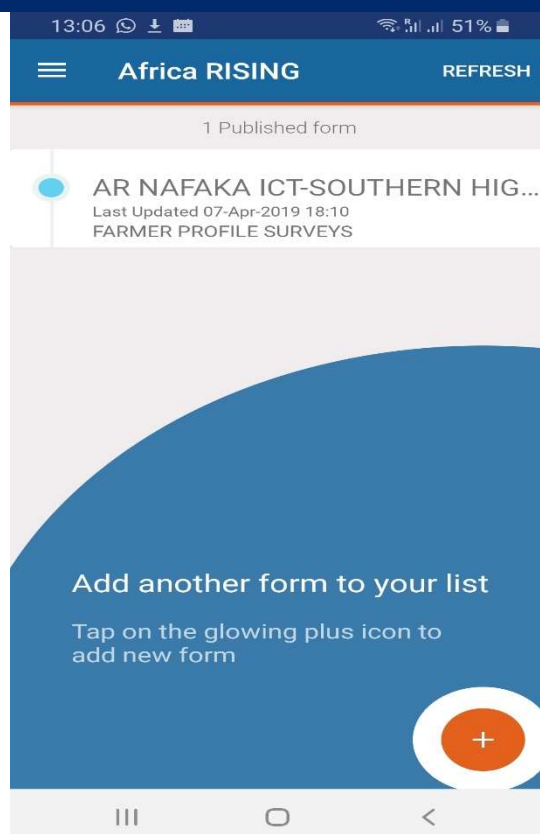




**AFRICA RISING - ENHANCING PARTNERSHIP AMONG AFRICA RISING, NAFKA AND TUBORESHE CHAKULA PROGRAMS FOR FAST TRACKING DELIVERY AND SCALING OF AGRICULTURAL TECHNOLOGIES IN TANZANIA**

**Quarter – April 01 to June 30, 2019**



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**Activity Start Date and End Date: April 2019 to June 30, 2019**

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## LIST OF ABBREVIATIONS

Africa RISING	Africa Research in Sustainable Intensification for the Next Generation
Agri tips	Agricultural tips
Agri VAS	Agricultural Value-Added Services
App	Application
ASHC	Africa Soil Health Consortium
DAICO	District agriculture, irrigation and cooperative officer
DED	District Executive Director
DFS	Digital Farmer Services
E-extension	Electronic Extension
GAP	Good agronomic practices / Good agricultural practices
GPS	Global positioning system
GSM	Global System for Mobile communication
GSM A	GSM Association
ICT	Information and Communication Technology
Kplus	Knowledge Plus
Kplus App	Knowledge Plus Application
M-Learning	Mobile learning
MIS	Market Information System
MNO	Mobile network operator
NGO	Non-governmental organization
RAS	Regional administrative secretary
SIM Card	Subscriber identity module card
SMS	Short message service
TARI	Tanzania Research Institute
TOTs	Trainers of Trainees
VAEO	Village agricultural extension officer

## 1. Activity Overview/Summary

<b>Activity Name:</b>	MWANGA ICT platform activities in Babati District and the Southern Highlands
<b>Activity Start Date:</b>	01/04/2019
<b>Activity End Date:</b>	30/06/2019
<b>Name of Prime Implementing Partner:</b>	International Institute of Tropical Agriculture (IITA)
<b>[Contract/Agreement] Number:</b>	MTO 069018
<b>Name of Subcontractors/Sub awardees:</b>	Fred Kizito
<b>Major Counterpart Organizations</b>	AR NAFAKA, IITA and ESOKO TANZANIA
<b>Geographic Coverage (Districts, Regions and or Zanzibar)</b>	Babati and Southern Highlands of Tanzania
<b>Reporting Period:</b>	01/04/2019 to 30/06/2019

### 1.1 Executive Summary

- The objective of this work is to scale out promising technologies beyond the Africa RISING target sites in Tanzania and provide advice on agronomy, climate services and market information.
- Traditionally, agricultural extension training was delivered through rigid channels such as print media, word of mouth using extension officers. These channels had several short comings which include but not limited to:
  - They did not allow updating of content dynamically
  - Were very slow, hence information reaching the farmers could end up time barred
  - Were impossible to scale since extension officers could only reach a specific number of farmers per season limited by resources, morale and time
- Use of ICT was geared at improving delivery of extension services riding on mobile technology use which is growing rapidly not only in urban settings but also in rural communities. According to GSMA the current mobile phone ownership in Tanzania stands at 82% of the total population (GSMA 2019). Use of SMS was crucial in delivering the extension information to the farmers as it ensured the smallholder farmers were getting content customized and personalized to their crop production and agro-ecological zones.
- The above also ensured all registered farmers for AR NAFAKA who have access to a phone - regardless of whether it is a feature phone or a smartphone- could receive the updated and certified Agri tips via SMS throughout the production season and post production period.

- Use of interactive videos for training was also deployed as an add-on to improve the knowledge transfer to the farmers. The videos were developed involving the communities and in Swahili language in Tanzania to ensure the literacy gap was bridged and give the communities a sense of ownership.
- On the overall the last quarter we have reached more than 13,000 smallholder farmers (unique profiles). These were reached using SMS information services of which 69.41% were Male and 30.58% Female. The low number of registered female farmers may be attributed to mobile phone ownership which is skewed in favor of men due to cultural and social economic factors.
- Currently dissemination of SMS on agronomy is ongoing in trickles as the harvest season approaches when the bulk of the Agri-tips on pre-harvest, harvest, post-harvest technologies, storage and marketing tips will be delivered.
- Video development from the field is complete and currently video production and alignment to the training modules is ongoing and will be available for training farmers towards end of July in time for the harvest period.
- This quarter highlights an engagement between AR NAFKA and ESOKO to ensure accurate representation for southern highland farmers. The Platform that hosts educative videos and linking up with partners that are in the Southern Highlands with those in the Manyara Region is functional. It currently hosts 12,214. An additional 24,707 farmers do not have phone contacts.
- We have engaged with project partners to tailor their farmer needs towards providing reliable, relevant and timely information on postharvest interventions however, for other activities, this was not made possible.

The current platform offers: automatic and personalized SMS alerts and can have options for bulk SMS, SMS polling, surveys, and interactive video training modules. The bulk SMS option means that AR NAFKA in partnership with ESOKO will act as an SMS aggregator, delivering SMS messages to subscribers' handsets through the mobile network operator's (MNO) short message service center (SMSC). The information is delivered to all registered subscribers independent on which MNO they have affiliated to.

## 1.2. Accomplishments during the last quarter

1. Cleaning smallholder farmer profile information and develop a database of the project beneficiaries for both the Southern Highlands and Babati farmers;
2. Disseminate to the beneficiaries agronomy SMS content and videos co-developed with Africa RISING partners and personalized information based on farmer profiles;
3. Report on beneficiaries' user experiences and regular feedback for monitoring and evaluation purposes
4. Align the SMS dissemination with the radio programs to ensure complementarity

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### 1.2.1. Activities co-delivered with Esoko

- Provide mobile and web-solutions that will enable the Africa RISING NAFKA program to:
  - Register their beneficiary farmers in real time via SMS, web and smart phones.
  - Deliver vital and relevant agronomy information throughout the crop calendar to beneficiary farmers.
  - Centralize farmer information storage for easier future management
  - Segment and group members based on gender, age, location and commodity and intervention.
  - Provide interactive video training for maize farmers in Tanzania
- To clean farmer profiles and filter those without mobile phone numbers in the Southern Highlands and Babati farmers.
- Send Pre-set good agronomic practices information through SMS to the profiled farmers based on their respective Maize, Rice, Beans or Soy Bean cropping calendars
- Generate reports using in built data analysis tools on the system

## 2.0 ACTIVITY IMPLEMENTATION PROGRESS

### 2.1 Progress Narrative

Currently about 70% of the activities have been completed. The first step involved setting up the three systems for MWANGA:

- The MIS Web system
- The Kplus Web system and
- The Kplus mobile Android system

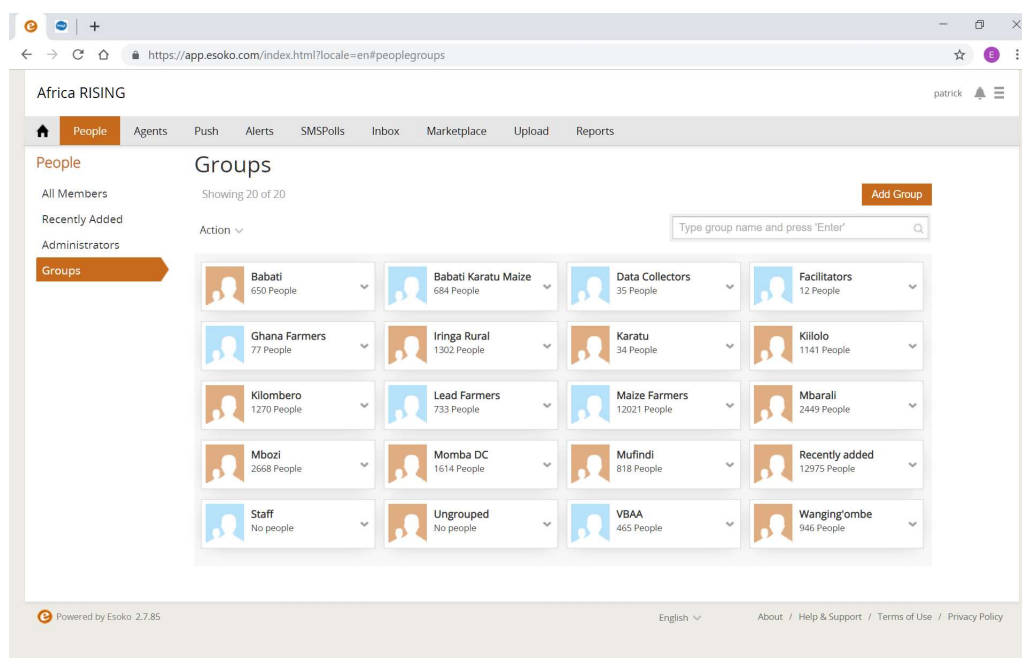
#### 2.1.1 The MIS Web System

This is the web interface for Database management and disseminating the agronomic SMS. Before the SMS could commence in being disseminated, the sender ID "MWANGA" was registered for all Mobile Network Operators (MNOs). This is the name from which recipients will be receiving the agronomic information. This serves the purpose of continuity from previous engagements while also providing authenticity of the sender of such information. The MIS system was then setup for MWANGA (Annex A) and topped up with SMS credit (Annex B) ready for dissemination.

#### Farmer Profile cleanup, database development and segmentation

Out of the farmer profiles provided from the Africa RISING program, 13000 were extracted. This was after profiles missing phone numbers were removed and duplicates identified and removed too. The farmer profiles were uploaded onto the MWANGA platform and using the built-in database management tools, segmented and grouped by their location, crop cultivated and gender.

*Screenshot of segmented and grouped farmer profiles on the MWANGA platform*





## Agronomy SMS development

Good agronomic practices SMS was extracted from content provided by the Africa RISING Program through the Phase I products and TARI-Uyole. The messages were developed in collaboration with TARI-Uyole and the messages run through the Africa RISING partners for verification. The agronomy SMS messages were then disseminated to the beneficiaries based on their agro-ecological zones, the crop they were cultivating and prevailing activities of their season. Dissemination was done on a weekly basis.



District	Unique beneficiary IDS	Sample size to be surveyed
Iringa Rural	IR001-IR130	130
Momba	MO001-MO163	163
Kilombero	KI001-KI127	127
Mufindi	MU001-MU074	74
Mbozi	MB001-MB259	259
Wanging'ombe	WA001-WA87	87
Kilolo	KIL001-KILO131	131
Mbarali	MBA001-MBA265	265
Mbozi2	MBB001-MBB24	24
<b>Total number</b>		<b>1260</b>

## Content development for Africa RISING NAFKA Esoko dissemination

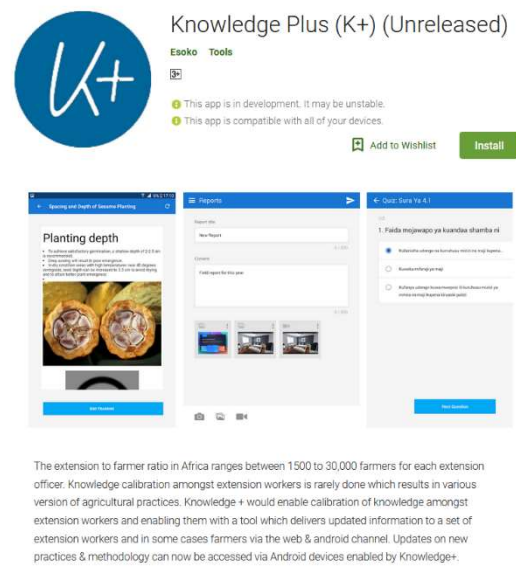
### 2.1.2 Use of Interactive videos for training using the Esoko's Kplus Application

We have developed an innovative digital interactive video training application that allowed M-learning and E-extension training functionalities called Knowledge Plus (Kplus) App. The application has successfully been piloted in Dodoma, Singida, Manyara, Pwani and Morogoro regions for training smallholder farmers in sesame, cassava QDS, maize, vegetables and poultry value chains. It's against this backdrop and in-line with the lessons learnt and success of deploying this method of training that a decision was arrived at to pilot use the Esoko Kplus App for training the maize farmers in Iringa rural, Momba DC, Mbozi, Mufindi, Wanging'ombe, Karatu and Babati districts in Tanzania. Use of these interactive videos were received by the communities with high enthusiasm.

## The Knowledge Plus (Kplus) App

From experience we realized no amount of technology can replace a human to human interface training and communication of ideas. This is because there is more to just reading text or even simply listening to a radio. Visualization aids in better understanding and helps in clarification of complex explanations.

For that reason, we took advantage of a digital interactive video training App dubbed Knowledge Plus or simply Kplus. The idea was to bring the human to human training interface in a more cost-effective way and enabling farmers to get technical knowledge on how to do complex activities by visualizing how they are done by both peers and experts through video. This App enables different experts to train farmers virtually increasing the chance of understanding and adoption of the technologies being promoted.



*Image 1: Kplus on Google play store*

Kplus was engineered bearing in mind the rural setting is plagued with issues of low GSM or internet coverage. For that reason, it was built to work completely **offline** where one needs to sync new content and can continue training completely offline in hard to reach communities. Kplus allows you to quickly log in to the web portal add new content, save your work and publish, the TOTs get an SMS notification that there is new content available, they can then switch on their internet (mobile data), sync the new content to their devices and continue training.

Kplus also enables trainers to register farmers they intend to train and -continuously -the system will be capturing information on which modules each farmer was trained on. The training reports can then be extracted using the web interface to determine targets reached by the TOTs or ascertain which modules are more popular hence more important to the farmers. Repeating of the same module may also indicate difficulty in understanding and therefore additional videos can be developed for the said modules to simplify the module.

The web interface is user friendly hence there is no need for an IT professional with advanced skills to run it, all one needs to deploy their content is basic Word Processor programs (Microsoft Word, Open Office, WPS...etc.) knowledge, with this one can add Text, Videos, Photos, Diagrams, and audio to create the training modules. This would be in line with training of agricultural extension agents.

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## **E-extension training / Kplus App deployment**

The deployment of the E-extension involved 6 steps

### **i. Video capture areas identification:**

Based on the progress of the season some of the areas where the videos would be captured were identified and the communities there engaged.

### **ii. Establishing training requirements**

Based on farmer interactions when collecting the videos, the following areas were identified as key focus areas when developing the videos

## **Some focus areas when developing videos**

### ***Pre-Planting phase***

- Crop rotation (minimum period rotation)
- Things to consider when selecting land for production
- Seed varieties selection
- Method of planting (Pros and Cons of each method)

### ***Planting and Growth phase***

- Crop spacing / Density
- Gap filling (The best time for gap filling)
- Nutrient requirements and important of fertilizer application
- Soil health
- Pest and diseases: Common pests that infest the crop
- Pest and diseases: How to manage these pests and diseases
- Safety when using pesticides

### ***Post-harvest and sales***

- Harvesting (How and when to harvest)
- Packing, transportation and storage of produce
- Value addition – ensuring produce is clean
- Marketing Tips and market identification techniques.

### ***Record keeping***

- Records management
- What records to keep
- How to manage expense and profit tables

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### **iii. Video and Audio capture**

Several field visits were carried out for video and audio capture. These videos were captured to reflect actual processes on land preparation, planting and weeding. Additionally, more videos were captured on mature crops for a broader content coverage on pest and diseases and harvesting practices. Knowledgeable farmers, a researcher, an Agricultural Extension Officer and a seed expert were interviewed to provide the video and audio for the training modules.

- Quality assurance was done by Mr. Sabula from TARI-Uyole to ensure the videos aligned with the good agronomic practices guidelines. The provided comments were incorporated by making additional field visits to capture information that was missing or needed correction.
- Videos were edited and then compressed to mobile viewing optimized formats and sizes while ensuring the quality was maintained
- The content was then uploaded to the Kplus web platform together with the text, photos and diagrams content to produce a sequence of training modules from land preparation to post harvest and marketing
- When the modules were further evaluated and approved, they were published ready for download on Android gadgets

### **iv. KPlus Training**

To finalize the process of actualizing Kplus training deployment, Africa RISING staff will be trained virtually and they will further engage the communities on the ground. The KPlus training would include:

- KPlus Basics
- A walk through the maize crop production Training Modules
- How to Register farmers before the training is conducted
- How to update the tablets with new training content
- How to train other farmers

### **v. How the TOT farmers would engage other farmers in training**

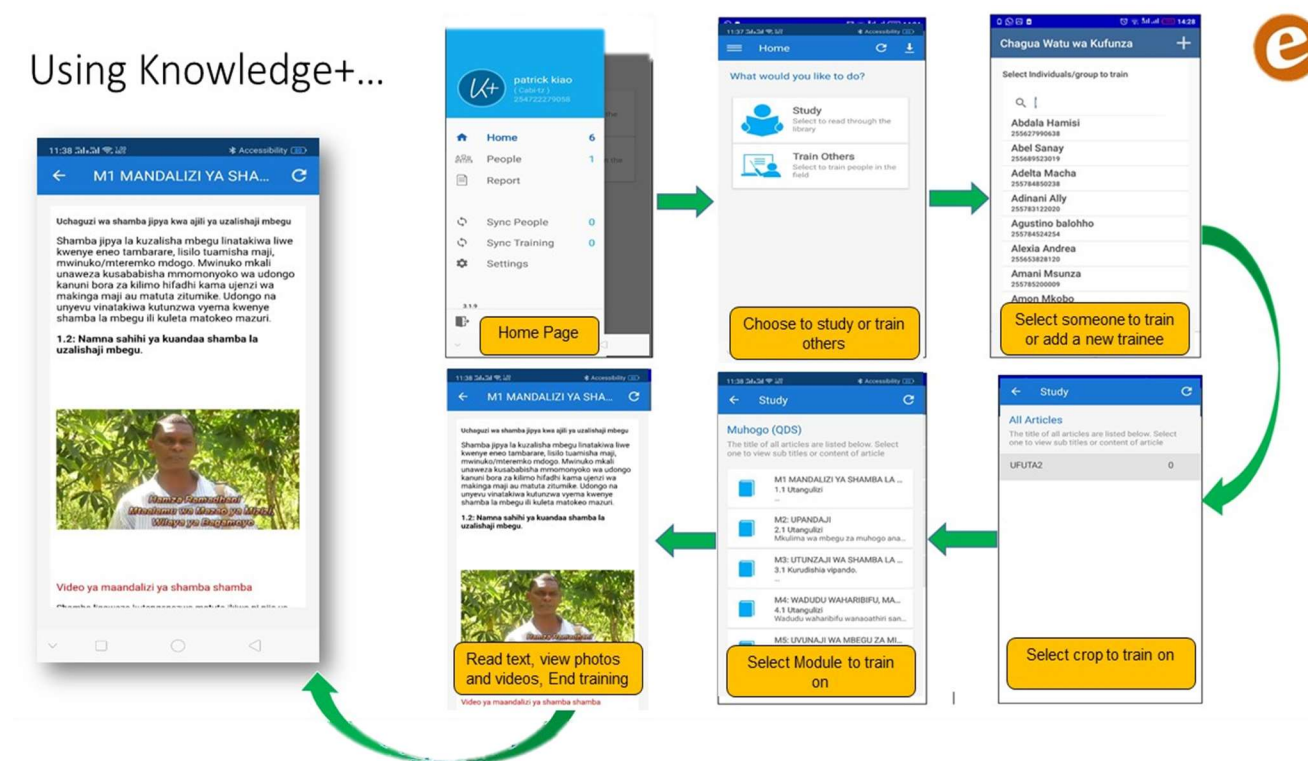
TOT farmers will be allowed a week to use the M-learning functionality on Kplus to familiarize themselves with the training content by reading through and viewing the videos before embarking on training other farmers using the E-extension functionality. Each TOT farmer will subsequently train other members of the group during their weekly / bi-weekly farmer group meetings or conduct peer to peer training at their leisure time. Two gadgets have been purchased for the pilot. The gadgets will be rotated among farmer groups in a village to ensure adequate reach. Farmers and staff with Android smart phones will also be linked to the service and they will be able to learn straight from their gadgets.

## vi. Monitoring and updating of content

Periodic reviews and checks will be performed by the implementing partners (Africa RISING partners and Agriculture Extension Officers and Esoko) for verification of the trained farmers and troubleshooting issues arising from the field.

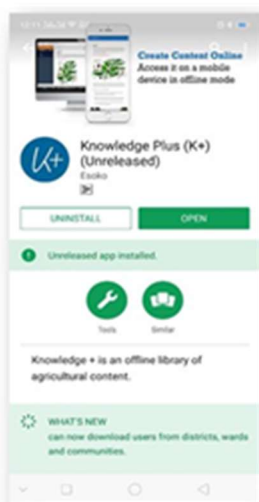
A provision for updating and adding new content will be available and once new content is added and published on web it will be available to be synced in real time to the devices and thereafter be available for use offline on the devices.

Image 1: Step by step using Kplus training App

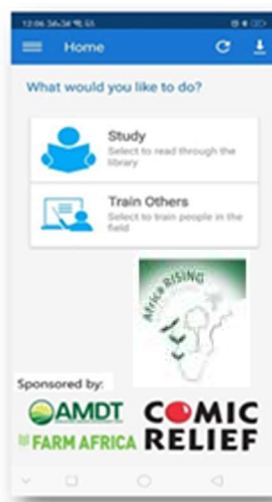


## Kplus sustainability

The idea behind Kplus is to ensure it's a gateway to accessing a wide range of information services including crop, inputs, financing, output markets, most up to date innovations, insurance...etc. The following developments will ensure sustainability and updating of content on Kplus:



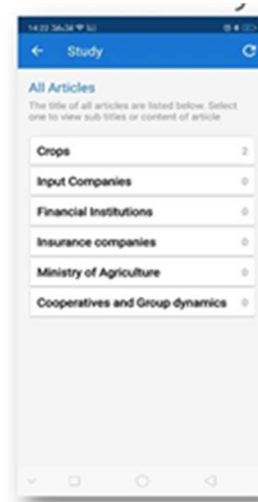
1. Knowledge Plus is now available on Google play store



2. Logos for organizations / Agribusinesses supporting the content (Agribusinesses will sponsor the content)



3. Content from different networks and for different crops will be available indefinitely



4. Wide range of Content will be available. (organizations will pay to support the content)

### 2.1.3 Equipment / Gadgets purchase

The order for the 2 training tablets has been placed with the manufacturer due for delivery by mid-July. The tablets will then be configured and deployed to the field in end of July, 2019. (photo of projector in Annex E)

### 2.1.4 Offer business and technical support services

Esoko has assigned one business advisor for providing any technical and business support for the project to allow for interactive farmer feedback with service provision. The role of the Business advisor is to provide technical backstopping and periodic reporting on the progress of the project.

### 2.1.5. Local capacity development

We have encouraged the DAICOS, extension officers and agronomist to join the service so that they can also learn about new technologies being disseminated. We will also encourage them to install Kplus app and get more detailed training. Kplus presents an opportunity for retooling the extension staff and agronomist by providing them with latest technologies researched and verified. Most extension staff rely on training they got when they were in school which is outdated and lacks the latest research and innovations. Enhancing the knowledge of the local extension officers, lead farmers and agronomist is key for sustainability and continued technology transfer to the last mile. Over and above agronomy, local extension officers, lead farmers and agronomist will also have an opportunity to increase to learn new skills in ICT.



## 2.2 Implementation Status and Planned Activities

### 2.2.1 Current status of Implementation

Deliverables	Due Dates	Status	Details
1. Web platform license, build, maintenance and customization	22.03.2019	Completed on time	Completed System Setup (Kplus and MIS system)
2. Report on support activities that also include tailored messages for dissemination on MWANGA Platform for Tanzania.	30.04.2019	Completed on time	27 messages developed for preharvest, Harvest, postharvest, storage, aflatoxin
3. Complete ICT database with Farmer' records in Babati and Southern Highlands in Tanzania and Ghana	30.05.2019	Completed on time	Farmer database cleaned, uploaded and segmented on the MWANGA platform
4. Report on support activities that also includes tailored messages for dissemination on MWANGA platform with Knowledge plus modules that have video content for viewing offline	30.06.2019	Ongoing on schedule	Interactive Video Content development for Kplus (Video collection, editing, compression and uploading to the Kplus web platform)
5. Report on Analytics around platform performance	31.08.2019	Ongoing on schedule	Final report with learnt lessons for use in scaling up

This following table outlines the status of activities that were scheduled to be carried out:

Activity	Status	Comment
System set up for the SMS dissemination (MIS) and E-Training (Kplus) -Both web and Android	Completed	Screenshots Annex A
Africa RISING maize content review for Text, photos and videos that are available	Completed	Done
Maize content summarization for SMS and video content	Completed	Done
Review, selection and prioritization of SMS content	Completed	27 messages developed for preharvest, Harvest, postharvest, storage, aflatoxin
Upload of Text content to Kplus	Completed	Summarized content uploaded on Kplus Web – Screenshot Annex D
Registration, testing and deployment of the MWANGA sender Id for SMS dissemination	Completed	Screenshot Annex D
SMS account topped up	Complete	Screenshot Annex B
Video, Audio and Photo collection	Completed	Videos, photos, audios have all been collected
Video editing and upload to Kplus App	Ongoing	On schedule
Full Video content review on Kplus App	Scheduled	On schedule
Publication of the video content on Kplus App to be available to registered beneficiaries	Ongoing	On schedule

### 2.2.2 Planed activities

Activity	Date	Comment
Introduce the video training modules to farmers for piloting	Mid-July	On Schedule
Continue with the Agronomy SMS dissemination	Up until August	Ongoing
Full Video Content verification through TARI-Uyole	15 <sup>th</sup> July 2019	On Schedule
Final Report	31 <sup>st</sup> August 2019	On Schedule

## 2.3 Intermediate Results

The summary of this content has also been presented in the Executive summary. Overall more than 13,000 smallholder farmers (unique profiles) were reached using SMS information services of which **69.41% were Male** and **30.58% Female**. The low number of registered female farmers may be attributed to mobile phone ownership which is skewed in favor of men due to cultural and social economic factors. Currently dissemination of SMS on agronomy is ongoing in trickles as the harvest season approaches when the bulk of the Agri Tips on preharvest, harvest, post-harvest technologies, storage and marketing tips will be delivered.

Video collection and development from the field is complete and currently video production and alignment to the crop production manuals is ongoing. The complete video training modules will be available for training farmers starting mid-July in time for the harvest period.

### What went well?

- During the field visit to different communities, the farmers seemed very enthusiastic about the project and many are waiting to learn through the video modules.
- There was overwhelming support from TARI-Uyole, Dr. Bucheyeki Tulole (the center director) and Mr. Leonard Sabula (maize researcher) exceeded our expectation; they went out of their way to ensure we were properly received and introduced in all the regions we visited.
- We also got very good reception from the RAS, DAICO offices, Ward representatives and Village Extension officers, in all the regions we visited.



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## 2.4 Youth Engagement

We are encouraging the youth to be registered -through the focal persons and agronomist in their areas- for both the SMS service and through the Interactive Video training Kplus App. We will broadcast an SMS to all the 13,000 beneficiaries encouraging those with smartphones (where majority are usually youths) to download the Kplus App and access the video training modules.

## 2.5 Local Capacity Development

We have encouraged the DAICOS, extension officers and agronomist to join the service so that they can also learn about new technologies being disseminated. We will also encourage them to install Kplus app and get more detailed training.

Kplus presents an opportunity for retooling the extension staff and agronomist by providing them with latest technologies researched and verified. Most extension staff rely on training they got when they were in school which is outdated and lacks the latest research and innovations. Enhancing the knowledge of the local extension officers, lead farmers and agronomist is key for sustainability and continued technology transfer to the last mile. Over and above agronomy, local extension officers, lead farmers and agronomist will also have an opportunity to increase to learn new skills in ICT. For example 4 young Tanzanian enumerators were trained using a survey tool called Insyt. **See tutorial in Appendix F.**

## 2.6 Policy and Governance Support

Use of SMS and videos will go a long way to support agricultural extension activities in the area of implementation. This is a big boost to the under staffed extension departments and will enable more smallholder farmers to be reached with timely agronomic information which would have been impossible to achieve using extension officers.

We are also lobbying the local governments to see the importance of using ICT to deliver extension and incorporate the costs into their budgets for sustainability. There is positive feedback from Momba DC where the DAICO is actively lobbying for inclusion of the ICT component in their budget.

## 2.7 Private Sector Engagement, Public Private Partnerships (PPP)

Africa RISING NAFKA has engaged Esoko as a private sector player. Subsequently both Esoko and AR NAFKA partner with private sector Agri businesses, Government (both local and national), Research institutes such as TARI-Uyole and TARI-Selian to deliver its mandate. Some of the Agri businesses are fertilizer companies (MINJINGU), seed companies (MERU AGRO), micro finance institutions, micro insurance companies, millers all in a bid to deliver bundled services to the smallholder farmers who would otherwise be left out of such engagements because they are considered financially risky.

## 2.8 Science, Technology, and Innovation

The pace at which the world is continuously innovating in line with the ever-changing telecommunication technologies is staggering. As a result, the Africa RISING NAFKA- Esoko partnership came into being to provide agronomic, market and weather services through the use of the emergence of mobile phone technology. This allows to increase the bargaining power with middle men and traders, now with the growth in popularity of smartphones, the Kplus module is slowly becoming a must have application bringing a more enhanced training interface for trainers and m-learners.

One of the innovative ways farmers are receiving training is by use of Kplus running on Android tablets with inbuilt projectors. This has really changed the dynamics as farmers get to train as a group using the videos and the content stays at their communities. The community members are also excited to be featured in the videos giving them a sense of ownership of the content development process.



*Photo 2: Farmers in Kilosa following training on Kplus using a tablet projector device conducted on 5 June 2019*

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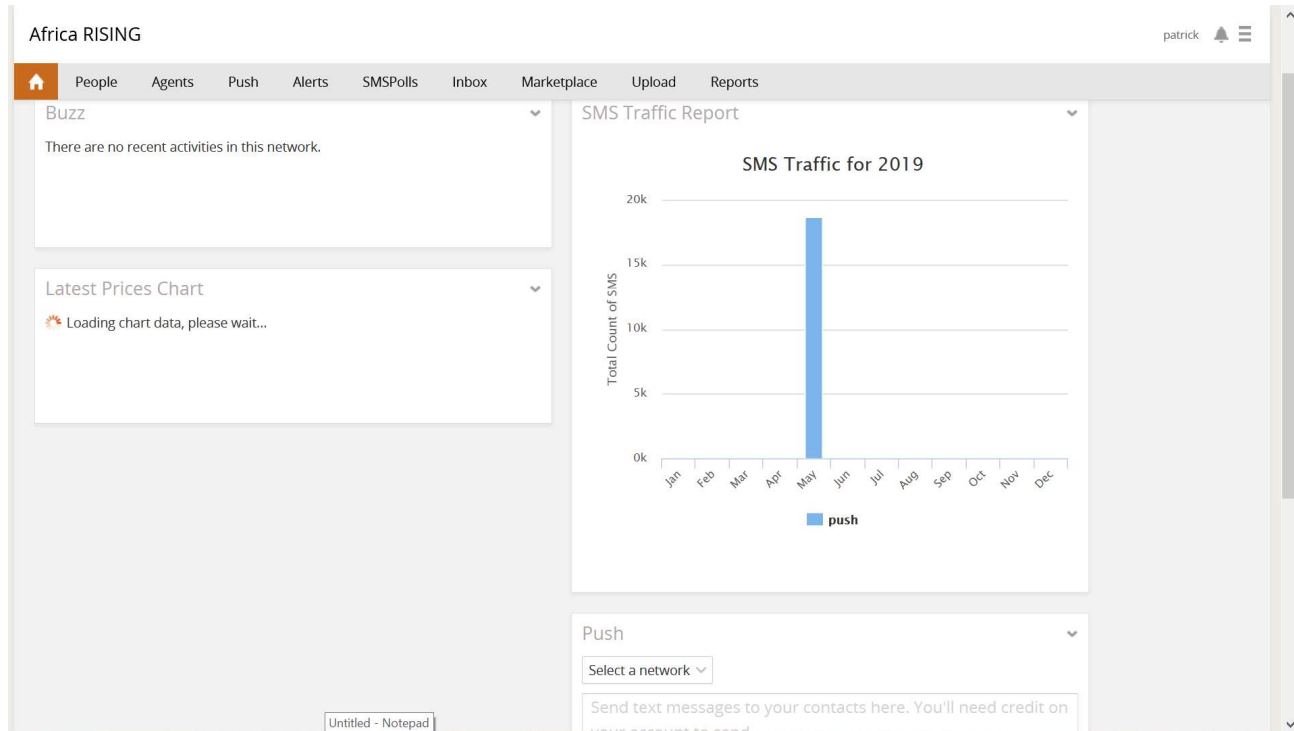
## 3.0 MONITORING, EVALUATION, AND LEARNING

### 3.1 Lessons learnt

- You have to offer a **bundle of services**: No single channel is the most effective and no amount of technology can replace the physical extension officers because complex and technical language needs a human to human guidance and explanation.
- You have to be channel **agnostic** (SMS, Voice, Live experts, Radio, video) – channels: each farmer has preference on which channel suits them depending on the prevailing circumstances so multiple channels ensure a high probability of the information being delivered to the farmer and is impactful.
- You have to develop original **content**: most of currently available agricultural content is outdated since and lacks current agricultural technologies. The onset of new channels such as SMS and interactive video training modules means their content has to be developed afresh and constantly updated.
- You need **local champions**: -Farmers tend to trust the word of people they know and can relate too hence the success of ICT and any other agricultural technology transfer should incorporate use of lead farmers or local champions. This is the model Kplus utilizes to guarantee easy adoption and use of acquired knowledge.
- You have to integrate solutions for **businesses** – As long as there is a value proposition, businesses are willing to invest their time and money in what you are doing. This is the surest way of transitioning to sustainability
- You should partner with media **companies to scale** – most mass media employs scattershot to broadcast its content over large geographical areas and reaching large populations. This can be a good way to scale interventions and reach more farmers who can then subscribe to services and get more personalized information based on preferences and their profiles.
- It's harder than you think – changing the mind-set of someone takes a lot of effort and energy hence success of an intervention may not be visible outright. This is especially so when you want to evaluate qualitative data from farmers. It **takes a lot of patience to effect mind-set and behavioural change**.
- It's 5% technology and **95% deployment** – Given the Africa RISING NAFKA and Esoko partnerships depth of knowledge, accumulated wealth of lessons and experiences while dealing with farmers and other enterprises that work with farmers, the experiences should give us an edge in ensuring successful deployment of ICT services. While endeavouring to scale out, we should constantly add innovations to the suite of products and services, we should prioritize deployment.

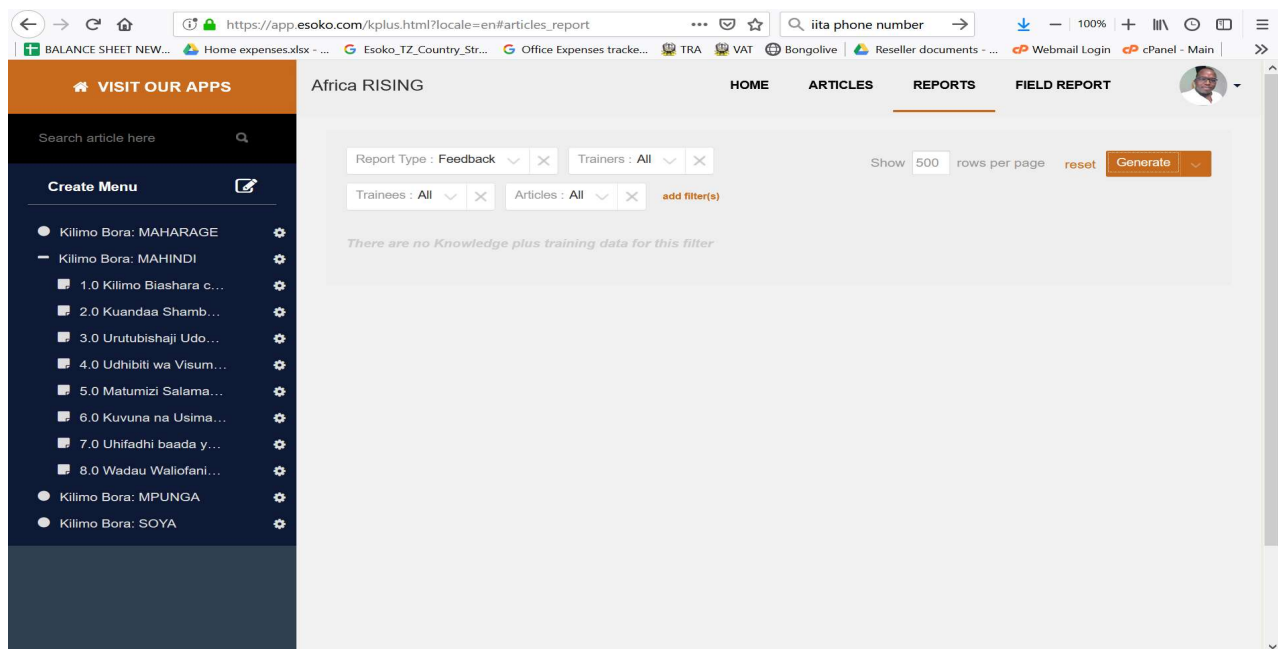
### 3.2 Monitoring and Evaluation

Presence of built in M&E capabilities enabling dashboard views of progress of SMS dissemination and also tools to monitor the modules each farmer has been trained on. The systems also allow for reports to be extracted to excel for further analytics.



#### Training reports interface - Web

This interface is used to download training reports



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## 6.0 CHALLENGES ENCOUNTERED

- A new government directive to deactivate numbers that were not in use for 3 months or more affected some of the farmers. Usually farmers have several mobile phone Sim cards -sometimes for each mobile network operator- and they unfortunately don't top them up regularly therefore they are usually at risk of being disconnected from the SMS GAP information services if the number they registered with happens to be blocked for inactivity (which doesn't necessarily mean usage but simply when they last topped it up with airtime)

### ***Solution:***

We cleared from the system the mobile phone numbers that were deactivated after identifying them using reverse lookup.

We will do sensitization to the farmers through their village extension officers on:

- i. Ensuring they renew their old numbers if they lose their lines instead of just buying new SIM Cards
  - ii. Importance of topping up the phone numbers they registered with us regularly to avoid their lines from being deactivated; probably will also test as a proxy for willingness to continue with the initiative.
  - iii. Using the Self registration option "Jiunge" to register their new numbers
- Another issue we encountered was delay in video development due to the season. We collect the videos as the season progresses and therefore sometimes, we just couldn't go to the field until a particular event such as harvesting was underway and other times the locations that were targeted by the program were ahead of the stage we wanted to capture.

### ***Solution:***

In some cases we would capture videos from different areas where their season was ahead or behind the season in the program locations and in at times we just had to just sit and wait it out until the time was right to go to the field.

---

## 7.0 RECOMMENDATIONS

### 7.1 Opportunities for Kplus App that could be explored further.

- a) **Using Kplus to bridge the Extension to Farmer ratio**  
Currently averaging 1:600-1400, by using lead farmers, this can be significantly brought down to up to 1:35 using the Kplus E-extension model.
- b) **Retooling and support for Agricultural Extension Officers**  
Part of the reason the extension staff are underperforming is amplified by the fact that they don't have access to latest agronomic technologies and end up relying on what they learnt 15 to 20 years prior. There is a dire need to provide them with up to date information on new farming technologies, improved varieties and new diseases and pests such as Fall Army Warm (FAW) which may be completely new to them.
- c) **Special content for youths and women**
  - ❖ Use of smartphones would be a plus for youths since they easily identify with it and they will be attracted by usage of videos and returns in investment models for the different crops. This can be enhanced to provide information on crops such as horticulture that have short maturity and high returns which are more attractive to youth.
  - ❖ Special content on nutrition, family health care, reproductive health, insurance can be included targeting women.
- d) **Onboarding Agribusinesses (for sustainability).**  
Agribusinesses will have an opportunity to include their products and catalogues on Kplus at a fee to support the content provision and updating. Biggest sponsors will have their logos included on home page.
- e) **Use of the innovative Tablet Projector combined with Knowledge plus.**  
This technology allows farmers to watch the videos together and discuss and had been received very well by farmers. It should be piloted at a larger scale as it cuts down on costs of conventional training and capacity building.

### 7.2 What could have been added or done differently.

#### Ranking of the recommendations

High – the greatest potential for improved Farmer satisfaction

Medium – greater potential for improved Farmer satisfaction

Low – the potential for improved Farmer satisfaction

	Recommendation	Effect
1	Feedback mechanism: farmers requested for a phone number they can call when they have inquiries on farming, markets, weather or inputs. We feel the most appropriate channel is a call center running a farmer helpline which they can call and get answers. Esoko Tanzania is seeking to establish this as it will be a necessity as the number of farmers being reached increases.	High
2	Sensitization and creating awareness through mass media: there should be a provision for running radio or TV campaigns before engaging farmers to ensure they have some background of the project before engaging them on the ground. This can also be used for aiding in farmer self-subscription and registration.	High
3	Early deployment: the most vital and key component of improving production for small holder farmers lies in seed variety selection. Therefore, it is important to start the campaigns early enough so that the farmers can make informed choices based of the information they get about the improved seed varieties. We encourage colleagues (Partners) to remember invitation of agro-dealers to field days.	High
4	Increase the number of farmers profiled, ICT is all about scale, the bigger the number the better: To make the database more attractive and an inch closer to sustainability investment in profiling at least 200,000 farmers is recommended. This project is only reaching 13,000 farmers but there is potential to reach hundreds of thousands with an additional 25,000 in the database un-profiled due to absence of phone contact.	High
5	Development and deployment of Video training modules: The video training modules have been received with a lot of enthusiasm and are very attractive to youth. Effort should be put in place to develop content in all the 4 covered value chains and deployed to current and future farmers. The videos are more detailed and help bridge the literacy gap, establish a sense of ownership in the community.	High

## 8.0 SUCCESS STORIES

A success story has been written in relation to the current model of scaling and reaching wider geographies for the districts in Manyara and the Southern Highlands.

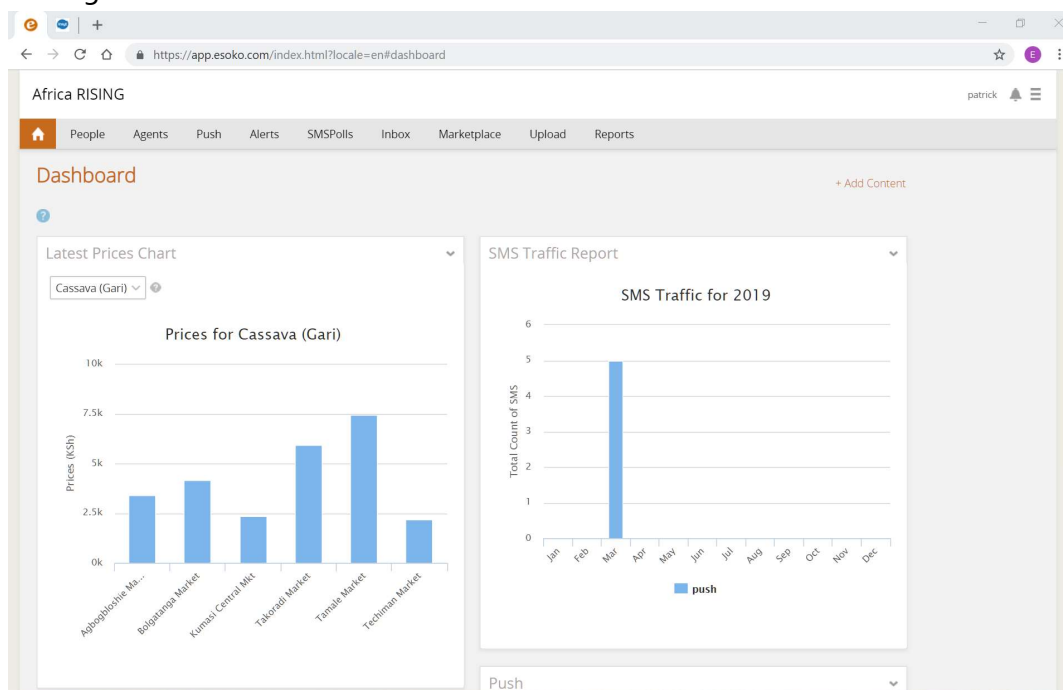
[http://africa-rising-wiki.net/images/f/fa/The\\_changing\\_face\\_of\\_farming\\_in\\_Tanzania.pdf](http://africa-rising-wiki.net/images/f/fa/The_changing_face_of_farming_in_Tanzania.pdf)



## APPENDICES

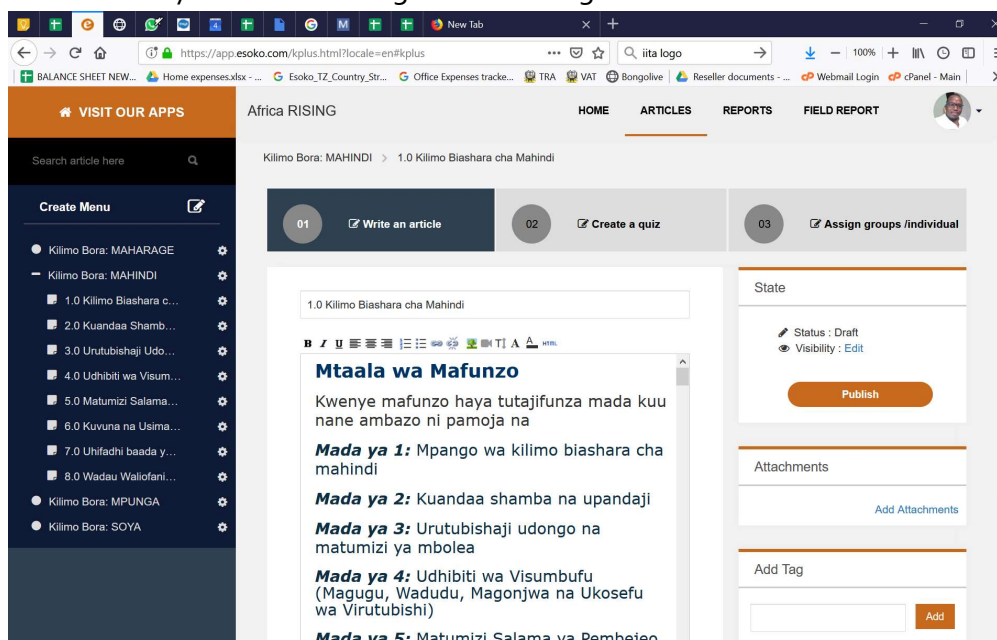
### Appendix A – System Setup: Screenshot of Systems

#### A. Web based MIS System: System for sending GAP information to farmers and database management



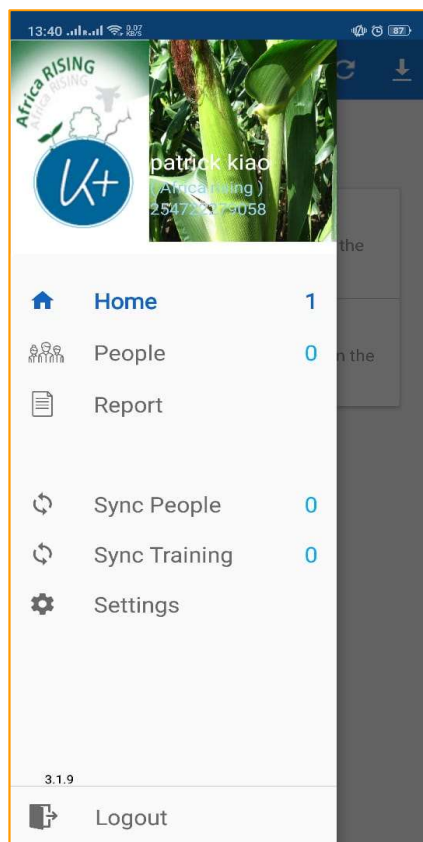
#### B: Knowledge Plus system (web and Android)

##### Web based system for training farmers using interactive videos

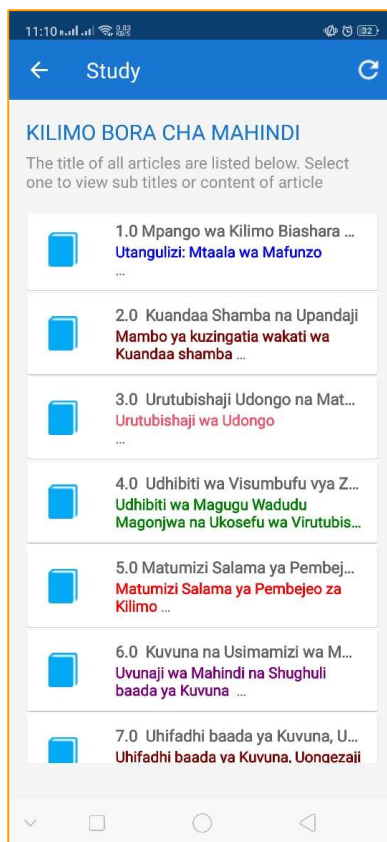




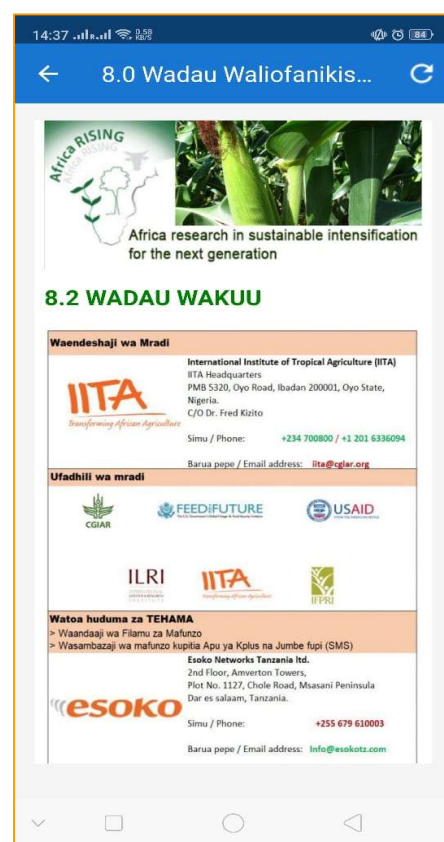
## C: Android based Kplus System for TOT trainers and M-learners



Home page  
Implementers page



Training Modules List



Sponsors &

## Appendix B –SMS dissemination account topped up

The screenshot shows the 'Africa RISING' web application interface. The top navigation bar includes links for People, Agents, Push, Alerts, SMS Polls, Inbox, Marketplace, Upload, and Reports. The left sidebar lists settings categories: General, Commodities, Locations, SMS Codes, Privacy, Permissions, Sharing, and Network Billing (which is highlighted). The main content area is titled 'Network Billing' and contains a 'Summary' tab. A teal box displays the 'Balance \$ 4,999.55' and 'a/c no : N01473377'. Below this, account details are listed: Account Name 'N01473377' (with an edit link), Balance '\$ 4,999.55', View in 'US Dollar', and Subscription 'Africa RISING (Silver)'. A table titled 'Our Plans' compares limits for Silver, Gold, Custom, and Platinum plans across five categories: Agent Limit, Alert User Limit, Network limit, Poll User Limit, and Profile Limit. At the bottom, three green checkmarks provide additional information: 'Platinum License gives you three networks', 'Custom Plans available upon request', and 'To upgrade or change your plan, contact your Esoko representative'.

Our Plans	Silver	Gold	Custom	Platinum
Agent Limit	10	10	100000	50
Alert User Limit	10	1000	5000000	50000
Network limit	1	1	100	3
Poll User Limit	10	1000	100000	50000
Profile Limit	1000	10000	1000000	50000

- ✓ Platinum License gives you three networks
- ✓ Custom Plans available upon request
- ✓ To upgrade or change your plan, contact your Esoko representative

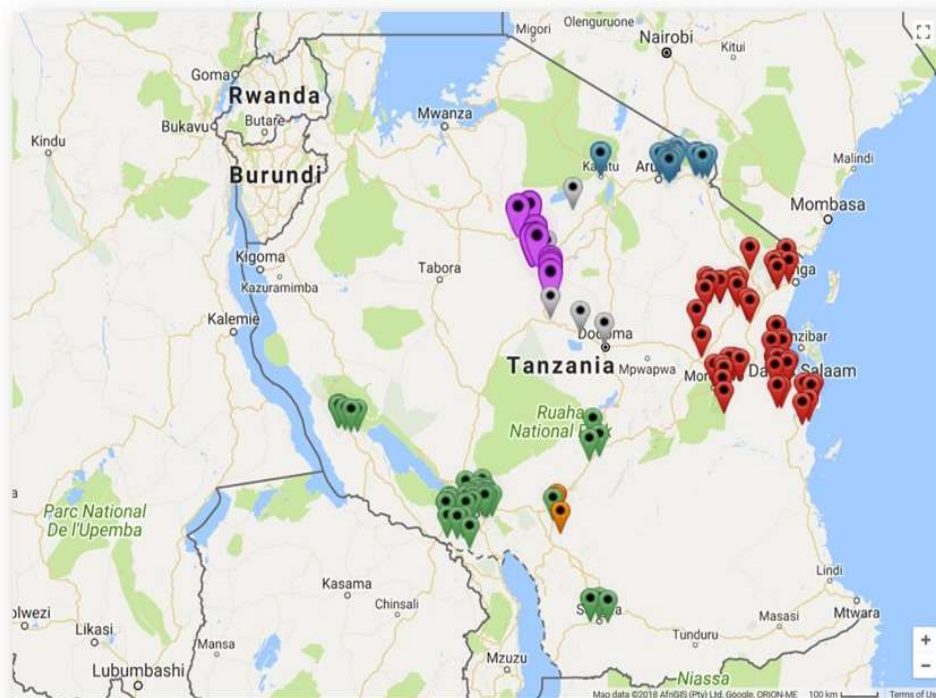
## Appendix C - Geographical map of Esoko's operation areas

### Summary:

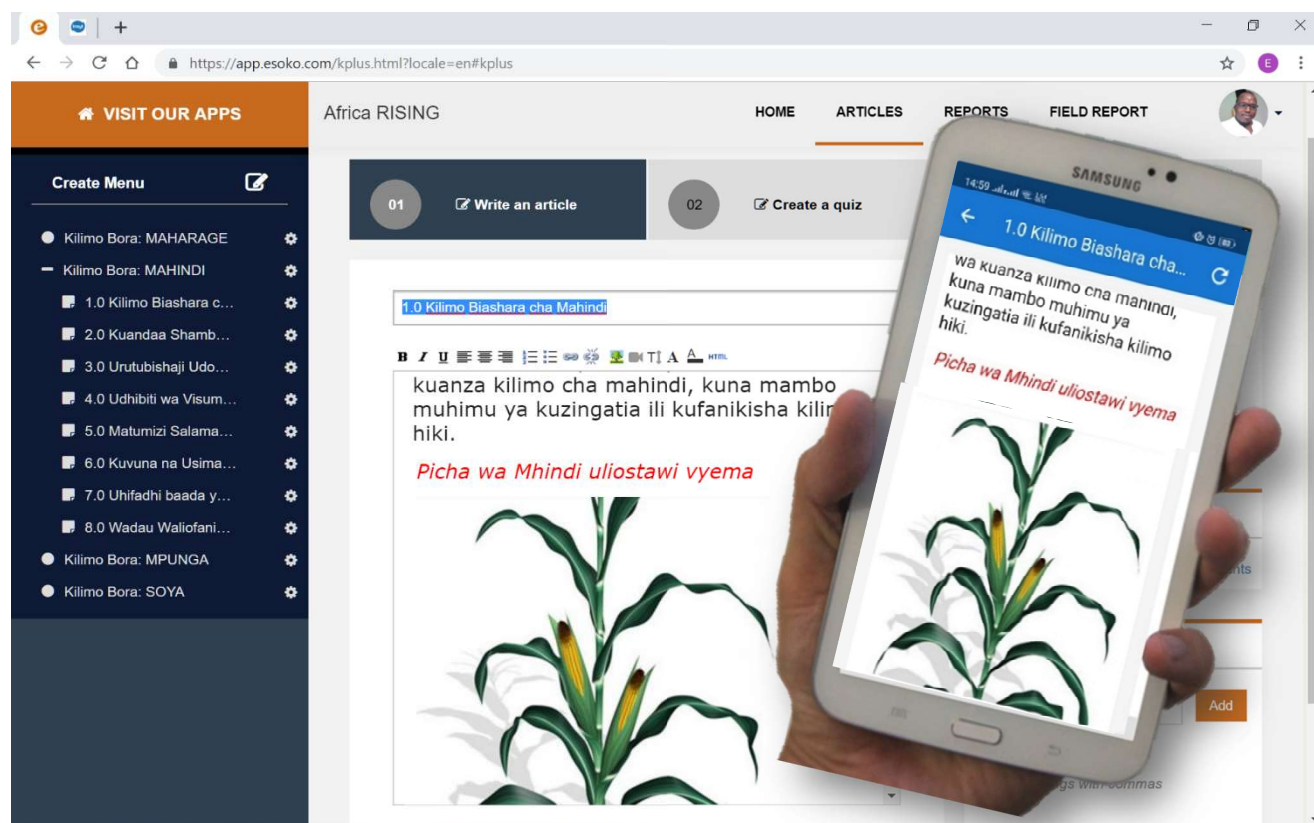
- 14 Regions
- 30 Districts
- 883 villages
- 140k Farmer profiles
- 200+ Champion Farmers
- 30% Women
- 39% Youth

### Value chains:

-  Irish potatoes
-  Maize
-  Cassava
-  Sesame
-  Sunflower
-  Beans



## Appendix D – Preview of the uploaded content on web and android



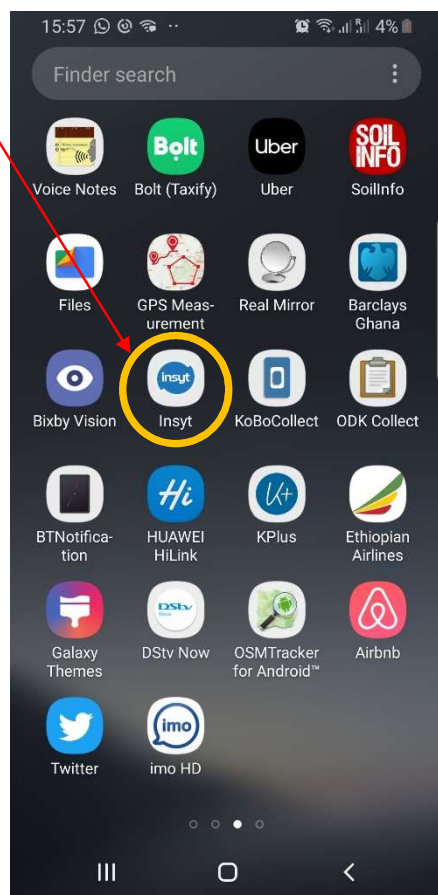
## Appendix E – Tablet with Built in projector



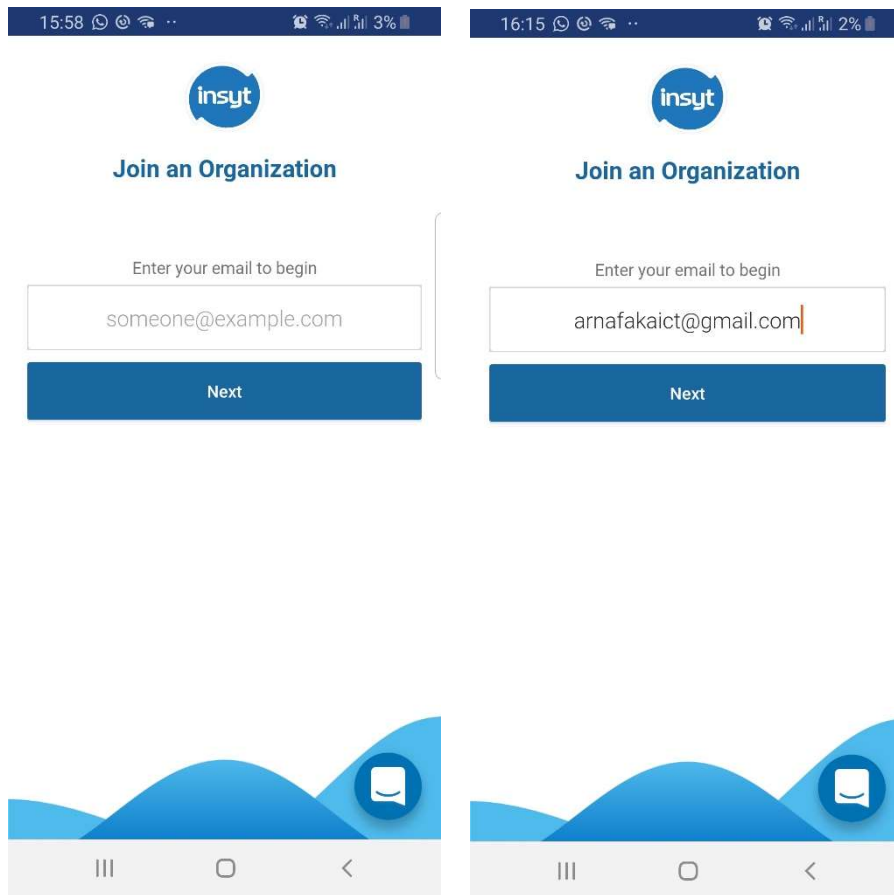
## APPENDIX F: Tutorial on using the Insyt Tool for data collection

### Tutorial composed by Fred Kizito

1. Download the Insyt Tool either on your computer or Android phone or Tablet




2. Open the app on either your computer, tablet or phone then type the email address: [arnafakaict@gmail.com](mailto:arnafakaict@gmail.com); after typing the email address click on **NEXT**






3. Click on next and type the password: **arnafaka2020**
  - After entering the password please click on **continue**

16:15 2%




## Welcome ARNAFAKA ICT

Enter your password to continue



Continue



1 2 3 4 5 6 7 8 9 0

q w e r t y u i o p

a s d f g h j k l

↑ z x c v b n m

!#1 , English (UK) . Done

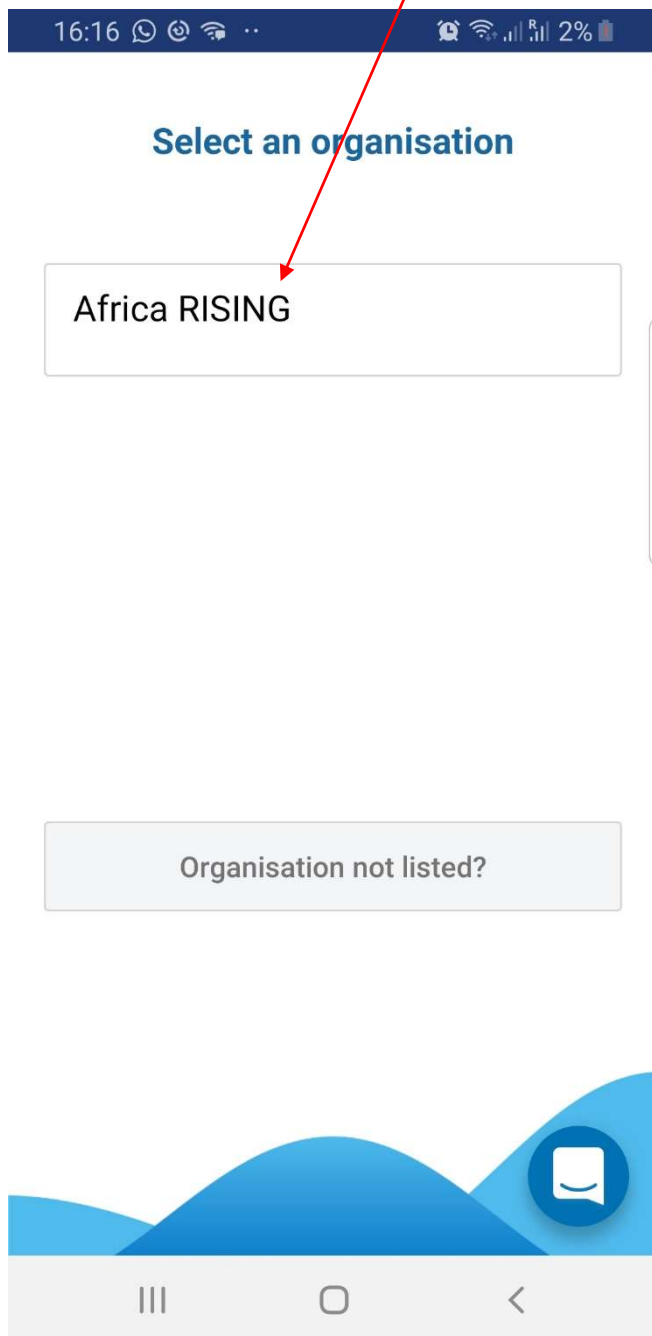
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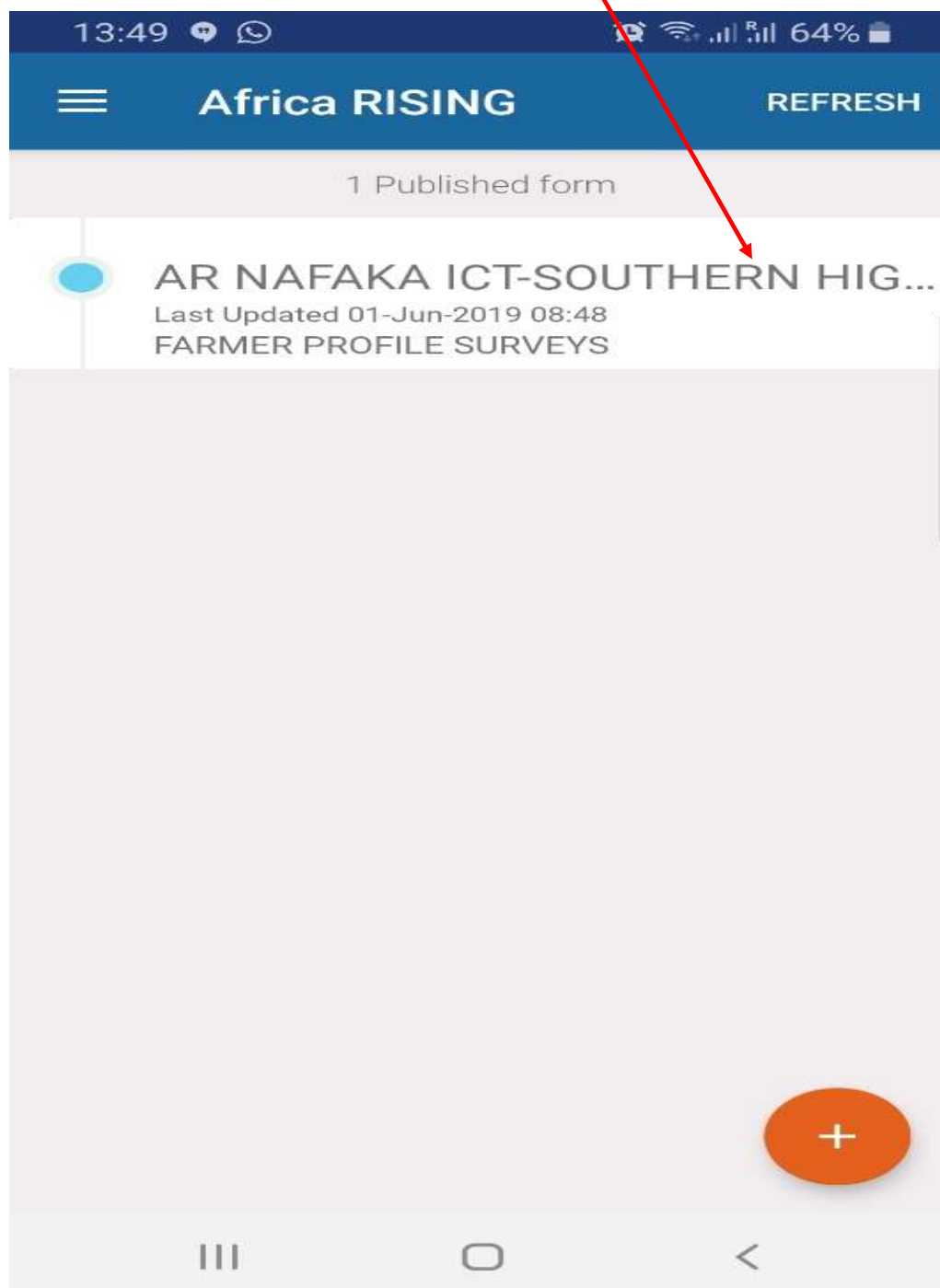
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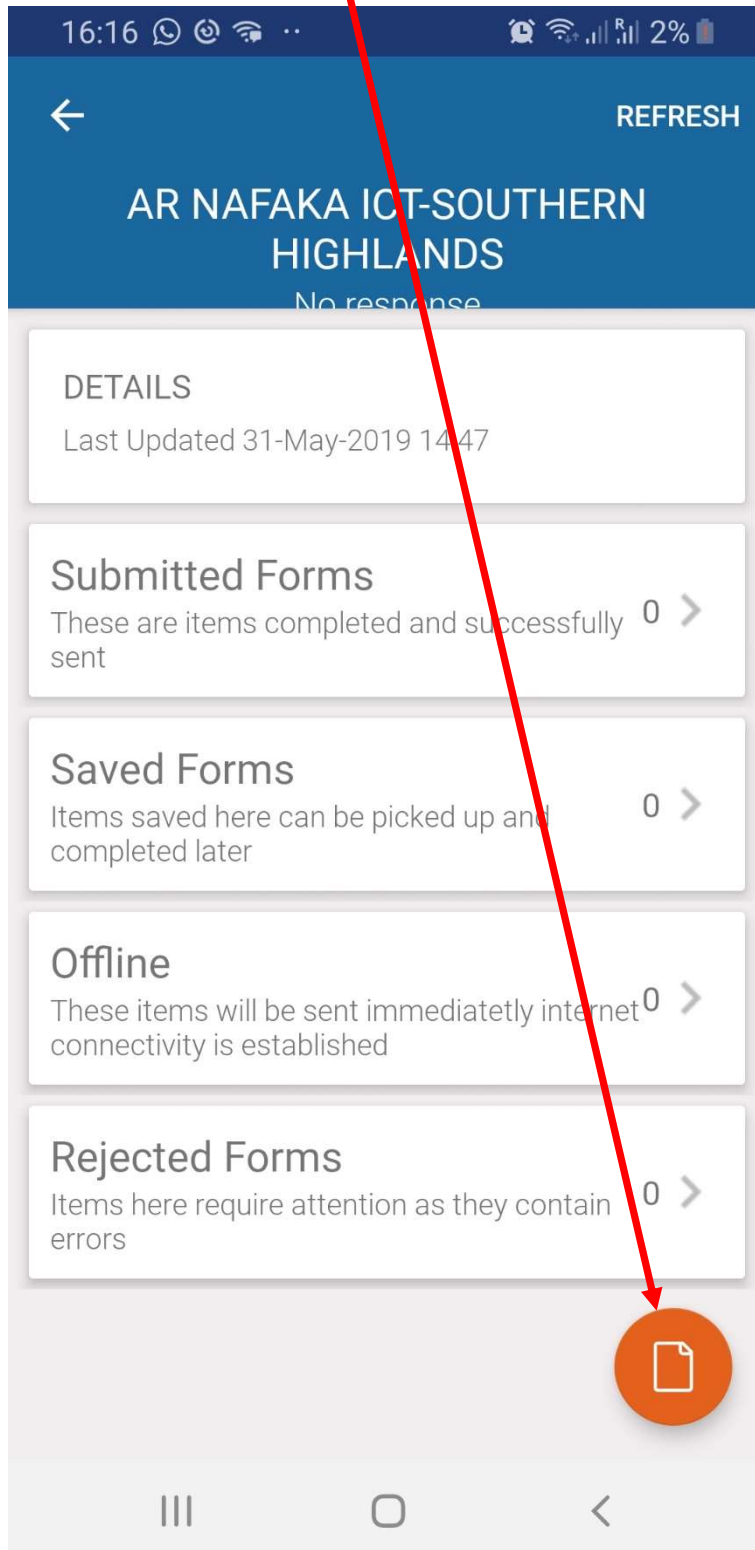
4. Then Click on the words “Africa RISING”



5. Click on the AR NAFKA ICT SOUTHERN.....



6. After that the screen below will appear; Click on the Icon at the bottom right side of the screen to load the form and start your survey



7. The survey form will open for you to start the session.

14:09 59%

← AR NAFKA ICT-SOUTHE... ⋮

1 Do you wish to continue with the interview? \*

☐ Yes

☐ No

2 Name of District \*

*select one that apply*

Tap here to select an option

3 What is the name of the community? \*

Type answer here

















4 Unique beneficiary ID

Type answer here

## APPENDIX G: Feedback from Partners meeting in MBEYA

In relation to the mini-survey we tele-conducted this through a set of key questions pertinent to ICT in the region. Please see attached survey instrument: <https://insyt.esoko.com/en/forms/3128>

We agreed to sample about 10% of our population which comes to about 1260 respondents who will be based on the proportional numbers within the respective districts. The table shows the sample of respondents from each of the districts

 Data Collectors 35 People	 Facilitators 12 People	 Iringa Rural 1302 People	 Kilolo 1141 People
 Kilombero 1270 People	 Lead Farmers 733 People	 Maize Farmers 12021 People	 Mbarali 2449 People
 Mbozi 2668 People	 Momba DC 1614 People	 Mufindi 818 People	 Recently added 12214 People
 Staff No people	 Ungrouped No people	 VBAA 465 People	 Wanging'ombe 946 People

District	Unique beneficiary IDS	Sample size to be surveyed
Iringa Rural	IR001-IR130	130
Momba	MO001-MO163	163
Kilombero	KI001-KI127	127
Mufindi	MU001-MU074	74
Mbozi	MB001-MB259	259
Wanging'ombe	WA001-WA87	87
Kilolo	KIL001-KIL0131	131
Mbarali	MBA001-MBA265	265
Mbozi2	MBB001-MBB24	24
<b>Total number</b>		<b>1260</b>

- Confirmation from the enumerators was done and at the meeting, we estimated the time it would take to effect the exercise. The Survey tool can be accessed at this link:

<https://insyt.esoko.com/en/forms/3128>

-The username to access the tool is: [arnafakaict@gmail.com](mailto:arnafakaict@gmail.com);

-Password to access the tool is: arnafaka2020 and the access code is: 7573229

-Agenda developed at the meeting: [http://africa-rising-](http://africa-rising-wiki.net/File:AR-NAFAKA MEETING Mbeya.pptx)

[wiki.net/File:AR-NAFAKA MEETING Mbeya.pptx](http://africa-rising-wiki.net/File:AR-NAFAKA MEETING Mbeya.pptx)

-Presentation provided at meeting: <http://africa-rising-wiki.net/File:AR-NAFAKA MEETING Mbeya.pptx>

-Survey instrument developed for farmer profiles: <http://africa-rising-wiki.net/images/7/72/AR-NAFAKA SURVEY INSTRUMENT Southern Highlands.pdf>

## Appendix H: Post Harvest Messaging for increasing resilience in smallholder farmers

Collaboration with the Postharvest team to disseminate simple, actionable, and memorable text messages – Grain postharvest management

	Stage	English	Swahili version		Time to send message		
				Mbeya/ Songwe	Iringa	Babati/ Karatu (Manyara/ Arusha)	Kingwa/ Kiteto (Dodoma)
1	Harvesting	The timelier the harvest the better the quality; harvest when husks turn brown, cobs hang down, or kernels are hard, and resistant to scratching by the thumbnail.	Uvunaji kwa wakati ubora wa mavuno; mazao yasikae muda mrefu shambani. Vuna punje zinapokuwa ngumu na kutofikichika kwa urahisi kwa kucha.	Early June	Early July	Early July	Early May
2	Harvesting	Harvested produce is alive and can get diseased; remove husks immediately and dry cobs on tarpaulin of clean platform to improve storability.	Mazao yaliyovunwa ni hai hushambuliwa na magonjwa; baada ya kuvuna ondoa maganda na kausha mahindi katika magunzi kwenye turubai au kwenye kichanja safi ili yahifadhiwe vizuri.	Mid June	Mid July	Mid July	Mid May
3	Harvesting/shelling	Harvested produce is alive and can get diseased and become poisonous; separate rotten/moldy cobs before shelling.	Mazao yaliyovunwa ni hai, na hushambuliwa na magonjwa na kutengeneza sumu; chambua yaliyooza/ukungu kabla ya kupukuchua	End June	End July	End July	End May
4	Harvesting/shelling	Harvested grains are alive and can get easily diseased when wounded; use method that does not break grains during shelling.	Mazao yaliyovunwa ni hai. Yakipata majeraha hushambuliwa na magojwa. Tumia njia isiyosababisha majeraha wakati wa kupukuchua	End June	End July	End July	End May
5	Drying	Harvested grains are alive; They get easily diseased when stored moist; dry well and verify dryness of grain moisture is < 13% during storage	Mazao yaliyovunwa ni hai na hushambuliwa na magonjwa yakihifadhiwa na unyevu; kausha vizuri unyevu usizidi asilimia 13 wakati wa kuhifadhi.	1 <sup>st</sup> wk July	1 <sup>st</sup> wk August	1 <sup>st</sup> wk August	1 <sup>st</sup> wk June

	Stage	English	Swahili version		Time to send message		
6	Storage (early)	Clean grain, better storage: winnow grain, remove dirt, and trash to keep off insects	Mazao safi, uhifadhi bora: pepeta, ondoa uchafu na safisha kuepuka wadudu	2 <sup>nd</sup> wk July	2 <sup>nd</sup> wk August	2 <sup>nd</sup> wk August	2 <sup>nd</sup> wk June
7	Storage (early)	Insects require air to survive and damage stored produce; stop them by storing produce in air-tight containers always.	Wadudu wanahitaji hewa kuishi na kuharibu mazao yaliyohifadhiwa; hifadhi mazao kwenye vyombo visivyoruhusu hewa wakati wote	3 <sup>rd</sup> wk July	3 <sup>rd</sup> wk August	3 <sup>rd</sup> wk August	3 <sup>rd</sup> wk June
8	Storage (early)	Clean food, safe food, more money! use hermetic bags or other air-tight devices to store without chemicals	Chakula safi, salama na pesa zaidi! kuhifadhi bila kutumia kemikali tumia mifuko au vifaa vingine visivyoruhusu hewa kupita	3 <sup>rd</sup> wk July	3 <sup>rd</sup> wk August	3 <sup>rd</sup> wk August	3 <sup>rd</sup> wk June
9	Storage (early)	Clean environment, better storage: keep old harvest far from new harvest.	Mazingira safi, uhifadhi bora: weka mazao ya msimu uliopita mbali na mazao ya msimu mpya.	4 <sup>th</sup> wk July	4 <sup>th</sup> wk August	4 <sup>th</sup> wk August	4 <sup>th</sup> wk June
10	Storage (regularly)	Clean environment, better storage: keep non-grain item away from stored grain.	Mazingira safi, uhifadhi bora: Weka vitu visivyo nafaka mbali na mazao yaliyohifadhiwa.	4 <sup>th</sup> wk July	4 <sup>th</sup> wk August	4 <sup>th</sup> wk August	4 <sup>th</sup> wk June
11	Storage (regularly)	Clean environment, better storage: keep domestic animals and trash rubbish dumps far from grain store.	Mazingira safi, uhifadhi bora: weka wanyama wanaofugwa na jalala mbali na ghala.	1 <sup>st</sup> wk August	1 <sup>st</sup> wk September	1 <sup>st</sup> wk September	1 <sup>st</sup> wk July
12	Storage (regularly)	Clean environment, better storage: sweep way spilt grain, dirt, and trash on the floor and hidden areas every week to keep off insects and rodents.	Mazingira safi, uhifadhi bora: Ondoa mahindi yaliyoanguka chini, uchafu, na takataka nyingine sakafuni na maeneo yaliyofichika kila wiki ili kuzuia wadudu na panya.	2 <sup>nd</sup> wk August	2 <sup>nd</sup> wk September	2 <sup>nd</sup> wk August	2 <sup>nd</sup> wk June
13	Storage (regularly)	Protect your food: inspect your store regularly; fix falling walls, leaking roofs, avoid dampness from floor or wall.	Linda chakula chako! kagua ghala mara kwa mara; rekebisha kuta na mapaa yanayovuja. Chukua hatua za kudhibiti unyevu.	1 <sup>st</sup> wk September	1 <sup>st</sup> wk October	1 <sup>st</sup> wk October	1 <sup>st</sup> wk August

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	Stage	English	Swahili version		Time to send message		
14	Storage (regularly)	Protect your food: inspect your store soundings regularly; clear the surrounding and install rodent control measures.	Linda chakulachako! kagua ghala mara kwa mara; Fyeka maeneo yanayozunguka ghala. Chukua hatua za kudhibiti panya na wadudu.	1 <sup>st</sup> wk October	1 <sup>st</sup> wk November	1 <sup>st</sup> wk November	1 <sup>st</sup> wk S  eptember