl.com	
14	Jennifer Amejja	National Association of Prof. Environmentalist (NAPE)	076527667 nape@nape.or.ug jenni@nape.or.ug jamejja@gmail.com	
15	Modathir Zaroug	NBI-Sec	0700475319 mzaroug@nilbasio.org	

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Registration Form

Day 3

No.	Name	Institution	Phone Number and Email	Signature
16	Philby Mbuliro	Nile Basin Initiative	0772949693 / 0701214342 mmbuliro@nilebasin.org	
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19	Kamugenyihei	UNCST	0772559334 kamugenyihei@gmail.com	
20	Godfrey Mujuni	UNIMA	0772-568977 grmujuni@gmail.com	