



**How to Contribute to Improved Food Security for Smallholders in Uganda  
Geodata for Agriculture and Water (G4AW)**



**Matchmaking and Information Day  
Wednesday June 11, 2014**

**Copper Chimney Restaurant, Lugogo Kampala**



## Introduction

The Geodata for Agriculture and Water (G4AW) facility is an initiation of the Ministry of Foreign Affairs of the Netherlands aimed at increasing the agricultural sector output in 15 G4AW partner countries by providing food producers with relevant information, advices or financial products through operational information chains using satellite data.

The programme is being implemented by the Netherlands Space Office (NSO) on behalf of the Netherlands Government. The idea is to have public-private partnerships that put these information services into operation covering the complete information chain from satellite data as basic input to end user information products.

To that end, a number of organisations were identified in Uganda as potential beneficiaries and invited for a matchmaking and information workshop on 11th June 2014.

The objective of the workshop was to prepare participants to apply for the upcoming second call of the G4AW Facility.

The workshop was attended by 43 participants representing organisations involved in communication, agriculture, finance, water programs, teaching and training programs and environmental conservation.

The workshop was facilitated by Agri-ProFocus Uganda and Netherlands Space Office.

### A. Opening Remarks

The country Coordinator for Agri-ProFocus, Ms Anja De Feijter, opened the workshop. She welcomed all participants to the workshop and noted that the workshop was facilitated by Agri-ProFocus together with the Netherlands Space Office (NSO). Participants introduced themselves.

### B. Presentation: Satellite Based Information Services for Food Security (Mr. Mark Loos)

Mr Mark Loos of NSO started with an illustration of satellite data and took participants through various illustrations of satellite maps showing effects of climate change on food and water security. This information is important and may be relevant for farmers so as to mitigate the effects of weather changes. Satellite data provides information; without information there is no knowledge, and without knowledge farmers cannot make the right decisions.

He explained that G4AW Facility starts with Earth observation and data collection followed by mapping and forecasting. This information is relevant throughout the agricultural cycle (Pre-cultivation-Crop cultivation-Harvesting-Post harvesting).



He illustrated several examples where satellite data can provide useful information in the agricultural cycle:



- Crop growth monitoring
- Rain data: how much does it rain and where, predict when it is expected to rain.
- Flood monitoring: detect which areas are prone to flooding.
- Drought monitoring: e.g. determine pay-out for crop insurance
- Hazard and risk analysis
- Yield forecast- what is the actual yield, forecast market price.
- Actual biomass production can be monitored

**Why use Satellite data?** Objective, consistent, cross border, time series, and data can be stored for 25 years or more.

## Questions

1. How accessible is this data especially for Uganda if one needs information pertaining to a particular district. **Mr. James William Lwerimba (WWS)**

### **Response by Mark Loos**

Different satellites provide different information and some have their own portals on the internet where information is available, either for free or commercially. There are companies specialised in accessing and analysing this data. They have the knowledge to process and analyse that data using different algorithms.

He advised participants to find the different organisations that know how to access and translate this data into useful information.

2. How much is satellite data actually being used in Uganda beyond Google maps (**Mr Paul Sengoba**)

**Response by Ms. Sylvia Natukunda:** a quick scan shall be presented which will give an overview of what is happening in Uganda

3. Are satellites able to store data? (**Jacob Olanya**)

**Response from Mr Mark Loos:** Yes, they are. The data is stored in portals and often available at lower cost than near real-time data

4. How important is this data for use at an individual level?

**Response:** For example, it can help one to know which area has e.g. drought. This is important for Insurance Companies to determine which area is high risk and for microfinance proposes to determine whether or not to provide loans to farmers

5. For which countries are the sentinel data with a 10 x 10 resolution provided?

**Response:** The European Sentinel satellite constellation will cover the whole World including Africa.

## **C. Stakeholders, User Needs and Opportunities in Uganda presented by Ms Sylvia Natukunda (Agri-ProFocus)**



Aim of the quick scan is to provide an overview. It identified issues needing attention on food and water:

- Low agricultural productivity
- Low value addition to agricultural produce.
- Poor access to sustainable markets
- Food and nutrition of security not satisfactory
- High population growth
- Climate change
- Only 65% of rural population has access to water
- Availability of water for productivity is low
- Information Security: ICT sector is liberalised and many players are now active.
- Meteorology: services are not reliable yet they are important for planning and management of agricultural production. The short term accuracy is 40%-50% and long term accuracy 70%-80% are met. Stations are far and sparsely distributed.
- Mobile services- widely used. Every 1 in 4 people owns a mobile phone although it is limited to some because of costs.
- Internet-access is limited by high access costs.

### **Challenges in information supply**

- Inadequate data and information and it is not usually reliable
- Costly and infrequent data collection services and poor data analysis mechanism.
- Inadequate meteorological services to provide early warning information related to changes in rainfall patterns to farmers.
- High risks and high costs of investment leading to limited lending.
- Poor electricity connection and consumption.
- Limited extension support services to farmers related to improving agricultural productivity.
- Inadequate physical infrastructure.

### **Current Agricultural sector Information Supply.**

- Market information e.g. commodities prices is the most common and is collected more of a private sector led initiative.
- Involves regulation of commodity prices, verification, analysis and dissemination.
- Dissemination is done through radios, newspapers, internet and mobile phones.

### **Nature of information received in agriculture**

- Commodity prices
- Weather
- Agro Inputs
- Pests
- Buyers
- Sellers

### **Major stakeholders**

- Government
- Communications
- Farming Organisations
- Non Governmental Organisations



- Research Institutes
- Bank and Insurance Companies

### Reactions to presentation:

1. **Mr Denis Olul (MAAIF).** There is a problem of poor analysis of available data and hence clarification is needed on how this data is available. How fast can farmers obtain analysed information because it looks like the process is long?

**Response: Mr Mark Loos:** the end user should specify the information needed and the organisations capable should analyse it, translate it and pass it on to the end user. Organisations ought to find suitable partners that analyse data. Some value adding companies have automated processes that can analyse data in minutes or hours. Dissemination can then be done via e.g. sms.

2. Ms **Anyait Christine:** training institutions were left out from the list of stakeholders. Is it possible for members to get copies of the presentations used at the workshop?

**Response by Sylvia Natukunda:** Assumed they were under research institutes and yes, presentations would be attached to the final report and distributed to participants

3. **Mr Moses Nyago** The agricultural sector greatly depends on the state of the environment and natural resources, so how do we do agriculture in a smart way without negatively affecting the environment?

**Response by Mark Loos:** Satellite and other spatial data also has information on resources available

### D. PLENARY DISCUSSION –Identify The Possible Needs And Opportunities For Uganda For The Project Proposals

Participants formed 6 groups and came up with the following needs and opportunities:

#### Group 1: Presentation made by Nsubuga Arthur

- Proper Planning and farm management- Satellite enables to locate where to farm what.
- Production focus for different areas-where to farm what
- Soil analysis and water availability
- Production forecasting, so that buyers know which area produces what and can target certain areas

#### Group 2: Presentation made by Irene Amach



- Need to provide timely and adequate information on the weather to increase productivity.
- Effective land management in relation to environment
- Mapping status of production to market
- Availability of infrastructure suitable for farming
- Disaster management and early warning systems
- Need for information of increase in production in relation to environment.

#### **GROUP 3: Presented by Alia Franco**

- Effective planning e.g. when to plant what and where.
- Information on soil moisture content.
- Detection of insect transmitting diseases so that farmers can be advised on whether to leave area or appropriate treatment.
- Risk assessment
- Yields assessment
- Crop mapping to know which area is covered by what crop
- Access to information
- Infrastructure mapping
- An opportunity to have farmers insured against erratic weather

#### **GROUP 4: Presented by Florence Ogwang**

- Mechanism for capturing livestock productivity
- National Food Balance
- Post harvest handling
- Water harvesting technologies
- Regional production

#### **GROUP 5: Presented by Deborah Mugabi**

- Disaster management and early warning systems
- Effective planning and management –land use planning and investment decisions
- Farm management –improving agricultural productivity and irrigation water-availability and volume of ground water.
- Marketing/price information on agricultural inputs and outputs.
- Satellite based insurance of crop and livestock

#### **GROUP 6 Presented by Julius Kwesiga**

- There is a lot of information which does not reach farmers.
- Lack of credit for farmers
- Lack of improved inputs
- Lack of cheap information for training institutions cows, and produces over

### **E. Presentation of Ugandan organisations (pitches)**

#### **PITCH by Charles Angebault (Managing Director Metajua U Ltd)**

Metajua is a company that provides data collection and automated reporting solutions. The company participated in the 1<sup>st</sup> round of G4AW proposals. He mentioned requirements for submitting a project proposal:



- The proposal should contain a clear business model
- You must have partners one of which must be a Dutch organisation.
- One of the partners must be a local public partner.
- Project has to be financially sustainable
- The proposal should be demand-driven, addressing a user need

Their main concept for the proposal was that:

- There are different actors in the agricultural sector, which different actors require a central and accessible point from which they can obtain information.
- There is currently no such central place from which information on satellite data can be obtained.
- There will be an expert needed to analyse the data and make all this possible
- Project is correlating potential market needs to expertise.

### Responses and Questions directed to Mr Angelbault:

1. **Mr James William Lwerimba:** is there a team that can find out authenticity of data received From farmers? is there a system of rewarding data givers?

**Response** Metajua provides solutions to those who want it and are willing to pay for it because they are a business. They do not collect the data itself because sometimes it is faulty

2. **Mr. John Silco** Who controls the income at the central points? If all the companies have put information at the centre, how does information move from the centre to all the companies?

**Response:** Each company collects only a portion of the information needed.

3. **Mr. Robert Kintu:** what challenges are faced in identifying partners to work with?

**Response:** there was already a pool of partners so when Metajua looked at specifications they realised they needed a satellite expert. So there is need to consolidate their partnership. Unless one knows what they want and want to change, one shall lose focus. Applicants should get partners who are ready to commit. Each applicant needs to ask themselves. Is it something you were looking at already, and not just for the purpose of the application? There is need to check twice whether there's a chance of success. Do you have what it takes to provide the business service everyday?

### PITCH BY DEBORAH MUGABI OF CENERGY GLOBAL LIMITED

Cenergy Global Ltd is a profit making company producing an environmentally clean fuel from the seeds of the candlenut tree. Their goal is to plant 2.5 million trees to produce 100 million litres of clean fuel per year while creating wealth from the rural farmer. A the same time, they will be cleaning the environment and The trees can be transplanted with food crops hence ensuring food security as well.

Questions and Answers



1. **John Silco** which Districts does Cenergy operate in?  
**Response:** They operate in Kabale, Ntungamo, Mbarara, Masaka, Gomba, Luwero, Bulemezi, Mubende, Masindi, Nebbi, Apach, Kumi, Kaberamaido, Bulisa and Bugiri
2. **James:** Are the by-products used anywhere else?  
**Response:** yes they are e.g. in fertilisers and cattle cake
3. **Nyago Moses:** Where is the refinery situated?  
**Response:** in Kansanga where they produce diesel for use in their tractors

#### **PITCH PRESENTATION BY LION ASSURANCE** (Newton Jazire)

Lion Assurance is part of the current project and have put in a proposal for the G4AW first round. He noted the following:

- The model of going to farmers to see what each is doing has proved expensive because we have small scale holdings
- Weather index insurance is necessary since most of our weather stations are not available where they are required.
- For the small scale farmer to be able to access microfinance credit, they need someone to take care of risks e.g. drought
- Satellite data would make it possible to obtain that information without the use of a weather station.
- Satellite data is cost effective
- It will enable partnership with peers from the Netherlands



#### **Questions**

1. **Jacob Olanya:** is Lion Assurance currently offering any agriculture policies  
**Response:** Yes, the weather index insurance but need to upscale to a higher level.
2. **James William Lwerimba:** Is it a loan insurance or agricultural insurance?  
**Response:** Loan insurance covers one for catastrophe but weather index covers production risk on the farm.

#### **F. GOALS AND HOW TO TENDER presented by Mark Loos**

The programme has been organised in 2 rounds, the first round was closed in March 2014 and 10€ was availed for it. The 2<sup>nd</sup> round will be published in summer of 2014 and 30m€ will be available. Each organisation is expected to supply 30% of the total project cost as own contribution.

#### **Aim and expected results:**

Aim: to **increase the agricultural sector** output by providing food producers (**3 million smallholders**) with relevant information, advices or



(financial) products through operational information chains **using satellite data**

**Output:** providing useful and timely agro-meteorological and/or financial/insurance products

**Outcome:**

- 1) improved sustainable food production, more effective use of inputs (water, nutrients), and economic development
- 2) stimulating private investments
- 3) leading to financially sustainable services after 3 years

**Impact:** improved food security and income

### **Requirements for a G4AW application**

**i)** User demand / information needs which must contain:

- Definition of user group
- Definition of other stakeholders
- Definition of user needs (user survey)
- Capacity building & training
- Cooperation with institutions connecting users
- Connecting local initiatives

**ii)** Solid Business /sustainability model

- Solid market analysis (users, market volume, USP)
- Solid business strategy
- Appropriate choices in partnership; Ownership of Information service after project
- Financially sustainable service provision is required after project (revenues may come from public and private resources)

**iii) Solid partnership**

- Partners bridging the last mile to users of services
- Transparency in partnership
- Partnership agreement enclosed with application. This is the basis for project execution
- Closing the information chain, complementary, experience

**iv) Information service**

- Satellite data are at the start of the information chain
- Based on proven technology and services
- Transmission channel(s) reaching users
- License-to-operate (legal, available data)

### **Question and answer session (Mark Loos)**

1. **Paul Sengoba:** How much is the award per project? Is it possible to get a list of the organisations that participated in the first round?



**Response:** The budget for each project is expected to be between a minimum of 1,000,000€ and a maximum of 5,000,000€.

Proposals are still under review and hence classified. Once it is decided which project will be granted funding, summary information shall be provided.

2. How many projects are we looking at in Uganda? Should a project be targeted to the whole country?

**Response:** G4AW is targeted to 15 countries and it is envisioning a minimum of 6 projects and a maximum of 60. One project can target a region, country or multiple countries: it all depends on the target group.

3. Is there any facilitation provided during the course of preparation of proposals

**Response:** NSO can be contacted for any information about the G4AW Facility.

## **G. PLENARY DISCUSSION: EXPLORING AND MATCHMAKING FOR G4AW IDENTIFIED OPPORTUNITIES (interest in cases, solutions, own role) MODERATED BY Sylvia Natukunda**

**Group 1 Represented by Paul Sengoba:** This group zeroed down on coffee production

- -improving quality and quantity of coffee using satellite data
- Using satellite data to develop insurance products to encourage farmers to invest
- Determine asses that encourage lending.

The different organisations would contribute

- MAAIF-lobby for adoption of weather based insurance
  - verification of soil types
  - Dissemination and interpretation of satellite data.
- CURAD- provide credit to farmers
  - give tailored advice to farmers engaged in production
- GRAMEEN- use their network on the ground to disseminate information to rural communities about insurance based products
  - Disseminate information of pending disasters
  - Develop atomised applications that leverage the dissemination of satellite data

**Group 2 Represented by John Silco:** These group concentrated on crop and animal performance using Satellite Data and identified the following issues

- Inputs, crop protection, pests and disease control, quality of inputs, market, soil analysis.
- Weather information – disaster and risk assessment
  - Accurate and timely weather information and advice
  - Mitigation measures in terms of water harvesting, irrigation etc.
- and productivity forecast.-improving quality and quantity of coffee using satellite data
- Using satellite data to develop insurance products to encourage farmers to invest
- Determine asses that encourage lending.



The different organisations would contribute

- NEPAK- their interest is off a participatory nature
- NAMAACE -zoning of enterprises
- MUK-giving trainings to farmers and organisations
- Pearl Seeds and RicNet -information documentation and sharing with farmers.
- WWS-reduction of competition of human vs animals ie how by-products can be used to benefit animals
- Nile Breweries-quality assurance of seeds that are produced
- Pelum- interested in networking and sharing

### **Group 3 Represented by Christine Anyait:**

Specific organisations and their interested

- Bukalasa –interested in capacity building and training extension workers and farmers
- Wild Life Conservation Society- monitoring agricultural activities to ensure that are environmentally friendly.
- NECPA- improving livelihoods through agriculture. And data dissemination.

### **Group 4 Represented by Catherine Muwanga:** The group identified the following solutions:

- Useful satellite data would help in development of infrastructure
- Weather since it affects crop productivity and hence market prices
- Location if market
- Crop mapping

The organisations involved in this discussion were CENERGY, UOSPA, FIT (U) and Green Organic Watch. And their role would be:

- Addressing of the knowledge gap hence dissemination of relevant information to farmers.
- Connecting farmers to market
- Helping farmers estimate yields
- Field mapping
- Training farmers

### **Questions and concerns raised by participants for further discussion with Mark Loos**

1. Most of the organisations are good at dissemination and training. Where is the group that will process the data?
2. The business element seems to be missing from most of the organisations as they are more of services deliveries.
3. Feedback is needed on whether the plan is feasible for Uganda.
4. Satellite data alone may not be enough to solve the problems Uganda are facing.

### **H. Way Forward: Good Partnership, ways to link with International and Dutch Partners and final remarks**



- There is a Matchmaking Facility (MMF) available at Netherlands Enterprise Agency and anyone interested can apply through the Netherlands Embassy (<http://english.rvo.nl/subsidies-programmes/matchmaking-facility-mmf>)
- Partners can be found at the G4AW directory on the website at [www.spaceoffice.nl/g4aw](http://www.spaceoffice.nl/g4aw)
- Partners may be found at the Netherlands Cooperation on Water and Climate Services at their website: [www.waterandclimateservices.org](http://www.waterandclimateservices.org)
- To present their interest organisations may upload their organisation profile into the G4AW directory on the website at [www.spaceoffice.nl/g4aw](http://www.spaceoffice.nl/g4aw)
- The lead organisation for every application must be a Dutch Organisation.
- Whoever is interested can contact Mark Loos personally for questions about the G4AW Facility.

On Thursday and Friday following the G4AW workshop, several bilateral follow-up meetings were held with organisations interested in the G4AW Facility to discuss ideas and answer more detailed questions about the G4AW Facility. These organisations included:

- Bukalasa Agricultural College, AGRIBUTEC
- ICCO Cooperation
- World Wide Sires
- Cenergy Global Ltd
- Metajua
- DFCU Bank
- Rwenzori Information Centres Network (Ricnet)
- Uganda Oilseed Producers and Processors Association (UOSPA)

#### **Attachments:**

Program  
Presentations  
List of participants