



ICT improves weather information dissemination to farmers and other stakeholders?

Based on findings from two surveys conducted in 2017 and 2020 among stakeholders in agriculture, environment, and health sectors as well as farmers in Rakai, Mbale, Kamuli, Wakiso and Kampala Districts

PROJECT							
PROJECT NAME	WIMEA-ICT (Improving Weather Information Management in East Africa through the use of suitable ICTs) www.wimea-ict.net						
COLLABORATORS	MAKERERE UNIVERSITY (UGANDA), Uganda National Meteorological Authority (UNMA), DAR-ES-SALAAM INSTITUTE OF TECHNOLOGY (TANZANIA), UNIVERSITY OF JUBA (SOUTH SUDAN), UNIVERSITY OF BERGEN (NORWAY), TMA, SOUTH SUDAN DEPARTMENT OF METEOROLOGY						
TARGET PRODUCT	WEATHER INFORMATION DISSEMINATION SYSTEM						
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Background							
PURPOSE <i>why?</i>							
<ul style="list-style-type: none"> Weather information is important in different sectors for stakeholders to make informed decisions Informed decisions lead to improved productivity and safety. There is acknowledgement of climate change and its effects are evident to all sectors and most especially the farmers. <i>“People from “up” need to come and see how much we suffer and how much the sun affects us.</i> Many farmers previously receive weather information mainly via FM radio, community radio, TV, social media, extension workers, social gatherings (e.g. worship places, community meetings, funerals, political gatherings), newspapers, or use indigenous knowledge, among others. Some people do not own radios, TVs, have no time to listen/watch, expensive to maintain radios, set-top boxes for TVs. <i>“Also the radio cells are very expensive so I would rather buy a kilo of posho than buy cells for the radio. In this way the news will pass you by... the taxes which have been introduced. You have to buy TV dishes before you watch</i> 							

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news, really? So if you don't pay you can't access the news.... So I think we use a medium we are all conversant with" (respondents)

- ICT leverages available tools and technologies to provide information on demand in a timely and cost-effective way.
- Majority of rural Ugandans own a mobile phone or have access to one, coined as 'farmer phone' (button type rather than touch screen type); are conversant with phone functionality/usage, including short codes; are willing to pay up to 200/- for an SMS providing weather information on request; want to receive audio messages customized by language.
- The WIMEA-ICT project in collaboration with the meteorological services have enhanced weather information dissemination using already existing local setting/structures of the mobile phone through an SMS-based and a web-based application accessible via *255*85# and www.wids.mak.ac.ug/wids respectively.
- The quick adoption of the application is evidence of its demand and usefulness in decision-making.

Approach | how?

- Following findings from an earlier study conducted among farmers in Rakai and Mbale districts in January 2017, we designed the Weather Information Dissemination System (WIDS). WIDS is accessible via a mobile phone application (via *255*85#) or a web-based application (www.wids.mak.ac.ug/wids).
- Negotiations with ICT service providers on sustaining WIDS. These include bulk SMS, audio messaging, code from UCC at a cost of USD 10,000 per year, all costs being met by the project
- The English version of the WIDS application was developed, thoroughly tested and deployed in 2018 and 2019.
- The WIDS application was then translated to ten major local languages i.e. Luganda, Runyankore, Lusoga, Lusomya, Japadhola, Rutooro, Acholi, Ateso, Lumasaba and Lugbara and it incorporated weather forecast information in these languages made available through collaboration with World Vision.
- WIDS later incorporated audio messaging, to cater for categories including those who cannot read
- The WIDS application is regularly populated with weather forecast information from UNMA.
- From mid May to mid July 2020, social media and FM stations intensified WIDS dissemination campaigns to raise awareness amongst the public.
- From May - June 2020, a second field survey was carried out to gather views from the different stakeholders in the weather information value chain for informing a dedicated policy.
- Data from farmers was collected through focus group discussions, while data from others stakeholders was collected through a google form. Stakeholders who participated in the second survey are based in Kamuli, Wakiso and Kampala districts.
- Data was collected from policy makers in Agriculture, Health, ICT, local government, Water and Environment, Academia, NGO and private sector.
- WIDS usage was also monitored regularly i.e. the number of users per day as well what information they access.

RESULTS

Theme Findings

- The farmers practice mixed farming on $\frac{1}{4}$, $\frac{1}{2}$, an acre of land; mainly subsistence farming with animals reared to supplement family incomes; little or no food security.
- Farmers acknowledge two planting seasons; change in weather patterns has led to shift in crops grown; a desire to irrigate but water sources distant, expensive. They want to know seasonal information, what crops to grow, when to undertake related farming activities (weed, harvest, spray, apply fertilizers).
- Farmers use seasonal, weekly and daily weather forecasts to plan planting, fertilizing, irrigation and pesticide application.
- Farmers are willing to pay 200/- for especially the seasonal forecasts, although a significant percentage (41%) may not afford this cost when they need the forecast information.
- Majority of Farmers state that, the accuracy of the weather forecast has improved, with only 6% stating that the accuracy is poor.
- Farmers propose that the weather authority should increase the use of avenues such as social media and SMS to provide weather information as these are increasingly accessible to them.
- The policy makers need weather information for agricultural decisions and disease predictions and of these only 43% currently have access.
- The policy makers who currently have access to weather information receive it by email from UNMA.
- The Water-related organisations use weather information for monitoring and managing water levels, flood and drought Management, Managing Domestic Water Supply, and Development of Water for production activities.



- The policy makers state a number of benefits that their organisations stand to gain due to weather information including informed decision making and interventions, better yields, more productive operations, reduction of losses and other commercial values.
- Most stakeholders have a challenge of accessing the weather information when they need it.
- Between the May –June period the WIDS systems usage has increased from 1600 to over 11000 requests, coming from 139 of Uganda’s 140 districts.
- Over 1000 requests have been received on some days with requests from more than 50 districts.

CONCLUSIONS

What does this mean? ?

- The WIDS application provides a convenient platform for access to Weather information
- Users from all over Uganda (requests have come from 139 districts) are eagerly making use of the weather information through the WIDS application.
- Ensuring that the WIDS application is sustainable is important so it can keep serving Ugandans.

IMPLICATIONS

IF...THEN | could happen

If information is disseminated effectively and received in a timely manner, then we can look towards:

- water harvesting that supports irrigation practices
- enhancing food security
- More accurate prediction of disease outbreaks
- optimizing land use and maximize productivity
- growing commercial agriculture, and
- financial independence for the farmers

RECOMMENDATIONS to the ICT Sector

THE TAKEAWAY | key idea?

- Uganda Communications Commission is implored to provide a USSD code since weather information is a public good. The currently used USSD code *255*85# has been sub lent from a service provider at USD 250/month as the project had no budget for a recurrent cost of USD 10,000 per year which is officially charged by UCC. Unfortunately, if this charge can not be waived the system will not be sustained beyond the project i.e. after December 2020.
- Telecom companies i.e. MTN and Airtel SMS charge UGX 100-300 per SMS. This is unaffordable to many rural Ugandans? The telecom companies have a corporate social responsibility to allow communications even among the less privileged Ugandans, they should subsidize this SMS charges or completely waive it.
- The WIDS application relays voice messages for those farmers who prefer audio especially if they are unable to read. The current service provider, “Africa is talking” charges an average of UGX 1,000 per voice message. This cost will have to be incurred by the users after the project ends, however, this is not affordable for most rural Ugandans. UCC can provide support for this as well so that this vital information reaches the Ugandans who need it.
- The WIDS application has proved useful, however, the current usage is at 11,000, the ministry of ICT can use its organs to make more Ugandans aware of this service.

Next Steps | Immediate Actions

The WIMEA-ICT Team is committed to nurture WIDS application by among others:

- Continuing to improve the application as user feedback is received.
- Continuing to translate it to more local languages for better user experience.