



Concept on the Climate Action Hack – Uganda 12-14 June 2017

1.0. Introduction

The Government of Uganda has since 2014 been implementing the UNDP-GEF funded Strengthening Climate Information and Early Warning Systems (SCIEWS) project, with the key goal of improving the hydro-meteorological monitoring and forecasting capability of the Ministry of Water and Environment, with the Uganda National Meteorological Authority (UNMA) as the lead partner. The key responsible parties to the project are: The Department of Water Resource Management (DWRM); Department of Relief, Disaster Preparedness and Management (DRDPM)/Office of the Prime Minister (OPM); the Uganda Communications Commission (UCC); The Ministry of Finance Planning and Economic Development; the Ministry of Agriculture, Animal Industries and Fisheries (MAAIF) and the Local Governments in the project area.

The project has two key outcome areas, namely:

- 1) To enhance the capacity of UNMA and DWRM to monitor and forecast extreme weather, hydrology and climate change;
- 2) To ensure efficient and effective use of hydro-meteorological and environmental information for making early warnings and long-term development plans.

With the procurement and installation of modern automatic weather and hydrological stations across the country, outcome 1 (technology transfer) has to a great extent been achieved, and near real time information is being utilized from these systems. The main concern under outcome 2 is the customization and utilization of products from these systems, in a format that is easily useable by every segment of the society.

2.0. Justification of the innovation

Systematic development of sector-specific information and appropriate packaging and dissemination of weather and climate information for use by public and private sectors are still nascent in Africa. For instance, the use of current weather and seasonal climate information in the agricultural sector is currently variable across Africa and in some countries is minimal for a variety of reasons, including: the timing when information/advisories are received; the content of the information/advisories (average rainfall change for a seasonal forecast; as opposed to information on onset, cessation and seasonal duration); and whether or not the information is applicable for the local environment. In some cases, this has led to the emergence of private weather companies in places that fulfil the demand for relevant and reliable weather and climate information.



There is also limited access to and uptake of early warnings (EW) and climate information by vulnerable communities owing to inadequate end user dissemination channels as well as approaches to engage them in the development and use of the information. The limited understanding and uptake of this information by vulnerable communities is partly because information, particularly scientific information and concepts, is not communicated effectively, is often unilaterally developed without end-user engagement, and does not often integrate local knowledge and socio-cultural and gender-differentiated contexts

The Uganda National Meteorological Authority is the main producer of climate and weather information in the country. Among the products are: daily weather forecasts, ten day forecasts (decadal), seasonal forecasts and Agricultural Advisories. Building on these products, the applications and innovative ideas planned to be implemented in this short project is intended to meet on-the-ground realities in Uganda. Existing challenges include:

- Limited number of smart phones and internet;
- Lack of reliable electricity;
- Limited technical capacity;
- Variation in languages and dialects, cultural barriers and ethnic differences;
- Low level of literacy in the country side;
- Gender- and generation-based differences in the use of weather and climate information;
- Large events/hazards that hinder attainment of development goals, such as war, drought and disease
- From a perception point of view, many Meteorological offices in sub-Saharan Africa are caught in a non-virtuous cycle, where low-quality information and outputs, limited capacity and technology, and limited funding and political support have perpetuated a perception that they are weak institutions sharing poor information. Policy makers, farmers, pastoralists and fishermen sometimes simply don't trust the weather forecasts. The support is in place to build the fidelity of the information shared by MET services, but end-users need to trust this information and be able to act on it;
- According to the World Bank. "most hydro met services in Sub-Saharan Africa are unable to meet current needs for weather and climate information and offer only limited areas of trans-boundary cooperation."

*From the foregoing, **young professionals with passion for applications development will be invited to a three days' fully accommodated workshop to give them the opportunity to think creatively and develop applications that can support dissemination and usage of weather and climate products by communities and the private sector for making decision on production and agricultural activities.***



3.0. Objectives of the hackathon project

Invitees will be given raw data to create mobile applications, information systems and innovative methodologies that can be used by vulnerable key stakeholders to receive early warnings, take action, save lives and build productivity.

- 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;
- Build hacks and next-generation applications to improve on existing systems and methodologies;
- Leverage existing information, networks and human capacity to seed innovation.

4.0. Stakeholders

End Users

These are the target end-users for this information. Reaching them also requires engagement with several actors.

Vulnerable Farmers. This target group is comprised of vulnerable farmers, pastoralists, fishermen and rural enterprisers. This target group has multiple needs for weather information. It can save lives, increase productivity and reduce risk. Reaching them is a challenge, Internet communication is virtually impossible, literacy is low, and there are regional and village-level cultural and linguistic differences.

Vulnerable Communities. This group is comprised of community leaders, farm cooperative leaders, village leadership, regional politicians, children, teachers, Moms, grand moms and other community members that don't work in farming, local NGOs, extension services and medium-scale local enterprisers.

Policy Makers. This group is comprised of national leaders, National Hydro-Met Services, Members of Parliament, the Executive/Ministries, media, large private-sector enterprises (telecommunications, banking, mining, etc.), universities, think tanks, and regional cooperation entities (i.e. African Union).

Actors

Actors can be used to share information, technology, early-warnings and more with our end users. Some top country-level actors include:



Country-level Actors. Telecommunications and electronic media platforms, Met Services, community leaders, first responders, NGOs, education, health and agricultural extension agencies, Early warning center, brand ambassadors, UNDP-supported Climate Information and Early-Warning System projects.

5.0.Methodology

Climate Action Hack strives to foster an open environment where ideas – both big and small – can be explored. With this in mind, it will be up to project participants to address what problems they wish to work on, which technologies and methodologies they wish to use, and how they wish to disseminate, share their final product.

In terms of methodology, only basic instructions will be given during the hackathon itself, and it is the developers' challenge to provide the solutions. Participants will be given weather and climate datasets from satellite feeds, National Meteorological Services and other sources to build their application and system. An online workspace will allow for collaboration with virtual participants. Internet connectivity is provided, but large servers will not be available. This is a BYOD (Bring Your Own Device e.g. laptop computers, mobile phones) event.

Some guiding principles:

- Engage with virtual participants;
- Build a maximum of four working groups to address specific problems and leverage subject-matter expertise (for example, a team with individual specialists in Information Technology, Information Systems, mobile application, and web development);
- Respect ideas, listen, engage;
- Laugh at failure and try again;
- Remember the objectives, challenges and key end-users;
- Work within the hive to define groups, goals, roles and responsibilities.

6.0.Seeding Ideas

While it is up to the Climate Action hackers to come up with ideas and build their applications, here are a few seed ideas to get you started:

- **Farmer-specific feature phone application** to share five-day forecasts (10-day forecast), protect crops and livestock from significant weather events, improve farm yields, hit markets, decide on crop planting times and crops to plant, avoid pestilence, apply fertilizer at appropriate times and share best farming practices;
- **Information Systems solutions.** Bundling and information pipeline. How to get



information from satellites, Automatic Weather Stations, data streams and other information sources, into useable form;

- **Smartphone application** to be used by rural communities and policy-makers with advanced forecasting, crop and health information, with advanced linking to long-term and short-term forecasting;
- **Socio-economic-based application** to protect poor rural people from floods, hail, lightning, and other natural disasters and mosquito-borne illness. This application provides information on what to do in case of emergency or illness and provides early warnings to targeted regions; **Crowd-sourced now-casting** to share weather alerts within a community, attach to social networks. In this one, the farmers are the information gatherers, attaching their on-the-ground observations to bigger data;
- **Crowd-Sourced Weather Information.** Local weather parameter measurements to ensure and improve quality control of forecasts;
- **Bridge the gap between National Met Service and the private sector.** An app for automatically matching private sector information needs with weather information products; **Money maker.** Basic app that helps key users make more money by hitting markets, planting, harvesting at optimal times;
- **Social engagement.** Hybrid solutions that bring together technology with human networks and know-how to bridge the knowledge gap;
- **Advocacy.** Products that share what to do in the event of an emergency, and connect people with better weather information;
- **Cooperation between departments or nations.** Systems and platforms to share relevant early-warnings and weather information across international borders;
- **Media link.** Connecting information gatherers with social and traditional media;
- **Your Idea.** There are no bad ideas. Innovate, think outside the box, experiment and explore.

7.0.Budget

<u>BUDGET FOR THE HACKATON/INNOVATIONS CHALLENGE</u>					
<u>JUNE 2017</u>					
#	Activity/Item	No. of UNITS	Frequency/Days	UNIT COST (Ugx)	TOTAL COST (Ugx)
	2.4.5. Conduct a Hackathon/Innovations Challenge for young professionals to show case weather products				
1	Newspaper call for proposal (New Vision, Monitor and the East African)	3	2	1,300,000	7,800,000



2	Hall hire, meals and break tea/coffee for proposal screening committee(lumpsum)	1	2	900,000	1,800,000
3	Per Diem for Committee evaluating proposals	5	2	161,000	2,053,520
4	Break Tea/coffee, water with snacks and lunch for the participants at Pulse Lab	35	2	9,000	2,820,000
5	Afternoon Tea with snacks for the participants at Pulse Lab	35	2	9,000	630,000
6	Hotel hire residential for hackers in outskirts of the City (including breakfast and dinner on arrival & the final day). Transport to and from venue to be provided by the PMU.	25	4	120,000	12,000,000
7	Hotel hall hire for 1 day within City Center (Including break teas/coffee and lunch)	1	1	5,000,000	5,000,000
8	DSA and travel cost for upcountry participants(lumpsum)	15	2	350,000	7,350,000
9	Skype Enable internet(Hotel)	1	1	300,000	300,000
10	Media Coverage(lumpsum)	1	1	200,000	200,000
11	Print work (2 banners, certificates)-lumpsum	1	1	700,000	700,000
12	Cost of the award / prize:				-
	1st prize	1	1	3,000,000	3,000,000
	2nd prize	1	1	2,000,000	2,000,000
	3rd prize	1	1	1,500,000	1,500,000
	Total				47,153,520

8.0. Programme

Day One: Arrival of Participants; Check in designated Hotel :11th June, 2017			
Day two: 12th June, 2017			
Time (Hrs.)	Sessions / Presentations / Activities	Venue	Responsible
8:30	Registration	UN Pulse Lab-Kololo	UNMA/PMU
9:00	Prayer/Welcome remarks/Participant introductions Structure and objectives of the workshop		Director Applied Meteorology and Climate Services
9:30	Welcome Remarks		Programme Manager, UN Pulse Lab
9:45	Opening Remarks		UCC Representative
10:00	Welcome Remarks		UNDP Country Director
10:15	Official Opening of the workshop		Executive Director, UNMA
10:30	Group Photograph		UNMA



10:40	Health / Tea Break	” ” ” ” ” ”	Catering
	SESSION 2	” ” ” ” ” ”	Catering
11:25	Presentation of the Current weather observation technologies		Director Station Networks and Observations-UNMA
11:45	Presentation on Climate Data Management system and climate products	UN Pulse Lab Kololo	Director Applied Meteorology and Climate Services
12:05	Presentation of tools used in Weather Forecasting		Director Forecasting Services
12:25	Presentation of the current challenges and the technological needs of UNMA		Executive Director UNMA
12:45	Q & A		UNMA/UNDP
13:00	Health /Lunch Break	” ” ” ” ” ”	Catering
14.00	SESSION 3: Young Innovators break into 4 working group and begin to brainstorm on new ideas	UN Pulse Lab-Kololo	UNMA
16.30	Health/Tea Break	” ” ” ” ” ”	Catering
17.00	End of day two	Hotel (TBC)	
Day 3	13th June 2017		
8:30	Registration	UN Pulse Lab-Kololo	UNMA/PMU
9:00	Young Innovators continue to develop solutions, in the process interacting with UNMA & Pulse Lab technical team for Q & A		UNMA/Pulse Lab
9:30			
10:00			
10:30	Health /tea or coffee Break at will	” ” ” ” ” ”	
10:45	Young Innovators continue to develop solutions, in the process interacting with UNMA & Pulse Lab technical team for Q & A	UN Pulse Lab-Kololo	UNMA/Pulse Lab
13:30	Health /Lunch Break	” ” ” ” ” ”	Catering
15:00	Consolidation of ICT solutions by Young Innovators	UN Pulse Lab-Kololo	UNMA/Pulse Lab
16:30			
17:00			
17:15			
17:30			
	N.B. Activity can continue from the hotel rooms	Hotel (TBC)	
Day 4	14th June 2017		
8:30	Registration and Judges take up their seats	Hotel (TBC)	UNMA/PMU
9:00	Overview of the Innovation process		UNMA/PMU
9:30	Presentation by Group 1		
10:00	Q&A		
10:15	Presentation by Group 2		
10:45	Q&A		



11:15	Presentation by Group 3		
11:45	Q&A		
12:00	Presentation by Team 4		
12:30	Q&A		
	Assessment by Judges		
13:00	Lunch		
14:00	Announcing of winners and rewards	Hotel (TBC)	UCC(Judges)
14:30	Final Remarks		UNDP Resident Representative
15:00	Closing Remarks		ED, UNMA
15:15	Health/Tea Break and departure	” ” ” ” ” ”	

9.0. Additional Resources

There will be opportunities at the hackathon to engage with experts on climate change, sustainable development, communications, public-private partnerships, meteorological technology, meteorology and hydrology. Here are some virtual resources you wish to check out.

- Similar platforms and last-mile enterprises [3-2-1 Africa](#), [Rain Cell Africa](#), [TAHMO](#) and [Agriculture and Climate Risk Enterprise](#).
- [Free icons and humanitarian symbols](#)
- [GUIDELINES ON EARLY WARNING SYSTEMS - WMO](#)
- [A Checklist Developing Early Warning Systems - UNISDR](#)
- [Case study: Flood early warning systems](#)
- [A Conceptual Flash Flood Early Warning System for Africa](#)
- [Information systems in a changing climate: Early warnings](#)
- [Improving early warning systems for agricultural – CGIAR](#)
- [Monitoring, Early Warning and Communication System](#)



How farmers around the world are making decisions based on weather and climate information

As climate change threatens food production, climate information services are helping farmers in Africa and South Asia make better decisions in the short and long-term to adapt to changing growing conditions.

	Type of information	Vehicles for delivering information	Farmer decisions affected
WEATHER Days to weeks	<ul style="list-style-type: none"> Observed rainfall and temperature Daily forecasts up to one week ahead of time Alerts on pests and diseases Early warning of extreme weather events 	<ul style="list-style-type: none"> Mobile phones Radio Television 	<ul style="list-style-type: none"> Timing of planting and harvest Timing of fertilizer, pesticide, and irrigation application Protecting lives and property from extreme events
CLIMATE VARIABILITY Months to Years	<ul style="list-style-type: none"> Probabilities for seasonal rainfall and temperature conditions Seasonal climate variables targeted to particular agricultural risks (dry spells, rainy season start date, etc) Historical variability of climate variables 	<ul style="list-style-type: none"> Workshops with experts Conversations with agricultural extension agents (farm educators) 	<ul style="list-style-type: none"> Selecting crops and varieties Livestock stocking rates and feeding strategies Intensity of input use (fertilizer, pesticides) Labor or marketing contracts Intensifying and diversifying crops Diversifying sources of income
CLIMATE CHANGE Decades or longer	<ul style="list-style-type: none"> Projections of future rainfall and temperature Historical trends in rainfall and temperature Historical changes in extreme events 	<ul style="list-style-type: none"> Workshops with researchers, agricultural extension agents, and meteorological services. 	<ul style="list-style-type: none"> Major capital investments (buying or expanding landholding, irrigation systems, farm equipment etc) Changing farming system or livelihood strategy Deciding whether or not to farm



RESEARCH PROGRAM ON
 Climate Change,
 Agriculture and
 Food Security

