



*Empowered lives.  
Resilient nations.*

# **TITLE OF PROJECT: STRENGTHENING CLIMATE INFORMATION AND EARLY WARNING (SCIEWS)**

## **END OF PROJECT REPORT**

18 JUNE 2018

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The SCIEWS project was a catalyst for improvement of hydro met services in the country, and therefore some gaps still need to be addressed to bring the level of service to a climax. In this respect three key recommendations for future actions are: ..... 25

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## 1.0. BACKGROUND AND OVERVIEW

### 1.1. Introduction

As climate change unfolds globally, the frequency and intensity of natural disasters is expected to increase. Uganda is one of the countries in Africa that has been considered vulnerable to the increasing frequency and severity of droughts, floods and severe storms (hail, thunder, lightning and violent winds), and their impacts on sectors such as agriculture, fisheries, as well as infrastructure. Such climate-related hazards are having increasingly adverse effects on the country and future climate change is likely to further exacerbate the situation. A large proportion of the Ugandan population has a low capacity to adapt to climate change. Climate change impacts are likely to be particularly negative on Uganda's rural population because of their high dependence on rain-fed agriculture and natural resource-based livelihoods. Uganda's capacity to adapt to climate-related hazards should therefore be developed to limit the negative impacts of climate change and effectively address the country's socio-economic and developmental challenges.

These changes in climate and weather conditions required reliable and timely early warning information to enable planning at both the policy and end-user levels. It is for this reason that the United Nations Development Programme (UNDP) in Uganda with funding from the Global Environment Facility (GEF) has since 2013 been supporting the Government of Uganda to build capacity in terms of infrastructure, systems and human capital for improving the weather, climate, disaster preparedness and disaster management in the country. This has been done through the GoU/UNDP's "Strengthening Climate Information and Early Warning System (SCIEWS) project in Uganda" in partnership with other development initiatives notably the GiZ-USAID.

The SCIEWS project aimed to avail the country with the opportunity to better manage climate hazards, food security and agricultural production, scarce and dwindling water resources and make its socioeconomic development process less vulnerable to climate-related risks by:

- i. Enhancing the **capacity of hydro-meteorological services and networks** to monitor and predict weather and climate events and associated risks e.g. floods, droughts and severe storms;
- ii. Developing **effective and efficient ways of packaging weather and climate information**, including contextualising with other environmental and socio-economic data to produce early warnings/alerts and advisories; and
- iii. Supporting **improved and timely preparedness and response to weather and climate information and early warnings**, including efficient delivery mechanisms using radio and telecommunications networks.

The US\$ 4 Million project funded by the UNDP/GEF, with co-funding of US\$ 23 Million (in kind) by the Government of Uganda (GoU) and other partners, has been implemented from March 2014 and is closing on the 30<sup>th</sup> June 2018. The project has been implemented by the Ministry of Water and Environment's Uganda National Meteorological Authority (UNMA) and the Department of Water Resource Management (DWRM), in collaboration with key responsible partners including: the Department of Relief, Disaster Preparedness and Management (DRDPM) in the Office of the Prime Minister (OPM); the Ministry of Agriculture, Animal Industries and Fisheries (MAAIF), the Ministry of Local Governments (MoLG); the Uganda Communications Commission (UCC), and the Ministry of Finance Planning and Economic Development as the Donor Coordinator. The project has been

implemented across the country, with pilot testing of its results in 28 Districts from four sub-regions of Elgon, Karamoja, Teso and Lango mostly in Eastern Uganda.

## **1.2. Project Description and Development Context**

### **Problems that the project addressed**

Statistics on weather events over the past three decades place Uganda at high vulnerability to climate change, as the country continues to experience increasing temperatures, shifting rainfall patterns and climate hazards particularly droughts, floods and severe storms (hail, thunder, lightning and violent winds). Average temperatures in Uganda have been predicted to increase by up to 1.5 degrees Celsius in the next 20 years and by up to 4.3 degrees Celsius in the 2080s. Rainfall patterns and total annual rainfall amounts are also expected to change with the climate becoming more erratic and unpredictable than before.

The effects of climate change for Uganda include increased food insecurity, increase in incidences of diseases such as malaria, soil erosion and land degradation, damage to infrastructure and settlements by floods, decline in productivity of agricultural and natural resources. Another important impact will be on vulnerable members of the population including poor people living with disability and HIV/AIDS, youth and orphaned children, the elderly, refugees and marginalized communities. If not checked, climate change could push these categories of the population further into poverty. Extreme weather events is said to contribute to 70% of natural disasters in Uganda, which results into annual destruction of about 800,000 hectares of crops. Increase in droughts, floods, temperatures and severe storms have a negative effect on crop production and supply chain as well as on national security, longevity of infrastructure, hydropower production, human health, ecosystem integrity and consequently capital development.

The fundamental problem that this project sought to address therefore was that the climate information (including monitoring) and early warning systems in Uganda were not functioning as optimally as they could for effectively supporting the adaptive capacity of local communities and key sectors, which constrained management and early warning activities, as well as restricting long-term planning, better knowledge of expected future climate change impacts, in particular those associated with the expected increase in frequency and intensity of droughts, floods and severe storms. At commencement of project implementation, the state of climate information and early warning systems in Uganda, if not improved would have significantly undermined social and economic development in the country as:

There were limited hard (e.g. weather/climate observing infrastructure and communications equipment) and soft (e.g. weather forecasting and analysis software, derived analyses of user-friendly information) technologies as well as human and technical capacity to utilize these technologies. This has resulted in: i) insufficient understanding of current and future climate risks; ii) inadequate monitoring and forecasting of climate hazards; iii) inappropriate communication and packaging of warnings; iv) restricted responses to impending climate hazards; and v) constrained planning for long-term climate changes in economic development and risk reduction efforts.

In addition to the above, at the beginning of the project, the weather and climate information, as well as disaster management in the country mostly focused on relief and rehabilitation (reactive actions).

*The goal of the project was therefore to establish a functional network of meteorological and hydrological monitoring stations to help understand better the weather and climatic changes overtime and provide timely information to avert any weather and climate change related to disasters.*

### 1.3. Time Frame

The project document was endorsed on the 20<sup>th</sup> November 2013, and approved for implementation in January 2014. Actual implementation of the project started on 21<sup>st</sup> March 2014 after the Inception Workshop and following the recruitment of core project staff plus re-validation of outputs, including: annual work plans and deliverables; and Monitoring & Evaluation framework. The project had been scheduled to close by the end of December 2017, however, because the project started five months later than the initial planned start date, at the recommendation of the Mid-Term Review consultant, a no-cost extension of six months was given and the 30<sup>th</sup> June 2018 end date.

### 2.0. OPERATIONAL ENVIRONMENT

Since commencement of implementation in March 2014, the operating environment has remained stable to enable delivery of planned targets. A few notable institutional frameworks that enabled implementation during the life of the project were:

In line with the World Meteorological Organisation (WMO) Convention, adopted on 11<sup>th</sup> October 1947, and reviewed in 2007, the National Meteorological and Hydrological Services (NMHSs): Are the single authoritative voice and source on weather and hydrological warnings; And may also be responsible for air quality, astrophysical phenomena, and tsunami warnings. The views of NMHSs are scientifically sound and impartial when advising their governments.

The current National Development Plan (National Development Plan) II for period 2016-2020 was developed, with due attention given to the issue of climate change and disaster preparedness. The United Nations Development Assistance Framework (UNDAF) was also aligned to the NDPII; The Uganda National Meteorological Authority (UNMA) Act 2012 came into force in 2014 giving UNMA the mandate to monitor weather and climate as well as provide weather forecasts and advisories to Government and other stakeholders for use in sustainable development of the country. Overall, the project received both political, technical and field based support to enable it to proceed to completion, as summarized in the below risk log that was used to track the project's interaction in the operational environment.

Risks identified	Mitigation/reduction measures undertaken	Risk Level	Remarks
1) Delayed implementation of baseline projects by the Government and Donors negatively affects LDCF project outcomes.	The Board, Technical Committee and key partners were actively involved in tracking and guiding project implementation.	1	On track

2) Failure to maintain/ vandalized installed hydro-meteorological Equipment.	Operations and Maintenance System in place; Installed weather stations have full time (24 Hrs) personnel on duty; Fencing and permanent structures were constructed for the hydrological stations. The Sub-National Partners and the Water Management Zone(WMZ) structures have been linked to communities for security and sustainability of services	2	Constant surveillance of the equipment required.
3) Climate shocks occurring during the design and implementation phase cause disruptions to installed equipment and severely affect communities, prior to the EWSs being established.	Ensured involvement of the District Disaster Management Committees and the and the WMZ structures, as well as regular maintenance by the meteorological and hydrological technicians.	1	On track; No significant climate shocks occurred.
4) Local information technology and telecommunications infrastructure restricts the transfer of data from installed equipment to necessary recipients, and restricts communication amongst key role players and end-users.	The LDCF project was designed in accordance with local conditions, taking, where applicable, the latest available international technology into account; IT consultants were hired and in collaboration with Kenya Met. Dept. aligned the Fibre Optics in Entebbe	1	On track
5) Procurement and installation of hydro-meteorological equipment, including hardware and software, is delayed because of complications with the release of funds and/or national procurement procedures.	Effective administrative planning was undertaken and procurement using UNDP ensured timely delivery of outputs from international as well as national sources.	2	Procurement of civil works for hydrological stations and installation of automatic water level stations finalized in June 2018.
6) Lack of commitment from communities where EWS are established undermines the effectiveness of the LDCF/SCIEWS project demonstrations.	The project avoided a 'top down' approach and created as sense of District ownership of the EWSs.	2	Linkage with Water Management Zone structures ensured community participation in the operations and maintenance.

7) Alerts and warnings required by communities are not feasible to produce due to scientific or technological failure and social acceptance.	Key personnel from implementing or responsible partners were trained on the current scientific and technical skills of hydro-meteorological systems. The UNDP-CIRDA team and suppliers of equipment provided technical backstopping to the project.	2	conduct annual refresher training to Implementing partners, and translation of weather information to local languages.
8) Electioneering affecting timely participation of District stakeholders including targeted communities and district stakeholders in project work	Ensured participatory planning with stakeholders before implementation of an activity.	1	On track. No incidences occurred.
9) Inflation and currency fluctuations affecting the price of products and services and performance of the Budget.	Constant budget review and revision of the Annual Spending Limit to match the delivery target.	1	On track. Implemented within Authorized Spending Limit (ASL)
10) Inadequate technical capacity of the Responsible/Implementing Partners to deliver outputs	In-house and external training and mentoring of key staff was undertaken for skilling.	2	Necessary to match job requirements with available skills.
11) Inadequate capacity of Responsible and Implementing Partners in financial controls	A Financial Authorization Certification of Expenditure(FACE) was instituted for monitoring project account; Most Financial resources managed via UNDP system.	1	On track; IP&RPs were trained by UNDP in financial management.

### 3.0. ACHIEVEMENTS TO DATE

#### 3.1. Outcome and output level results

The project was implemented in consonance with the planned results framework that was prescribed in the project document, and up to this point it has delivered over 98% of the GEF resources, with visible outcomes in the institutions (UNMA and DWRM) that were targeted for capacity building. Notably, the capacity of the Uganda National Meteorological Authority(UNMA) to produce weather forecast has increased significantly, as well as the capacity to send local observations to the regional(Nairobi) and international Meteorological centers. This is mainly attributed to installation of 25 Automatic Weather stations and Automatic Messaging Switching System(AMSS), rehabilitation of 89% (27) of the existing observation stations and training of personnel from partner Agencies; Uganda is also the first country in Africa to pilot Total Solutions Automatic Weather Stations that are mounted on cell phone towers, which guarantee security against vandalization, ensures un-interrupted power supply and connections to the internet.



In terms of human capital development, there is increase in the confidence UNMA staff have in sharing the weather products. UNMA has thus established itself as a credible source of reliable climate information with capacity to forecast and issue early warning information to end users. Installation of 16 Automatic Water Level Stations in all the four water management zones has been completed, however linkage to the meteorological data streams is pending operationalization of the MoU on data sharing between UNMA and the Directorate of Water Resources Management (DWRM);

Notable outputs that were achieved during the project cycle are summarized thus:

- 20 Automatic Weather Stations (AWSs) have been procured and are being installed in all the climatological zones in the country. This has boosted the weather data generation by UNMA, and hence the accuracy of weather forecasts;
- 5 Total Solutions Automatic Weather Stations (TSAWS) procured and installed in 5 districts of Eastern and North-Eastern Uganda;
- 1 Automatic Message Switching System (AMSS) has been procured and installed at the National Meteorological Center (NMC). As a result, Uganda has been connected to the GTS, upgraded in the WMO system and now transmitting regular weather data to the Regional hub in Kenya Meteorological Department (KMD) Nairobi;
- 16 Automatic Water Level Stations (AWLSs) were procured and installed in all the four water management zones in the country;
- 28 Water level stations were either constructed or rehabilitated;
- 9 PCs have been procured and delivered to UNMA, as support towards connectivity of the synoptic stations to the NMC; 12 smart phones for the synoptic stations delivered to UNMA for complementary data relay from the synoptic stations;
- 32 Base Weather Stations have been rehabilitated across the country, improving the safety and security of base station equipment;
- 2 years stock (732) of balloons and radiosondes procured and delivered to UNMA, and upper air sounding services resumed; 10 sets of 12 Barometers, thermometers (23 dry bulb 23 wet bulb, 24 max, 24 min, 10 grass min, 60 soil, 10 humidity) and 10,752 (equinox), 18,048(winter), 18,048 (summer) sunshine cards for all the stations procured and supplied to UNMA. With these input, the aviation briefing information has greatly improved the safety of flights in and out of Uganda;
- Technical support from KMD facilitated fiber optics connectivity at the NMC; the rest of training to be conducted in 2016-after the new equipment are procured and installed;
- 12 UNMA staff on the job trained in KMD;1 UNMA Systems Engineer underwent training in India on weather data management;
- 10 DWRM staff were trained at the KMD for improved hydrological monitoring and flood early warning in the country;
- The following Consultancies, Missions and Technical Assistance were facilitated through the SCIEWS project:
  - i. IT Specialist: enabled finalization of specifications for computers in the synoptic stations and the AMSS for the National Meteorological Center;
  - ii. Synoptic, Agro-Hydromet: Identified the status of UNMA weather stations, to enable planning for their rehabilitation;
  - iii. Hydromet AWLSs: Assessed the status of hydrological stations across the country to enable planning for civil works and rehabilitation;

- iv. Protocol & Agreements: Developed the Protocols, Agreement and Standard Operating Procedures for data sharing between UNMA and the DWRM;
- v. Monitoring and Evaluation: Reviewed the SCIEWS project document baseline and targets and developed the frameworks to be used for monitoring implementation of the project over the next 3 years;
- vi. Cost Benefit and Market Study: Unearthed opportunities for UNMA's income generation and sustainability strategies;
- vii. Communications Specialist: Developed Communications Strategies that will enable UNMA increase its visibility and improve its image and confidence in its products;
- viii. Hazard and Vulnerability Mapping Training of Trainers: Trained 8 core staff from UNMA, OPM, MAAIF, DWRM as resource persons for rolling forward the skills among partners
- ix. Early Warning System survey(ongoing): Will establish baselines for Early Warning at House Hold level, to enable tracking of impact of the SCIEWS project;
- x. Protocol and Information (ongoing): Will establish Protocols and Agreements including standard operating procedures for early warning data sharing among MDAs and partners in the Early Warning System fraternity
- xi. Multi hazard gender and vulnerability mapping;
- xii. Documents Editor;
- xiii. Contribution of Hydromet services to the GDP;
- xiv. Terminal Evaluation.

In addition, the implementing and responsible partners were facilitated to learn from following platforms, to reinforce their knowledge in decision making on early warning:

- xv. Conference on Public Private Sector and meteorological services;
- xvi. Mission to develop specifications for meteorological equipment;
- xvii. Support to UNMA Technical teams to assess support field operations;
- xviii. Supported participation of IP and RPs in Climate Outlook fora;
- xix. Awareness creation-agricultural show; world Met Day etc.

In terms of data sharing, weather information is now available on various platforms including at the National Emergency Coordination Center (NECOC) in the Department of Disaster Preparedness in the Office of the Prime Minister where the National Early Warning information is disseminated to the wider public on line, via monthly bulletin and through the Local Government structures(District and Sub County Disaster Management Committees) across the country, the private sector, civil society, development partners and local communities. Notwithstanding these efforts, dissemination of early warning information to the last-mile remains a challenge.

For further detail on the status of planned output see Annex 1

### **3.2. Financial Delivery**

By the close of the project, out of the 4 Million US Dollars from the Global Environment Facility (GEF) /UNDP about 97% of the resources has been fully utilized for the two project's outcome areas, and the project's planned objectives and outputs only.

Approximately 70% of the funds were utilized for procurement of equipment, civil works and systems capacity building or hardware, whereas the rest of the 30% covered the training, capacity building for the human resources, as well as the project coordination costs.

The balance of 3.45% at the end of June 2018 below is pending payment to consultants for Terminal Evaluation of the project, final payment to contractor for civil works for hydrological stations that were

constructed and payments that are pending Value Added Taxes (VAT) clearance for vendors that supplied goods and services to the project.

<b>SUMMARY OF EXPENDITURES 2014-MAY 2018</b>		
<b>Year</b>	<b>Expenditure</b>	<b>%</b>
<b>2014</b>	326,399.00	8.16
<b>2015</b>	1,154,412.73	28.86
<b>2016</b>	1,905,773.37	47.64
<b>2017</b>	544,242.00	13.61
<b>2018</b>	47,600.00	1.19
<b>Expenditure to date</b>	3,978,427.10	99.46
<b>Balance</b>	<b>21,572.90</b>	0.54
<b>Total Budget</b>	4,000,000.00	100

Project Audits are undertaken to measure adherence and compliance to financial guidelines and legal requirements. An audit of the project conducted in 2016 confirmed that financial management of the project was on track as the project submitted its Financial Account Certification (FACE) forms on a timely basis; All Allowances were disbursed only to the intended recipients, and not to their representatives; Date, voucher and reference numbers in the supporting documents transactions were kept in the original form and not edited; The project submitted all the Annual Work Plans on time to the Management Support Unit at the UNDP Country Office.

Because of the prudent management of its resources, the project was unqualified-meaning there were no audit queries that are of concern. To that effect the project has been rated transparent and accountable in its business operations. All the audit recommendations were consistently followed up to date.

#### **Outstanding Commitments:**

Commitments worth about 185,000 USD is outstanding. The bulk of this is payment to Earth Network (130,000 USD) from UNDP trac fund; payment to suppliers of goods and services some of which are pending VAT clearance. The commitments are listed below:

S/ N	Vendor	Goods or service provided	Invoice Date	Amount (Ugx)	Remarks
1	Imperial Royale Hotel	Workshop facility	18-Jan-18	5,221,500	Pending VAT certificate
2	Lion Assurance	Workshop facility	12-Oct-17	70,542	Pending VAT certificate
3	Ridar Hotel	Workshop facility	27-Sep-17	3,150,600	Pending VAT certificate
4	Lion Assurance	Third Party Insurance	3-Oct-17	153,867	Pending VAT certificate
5	Imperial Royale Hotel	Workshop facility	19-Oct-17	3,914,700	Pending VAT certificate
6	Hotel Africana	Workshop facility	26-Sep-17	3,351,200	Pending VAT certificate
7	Ridar Hotel	Workshop facility	22-Sep-17	6,888,840	Pending VAT certificate
8	Gulf Africa	Stationery	23-Nov-17	2,520,485	Pending Credit note for undelivered pens yet invoiced
9	Blue Pearls	Hire of car for Town running	1-Nov-17	1,575,000	Pending approval of Note to file by Operations Unit
10	UPDEAL (U) Ltd	Civil works for DWRM	1-May-18	27,046,369	Pending certification, Proof of VAT and invoice from UPDEAL
11	Earth Network	Meteorological services	1-Apr-18	484,903,500	Pending approval of Trac Funds by CO
12	Lydia-Land Lady Park Lane	Office rent 2018/2019	1-Apr-18	111,000,000	Pending approval of Trac Funds by CO
13	MTN December 2017	Internet	1-Jan-18	1,000,001	Pending approval of Trac Funds by CO
14	MTN November 2017	Internet	1-Jan-18	1,000,001	Pending approval of Trac Funds by CO
15	MTN January 2018	Internet	1-Jan-18	1,000,001	Pending approval of Trac Funds by CO
16	MTN February 2018	Internet	1-Feb-18	1,000,001	Pending approval of Trac Funds by CO
17	MTN March 2018	Internet	1-Mar-18	1,000,001	Pending approval of Trac Funds by CO
18	MTN April 2018	Internet	1-May-18	1,000,001	Pending approval of Trac Funds by CO
19	NC Beverages		24-Apr-18	500,000	Pending proof of VAT Filing
20	St. Lira Hotel Ltd	Workshop facility	5-Jun-18	18,319,000	Pending proof of VAT Filing
	Andrean	Filming of SCIEWS Project	18-Jun-18	16,000,000	First invoice received, balance end of June.

21	Participants at the sub national workshop in Lira	Unpaid DSAs to participants whose details were not ready at time of bank process	9-Jun-18	18,000,000	Pending verification of signatures of paid participants to avoid double payment
22	Imperial Royale Hotel	National Dialogue & Board meeting	-22 Jun-18	14,500,000	Pending invoice after activity
	<b>Total</b>			<b>723,115,606</b>	

US\$190,293.58

### 3.3. Asset Management:

All assets for the project were procured using Government or UNDP procedures. Most of the assets including consumed goods, equipment, furniture and fittings were procured using the latter procedures, where value for money was a key criterion for their acquisition. All non-expendable assets except the 5 Total Solution Automatic Weather Stations equipment located on the telecommunication masks were bar coded and duly reflected in the fixed assets register.

Early this year, the project team together with officials from UNMA and DWRM undertook a country-wide asset tagging exercise, where the assets bar coded with unique identification /inventory numbers. The tags are also important for evidence of partnership between the GOU and UNDP.

The tagged items included: barometers, Weather stations (rain gauge, sunshine detector, and wind vane), ICT equipment at the stations, solar panels, batteries, Telemetry systems, synoptic stations, automatic rain gauges, Stevenson Screens, Inverters, power supply, Level sensor (UNI LOG LIGHT), and furniture.

For detail of inventory please refer to Annex II.

### 4.0. CAPACITY BUILDING OF HYDRO-MET SERVICES

In the past Policy Makers as well as users of weather information tended to attach low priority to weather and early warning natural resources, with more significance being given to other socio-economic sectors. However, with the increasing cases of disasters caused by the effects of climate change, weather and early warning resources are increasingly becoming more important for day to day reference than ever before. As such, the Ministry of Water and Environment with support from Development Partners have taken great strides in improving the quality and timeliness of early warning information to the end users. Uganda has been one of the first countries in Africa to Develop Country Action Plan for Water, and with the UNMA Act 2012 established a Meteorological Authority, to address the issue of weather and water monitoring and forecasting infrastructure as well as information.

#### 4.1. Training and Development

The process of gathering, analyzing and disseminating early warning products requires a concerted effort of training and mentoring the human resources in the key institutions to technically equip them

to produce and disseminate the right sets of products. In this context, capacity building of the hydro met services was a critical aspect of the SCIEWS project. Personnel from the UNMA, DWRM, MAAIF and the OPM were supported to participate in various learning opportunities for the purpose of building their expertise in operating the systems that were invested through the project. The below matrix summarizes the key capacity building sessions that were attended over the past four years, with their outcomes:

<b>KEY CAPACITY BUILDING IN 2014-2018:</b>					
<b>YEAR</b>	<b>DATE(S)</b>	<b>VENUE</b>	<b>BENEFICIARY</b>	<b>OBJECTIVE</b>	<b>OUTCOME</b>
<b>2014</b>	3-8 August	Kenya Meteorological Department (KMD) and Nzoia basin	6 Board Members of UNMA 2 UNMA personnel.	Orientation of Uganda National Meteorology Authority Board, Management KMD	The leadership of UNMA was set on the path of modernization and improvement of quality of weather products and services
<b>2014</b>	13-16 October	Dare salaam Tanzania	1 UNMA Personnel and 1 Directorate of Water Resources Management (DWRM) Personnel	Climate Information for Resilient Development in Africa (CIRDA) Training	Participants had a clear perspective to observation network for monitoring weather and climate, for mitigating the effects of climate change.
<b>2014</b>	6-31 October	Kenya Meteorological Department - Nairobi	2 UNMA personnel	Instruments calibration and maintenance Training	Improved understanding of UNMA to set up its own calibration and maintenance system for sustainability of their services.
<b>2015</b>	10-14 August	Philippine Weather Service(PAG ASA)	2 UNMA personnel	Benchmarking weather early warning	Acquired skills on customization of weather monitoring system at affordable rates
<b>2015</b>	3-8 May	KMD	1 UNMA IT personnel	Onsite observation of linkage of synoptic stations to the regional hub in Nairobi	Uganda weather products are now linked to the Global Telecommunication Network of weather service providers
<b>2015</b>	1-30 September	KMD	2 UNMA Personnel	Numerical Weather prediction	Improved skill in modelling weather products
<b>2015</b>	1-5 September	KMD	2 UNMA Personnel	General Forecasting	Deepened forecasting techniques.

2015	24 Oct-8 Nov.	India	1 UNMA IT Personnel	IT Information Library and Project Management Professional Certification Combo Training	Enhanced performance in planning and managing data digitization and archiving weather information for future historical reference and planning
2015	26 Sept – 3 <sup>rd</sup> October	Washington DC, Maryland And Oklahoma	2 UNMA Personnel	Sub Saharan Africa Climate Information and Early Warning Systems Training	Orientation on issues relating to technology transfer and modernization of meteorological services
2015	17-30 August 1-5 September	Mukono & Mbale	8 Personnel from MAAIF, MWE, OPM, DWRM, MLHUD, UNMA	Hazards and Vulnerability Mapping Training	A resource of trained trainers in Hazard and Vulnerability mapping is available to the Government Departments
2015	19-24 October	KMD	10 DWRM Personnel	Training of Senior and Junior Hydrologists on region-specific water resource issues	Technical team were on the job-mentored in flood and water resources forecasting
2015	8-15 November	KMD and Nzoia basin/ water catchment	10 DWRM Technical personnel (2 women and 8 men)	To benchmark and draw lessons from the hydro-meteorological early warning system in Kenya.	Better understanding of modelling a Community Based Early Warning System, and linking the hydrological with the weather gauge information systems, and the dissemination systems; real-time monitoring system and flood disaster management system.
2016	12-15 September	Eastern Uganda	3 UNMA Personnel	Adcon Training on maintenance and usage of AWS	Trained personnel can install and maintain automatic weather stations(AWS)
2016	23-26 October	Kampala	24 UNMA Personnel	Earth Network Training	Personnel can monitor weather and storms using satellite based system
2016	11-22 March	Entebbe	26 UNMA Personnel	UNMA Training on Automatic	Trained personnel can track weather information

				Message Switching System	transmitted from the weather stations and linkage to the regional hub.
2016	12 <sup>th</sup> -17 <sup>th</sup>	Eastern Uganda	30 data collectors	Collecting disaster data from sub-counties in disaster prone areas	Data collected fed into the Disaster Database (DesInventar)
2016	4-8 July	At Elgon Hotel Mbale.	30 Government and District officials from Eastern Uganda	Disaster Risk Reduction Data Collection Training	District participants can receive and send emergency data to the National Emergency Coordination Center (NECOC) in the Office of the Prime Minister
2017	28-31 March	Soroti	44 District Technical personnel from 28 Pilot Districts	Training of District & County Technical Officers from Kyoga Water Management Basin(KWEB)	District Planners, Livestock, Agriculture Extension Workers, Environment Officers equipped in climate weather collection, analysis and dissemination
2017	29/mar-12 <sup>th</sup> April	Sezibwa, Muyembe, Wambabya, Wamala, Kanyampara and Kibaale stations	7 DWRM Technical personnel	Training of 4 Metaset and 2 non- metaset stations under by SEBA	DWRM acquired practical skills in installing and maintaining automatic water level stations
2017	24-26 July	Ridar Hotel Mukono	40 UNMA personnel	Gender Training	UNMA personnel can mainstream gender in their plan, budget and reporting
2017	16-19 July	Protea Hotel Entebbe	2 OPM & 2 UNMA Personnel	Transformational Development Approach Training	Improved results based management of programming
2017	22-27 October	South African Weather Service (SAWS)	Senior Management and Technical Officers from UNMA, DWRM, OPM and MAAIF	Bench mark modernization of hydromet services	A better understanding of the strategic importance of weather and water resources management including sustainability of the services in the face of climate change.
2018	5-8 June	Kyoga Water Mgmt Zone	Technical teams from	Downscaling utilization of	Better understanding of and access to weather



		UNMA, DWRM, OPM, MOLG, LGs and communities	hydromet information and sensitizing communities on hydromet sites	information; Community ownership of the hydromet stations in their areas.
2014-2017	Various	17 UNMA, OPM, DWRM, MAAIF personnel	Participating in the Great Horn of Africa Climate Outlook For a(GHACOF)	Modelling seasonal forecast for the region as well as Uganda specific weather forecast

The various capacity building support from UNDP and other development partners has strengthened the institutional capacity of the Ministry of Water and Environment, specifically the Directorate of Water Resources Management and the Uganda National Meteorological Authority to monitor and forecast weather and water resources in the country. The National Meteorological and Hydrological (NMHS) services are now being ably operated by national personnel who can fix and maintain the digital and manual stations with little support from expatriates and suppliers of the equipment and operating systems. An evidence of this outcome is the award of International Standards Organization(ISO) certification of the Uganda National Meteorological Authority, in recognition of its improved services to the aviation sector and the public at large.

#### 4.2. Weather Hackathon/Innovations Challenge

Early warning and forecasts provide lead time, which together with public awareness, education and preparedness, can enable quick response to impending hazards and disasters, thereby increasing human safety and reducing losses from natural disasters. The use of information technology that is customized to the local content and affordable, is one option for improving dissemination and utilization of weather and climate information. It is in this context that UNMA and DWRM thought of organizing the first ever weather hackathon competition in 2017 for youth in Uganda, with the aim of developing innovative solutions for converting the available weather and climate data into useful weather and climate information and/or solutions that could facilitate efficient dissemination of weather and climate information to the end users. Challenged by the CIRDA facilitated Innovations Challenge in March 2016 in Livingstone, Zambia, the Ugandan team realized that the weather products needed to be upgraded to match the increasing demand for timely and accurate weather information.

It was in this context that from the 12<sup>th</sup> to 14<sup>th</sup> June 2017 the Uganda National Meteorological Authority in partnership with the United Nations Pulse Lab with support from the UNDP –GEF funded CIEWS project organized the first ever “**Weather Hackathon**” in the country.

The five teams were allowed three days to refine their ideas from the UN Pulse lab, guided by management and technical team from the Uganda National Meteorological Authority and the UN Pulse Lab. On the third day, the five teams presented their prototypes in a hall within Hotel Africana, attended by a cross section of partners from Ministries Departments and Agencies.

The three-day workshop was organized to enable young professionals with passion for applications development to think creatively and develop applications that can support dissemination and usage

of weather and climate products by communities, the private and decision makers for different productive activities. These enthusiastic teams of youth were given raw data from which to : create prototype mobile and information-system-based applications and technological solutions to share actionable weather and climate information with a variety of stakeholders, sectors and end-users; connect technology with people to bridge the last mile; Build scalable systems that react to more frequent storms, increase in lightning, erratic weather patterns and long-term climate change; create technological solutions that are relevant to the Ugandan context; and to build hacks and next-generation applications to improve on existing systems and methodologies.

An award ceremony was organized for the participating groups and Agrigap won the first weather hackathon in Uganda, after three days of rigorous work to develop an application that would ease dissemination and utilization of weather information in Uganda.



The winning teams: Agrigap, Thinkline 256, Tractor - posing with Ms. Rosa Malango the UNDP Resident Representative and UN Resident Coordinator together with officials from the Uganda National Meteorological Authority (UNMA) and Ministry of Water and Environment at the end of the Climate Action/Weather hackathon in Kampala, Uganda. (Photo Credit: UNDP Uganda 2017).

Think Line 256 and Tractor groups took second and third place winning two million and one million shillings respectively. Agrigap, the winner, got three million shillings for their innovative idea. All participants in the challenge were received certificates of recognition for their input.

To sustain the initiative, the youth were linked to the Uganda Communications Commission and UNMA for further mentoring. To improve on the products, both UNMA and the innovators were required to ensure that their apps would be simple to use across the generation gaps, including information that is easily translatable to local languages making it easy for everyone to understand, and accessible to everyone everywhere.

#### **4.3. Public-Private-Partnerships**

The concept of private sector participation in weather products is new in Uganda, as weather and water have been public goods, yet weather is a multi-billion-dollar industry. Presently, about 50% of this business is by companies that provide forecasting services, numerical modeling, engineering-science support, and consulting. While the interest of the public sector is in climate information services (CIS) for resilience to climate variability and change, the private sector is beginning to recognize that there is a growing market for climate services.

The project invested in Public-private partnerships (PPPs) to help to bridge gaps in public services like it is around the globe and Uganda is steadily progressing in harnessing this synergy.

UNMA and DWRM have traditionally been providing the climate and weather information to support resilience in Uganda, however the National meteorological and hydrological services (NMHSs) has started to collaborate with private service providers for innovation, technology transfer and capital necessary to fill key gaps in CIS across Uganda.

It is important to note here that while many African countries have experience in establishing PPPs in agriculture, infrastructure and healthcare, PPPs for CIS are still weak and particularly in Uganda.

After a bench-marking south-south cooperation with a number of countries in Africa and Asia, the Government of Uganda with support from the UNDP-GEF/SCIEWS project organized the first ever international early warning public-private-partnership workshop in Entebbe from the 20<sup>th</sup> to 23<sup>rd</sup> June 2016, with the main purpose of developing a private sector engagement strategy for weather and climate information providers and users, including the Aviation, Agriculture, Tourism, Mining, Cell phone operators and extension services. The workshop was attended by 60 participants including 10 international actors.

This workshop was hinged on how UNMA adding value to the country's current meteorological products, and helped to: identify options for improvement of the quality of UNMA's weather products; how UNMA can learn and adopt suitable modes of packaging its products for dissemination in the country; get feedback from users of weather products to inform UNMA's strategies for public private partnership.

The workshop brought together a pool of participants in the workshop from UNMA, UNRA, DWRM, WIMEA-ICT, FIT Uganda, UTAMU, ECLINET, and CSOs among the national stakeholders; and UNDP-CIRDA, UN Global Pulse, UNDP-CIRDA (Global) and National, HNI, EN, UBIMET among the international stakeholders.

As a result of the workshop, UNMA was able to sign Memorandum of Understanding with private partners for example FIT Uganda and Total E&P within the framework of the Public Private Partnership (PPP) law. This law together with the UNMA Act 2012 gives an enabling environment for partnership with UNMA.

Following a cost benefit and market study that was carried out to support UNMA scan its business opportunities, and with improved quality of its meteorological products, UNMA has acquired the International Standards Organization (ISO:2008) and is moving towards the latest (ISO:2015). With these accreditation, UNMA has qualified to provide credible and dependable weather products to the public and the aviation sector. The workshop also noted that weather products will increasingly be demanded for weather index insurance and engineering construction work.

#### **4.4. Gender training for UNMA**

The training was divided into different parts that were interconnected. The first part of the training exposed participants to the conceptual understanding and appreciation of gender as a concept that is relevant to the development process. This included the definition of gender and related concepts, the legal and policy framework for gender equality and women's empowerment and its linkages climate change. The second part exposed participants to gender analysis and the learned how to identify gender issues in climate change, the underlying causes and develop interventions to address them. While the third part exposed participants to the different categories of gender policies and their outcomes. Building on this, participants were engaged in an exercise to assess the gender responsiveness of their strategic plan using a guided checklist. It was observed that the strategic plan had glaring gender gaps and proposed that the plan is reviewed to address the gaps before approval. This report highlights the areas covered and key learnings.

Gender is widely recognized as a concern for sustainable development and climate change adaptation and mitigation. However, there are challenges in understanding gender concerns, the tools and strategies available to enhance equality between men and women in the context of climate change. This gender training was unique, it was an IP initiated training and supported by UNDP through SCIEWS. The entire UNMA staff was present and has indeed given UNMA a new gender dimension.

##### **The gender training was able:**

- i. To enhance capacity of UNMA staff to integrate gender concerns into climate information collection and dissemination;
- ii. To strengthen the capacity of UNMA to generate weather and climate information messages that are gender responsive;
- iii. To strengthen the capacity of UNMA to generate engendered policy actions for mitigation and adaptation to climate change; and
- iv. To improve the capacity of UNMA in engendering its operations (including internal capacity building/skills development, infrastructure development, data collection and management etc).

##### **Key result areas from the gender UNMA gender training:**

- 20 males and 20 females attended the three-day's workshop that was the first such workshop for UNMA. The workshop empowered both men and women in UNMA to genderize their operations and work practices. As such, UNMA has committed to:
- Mobilize resources to empower and support the Gender Focal Point Person to coordinate gender mainstreaming activities at the Authority
- Constitute a technical team that will work with the UNMA team in charge of finalizing the UNMA Strategic Plan on incorporating gender and equity.

- Allocate resources for mainstreaming gender and equity in UNMA policies, programmes and processes.

#### **4.5. Operations and Maintenance of UNMA and DWRM systems**

As the SCIEWs project closes, a clear road map of how UNMA and DWRM will continue to operate and offer services to the nation in relation to the weather and climate information that has been a core development issue addressed by the SCIEWs project is paramount bearing in mind the heavy investments to boost the capacity of the two IPs.

Through an in-house work shop organized by the PMU, strategies for maintenance and continued operation of the early warning systems established under the SCIEWS and other development partners in the meteorology and hydrology sub-sectors was arrived at and a costed O&M manual was produced.

##### **Key Issues on Maintenance of Hydrological Systems:**

- Many hydrological stations are still manual, and will need to be converted to the digital format, for compatibility with the new technology;
- Most of the hydrological stations are in remote places where security is of concern, notwithstanding the fences;
- The local volunteer observers who maintain the hydrological stations are paid very low allowances (@ 10,000 per month and 20,000 for maintenance), which is not sufficient for motivating and retention of these volunteers;
- Floods sometimes affect the rating curve as they give out of the range recordings;
- In some cases, hydrological stations are built near bridges to mitigate their exposure to vandalism. However, with the expansion of the road network these need to be relocated to other sites; The Issue of bridges; DWRM is in partnership with UNRA to repair the affected stations at their own costs.
- Once the Hydrological Modelling Unit has been established, DWRM has a lot of data to feed into NECOC. This may require DWRM to place a full-time staff in the OPM/NECOC to manage the hydrological dissemination system for faster decision making;
- Vandalism continues to be a threat particularly to some of the hydrological stations: Options for mitigation of vandalism include: that a solar panel can be part of the concrete structure to make it hard for the culprits to extract them, or the solar panel can be raised as high as 10 m pole; or security alarm system be set up on the houses; Some stations are located near electricity that DWRM can take advantage of in lieu of the solar sources; to adopt hi-tech tracking systems to trace stolen items; the size and color of the solar panels should be small and disguised; using batteries which can replace solar panels; use of the NDP II as an advocacy tool for sustainability of the equipment;
- There is a weak partnership among the many water based projects in the country, hence missing valuable opportunities for maximizing the monitoring and forecasting water resources. For example, DWRM is very keen on giving information to power generators in Jinja and control of the required water in partnership with the Egyptians at Rippon falls; DWRM is able to convert the required Megawatts into water requirement. Can tell how much impact the generating power plant on other users.

Many opportunities exist that could be exploited to maximize the use of water resources in the country:

- Through the hydrological modelling unit, DWRM can guide the country on the likely impact of any possible disastrous floods;
- DWRM has flood maps which can be well linked to UNMA data to be able to advise on the upcoming floods;
- Reinforcing the OPM/NECOC flood early warning system in Butaleja;
- There should be a hydrological year book which guides how data can be accessed and used.

Therefore, routine maintenance and operation of the hydrological stations need to address the following issues: Vandalism; Ignorance of communities on the importance of the equipment; Temporal variation of network; Breakdown of sensors; Inadequate honoraria and station maintenance fees; Limited budget; Limited capacity of staff to cope with the changing /modern technology; Inadequate staff structure both at the center and zonal level; Inadequate equipment (e.g. flow measurement) at the zonal level.

### **Key issues for maintenance of weather services**

Unlike the hydrological stations, most of the meteorological stations are located in relatively secure places like near Police stations, within National Agricultural Research Organizations and within the District Administration premises.

Following a comprehensive comparison between rainfall and temperature from the Automatic Weather Stations (AWSs) and the manual rain gauges across the country, using visual graphical analysis, it was confirmed that the automatic sensors were recording similar results. This exercise was important for calibration of the two systems to ensure consistency in data streams. In general, the daily values from the AWSs had the same trend with the values from the manual stations. Although most of the manual sensors were not calibrated, however the close similarity in the trends with the AWS sensors implies that the data was useful. However an additional statistical analysis is recommended.

The main operation issues for the meteorology sub-sector include:

- Occasional vandalism of installed equipment, solar panels for the automatic weather stations;
- Breakdown of Sensors without spare parts which are costly;
- Lack of transport to the different weather stations for routine maintenance;
- Cellular interruption including breakdown of network, which interferes with the dissemination of weather information;
- Limited budget for Airtime;
- UNMA is also understaffed with IT Officers, Technicians Instrument Officers and Meteorologists;
- Lack of trained Instruments Officers;

- Hosting websites for UNMA need to be streamlined, so that UNMA has a full owners and control of accessibility to information;
  - Need for standardization of frequency of data flow to the 15 Minutes based on the normal practice of Meteorology and on the global time zone.;
  - Network and weather observation stations is still below 40% of the threshold, hence need for increasing the national coverage;
  - Having extra sensors is a contract management issue that needs to be discussed extensively;
  - There is a challenge of keeping system components like GPSs by individuals, which requires a storage facility for government assets;
  - Earth Network tools are above the required height of WMO. However, they are good at detecting lightening and storms. Sustainability of these equipment is beyond the control of UNMA as they are satellite based and the installations are inaccessible to UNMA.
- 
- Software compatibility is still a problem;
  - There is an increased confidence in UNMA because of the ISO certification;
  - The useful period of the procured computers in weather stations two years. These should be replaced timely as well as weather stations;
  - Coverage of weather stations should not be determined by politicians, but should be based on technical considerations.

#### **5.0. KEY CHALLENGES AND SOLUTIONS**

Overall, the project was implemented nearly as scheduled, save for delay in delivery of the hydrological outputs that was finally addressed during the no-cost-extension period. During the project's life, a few challenges were experienced that affected timely delivery of outputs:

- Installation of the 16 Automatic Water Level Stations delayed for many reasons including: late handing over of sites for construction of the hydrological stations; structural challenge of rocky soil sub-structures that presented with difficulty in excavation for setting foundation of the houses. Because of the late completion of the milestones for the hydrological stations, it was not possible to implement the Memorandum of Understanding on sharing data between the DWRM and the UNMA. It is therefore important that the two streams of data and information on early warning be integrated, so the users are fed with holistic information for policy and planning;
- Access to weather and water level information is still limited to a few individuals and institutions. weather and water Support system for dissemination of weather information to the wider population is limited. And there is restriction in the Application Program Interface(API), which limits access to weather products by the wider end users;
- A more sustainable solution to the issue of vandalism elaborated on above requires two approaches: Strengthening the ownership and involvement of communities in the hydrological

and meteorological stations in their areas; and improving the remuneration packages for volunteer community observers;

- The hydro-met services in the country is still under upgrade and therefore to ensure improvement in their network and products requires continued support to the sector by both Government and the development partners;
- The Earth Network equipment have not been fully accepted by the UNMA, and there is a danger of it being abandoned after the project has closed. For the last one year, UNDP has been paying the operational and maintenance fee to the supplier from its own TRAC resources, which expires by the 30<sup>th</sup> June 2018. Given its high investment value (USD 500,000 for five units) it is therefore important for the Government (UNMA) to fully take responsibility sustaining services from this equipment.

## **6.0. MONITORING AND EVALUATION**

The SCIEWS project was designed with a robust M&E system, as a tool for tracking the outcomes, indicators, outputs and the risks. The monitoring framework was validated by a consultant at the beginning of project implementation. The project carried out routine monitoring to track and take corrective actions but also conducted ex-ante evaluation where a baseline study was carried out and findings formed the indicators for assessing utilization of weather information by households;

Annual M&E plans were prepared and aligned with the annual project work plan. A terminal evaluation is underway to reveal the contribution of the project towards attainment of the project Vision and scaling down the development problem identified at the inception phase and needs assessment. Documentation and knowledge management was well done, project communication was current to tell our story to the public, and learning was a part of the project team throughout the project life cycle.

Monthly field monitoring visits were conducted by the Implementing partners, complemented by quarterly visits by the Technical Focal persons and the Project Management Unit team, with regular interaction with the sub national partners. The project Board was kept informed on progress of the project during its bi-annual meetings.

A mid-term review of the project was carried out at the end of 2016, which rated the project as being on track, while final evaluation of the project is commencing this June. Similarly, an audit of the project was carried out in 2016 rated it as being accountable and transparent.

## **7.0. KEY LESSONS LEARNT**

Although more or less a pilot project, this project had particular experiences that could inform future similar projects:

- Synergies on weather data sharing between the meteorological, hydrological and the National Emergency Coordination Center (NECOC) in the Office of the Prime Minister has enabled a more



coordinated approach to the dissemination of early warning information to the users. However, integration with the new stations under Directorate of Water Resources Management (DWRM) has been deferred to 2017 pending completion of civil works;

- Because of the value attached to the weather products, private sector companies are becoming interested in trading in weather information as confirmed by the number of companies that are entering memoranda of understanding with UNMA. Following the June 2016 Engagements with the private sector in data generation, dissemination and marketing, have been achieved with the Civil Aviation Authority, the Sugar Corporation of Uganda and attempts are being made to engage the Telecommunications Companies. To date the Uganda National Meteorological Authority (UNMA) has signed Memoranda of Understanding for weather information sharing with: FIT Uganda, Total Energy and Petroleum Company, Program for Restoration of Livelihood in Northern Region (PRELNOR/IFAD) and the (GRP)Global Resilience Partnership (a consortium of THAMO, CHAI, ACLE, EN, HNI). FIT Uganda is partnering with UNMA on dissemination and marketing weather information; Total Energy to generate records on weather observations and weather data sales; PRELNOR partnering on infrastructure development of weather observation systems in Acholi sub-region, including dissemination; Similarly, the GRP is enhancing infrastructure development in weather observations, particularly in schools. At the moment the Civil Aviation Authority (CAA) is the main buyer of weather products from UNMA, and because of the improved quality of weather information evidenced by the International Service Organization certification awarded to UNMA by the World Meteorological Organization, this revenue base is expected to expand even further. This augurs well with strategies for sustainability of UNMA's investment plan.
- Uganda is the first country in Africa to successfully adopt mounting of Total Solutions Automatic Weather Stations on cell phone towers, which guarantees security against vandalization, ensures un-interrupted power supply and connections to the internet. Lower Local Governments need to be supported to improve dissemination and utilization of early warning products;
- Construction of hydrological stations is more unpredictable than regular civil works, hence requires more lead time

## **8.0.SUSTAINABILITY OF PROJECT RESULTS**

The project has set a pace for the hydro-met sub sector, and this needs to be scaled up to ensure continuous improvement in the services. This requires deliberate strategies for Technical or Institutional, Economic and Financial Sustainability of the service by the Implementing Partners whose capacity have been developed over the past four years.

Technically, various targeted training and exposure visits have equipped some of the staff in operations and maintenance of the systems. The operations and Maintenance Strategies that were developed by the partners should be utilized to guide training of staff for application of the skills gained. For detail of specific equipment, user manuals from the suppliers of the equipment can be used;

In terms of Economic sustainability of the projects outcomes, it is important to create demand for the products generated and scale up dissemination to as many users as possible. This will require a strong partnership with the telecommunications companies, to reach the wide base of clientele across the country. In this respect, the involvement of key stakeholders is crucial as has already been initiated

with the Local Governments, CSOs and CBOs. The multi-stakeholder dialogue workshops at the national and regional levels are some of the platforms for engagement with the public as was the case with the private sector in 2016.

In terms of Financial sustainability, the hydro met service providers should increase their advocacy level for funding to the sector. A cost benefit analysis and market study carried out in 2015, and the study on the contribution of hydro met services to the Gross Domestic product conducted in 2018 are two valuable resources that could inform UNMA and the DWRM on the basis for their resource mobilization strategies.

#### **9.0.RECOMMENDATIONS**

The SCIEWS project was a catalyst for improvement of hydro met services in the country, and therefore some gaps still need to be addressed to bring the level of service to a climax. In this respect three key recommendations for future actions are:

1. UNMA and DWRM to strengthen the collection, generation and interpretation of climate information to ensure the formulation of targeted, timely and detailed weather, climate, and hydrological forecasts, early warnings and advisories and;
2. UNMA, DWRM and OPM to strengthen and scale up dissemination and effective use of tailored weather and climate-based early warning and advisories for planning and decision making across sectors, agencies and all levels of government;
3. UNMA to improve its revenue base by hiring a full time Private Sector Development Officer, who will focus on marketing its services and products.

## ANNEX I: MATRIX OF RESULTS BY OUTPUT

SUMMARY OF OUTPUTS AND DELIVERY TO DATE: 10TH MAY 2018				
INDICATORS, BASELINE AND TARGETS	PLANNED OUTPUTS AND ACTIVITIES		ACHIEVEMENTS	REMARKS
Outcome 1: Enhanced capacity of the DOM (UNMA) and DWRM to monitor and forecast extreme weather, hydrology and climate change				
Output 1.1: 16 Automatic Water Level Stations (AWLSs) installed and 40 manual hydrometeorology stations and 5 AWLSs rehabilitated in the Victoria, Kyoga, Albert and Upper Nile Water Management Zones (WMZs.)				
1. % of national coverage of climate/weather and hydrological infrastructure.	1.1.1. Undertake a systematic analysis of existing manual hydro-met and AWLSs in each WMZ to determine gaps in coverage and priority stations for data rescue and rehabilitation.		Consultancy partially completed	Deliverable partly informed planning specification for hydrological stations
2. Frequency and timeliness of climate-related data availability.	This will include a plan to integrate new stations into the DWRM existing network and to link these with the DOM (UNMA) meteorological network and forecasting systems.		Linkage not implemented	Delay in construction of AWLSs and installation.
	1.1.2 Procure and install 16 hydrological AWLSs in priority catchments in all four WMZs including solar panels, batteries, and data transmission software packages and networking facilities.		All 16 Telemetry Stations were procured and installed. Quality Assurance is continuing through 2018	2 stations were retracted due to threats of vandalism.

	1.1.3. New AWLSs will be installed in locations in six priority catchments, namely: i) Albert East in the Albert WMZ; ii) Kyoga in the Kyoga WMZ; iii) Rwizi and Edward in the Victoria WMZ; and iv) Aswa and Albert Nile in the Upper Nile WMZ to benefit downstream communities and sectors particularly vulnerable to floods and droughts.		" " " " " " " " " " " "	" " " " " " " " " " " "
	<b>1.1.3</b> Undertake repairs to 40 manual hydrological stations and 5 AWLSs in WMZs, comprising 12 in the Upper Nile WMZ, 9 in the Kyoga WMZ, 16 in the Albert WMZ, 8 in the Victoria WMZ.		28 Hydrological stations (Telemetry houses) newly constructed out of 40. And 40 sets of spare parts were procured	Adjustment of target due to price increase.
	<b>1.1.4</b> Procure AWLS conventional instruments, spare parts and sensors including Acoustic Doppler Current Profiler (ADCP).		Not procured;	fund reprogrammed to construction of hydrological stations
	<b>1.1.5</b> Integrate hydrological AWLSs into the existing DWRM network, including reviewing and installing appropriate telecommunication infrastructure and creating linkages with the DOM (UNMA) observation network and forecasting systems.		Linkage not implemented	Delay in construction of AWLSs and installation.
<b>Output 1.2: 25 Automatic Weather Stations (AWS) installed and 32 manual (12 synoptic, 10 agrometeorological and 10 hydro-meteorological) and 32 AWSs rehabilitated in priority districts.</b>				
	<b>1.2.1</b> Undertake a systematic analysis of existing and planned synoptic, agro/hydro-meteorological stations and AWSs in Uganda to determine gaps in coverage and priority stations for data rescue and rehabilitation.		Consultancy successfully completed in 2016	Report informed planning sites for new weather stations and specifications for AWSs
	This will include a plan to integrate new stations into the existing DOM (UNMA) network and to link these with the DWRM hydrological network and forecasting information systems. This Activity will be conducted in parallel with the Activity 1.1.1 above.		Integration not done	Pending completion of quality control of AWLSs and setting up of the hydrological modelling unit.
	<b>1.2.2</b> Procure and install 25 automatic weather stations including solar panels, batteries, data transmission software packages, networking facilities and weather fences in 25		25 base AWSs procured, installation and installed; 5 Total Solutions AWSs completed; Rehabilitation	All the stations are functional and is the main source of the weather products.

	priority districts/locations covering all four regions and WMZs in the country		of weather stations completed; Installed 20 AWSs	
	1.2.3 Upgrade 32 existing manual (12 synoptic, 10 agro-meteorological and 10 hydro-meteorological) and 32 AWSs in priority areas.		Upgraded 28 fences out of 32, Plus Bukwu station in Entebbe. AMSS procured and installed, Replaced Barometers, Replaced Thermometers and sunshine cards, Procured upper air accessories 5.	Improved security of weather equipment, linkage with the NMC and timeliness of weather forecast.
	1.2.4 Integrate AWSs into the existing DOM (UNMA) network, including reviewing and installing appropriate telecommunication infrastructure, and creating linkages with the DWRM observation network and forecasting systems.		Partly completed save for the linkage with the DWRM which is pending quality assurance.	
<b>Output 1.3: Weather and climate forecasting facilities upgraded including an integrated hydro meteorological data management and information system and an online web platform for operationalizing collaboration arrangements and procedures between DWRM and DOM (UNMA).</b>				
	1.3.1 Procure and install hardware and software required for modern meteorological forecasting facilities (computers, storage and networking) to support the 12 synoptic stations and the NMC at Entebbe.		Procured the AMSS, servers, Computers, and Solar panels	Improved linkage to the Regional Weather Hub in the Kenya Meteorological Department in Nairobi.
	1.3.2 Upgrade and update the national DOM (UNMA) database and information management system – from CLICOM/ASC11 to an appropriate alternative modern system – and link to DWRM’s water management and information system.		Merged with Activity 1.2.4 under the IT consultancy	
	1.3.3 Undertake a data rescue and digitization process from DOM (UNMA) and DWRM archives.		Done in-house by OPM. Undertook a data rescue and digitization process field assessment trips; DWRM data stream not ready.	

	1.3.4 Develop and implement a protocol and an agreement between the DWRM and DOM (UNMA) for data collection, data exchange, data processing, data analysis and flood, drought and severe weather risk assessment and warnings.		Consultancy completed and MoU signed between UNMA and DWRM	Operationalization of the MoU is pending completion of installation of AWLSSs.
	1.3.5 Develop and establish an online web platform linked to DWRM and DOM (UNMA)'s official websites and information and management systems to assist the operationalization of Activity 1.3.4 as well as activities under Outcome 2.		The UNMA platform and OPM platforms are ready, pending installation of the hydrological modelling center	
	1.3.6 Determine the costs and benefits of installing lightning detection equipment to determine the most suitable network of detectors and how such information could be integrated/used for weather/rainfall monitoring		Consultancy successfully completed in 2016	The Report informed UNMA's revenue negotiation from the CAA
<b>Outcome 2: Efficient and effective use of hydro-meteorological and environmental information for making early warnings and long-term development plans.</b>				
<b>Output 2.1: Technical capacity of DOM (UNMA) and DWRM is strengthened by training 16 forecasters – including 8 senior and 8 junior – to build in-house capacity for producing standard and customized weather and climate forecasts and packaging hydro-meteorological data and information into a suitable format for user-agencies and local community end-users.</b>				
<b>1. %of population with access to improved climate information and drought, flood and severe storm warnings (disaggregated by gender). Sector-specific policies, annual budgets and development plans that integrate climate information (type and level of development plans</b>	2.1.1 Conduct training of 4 senior meteorologists and 4 junior meteorologists on region-specific weather and climate forecasting (including Numerical Weather Prediction and seasonal forecasting models) and the use of forecasting stations and data storage and information management systems installed under Output 1.3. This will include training on building in-house capacity of other meteorologists at DOM (UNMA)'s NMC, and at synoptic and agro/hydro meteorological stations.		Done; A team of meteorologists and Hydrologists and had a benchmarking visit in Kenya Meteorology, UNMA Systems Engineer underwent training in India; Supported 9 personnel from the IP/RPs to participate in GHACOF 41&42; 2 sub-national workshops held & more training in 2016	

	2.1.2 Conduct training of 4 senior hydrologists and 4 junior hydrologists in region-specific flood and water resources forecasting including the use of the integrated hydro-meteorological data and information system developed Output 1.3, including training on building in-house capacity at the national and water management zone level of other hydrologists in DWRMA.		Done; A team of meteorologists and had a benchmarking visit in Kenya Meteorology	
<b>Limited knowledge and capacity to effectively predict future climate events as a result of an acute shortage of technology and skilled human resources.</b>	2.1.3 Develop training packages and toolkits for assisting trained meteorologists and hydrologists to: i) build in-house forecasting capacity in the DWRMA and DOM (UNMA); ii) enhance collaboration between the two departments for data collection, data exchange, data processing, data analysis and flood, drought and severe weather risk assessment and warnings; and iii) mainstream the online platform and integrated data storage and management systems developed under Outcome 1.		Merged with activity 1.2.1 under one consultancy	
	2.1.4 (a). Support South-to-South Learning by Implementing and Responsible Partners; participation in the Greater Horn of Africa Climate Outlook Forum (GHACOF); Meteorological Instruments Exhibition in Europe.			
<b>No systematic process for packaging, translating and disseminating weather/climate information and warnings – including different information sources across – and within country borders.</b>	2.1.4 Support 2 hydro-meteorological internships in National Meteorological Hydrological Services in countries generating weather forecasting and climate change monitoring products.		Bench Marking Visit in South Africa by UNMA, OPM, DWRM, MAAIF	
<b>Output 2.2: Tailored weather and climate information (including color-coded alerts – advisories, watches and warnings – for flood, drought, severe weather and agricultural stresses, integrated cost benefit analyses and sector-specific risk and vulnerability maps) made accessible to decision makers in government, private sector, civil society, development partners and local communities in the Teso and Mt Elgon sub-region.</b>				

	2.2.1 Undertake a comprehensive assessment of existing centralized and decentralized early warning systems – including existing weather and climate information exchange mechanisms, communication channels and dissemination mechanisms between DOM (UNMA), user agencies and end-users – to establish best practices and gaps suitable for implementation for the Teso and Mt Elgon sub-regions in Uganda.		Not done by SCIEWS but complementarily implemented by DRR project in OPM	
	2.2.2 Develop and operationalize a weather and climate information online platform housed at the National Early Warning Data and Documentation Center based at the DRDPM. This platform will share and disseminate tailored weather and climate information between decision makers and government staff in the DOM (UNMA), DWRM, DDMPR (including DDMCs/SDDMCs), private sector, civil society, development partners and local communities.		Not done by SCIEWS but complementarily implemented by DRR project in OPM	
<b>Poor community level usage of climate information as a result of limited consolidation of effective dissemination channels including physical mechanisms and limited trust in warnings received.</b>	2.2.3 Train 4 hazard and vulnerability mapping personnel from MAAIF, DRDPM, DOM (UNMA) and DWRM to produce sector-specific risk maps, using climate and weather data and vulnerability information covering disaster-prone districts in the Teso and Mt. Elgon sub-regions.		8 instead of 4 Trainers were trained as resource persons for Hazard and Vulnerability Mapping.	
	2.2.4 Develop and implement protocols and agreements for data and information exchange, analysis and dissemination among DOM (UNMA), DWRM, and MAAIF, DRDPM, CCU and related institutions.		Merged with activity 1.3.4 under one consultancy.	
	<b>2.2.5</b> Develop tailored weather and climate alerts including color-coded advisories, watches and warnings for flood, drought, severe weather and agricultural stresses by integrating and customizing standard forecasts, e.g. daily, ten-day and monthly agro-meteorological bulletins, seasonal forecasts, , based on sector specific and end-user needs and in collaboration with DWRMA, MAAIF and DRDPM.		Complementarily implemented by the DRR project in OPM: 1. NECOC Website running 2. DMS Platform in place	



<p><b>No systematic process for packaging, translating and disseminating weather/climate information and warnings – including different information sources across – and within country borders.</b></p>	<p><b>2.2.6</b> Develop handbooks and policy and information briefs – to highlight the value of enhanced hydro-meteorological services and early warning systems to policy and decision-makers, civil society organizations, development partners and local communities.</p>	<p>Done: By a consultant in 2015, MoU and Protocol for data sharing (UNMA&amp;DWRM) signed; Protocol and Linkages with MDAs, Integration of information and data rescue focus of 2016 Not done,</p>	
<p><b>Output 2.3: Weather and climate information mainstreamed into national policies, annual workplans and local development including the National Policy for Disaster Preparedness and Management, and district and sub-county development plans in priority districts in the Bukedi, Busoga, Elgon, Teso, Acholi, Karamoja and Lango sub-regions.</b></p>			
	<p><b>2.3.1</b> Identify, review and propose revisions to five sector-specific policies, investment plans and annual budgets (including the National Policy for Disaster Preparedness and Management) to make provisions to incorporate weather and climate information for sector-specific adaptation planning.</p>	<p>Merged with activity 1.3.6. under one consultancy for Cost Benefit and Market Analysis.</p>	
	<p><b>2.3.2</b> Build the capacity of (human and technological) of the Disaster Risk Reduction</p>	<p>Not done; funds reprogrammed to visibility items</p>	
	<p>Platform/National Early Warning Committee coordinated at the DDMPR to facilitate inter-sectoral sharing of weather and climate information including integrated economic evaluation assessments, sectoral risk and vulnerability maps and alerts – advisories, watches and warnings.</p>	<p>Not done; funds reprogrammed to visibility items</p>	
	<p><b>2.3.3</b> Develop the capacity of 30 members of Sub-County and District DMCs in 18 districts in the eastern region (including Bukedi, Busoga, Elgon and Teso sub-regions) and 12 districts in the northern region (including Acholi, Karamoja and Lango sub-regions) to integrate weather and climate information into district development plans.</p>	<p>Implemented for all the 28 Districts, plus 12 other Districts from South Western Uganda</p>	<p>Better understanding of the security of hydromet stations and their importance in generating early warning information, as well as the collaboration</p>

				for disseminating the information.
	2.3.4 Develop a national weather and climate information and early warning system communication and coordination strategy		Done by the consultant on Communications Strategy for UNMA.	Recommendations are being implemented by UNMA for improving its visibility.
<b>Output 2.4: Governmental and non-governmental communication channels and procedures for issuing alerts including advisories, watches and warnings are strengthened at a national and local level including the development of an early warning system dissemination national and local toolbox and mobile-based alert platforms in the Teso and Mt Elgon sub-regions.</b>				
	2.4.1 Develop and operationalize SOPs for disseminating weather, climate and hydrological information including alerts across all levels, e.g. community-level, local-level, state/province-level and national level.		Merged with Activity 1.3.5 by the Protocol and Agreements consultant - Bagyendera Moses	
	2.4.2 Develop and operationalize an EWS dissemination national and local toolbox including a gender sensitive trainer manual on the use of radio, television, print media, SMS-based partnerships, satellite phones, cell phone call centers/hotlines, including local community-specific methods such as flags, drums, village chiefs, religious leaders, and school and community drama, posters and flyers.		Done in 2018 by a consultant on Multi-Hazard and Vulnerability mapping	
	2.4.3 Equip and facilitate DRDPM and DDMCs to support the dissemination of weather and climate information, including the establishment of call centers/hotline and internet connection at the DRDPM linked to the DOM (UNMA) and DWRMA.		Done by the Consultant for the EWS data Enumerator.	The Report provided baseline information on utilization of early warning information at household levels. Changes in the indicators are expected to be captured during the final evaluation of the project.
	2.4.4 Develop a SMS-based alert system for floods, droughts, severe weather and other agricultural advisories for local farmers and vulnerable communities in Teso and Mt. Elgon sub-regions – this will be established through building on existing Mobile Alert Pilot projects for fishermen in Lake Victoria and farmers in the Kasese district.		Done: Procured 28 cell phones to link the districts; OPM also secured DMS with support from UNICEF.	These have improved reporting of emergencies to and from the pilot Districts with NECOC

	2.4.5 Develop and conduct simulation exercises for enhanced flood, drought and severe weather preparedness to complement the SMS-alert system implemented in Output 2.4.4 in the Teso and Mt. Elgon sub-regions. Feedback from these exercises will be included in the development of SOPs through 2.4.1		Done- implemented by OPM	Equipped the District partners in responding to natural hazards and disasters.
<b>Output 2.5 Sustainable financing options – including appropriate government cost recovery arrangements, service level agreements and public-private partnerships – identified, developed and implemented for the operation and maintenance of the installed hydro-meteorological observation, forecasting and early warning system.</b>				
	2.5.1 Conduct a comprehensive study to establish the viability of different sources of revenues – rated as mixed good/commercial as well as public good – identified in the existing DOM (UNMA)/UNMA MWE Business and Modernization Plan	-	Merged with activity 1.3.6 under one Consultancy by Cost Benefit Analysis consultant	
	2.5.2 Develop and implement sector-specific marketing strategy and programme for improved meteorological services and products to the CCA as well as for 1-2 other key economic sectors that are identified as having the most potential for generating revenue.	-	Merged with activity 1.3.6 under one Consultancy by Cost Benefit Analysis consultant	
	2.5.3 Review and propose revisions to the current i) cost recovery arrangement between the DOM (UNMA) and CCA to adequately reflect enhanced services and fee structures based on the results of	-	Merged with activity 1.3.6 under one Consultancy by Cost Benefit Analysis consultant	
	2.5.4 Based on the results of 2.5.1 and 2.5.2, develop service-level agreements for government organizations and private companies requiring specific customized meteorological services from DOM (UNMA)/UNMA. This will also include establishing a public-private partnership with an internet service provider with regards to internet bandwidth costs for the DOM (UNMA) station network.		PPP workshop conducted in 2016,	UNMA has already signed service level agreements with private sector;

## ANNEX II: EXPENDITURE BY OUTPUT

OUTCOME, OUTPUT,ACTIVITY	Budget (USD)	EXPENDITURE					Total Expenditure (USD)	% Delivery
		2014	2015	2016	2017	2018		
<b>OUTCOME 1: Enhance the capacity of UNMA and DWRM to monitor and forecast extreme weather ,hydrology and climate change.</b>	3,059,224	90,409.59	775,429.98	1,626,713.72	496,526.00	33,000.00	3,022,079.29	98.79
OUTPUT 1.1 16 Automatic Water Level Stations (AWLSs) installed and 40 manual hydro-meteorology stations and 5 AWLSs rehabilitated in the Victoria, Kyoga, Albert and Upper Nile Water Management Zones (WMZs.).	1,540,914	88,708.18	83,515.93	695,200.68	254,373.00	14,000.00	1,135,797.79	73.71
OUTPUT 1.2 25 Automatic Weather Stations (AWS) installed and 32 manual (12 synoptic, 10 agro-meteorological and 10 hydro-meteorological) and 32 AWSs rehabilitated in priority districts.	1,321,110	1,701.41	573,408.70	729,829.86	215,630.00	2,000.00	1,522,569.97	115.25
OUTPUT 1.3 Weather and climate forecasting facilities upgraded including an integrated hydro-meteorological data management and information system and an online web platform for operationalizing collaboration arrangements and procedures between DWRM and UNMA.	134,700	-	64,130.57	196,660.96	5,356.00		266,147.53	197.59
OUTPUT 1.4 Capacity developed for operating and maintaining observation networks and related infrastructure including training 9 meteorological and 10 hydrological trainers and 50 weather observers, raising local community awareness, developing and O&M toolbox and establishing internal arrangements and procedures between UNMA and DWRM.	62,500	-	54,374.78	5,022.22	21,167.00	17,000.00	97,564.00	156.10

<b>OUTCOME 2: Efficient and effective use of hydro-meteorological and environmental information for making early warnings and long-term development plans.</b>	851,276	123,538.51	199,867.33	200,716.45	154,344.00	110,300.00	788,766.29	92.66
OUTPUT 2.1: Technical capacity of UNMA and DWRM is strengthened by training 16 forecasters – including 8 senior and 8 junior – to build in-house capacity for producing standard and customized weather and climate forecasts and packaging hydro-meteorological data and information into a suitable format for user-agencies and local community end-users.	349,626	98,087.54	38,000.00	43,560.00	49,061.00	26,300.00	255,008.54	72.94
Key Activity Result 2.2: Tailored weather and climate information (including colour-coded alerts – advisories, watches and warnings – for flood, drought, severe weather and agricultural stresses, integrated cost-benefit analyses and sector-specific risk and vulnerability maps) made accessible to decision makers in government, private sector, civil society, development partners and local communities in the Teso and Mt Elgon sub-region.	121,550	2,412.52	14,551.88	32,000.00	1,659.00	9,000.00	59,623.40	49.05
OUTPUT 2.3. Weather and climate information mainstreamed into national policies, annual work plans and local development including the National Policy for Disaster Preparedness and Management, and district and sub-county development plans in priority districts in the Bukedi, Busoga, Elgon, Teso, Acholi, Karamoja and Lango sub-regions.	163,800	-	63,948.20	32,450.00	14,093.00	13,000.00	123,491.20	75.39

<b>OUTPUT 2.4. Governmental and non-governmental communication channels and procedures for issuing alerts including advisories, watches and warnings are strengthened at a national and local level including the development of an early warning system dissemination national and local toolbox and mobile-based alert platforms in the Teso and Mt Elgon sub-regions.</b>	53,000	-	-	26,108.49	27,531.00		53,639.49	101.21
<b>Output 2.5 Sustainable financing options – including appropriate government cost recovery arrangements, service level agreements and public-private partnerships – identified, developed and implemented for the operation and maintenance of the installed hydro-meteorological observation, forecasting and early warning system.</b>	163,300	1,729.73	55,800.00	27,600.00	22,500.00	8,000.00	115,629.73	70.81
<b>Programme Coordination Costs</b>	89,500	21,308.72	27,567.25	38,997.96	39,500.00	54,000.00	181,373.93	202.65
<b>Delivery (with commitments)</b>	4,000,000	941,686	898,968	1,826,581	697,242	187,344	3,992,219.51	99.81

Explanatory notes:

Over expenditure incurred on: AWSs (US\$ 565,501), Hydrological Civil works, ( US\$. 120,000 ), Contribution to CIRDA (US\$ 400,000) and Hardware and software for NMC by US\$.62,000. Other items under budgeted for were Monitoring expenses, Subnational Workshops, Board and TC meetings.

### ANNEX III: ASSETS REGISTER

<b>STRENGTHENING CLIMATE INFORMATION AND EARLY WARNING SYSTEM - SCIEWS</b>
<b>ASSET INVENTORY; PROJECT ID 00088073</b>
<b>Date: 17/05/2018</b>

PROFILE ID (electricals, vehicles etc.)	LIFE	TAG_ NUMBER	SERIAL_ID	DESCRIPTION	LOCATION (physical)	CUSTODIAN NAME
Information Technology (IT) Equipment	4 Yrs.	EWS/UNDP- GEF/UNMA/ICT 01	28TJWZ1	Dell Laptop	UNDP CO. IT Unit	Peter Omedo
IT Equipment	4 Yrs.	EWS/UNDP- GEF/UNMA/ICT 02	BFXJWZI	Dell Laptop	EWS Kololo	Jennifer Tushabe Kiiza
IT Equipment	4 Yrs.	EWS/UNDP- GEF/UNMA/ICT 03	TBA ICT - PETER	Dell Laptop	UNDP HO. Procurement	Formerly Fredah Zawedde
IT Equipment	4 Yrs.	EWS/UNDP- GEF/UNMA/ICT 04	DRJZSo2	Dell OptiPlex Desk top	EWS Kololo	General C/O Jennifer
IT Equipment	4 Yrs.	EWS/UNDP- GEF/UNMA/ICT 05	8BJZSo7	Dell OptiPlex Desk top	UNMA	Paul Isabirye /C/O Pascal O
IT Equipment	4 Yrs.	EWS/UNDP- GEF/UNMA/ICT 06	5PJZSo2	Dell OptiPlex Desk top	EWS Kololo	Jennifer Tushabe Kiiza
IT Equipment	4 Yrs.	EWS/UNDP- GEF/UNMA/ICT 07	7CT2XZ1	Dell Latitude Laptop	UNMA	Sam Ochoto
IT Equipment	4 Yrs.	EWS/UNDP- GEF/UNMA/ICT 08	76Q2XZ1	Dell Latitude Laptop	UNMA	Sam Ochoto
IT Equipment	4 Yrs.	EWS/UNDP- GEF/UNMA/ICT 09	20AMS6P000	Lenovo Think Pad X 240 with docking Station; PB01NMKH,LED Screen (TFT Monitor)- 502MXYGLM906, Head Phones with Microphone, USB Keyboard, USB Mouse, Cable Lock for Laptop- Kesington, Portable Blue - Ray writer and Targus Sport Backpack Bag.	EWS Kololo	Pascal Onegiu Okello
IT Equipment	4 Yrs.	EWS/UNDP- GEF/UNMA/ICT 10	FS-C5250DN	Kyocera Printer	EWS Kololo	Jennifer Tushabe Kiiza
IT Equipment	4 Yrs.	EWS/UNDP- GEF/UNMA/ICT 11	NZU55155	Copier IR 2520 A3 Print, Copy and Scan Network Ready, Automatic Duplex Printing only Canon	UNMA	Sam Ochoto
IT Equipment	4 Yrs.	EWS/UNDP- GEF/UNMA/ICT 12	NZU51836	Copier IR 2520 A3 Print, Copy and Scan Network Ready, Automatic Duplex Printing only Canon	EWS Kololo	Jennifer Tushabe Kiiza

IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 13	So17217526G	Sony VPL-DX 100 LCD Projector	UNMA	Sam Ochoto
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 14	So172175464I	Sony VPL-DX 100 LCD Projector	EWS Kololo	Jennifer Tushabe Kiiza
IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 15	SPCo4MJZO	Lenovo Think Pad Laptop	DWRM	Gaston Osiimwe
IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 16	SPCo4P3EZ	Lenovo Think Pad Laptop	DWRM	Aggrey Kyewe
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 17	LJV252	Dell OptiPlex 9020 Computer, 23" screen& 1 UPS	UNMA	Solomon Mangeni
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 18	9BWV252	Dell OptiPlex 9020 Computer, 23" screen& 1 UPS	UNMA	Solomon Mangeni
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 19	32XV252	Dell OptiPlex 9020 Computer, 23" screen& 1 UPS	UNMA	Solomon Mangeni
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 20	7J4WY42	Dell OptiPlex 9020 Computer, 23" screen& 1 UPS	UNMA	Solomon Mangeni
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 21	CDWV252	Dell OptiPlex 9020 Computer, 23" screen& 1 UPS	UNMA	Solomon Mangeni
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 22	B7XV252	Dell OptiPlex 9020 Computer, 23" screen& 1 UPS	UNMA	Solomon Mangeni
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 23	C77TY42	Dell OptiPlex 9020 Computer, 23" screen& 1 UPS	UNMA	Solomon Mangeni
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 24	JGXV252	Dell OptiPlex 9020 Computer, 23" screen& 1 UPS	UNMA	Solomon Mangeni
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 25	BGWV252	Dell OptiPlex 9020 Computer, 23" screen& 1 UPS	UNMA	Solomon Mangeni
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 26	01841-000-255-220	Dell Poweredge Server R530 & a rack	UNMA	Solomon Mangeni
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 27	01841-000-255-519	Dell Poweredge Server R430 & a rack	UNMA	Solomon Mangeni
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 28	01841-000-480-929	Dell Poweredge Server R430 & a rack	UNMA	Solomon Mangeni
IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 29	8HNFSG2	Desktop Computer ( Dell OptiPlex 5040 SFF)	DWRM	Eng. Nebert Wobusobozi



IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 30	8HQMSG2	Desktop Computer ( Dell OptiPlex 5040 SFF)	DWRM	Eng. Nebert Wobusobozi
IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 31	8HTJSG2	Desktop Computer ( Dell OptiPlex 5040 SFF)	DWRM	Eng. Nebert Wobusobozi
IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 32	8HTLSG2	Desktop Computer ( Dell OptiPlex 5040 SFF)	DWRM	Eng. Nebert Wobusobozi
IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 33	8HSGSG2	Desktop Computer ( Dell OptiPlex 5040 SFF)	DWRM	Eng. Nebert Wobusobozi
IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 34	8HPKSG2	Desktop Computer ( Dell OptiPlex 5040 SFF)	DWRM	Eng. Nebert Wobusobozi
IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 35	8HVDSG2	Desktop Computer ( Dell OptiPlex 5040 SFF)	DWRM	Eng. Nebert Wobusobozi
IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 36	8HSLSG2	Desktop Computer ( Dell OptiPlex 5040 SFF)	DWRM	Eng. Nebert Wobusobozi
IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 37	APC Smart UPS	APC Smart UPS 750 VA	DWRM	Eng. Nebert Wobusobozi
IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 38	CN68QB60BH	HP Scanjet Pro 3500 f1 Flatbed Scanner	DWRM	Eng. Nebert Wobusobozi
IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 39	CN68QB608N	HP Scanjet Pro 3500 f1 Flatbed Scanner	DWRM	Eng. Nebert Wobusobozi
IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 40	PHB8J8626L	HP Laserjet Pro MFP 426fdn Scanner	DWRM	Eng. Nebert Wobusobozi
IT Equipment	4 Yrs.	EWS/UNDP-GEF/DWRM/ICT 41	PHB8J86229	HP Laserjet Pro MFP 426fdn Scanner	DWRM	Eng. Nebert Wobusobozi
IT Equipment	4 Yrs.	EWS/UNDP-GEF/OPM/ICT 42	5CG6463MH7	Laptop( HP EliteBook 850 G3)	OPM	Solomon Elungat
IT Equipment	4 Yrs.	EWS/UNDP-GEF/OPM/ICT 43	5CG6463MHM	Laptop( HP EliteBook 850 G3)	OPM	Solomon Elungat
IT Equipment	4 Yrs.	EWS/UNDP-GEF/OPM/ICT 44	5CG6463MGY	Laptop( HP EliteBook 850 G3)	OPM	Solomon Elungat
IT Equipment	4 Yrs.	EWS/UNDP-GEF/OPM/ICT 45	5CG6463MHV	Laptop( HP EliteBook 850 G3)	OPM	Solomon Elungat
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 46	1HRHL82	Dell PowerEdge R 320	UNMA	Solomon Mangeni

IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 46	S(E)51566734	Messir-Comm GTS Automatic Message Switching System/Software License	UNMA	Solomon Mangeni
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 46	PHKGF41912	Other accessories (Network Laser Printer A4 B&W-Laserjet Pro 400 M401dn,GSM/GPRS Modem,LAN Switch,Terminal Server)	UNMA	Solomon Mangeni
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 46	10722868829018	19 "LCD console with KVM Switch- Belkin F1DC108H	UNMA	Solomon Mangeni
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 46	AS15278131861	APC Smart UPS 2000 LCD	UNMA	Solomon Mangeni
		EWS/UNDP-GEF/UNMA/ICT 46		Rackable UPS 2200VA; APC Smart UPS 2000		
IT Equipment	4 Yrs.		<b>CCTV CAMERAS:</b>		EWS Kololo	Jennifer Tushabe Kiiza
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 47	PZC4FU381W0009	IP Camera - IPC-HFW4200EP-0360B	EWS Kololo	Jennifer Tushabe Kiiza
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 48	PZC4KU147W33384	IP Camera - IPC-HFW4200EP-0360B	EWS Kololo	Jennifer Tushabe Kiiza
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 49	PZC4KU147W00031	IP Camera - IPC-HFW4200EP-0360B	EWS Kololo	Jennifer Tushabe Kiiza
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 50	PZC4KU147W00001	IP Camera - IPC-HFW4200EP-0360B	EWS Kololo	Jennifer Tushabe Kiiza
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 51	PZC4JA068W00084	IP Camera - DHIPCAHDW4200SP-0360B	EWS Kololo	Jennifer Tushabe Kiiza
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 52	PZB4KN395W00005	SD6C-120S-HN	EWS Kololo	Jennifer Tushabe Kiiza
IT Equipment	4 Yrs.			Camera	EWS Kololo	Jennifer Tushabe Kiiza
IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 53		Shaft Encoders; with level sense, Output Sdi-12, Background Lighting	DWRM	Eng. Nebert Wobusobozi
IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 54		Pressure Transducers: SEBA pressure and Temperature and special cable	DWRM	Eng. Nebert Wobusobozi
IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 55		SEBA Data Logger Unilog	DWRM	Eng. Nebert Wobusobozi
IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 56		Satelite Transmitter for METEOSAT	DWRM	Eng. Nebert Wobusobozi

IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 57		Memory stick Upgrade	DWRM	Eng. Nebert Wobusobozi
IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 58		Antenna UB6.f Meteosat Transmitter	DWRM	Eng. Nebert Wobusobozi
IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 59		Antenna GPSf Meteosat Transmitter	DWRM	Eng. Nebert Wobusobozi
IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 60		Protection Housing	DWRM	Eng. Nebert Wobusobozi
IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 61		Over Voltage Protection 24v	DWRM	Eng. Nebert Wobusobozi
IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 62		Grounding set for grounding mast	DWRM	Eng. Nebert Wobusobozi
IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 63		Data Logger Accessories	DWRM	Eng. Nebert Wobusobozi
IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 64		Data logger Sensors without Transmission: SEBA data logger Unilog-Light ENC	DWRM	Eng. Nebert Wobusobozi
IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 65		Data Logger Programming Set: Panasonic Tough Book CF-31MK5	DWRM	Eng. Nebert Wobusobozi
IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 66		Solar Pannels and Solar regulator with batteries	DWRM	Eng. Nebert Wobusobozi
IT Equipment	10Yrs	EWS/UNDP-GEF/DWRM/ICT 67		Server & Software	DWRM	Eng. Nebert Wobusobozi
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 68		Nikon Camera D810 Body	UNMA	Deus Bamanya
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 69		Nikon Camera D810 Body	UNMA	Deus Bamanya
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 70		Nikon Camera D810 Body	UNMA	Deus Bamanya
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 71		Nikon Camera D810 Body	UNMA	Deus Bamanya
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 72		Nikon AF-S-24-120 MMF4	UNMA	Deus Bamanya
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 73		Nikon AF-S-24-120 MMF4	UNMA	Deus Bamanya

IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 74		Nikon AF-S-24-120 MMF4	UNMA	Deus Bamanya
IT Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/ICT 75		Nikon AF-S-24-120 MMF4	UNMA	Deus Bamanya
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 76		Digital Barometers	UNMA	Milton M.Waiswa
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 77		Digital Barometers	UNMA	
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 78		Digital Barometers	UNMA	
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 79		Digital Barometers	UNMA	
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 80		Digital Barometers	UNMA	
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 81		Digital Barometers	UNMA	
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 82		Digital Barometers	UNMA	
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 83		Digital Barometers	UNMA	
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 84		Digital Barometers	UNMA	
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 85		Digital Barometers	UNMA	
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 86		Digital Barometers	UNMA	
IT Equipment	10 Yrs.	EWS/UNDP-GEF/UNMA/ICT 87		Digital Barometers	UNMA	
IT Equipment	10 Yrs.	Asset tags?	20 Automatic Weather Stations(AWSs)	ADCON type	UNMA	
IT Equipment	10 Yrs.		5 AWSs	Earth Network type (On Telecommunications Towers in : Kaliro, Sironko, Napak, Kotido & Otuke/Agago)	UNMA	

IT Equipment	11 Yrs.	EWS/UNDP-GEF/UNMA/EQ 01	860491 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	12 Yrs.	EWS/UNDP-GEF/UNMA/EQ 02	860492 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	13 Yrs.	EWS/UNDP-GEF/UNMA/EQ 03	860493 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	14 Yrs.	EWS/UNDP-GEF/UNMA/EQ 04	860494 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	15 Yrs.	EWS/UNDP-GEF/UNMA/EQ 05	860495 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	16 Yrs.	EWS/UNDP-GEF/UNMA/EQ 06	860496 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	17 Yrs.	EWS/UNDP-GEF/UNMA/EQ 07	860732 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	18 Yrs.	EWS/UNDP-GEF/UNMA/EQ 08	860733 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	19 Yrs.	EWS/UNDP-GEF/UNMA/EQ 09	860734 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	20 Yrs.	EWS/UNDP-GEF/UNMA/EQ 10	860735 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	21 Yrs.	EWS/UNDP-GEF/UNMA/EQ 11	860736 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	22 Yrs.	EWS/UNDP-GEF/UNMA/EQ 12	860737 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	23 Yrs.	EWS/UNDP-GEF/UNMA/EQ 13	860738 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	24 Yrs.	EWS/UNDP-GEF/UNMA/EQ 14	860739 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	25 Yrs.	EWS/UNDP-GEF/UNMA/EQ 15	860740 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	26 Yrs.	EWS/UNDP-GEF/UNMA/EQ 16	860741 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	27 Yrs.	EWS/UNDP-GEF/UNMA/EQ 17	860742 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa

IT Equipment	28 Yrs.	EWS/UNDP-GEF/UNMA/EQ 18	860743 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	29 Yrs.	EWS/UNDP-GEF/UNMA/EQ 19	860744 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	30 Yrs.	EWS/UNDP-GEF/UNMA/EQ 20	860745 - A100753010	Adwave GPRS Quad	UNMA	Milton M.Waiswa
IT Equipment	31 Yrs.	EWS/UNDP-GEF/UNMA/EQ 21	222568	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	<b>Milton M.Waiswa</b>
IT Equipment	32 Yrs.	EWS/UNDP-GEF/UNMA/EQ 22	222569	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	<b>Milton M.Waiswa</b>
IT Equipment	33 Yrs.	EWS/UNDP-GEF/UNMA/EQ 23	222570	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	<b>Milton M.Waiswa</b>
IT Equipment	34 Yrs.	EWS/UNDP-GEF/UNMA/EQ 24	222622	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	<b>Milton M.Waiswa</b>
IT Equipment	35 Yrs.	EWS/UNDP-GEF/UNMA/EQ 25	222640	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	<b>Milton M.Waiswa</b>
IT Equipment	36 Yrs.	EWS/UNDP-GEF/UNMA/EQ 26	222641	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	<b>Milton M.Waiswa</b>
IT Equipment	37 Yrs.	EWS/UNDP-GEF/UNMA/EQ 27	222657	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	<b>Milton M.Waiswa</b>
IT Equipment	38 Yrs.	EWS/UNDP-GEF/UNMA/EQ 28	222658	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	<b>Milton M.Waiswa</b>
IT Equipment	39 Yrs.	EWS/UNDP-GEF/UNMA/EQ 29	222659	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	<b>Milton M.Waiswa</b>
IT Equipment	40 Yrs.	EWS/UNDP-GEF/UNMA/EQ 30	222660	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	<b>Milton M.Waiswa</b>
IT Equipment	41 Yrs.	EWS/UNDP-GEF/UNMA/EQ 31	222661	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	<b>Milton M.Waiswa</b>
IT Equipment	42 Yrs.	EWS/UNDP-GEF/UNMA/EQ 32	222662	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	<b>Milton M.Waiswa</b>
IT Equipment	43 Yrs.	EWS/UNDP-GEF/UNMA/EQ 33	222675	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	<b>Milton M.Waiswa</b>
IT Equipment	44 Yrs.	EWS/UNDP-GEF/UNMA/EQ 34	222676	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	<b>Milton M.Waiswa</b>

IT Equipment	45 Yrs.	EWS/UNDP-GEF/UNMA/EQ 35	222677	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	Milton M.Waiswa
IT Equipment	46 Yrs.	EWS/UNDP-GEF/UNMA/EQ 36	222678	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	Milton M.Waiswa
IT Equipment	47 Yrs.	EWS/UNDP-GEF/UNMA/EQ 37	222702	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	Milton M.Waiswa
IT Equipment	48 Yrs.	EWS/UNDP-GEF/UNMA/EQ 38	222703	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	Milton M.Waiswa
IT Equipment	49 Yrs.	EWS/UNDP-GEF/UNMA/EQ 39	222680	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	Milton M.Waiswa
IT Equipment	50 Yrs.	EWS/UNDP-GEF/UNMA/EQ 40	222679	Hydra Probe 11 SDI-12+8m Soil Moisture /Temp/Salin	UNMA	Milton M.Waiswa
IT Equipment	51 Yrs.	EWS/UNDP-GEF/UNMA/EQ 41	373445-A100850002	A850 Telemetry Gateway	UNMA	Milton M.Waiswa
IT Equipment	52 Yrs.	EWS/UNDP-GEF/UNMA/EQ 42	A300405301	AddVANTAGE Pro 6.5 Server	UNMA	Milton M.Waiswa
IT Equipment	53 Yrs.	EWS/UNDP-GEF/UNMA/EQ 43		PC Notebook ( windows 2012),PC Server, UPS	UNMA	Milton M.Waiswa
IT Equipment		EWS/UNDP-GEF/UNMA/EQ 44	15501-500-50	Lightning Package - 09	UNMA	Waiswa M Milton
IT Equipment		EWS/UNDP-GEF/UNMA/EQ 45	226-500-51	WeatherBug Network Appliance	UNMA	Waiswa M Milton
IT Equipment		EWS/UNDP-GEF/UNMA/EQ 46	10352-500-50	ISCON for Lufft Weather Stations	UNMA	Waiswa M Milton
IT Equipment		EWS/UNDP-GEF/UNMA/EQ 47	10351-500-50	Lufft 50M Weather Station Data Cable	UNMA	Waiswa M Milton
IT Equipment		EWS/UNDP-GEF/UNMA/EQ 48	10353-500-50	Lufft WS501 - UMB Smart Weather Sensor	UNMA	Waiswa M Milton
IT Equipment		EWS/UNDP-GEF/UNMA/EQ 49	10353-500-50	Lufft WS501 - UMB Smart Weather Sensor	UNMA	Waiswa M Milton
IT Equipment		EWS/UNDP-GEF/UNMA/EQ 50	1240-500-51	Modem Cable	UNMA	Waiswa M Milton
IT Equipment		EWS/UNDP-GEF/UNMA/EQ 51	10350-500-50	Power Supply for Lufft Weather Station	UNMA	Waiswa M Milton

IT Equipment		EWS/UNDP-GEF/UNMA/EQ 52	224-500-51	Power Supply WxBug N A	UNMA	Waiswa M Milton
IT Equipment		EWS/UNDP-GEF/UNMA/EQ 53	146-500-50	Texas Electronics Rain Gauge, TR-525M, Metric	UNMA	Waiswa M Milton
IT Equipment		EWS/UNDP-GEF/UNMA/EQ 54	817-500-50	StreamerRT (1 seat)	UNMA	Waiswa M Milton
IT Equipment		EWS/UNDP-GEF/UNMA/EQ 55	1NI-500-51	Network design, installation and training services	UNMA	Waiswa M Milton
IT Equipment		EWS/UNDP-GEF/UNMA/EQ 56	1NI-500-51	Installation kit for cell towers	UNMA	Waiswa M Milton
IT Equipment		EWS/UNDP-GEF/UNMA/EQ 57	809-500-51	EN-International ENcast-Bundled 6 day\15 day hourly sensor fo	UNMA	Waiswa M Milton
Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/EQ 58	Set	Solar Panels,Batteries,Charge Controllers,Inverters & Stands	UNMA	Solomon Mangeni
Equipment	4 Yrs.	EWS/UNDP-GEF/UNMA/EQ 59	Set	Solar Equipment Unit	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 01	n/a	Executive Office Desk with Mobile Pedestrial	EWS Kololo	Pascal Onegiu Okello
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 02	n/a	Executive writing Desk 1600x800	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 03	M1603	Office Desk with side extension	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 04	n/a	Book Cabinet 900x420x2000mm	EWS Kololo	Pascal Onegiu Okello
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 05	n/a	Storage Cabinet PL113	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 06	n/a	Visitors Chair - Aspire - Black	EWS Kololo	Pascal Onegiu Okello
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 07	n/a	Visitors Chair - Aspire - Black	EWS Kololo	Pascal Onegiu Okello
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 08	n/a	Visitors Chair - Aspire - Black	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 09	n/a	Visitors Chair - Aspire - Black	EWS Kololo	Jennifer Tushabe Kiiza



Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 10	n/a	Visitors Chair - Aspire - Black	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 11	n/a	Visitors Chair - Aspire - Black	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 12	n/a	Office Chair - MF High Back - Black	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 13	n/a	Office Chair -Steno Seating w/Fixed Arm	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 14	n/a	Office Chair -Steno Seating w/Fixed Arm	UNDP HO. Procurement	Formerly Fredah Zawedde
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 15	n/a	Flip Chart Stand	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 16	n/a	White Board 120*90	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 17	n/a	Verticle Blinds	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 19	n/a	Ge 160nOffice Desk	EWS Kololo Security Office	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 20	n/a	BS 590 Office Chairs	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 21	n/a	BS 590 Office Chairs	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 22	n/a	BS 590 Office Chairs	EWS Kololo	Jennifer Tushabe Kiiza
Furniture and Fittings	4 Yrs.	EWS/UNDP-GEF/UNMA/FF 23	n/a	BS 590 Office Chairs	EWS Kololo	Jennifer Tushabe Kiiza
Electronics	4 Yrs.	EWS/UNDP-GEF/UNMA/EQ 60	SJS192 KSL	Double door Refridgerator	EWS Kololo	Jennifer Tushabe Kiiza
Electronics	4 Yrs.	EWS/UNDP-GEF/UNMA/EQ 61	DK35	Water Kettle	EWS Kololo	Jennifer Tushabe Kiiza
Electronics	4 Yrs.	EWS/UNDP-GEF/UNMA/EQ 62	NWD1206N	Water Dispensor	EWS Kololo	Jennifer Tushabe Kiiza
Electronics	4 Yrs.	EWS/UNDP-GEF/UNMA/EQ 63	MS 2042DMS	Microwave	EWS Kololo	Jennifer Tushabe Kiiza

Vehicle			UAXU 848X	Toyota Land Cruiser	EWS Kololo	Frederick Watibini
Vehicle			UAU 588X	Toyota Double Cabin pick up	EWS Kololo	Moses Gwebatala
2 Air conditioners					EWS Kololo	
Solar panels				14 solar panels, battery switches etc	EWS Kololo	
Smoke detector				LIFECO	EWS Kololo	
Shreder					EWS Kololo	
<b>Total Value of Assets</b>						



**ANNEX IV: SAMPLE PHOTOS OF WEATHER AND WATER LEVEL STATIONS:**



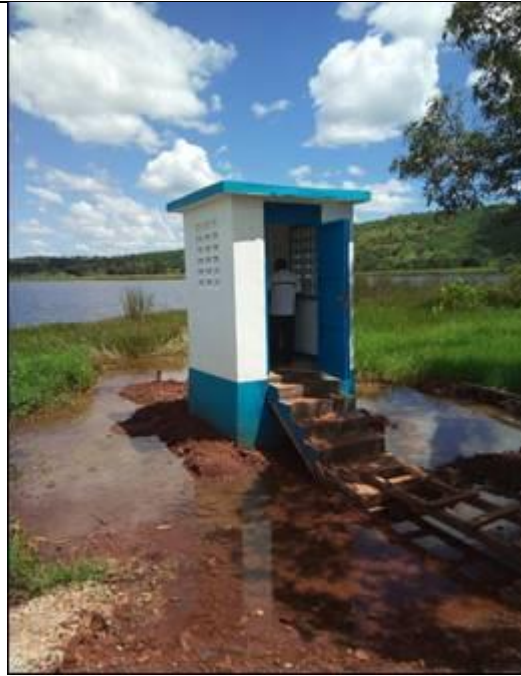
R. Muyembe



Nakivubo Channel – 5<sup>th</sup> street



R. Sezibwa



R. Kiyanja



R. Achwa



R. Ayugi



R. Nyagak



L. Bisina

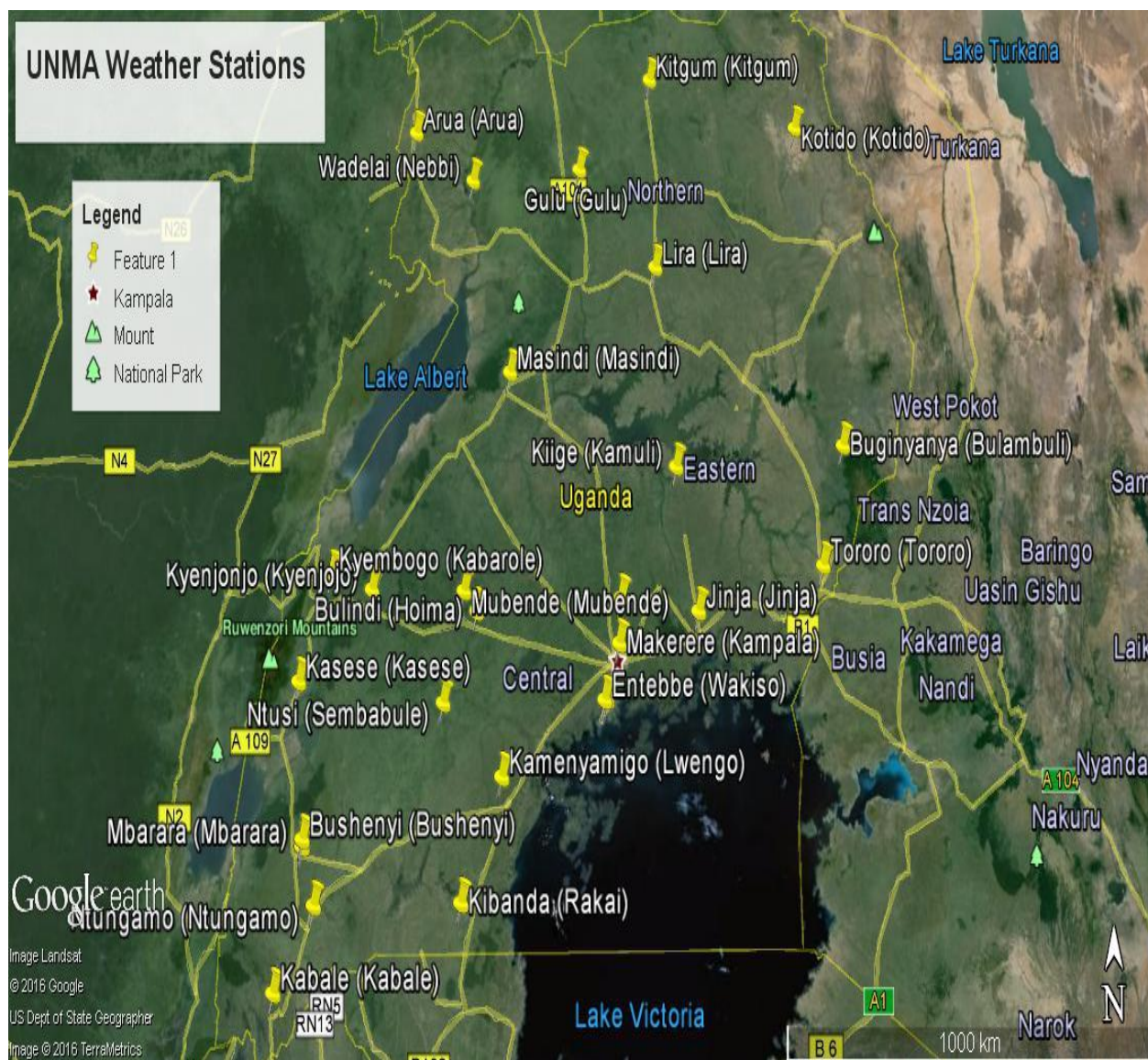
**List of hydrological stations renovated through the SCIEWS project**

<b>Hydrological stations-Automatic Water Level stations(AWLS)</b>		
<b>No.</b>	<b>Station</b>	<b>District</b>
1	Achwa	Nwoya
2	R. Ayugi at Atiak - Laropi Road	Amuru
3	R. Anyau at Arua – Moyo Road	Arua
4	R. Oru at Arua – Yumbe Road	Arua
5	R. Muyembe	Bulambuli
6	Kigingi Land site	Buyende
7	Nakivubo Channel – 5 <sup>th</sup> street	Kampala
8	L. Bisina at Opeta	Katakwi
9	L. Kwania at Kachung works	Lira
10	R. Sezibwa at falls	Mukono
11	Nyarwodo	Nebbi
12	R. Ora at Inde – Pakwach road	Nebbi
13	Laropi	Adjumani
14	R. Nyagak at Nyapea	Zombo
15	R. Waki II at Biiso – Hoima	Bulisa
16	R. Wambabya at Buseruka	Hoima
17	R. Sebwe	Kasese
18	R. Eisesero at Bunyonyi	Kabale
19	Nakivubo Channel – Railway Bridge	Kampala
20	Ishasha at Katungulu – Zaire Road	Kanungu
21	Kanyampara	Kasese
22	R. Kaku	Kisoro
23	R. Kiyanja	Masindi



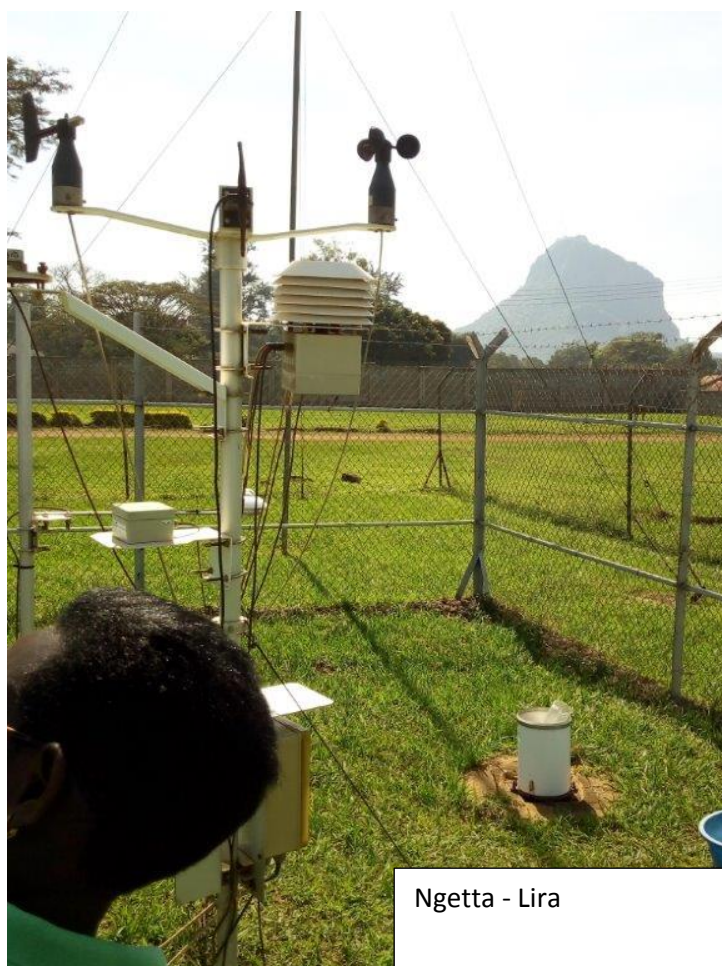
24	L. Wamala at Lubajja	Mityana
25	R. Ruizi at Ndeiza	Ntungamo
26	Kibaale bridge	Rakai
27	R. Chambura at Kichwamba	Rubirizi
28	R. Mayanja at Kapeeka – Kakunga	Kapeeka

## ANNEX V: UNMA WEATHER STATIONS IN UGANDA



**Sample Weather Stations rehabilitated:**





Ngetta - Lira





Bukwu - Entebbe









