Women and Digitalisation in Agriculture

Contents

ICT Update

Overcoming the divide on women and digitalisation in agriculture

Chipo Msengezi & Yentyl Williams

Research and statistics state that women constitute around 40% of the agricultural labour force in the ACP region and while they make essential contributions to rural economies and the growing advancements in digitalisation - the gender gap in access to information communication technologies (ICTs) continue to widen. This means women farmers, particularly in rural areas, experience difficulties accessing information, financial products and services and markets. They also often do not participate in relevant policy-making.

CTA has previously supported projects to address some of the challenges women in agriculture face, including access to markets, finance and other business services across ACP countries. Launched in 2018, VALUE4HER is a new joint initiative between CTA, the Africa Women Innovation and Entrepreneurship Forum (AWIEF) and the African Women in Agribusiness Network (AWAN), which aims to establish an agribusiness intelligence network, harnessing the power of ICTs to foster better links with markets, supply chains and service providers, including financing partners. VALUE4HER will help women to develop agribusinesses and to gain more income from agri-food markets. Equally, CTA developed the Pitch AgriHack Talent initiative, which aims at accelerating e-agriculture entrepreneurship across the ACP countries. It has seen a 60% increase in women participating in 2017 up from 30% in previous years.

In 2018, CTA ran perception survey on Gender, Digitisation and Agriculture, in collaboration with ACP Young Professionals Network (ACP YPN). The survey was a follow up to CTA's earlier 2002 Report on 'Gender, ICTs and Agriculture'. The results of the survey show that the digital divide remains overall. An infographic of some of the findings can be found in this issue of ICT Update. The report makes several recommendations including - (1) ensure applications are made available in mother tongue; (2) ensure women are consulted during the conception of agricultural digital solutions; (3) increase digital literacy training for women; (4) mainstream gender-disaggregated data collection in all projects and in national ICT related statistics; (5) leverage popular communication channels such as WhatsApp to reach more communities and women with agricultural information.

This issue of ICT Update is in collaboration with ACP YPN. ACP YPN has been pioneering the inclusion of youth experts in policy-making, within the EU-ACP partnership since 2014 and more recently at the level of the UN.

ACP YPN works across three inter-linked pillars: (i) trade and agriculture, (ii) environment and climate change; (iii) education and employment, and the three cross-cutting themes of (a) youth entrepreneurship, (b) women and gender equality, and (iii) digital inclusion and innovation. ACP YPN has opened up new spaces for young people to directly connect with members of the EU and ACP parliaments since launching the Youth Forum of the ACP-EU Joint Parliamentary Assemblies in June 2016 and as the only youth network at the EU's Economic & Social Committee. In particular, ACP YPN partners with COLEACP and CTA – the two leading institutions working on agriculture in the EU-ACP framework – to ensure the issue of 'youth and agriculture' is adequately addressed.

This issue has been the fruit of a joint collaboration, led by two young women from CTA and ACP YPN. We have identified three categories of women for this issue that we term, the 'enablers', the 'users' and 'women leading ICT driven businesses'.

For the 'women leading in ICT-driven business', we feature two contributions. We catch up with Naledi Magowe, Co-Founder and CMO, Brastorne Enterprises, and former CTA AGriHack winner, whose mAgri platform in Botswana is set to go regional in the coming months. As one of the few female drone-pilots, Rose Funja's contribution shows how she is travelling to new frontiers in order to get women trained and equipped in STEM subjects in both rural and academic contexts via her start-up, Agrinfo.

Secondly, we feature three examples of 'users' who benefit from technological tools and applications in their farmers' initiatives.

Ezinne Merianchris Emeana's contribution shows how agro-ecology and tech can be combined and explains its benefits for women farmers in Nigeria. Although remotely located on the Samoan island of Savai'i, Gillian Stewart's work at Women in Business shows how ICT applications can boost income and improve livelihoods of even the most distant farmers' community. The contribution from Keithlin Caroo shows how her initiative to set-up 'Helen's Daughters' in St. Lucia is linking the tourism and agriculture sectors through innovative tech tools in order to benefit female farmers.

Thirdly, we feature the 'enablers' who use the power of their networks to empower women farmer's use of ICTs and its linkage to policy.

Dr. Dorothy Okello, Chairperson, Women of Uganda Network (WOUGNET) provides an insight into how a number of targeted women-farmer initiatives and multi-stakeholder partnerships boost income and productivity. Fatma Ben Rejeb, CEO, Pan-African Farmers' Organisation gave us an exclusive interview on the Integrated Rural Development Strategy of the organisation and explains how rural women are fully involved within it. Lastly, Ana Brandusescu with her colleague, Nnenna Nwakanma from the Web Foundation, and their partners, provide key insights into a 'closed data culture' in their recent report on 'Is open data working for women in Africa?'.

Overall, the contributions in this issue aim to give stakeholders an overview of some of the most innovative and change-making examples of gender-targeted agricultural initiatives which harness the opportunities of digitalisation and contribute to tackling the divide impacting 'women-rural-digital' developments in agriculture. ●

About the authors
Chipo Msengezi is a Project Coordinator at Technical Centre for Agricultural and Rural Cooperation ACP-EU (CTA) for the GODAN Action project under the Data4Ag Programme. **Yentyl Williams** is a social entrepreneur and Founder of the Africa, Caribbean and Pacific Young Professionals' Network (ACP YPN).

mAgri and the woman driving innovation

Naledi Magowe

Naledi Magowe, a young female agri-tech entrepreneur, shares her experiences of building her start-up Brastorne Enterprises and the increasing impact her mobile app mAgri is making in Botswana and plans for expansion.

Brastorne Enterprises is a youth-owned, female-led enterprise that focuses on developing valuable solutions that are relevant in the African market and are targeted at levelling the playing field for the under-served and rural communities. Co-founder Naledi Magowe, who is passionate about bridging the digital gap for rural populations, has gained international recognition for her initiative, mAgri and as being a winner of CTA's 2016 Pitch Agri-hack Competition.

Her renowned application mAgri is a USSD (unstructured supplementary service data) services that gives farmers access to helpful information and agronomic advice, access to markets, and low cost communication. It is proving to be an invaluable agricultural service to under-served women farming communities in Botswana. In Naledi's words, *"The decision to start mAgri came from our dream to connect the unconnected in whatever way we could. (...)*

There are women, for example, who like everyone else, have need for information, access to opportunities, and fast and easy communication. These same people desire to also be a part of the digital economy and have internet access but aren't awarded that opportunity". Moreover, Naledi particularly targeted farming communities as she realized that the majority of these 'unconnected people' earn their income from farming activities, yet they did not have access to digital resources that could improve their farming activities.

Naledi explained that the challenge she faced in developing this application for the farming community, was identifying a resource that was already easily available to them at the same time providing relevant information at an affordable cost. At a cost of €0.75 (9 pula) per month, subscribers to the platform can access information on market prices, recommended agronomic practices, as well as weather information. In just two years, since the launch in 2016, mAgri has attracted over 500,000 users who have used the platform at least once, and there are over 350,000 active users. While mAgri is marketed through traditional marketing channels - radio ads, TV, outreach campaigns - the platform has received the most success through SMS campaigns - attracting 10,000 users in the first month alone. She recounts "*we didn't anticipate such success, however we came to find that the service became somewhat became viral*".

Naledi recalls the difficulties in sourcing capital funding stating, "*In the beginning, however due to cash flow issues, we didn't have the funds to market the service the way we needed to*". Strategic partnerships have been key to the growth of Naledi's business. In 2017, Brastorne Enterprises began collaboration with telecom giant Orange Botswana, who have helped establish the organisation's plans for scaling its services and delivering new features to improve the mAgri and reach a larger pool of users. At the same time, partnership with the Botswana Ministry of Agriculture provides the organisation with relevant up-to-date agronomic advice to disseminate to the farmers.

Today, the platform has been successful with more women (55%) using mAgri than men do, and over 60% of their mobile stores belonging to female users. Additionally, Naledi told us that there are also more women involved in outreach activities than men are. The success of the mAgri

platform is also because content is available in Setswana, the official language in Botswana and the language preferred by the women in the rural communities. Indeed, Naledi underscored "*The app needed to be relevant for our end user, therefore it needed to be as inclusive as possible.*"

The success of mAgri means that Brastorne Enterprises is now planning to expand by launching the application across West Africa and African Francophone countries, starting with Madagascar, Ivory Coast and Cameroon. Naledi recalls the exponential impact of participating and winning CTA's Agrihack competition: "*Winning Agrihack has had tremendous impact in our work in our vision. I have learned a lot of valuable insights that have allowed me to broaden my perspective and aim to grow the service.*" In particular, she gained strategic support for mAgri's development, "*The capacity building initiatives such as the conferences and workshops have placed me on a platform to meet people who have helped facilitate the internationalization of mAgri, some of which we have formed valuable relationships with and offer advice, facilitate connections with decision makers and monitor our progress.*"

Given her broad experiences, she wanted to share a message to other women interested in information communication technologies and agriculture. She said, "*We are living in an exciting time and age where many of us have refused to be ignored, our voices are being heard, and we persevere despite the disadvantages that come with being a woman in a male dominated field such as ICT. Be courageous, and view the disadvantages and challenges as opportunities to be the best version of yourself and for your work to be as impactful as possible to world.*" She added, "*... although the world may not change in a day, this will create the platform for other woman to be inspired to believe that they too can achieve their dreams.*" ●

Naledi Magowe:
Naledi is co-founder and Chief Marketing Officer of Brastorne Enterprises which developed the renowned app mAgri in Botswana.

Female Drone Pilots: moving from an exception to the rule in Tanzania

Rose Funja

A young African woman thriving and growing her business in the male dominated field of drone piloting and data science. **Rose Funja** is also giving back by working to promote young womens' participation in STEM.

Rose, Managing Director of Agrinfo Social Enterprise, is a leading female drone pilot in her home country of Tanzania, and further afield across the African continent. Not only is Rose a pioneer in her field, but she founded Agrinfo where she has the opportunity to train more women and girls to be drone pilots. Her story is a best practice in terms of scalability: Rose, like most successful entrepreneurs, started off by identifying a solution to a challenge that she saw in the world of agriculture, namely, women's access to digital tools and Science Technology Engineering and Mathematics (STEM) subjects. Although Rose says that she started her social enterprise Agrinfo 'by accident', she went on to win the 2013 Agrihack competition, which gave her initiative unprecedented visibility. From winning at the national level, Rose and her team also went on to become runners-up at the regional level, where they benefited from mentorship at the innovation hub. Within a year, Rose became a Mandela Washington Fellow and won a start-up grant from the US state department after attending the Young African Leaders Initiative (YALI) to the developed the 'She Codes for Change' initiative in 2014.

Rose has successfully won a number of other grants, which has allowed her to develop the 'She codes for change' programme and its reach to both rural and urban communities, targeting both young girl students and teachers. She has recently extended this training in STEM within Impact Hubs and she is one of the driving forces behind opening the very first impact hub for girls in Tanzania. Despite many advances and successful innovations, Rose is reminded constantly of the need to develop girls and women's competence in this field. During her school days, she recalls that there were only two women in her high school class and even later at university very few women took STEM courses. By the time she became a teacher herself, at the University of Bagamoyo, nothing had changed. Additionally, beyond the classroom and training, challenges persist with empowering women within local rural communities.

Often as the only female drone pilot in she is reminded of the ongoing challenges in the field. These can range from adequately preparing for field missions in very remote areas to being stuck with a vehicle break down! There are also challenges concerning engaging with communities where women are not active participants in discussions and decision-making, although they play a key role in the agricultural development of the community. Rose explained that her presence as the lead on such field visits contrasts significantly with the marginalised position of some of these women. Rose explains that 'I am in a unique position to gain a deeper understanding of the

best interventions and making sure that the community is engaged and understands the work that is being done and how it can be of benefit to them'. In her perspective: *"While it's true that drone flying is a male-dominated field just like most of the STEM careers, I feel like it's also an advantage for the few females that excel in it because they become a priority."*

Rose is certainly piloting ahead to make female drone pilots a priority. Through her wide-ranging experience – in academia in Africa and Asia, as well as a social entrepreneur - she has been exposed to Information Communication Technologies (ICTs) and women in many different contexts. For her, she feels that more needs to be done to ensure that African women can access digital tools. She explained, *"opportunities lie in the applications development for the those who already have phones so that the value on phone usage is tremendous to them. Rural electrification and renewable energy sources is a huge opportunity that is being explored but not to the maximum."* Yet again, she warned that affordability is still a key issue, which remains a barrier for women. She also identified alternative sources of energy, such as solar, as an opportunity for women to improve access to digital tools.

Rose's vast experience gives her a well-rounded understanding of the challenges and opportunities. She highlighted that *"When I was teaching I used to advocate for two things, one is practicality of the knowledge that is being shared at the university, and the second is using the*

knowledge to solve real-life problems especially the community around the university. In my case, I like to think that I have moved from academics to work on real-life problems and my focus has been on agriculture sector that employs 75% of the Tanzanian population."

Currently launching Tanzania' first Impact Hub for Girls, Rose's message for young women in ICTs is straightforward: *"If it has been done before, they too can do it."* She added, *"Statistically women handle most household chores and when it comes to farming they are the workforce. Technology gives us the opportunity to automate and gain insights into our activities and agriculture isn't different."* In addition, she underlines how challenges can provide opportunities: *"Those who feel the pinch (women) have a better chance of coming out with the solutions to challenges that they face and therefore it's important to take part in the discussion (...) take the front seat in addressing the challenges while armed with the knowledge."* ●

Rose Funja:
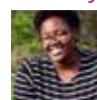
Rose is the founder and Managing Director of Agrinfo Limited and co-founder of She codes for change social enterprise.
http://www.agrinfo.co.tz/

The gender and open data intersection

Ana Brandusescu and Yentyl Williams

Open data is data that is made available for anyone to access, use and share. With more access to open data, people can help shape a more sustainable future with evidence-based solutions, contributing at the same time to a more transparent decision-making. But to reach the full potential of open data, it must be available to and used by all. Read more about web foundation's investigation into whether open data is working for women in Africa.

Having access to open data means that actors in the agricultural sector can start making more evidence-informed decisions and develop gender sensitive approaches to make the sector run more efficiently, thereby contributing more to the food security challenge. Open data has the potential to change politics, economies and societies for the better, however evidence shows that many open data initiatives supported by governments, civil society and funders have largely overlooked how open data can be used to meet the needs of women specifically. To realise the full potential of open data, data must be accessible to and used by all. In Africa, however, there is a significant gender gap in data equity.

In May 2018, Ana Brandusescu of the Web Foundation delivered a webinar for the GODAN Working Group on Capacity Development where she discussed open data through a gender lens. This was a precursor to the launch of a co-written report with Nnenna Nwakanma, Interim Policy

Women's groups, digital rights groups and gender experts rarely collaborate on open data and gender issues. To overcome this barrier, multi-stakeholder collaborations are essential to develop effective solutions.

Director, Web Foundation, in collaboration with Africa gender, digital rights and open data experts – AfroLeadership, BudgIT, Open Data Durban and Women of Uganda Network (WOUGNET) – entitled, Is open data working for women in Africa. The Report – which maps the current state of open data for women across Africa, with insights from country-specific research in Nigeria, Cameroon, Uganda and South Africa with additional data from a survey of experts in 12 countries across the continent - delves into detail and identifies the four main challenges, which entrench this siloed approach:

First, the report identified a 'closed' data culture in Africa. It explains, "Most countries lack an open culture and have legislation and processes that are not gender-responsive. Institutional resistance to disclosing data means few countries have open data policies and initiatives at the national level. In addition, gender equality legislation and policies are incomplete and failing to reduce gender inequalities. And overall, Africa lacks the cross-organisational collaboration needed to strengthen the open data movement."

Second, accessibility of data is raised as a challenge: "Cultural and social realities create additional challenges for women to engage with data and participate in the technology sector. One gigabyte of mobile data in Africa costs, on average, 10% of average monthly income. This high cost keeps women, who generally earn less than men, offline. Moreover, time poverty, the gender pay gap and unpaid labour create economic obstacles for women to engage with digital technology."

Third, the lack of data impedes the very object of the investigation on women and data. As the authors identify, "Nearly all datasets in sub-Saharan Africa (373 out of 375) are closed, and sex-disaggregated data, when available online, is often not published as open data. There are few open data policies to support opening up of key datasets and even when they do exist, they largely remain in draft form. With little investment in open data initiatives, good data management practices or for implementing Right to Information (RTI) reforms, improvement is unlikely."

Fourth, research in this field is insufficient. Ana and her co-authors note, "There is lack of funding, little collaboration and few open data champions. Women's groups, digital rights groups and gender experts rarely collaborate on open data and gender issues. To overcome this barrier, multi-stakeholder collaborations are essential to develop effective solutions."

In both the report and webinar, adopting a collaborative approach stands out as a solution. For the World Wide Web, the definition lies in "Building a culture in which open data works for all, especially for women (...), [where] civil society actors from across the technology and gender spaces must unite and work with government and the private sector to make this culture a reality".

The Report underscores the reality that even in 2018, "women are less likely to be online than men; less likely to be consulted on the design of data policies and initiatives; under-represented among the ranks of data scientists; and often uncounted in official statistics. " Nevertheless, a pro-active approach to the topic can ensure a new collaborative approach: one in which the gender and open data intersection can be used to open up a conversation on the current state of government data, and how it can be improved. Ultimately, women should use open data to empower themselves. Open data must be used to support women and their needs as well as address the role governments play to support these efforts with data and create better citizen-state engagement. ●

About the author

Ana Brandusescu is a Research and Policy Officer at the World Wide Web Foundation. https://webfoundation.org/
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Reference
[1] https://opendatabarometer.org/4thedition/report/

Developing sustainable ICT driven solutions & agroecology

Ezinne Merianchris Emeana

Ezinne Merianchris Emeana a researcher at Coventry University discussed how the SmartAgroecology app is promoting the sharing of agro-ecological knowledge and skills amongst women farmers and extension personnel in Nigeria in order to help them achieve sustainable production and livelihood.

Nigeria is one of many countries experiencing a shift to agro-ecology, which is, the application of ecological processes to agricultural production systems. This is a more sustainable, environmentally friendly and efficient agricultural system. It is based on approaches to farming, which use natural resources with little to zero dependence on agro-chemicals in the production of food for human and animal consumption, and has reduced the effect on the ecosystem. This shift in agriculture practices has now gone digital in Nigeria, with the arrival of the application called, SmartAgroecology. This application promotes the sharing of agro-ecological knowledge-based skills amongst farmers and extension personnel in order to help subsistence farmers achieve sustainable production and livelihood, based on sustainable crop practices and land use.

Given the predominance of subsistence farming in a country like Nigeria and the concerns of food insecurity, the SmartAgroecology app aims to offer a sustainable solution to the farming community. Practically, the app is designed to promote farmer-to-farmer and farmer-to-extension personnel interaction and is downloadable from the app stores. The information incorporates pre and post planting practices and management, pre and post-harvesting techniques, the available organic market information and prices of commodities.

As agro-ecology is knowledge intensive, male and female farmers were mobilised under the National Agricultural Extension and Research Liaison Services' Adopted Village Scheme (southeast Nigeria) and encouraged to combine and share their own traditional knowledge and skills. The farmers shared knowledge on restoring soil fertility and increasing and sustaining crop yield via the mobile-enabled platform as they learn from the updated information with the help of the extension personnel. During the rollout of the application in Nigeria, it became evident that there was a difference in the accessibility and usage of mobile-enabled services amongst the men and women user groups. In terms of accessibility, during the pilot stage, the developers realised that the women, being more engaged in food crop farming than cash crops as the men, had less to spend on mobile-enabled services such as SmartAgroecology. Comparatively men in the community were earning from their sales of cash crop production and could afford mobile services. Similarly, the men were more knowledgeable in the use of information communication technologies (ICT) and therefore downloaded and used the SmartAgroecology app more than their counterparts did. In short, usage was primarily affected by levels of illiteracy, low income and lack of ICT skills and this affected how and whether, at all, the women could engage and benefit from the service.

Despite these challenges, when informed and sensitised to the opportunities available when using the app, the women were enthusiastic about engaging in SmartAgroecology. This taught the developers of the app three key lessons:

1. Targeted ICT training should be provided for women farmers, with the aim to empower them to take control of their own information needs, especially information about agro-ecological approaches, which will not only improve the yield but are also cost-effective.
2. Training of the trainers is important in order to ensure consistency and comprehension, so farmers do not face difficulties in using the technology
3. Face-to-face meetings are still the preferred means of engagement between farmers and extension staff, in large part, due to the high cost of the internet connection and this impacts the uptake of users (and download) of the app.

As the majority of farmers in Africa are subsistence farmers

...once informed and sensitised to the opportunities available through the app, the women were enthusiastic about engaging in SmartAgroecology.

– the highest in the world according to UN 2017 data – it is critical to provide methods to these farmers to carry out sustainable agricultural practices., It is no longer good enough to refer to subsistence farmers as using indigenous methods, therefore, agroecology provides an alternative path to conventional and/or industrial agricultural practices. Yet, as the world goes digital and deals with challenges such as food insecurity and climate change, if female farmers are not targeted in training, they may miss out from apps, information and processes that can benefit them and their livelihoods.

Demonstration of the application with the farmers (2017) ●

About the author

Ezinne Merianchris Emeana is currently a doctoral researcher at the Centre for Agroecology, Water and Resilience, Coventry University, United Kingdom. Previously Ezinne worked as an agricultural research and extension officer at the Federal Ministry of Agriculture and Rural Development, Nigeria.

Harnessing digital opportunities for agriculture in Samoa

Gillian Stewart and Yentyl Williams

Gillian Stewarts of WIBDI shares how the organisation is leveraging ICTs to support an organic grower group of family farmers in Samoa, who rely on agricultural production to generate income and savings.

Gillian Stewart is the Programme Manager for Women in Business Development Incorporated (WIBDI) - Samoa, which is located on Savai'i, the biggest island in the chain of islands. When talking about how she joined the organisation, Gillian explains, "I'm not sure if it was serendipitous or if it was just meant to be. I was astonished by the work that WIBDI were doing. It just started off as a conversation with the Executive Director about if I wanted to work there and I've been based on the

Below: The WIBDI Farm To Table app. A Samoan woman processing cocoa

big island building capacity of 520 families in one island and 250 in another."

WIBDI manages a Certified Organic Grower Group comprising 750 families who rely on agricultural production to generate income and savings on a regular basis, amongst other programmes. Although Gillian has made huge gains for the families she works with, in terms of employment and income generation over the past 27 years, she explains that the biggest persistent challenge remains 'the poverty of opportunity'. In particular, although digital tools are often referred to as an opportunity, geographically, as Savai'i is not part of the mainland, she sees first-hand how access to technology remains a pressing issue to harness the opportunities it can provide.
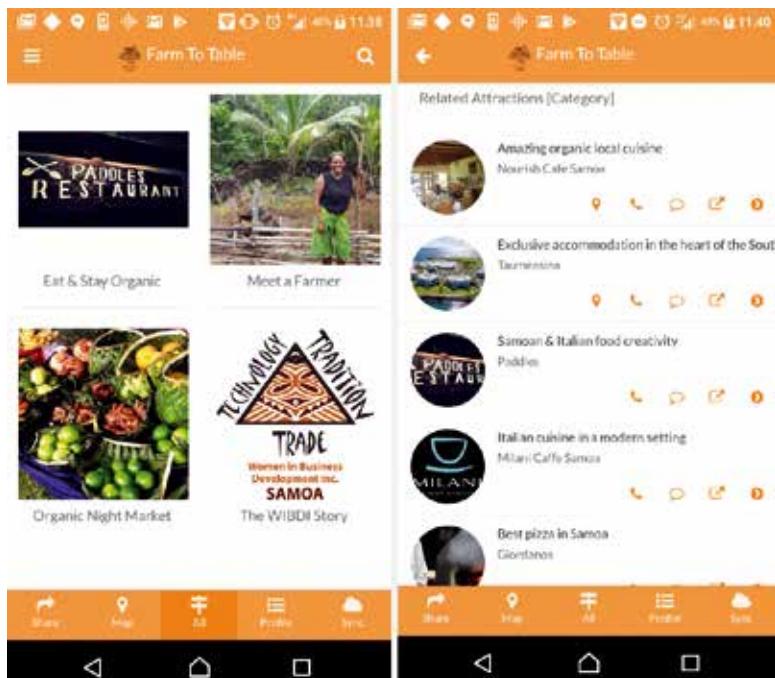
With CTA support , Gillian was able to discover the different digital opportunities available to the community and WIBDI has developed a farm-to-table app. The app aims to connect consumers with fresh produce from local supplying families at the front end. The model WIBDI uses clearly manages to balance respect of community culture and tradition with a strong business model. For example, with cocoa production, traditionally women do the roasting of the cocoa, they make the paste and the husband supports the process, bringing the whole family together. Adding digital tools and technology to this equation takes their work one step further. Gillian noted, "When people have been able to see lands from above it has been incredible, especially for our certified organic record keeping. The tablet system and the database system have been extremely useful and the farm-to-table app continues to be developed as we speak."

WIBDI has managed to secure some major contracts and partnerships in order to ensure that they can continue their major work, 'supporting vulnerable families'. They have a number of products including, cocoa, coconut oil and tea and sell to the Body Shop in the UK, as well as to companies in New Zealand. In Gillian's perspective, "It was important to bring companies out there. We work with families and try to do things that embrace culture & tradition. We cannot just go into villages to work – we have to go through the chief system. It is a talking culture – we have to talk through a lot face-to-face but this embeds a good working relationship, which can ensure a vibrant future with a strong supply chain."

While acknowledging the new range of exciting possibilities to scale up business, Gillian does recognise other issues that need to be addressed. She explained, "...at the back end, we need to do work on financial literacy; developing a business mindset and the realisation that agriculture is a respectable and honourable field of work. This is about changing the attitudinal culture, and also ensuring that quality and timeliness are seen as important."

A face-to-face meeting with Gillian is a powerful exchange - she embodies an individual who works for the passion of what she does by exploring all possibilities to go beyond the isolationism of being on an island in the Pacific with limited access to information communication

Although digital tools are often referred to as an opportunity, Gillian sees first-hand, how access to technology remains a pressing issue to harness the opportunities in Samoa.

technologies. Although she is constantly faced with challenges - slow digital connectivity, limited and costly data - she sees further to the opportunities for delivering reliable market opportunities. For example, they are currently developing the potential of agri-tourism as income generator on the island. She explains, "It helps to create ways in which urban people can experience tradition and authenticity with Samoan families. They can make their own chocolate or press coconut oil. People can tap into the support of WIBDI and buy laptops and phones. Technology can be used to our best advantage while helping our families through efficiency and timeliness in the supply chain." Although we were able to meet Gillian face-to-face at the European Development Days in Brussels in June 2018, she was keen to go back to Savai'i to continue to translate the challenges into opportunities by harnessing the connectivity that digital tools offer. ●

About the authors

Gillian Stewart is the Programme Manager for Women in Business Development Incorporated (WIBDI) https://www.womeninbusiness.ws/
Yentyl Williams is a social entrepreneur and Founder of the Africa, Caribbean and Pacific Young Professionals' Network (ACP YPN).

GENDER, DIGITALISATION AND AGRICULTURE

Findings from a survey on the perceptions on gender, digitalisation and agriculture

225 respondents participated in the survey

- ✓ **44% were women**
  55% were men

- ✓ **45% were youth** between the ages of **18-35**

- ✓ Over two-thirds of respondents **(72%)** were formally employed

About Usage

Women's use of digital tools and technologies for agriculture %

Usages

- ■ Mobile phones
- ■ Drones
- ■ Sensors
- ■ Data analytics software
- ■ Social media
- ■ Others
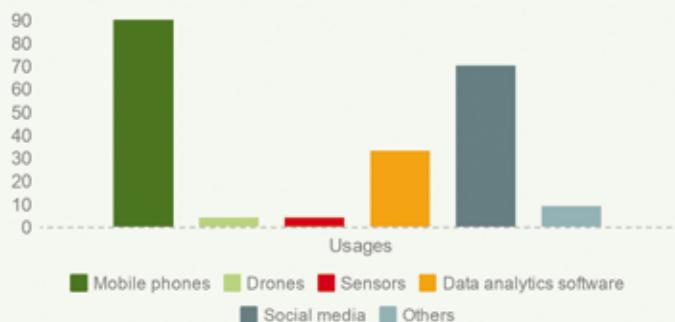
Less than **5%** of the female respondents use **drones or sensors** compared to **10%** of men

Social media for agriculture related activities

- **f** **87%** use Facebook
- **W** **84%** use Whats App
- **in** **72%** use LinkedIn
- **🐦** **54%** use Twitter

> "Facebook and Twitter enable me to interact online with other senior stakeholders about agriculture concerns."
>
> _Female respondent from Pacific Region_

Less than **40%** of both men and women said they use **Instagram** and less than **10%** used other tools, including **Youtube, Flickr, Pinterest**, other mobile network groups and group mailing

About Barriers
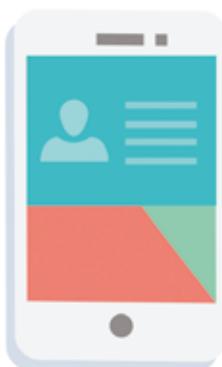
75% of all respondents believe that their usage of mobile phone applications would increase if these were to be made available in their mother tongue

95% of all respondents felt the need to regularly update their digital skills

About Policy

01 Over **80%** of respondents were not aware of their national ICT/e-agriculture strategies and its provisions vis-à-vis women.

02 Nearly **70%** of both men and women say it is still more difficult for women than men to be involved in ICT policy-making processes.

"Women are generally under-represented in policy making - ICT is no exception"

Female respondent from Africa

03 Top three critical factors were identified in order to make ICTs accessible and available for rural women

01 **Capacity development:**
Increase digital literacy training for women.

02 **Access & participation:**
Practitioners should conduct a gender analysis to identify opportunities for the use of ICTs to enhance current practices.

03 **Economic and social sustainability:**
Encourage more active participation in digitalisation initiatives and use of digital tools by providing income generating opportunities that are immediately applicable to the lives of women.

Marrying tourism and digital agriculture for female farmers in St. Lucia

Keithlin Caroo

Keithlin Caroo is the founder of Saint Lucian non-profit Helen's Daughters. Helen's Daughters was formed in 2016 in a winning proposal for UN Women's Empower Women Champions for Change Program.

Below: One of the women farmers participating in the Helen's Daughters project.

Helen's Daughters is a social enterprise that directly connects rural female farmers to the hotel industry. It was born out of the belief that there was a need to support rural women with the use of adaptive agricultural techniques, capacity building and improved market access.

For St. Lucia, formerly known as the 'banana capital' of the Caribbean for its 'green gold' - which contributed $187m to the St Lucian economy - the banana crash of the late 1990s early 2000s had a devastating impact on every farmer regardless of gender. Nevertheless, as a result of the perception that farming was male-oriented and women

farmers played an insignificant role in the St. Lucian agricultural landscape, initiatives that were brought forth to reinvent the market only included male farmers. Yet, in the Castries Market, (the capital of St. Lucia and the largest produce market on the island) 90% of the vendors are women, and, in most cases, these women are both producers and vendors. This misperception has essentially blocked female farmers out of commercial markets and in some instances, female farmers are selling produce to bigger companies under the name of a male relative or spouse, as they do not have the requisite certifications. This gender disparity is not only present in the agricultural context but extends to the overall St. Lucian labour force. The rate of unemployment in St. Lucia amongst women (24.7%) is slightly higher than that of men (20. 1%) and women, many of whom are in the agricultural sector, own two-thirds of small businesses in St. Lucia.

To leverage the use of digital agriculture while empowering rural women to fill gaps in the agri-food-tourism system, Helen's Daughters, in collaboration with the University of British Columbia (UBC), is providing women farmers with soil sensors that transmit environmental data (light, soil moisture, ground and surface temperature) based on the farmer's plot of land. This data collected by the soil sensors is visualised on an online dashboard that monitors the plots of each farmer and allows Helen's Daughters to transmit agronomic recommendations translated into the Creole language. The advice is then delivered to the farmers through an integrated voice response (IVR) system that is accessible by dialling in, whether by smart or feature phone. The initial group of women farmers participating is also being trained to understand the data from the soil sensors and adapting its information to their farming methods.

In addition to providing these services to the farmers, Helen's Daughters plans to build an e-commerce website where hoteliers can place orders for local produce without the hassle of sourcing from various buyers. Tapping into the hotel market is key for an island that has a thriving tourist industry boasting arrivals of over 1.1 million visitors in 2017, but imports more than 50% of its fruit and vegetables (statistics show that locally-sourced fruits and

Above: St. Lucian woman tending to her lettuce garden

Helen's Daughters not only enables female farmers' access to digitalisation but also brings them to the forefront of modern agricultural techniques in St. Lucia.

vegetables average around 42%). In other words, as a prime Caribbean holiday destination, St. Lucia has a hefty food import bill of $360 million, with some hotels reportedly importing $10-$15 million in crops that can be grown locally and bought at a lower price on the island.

Helen's Daughters not only enables female farmers' access to digitalisation but also brings them to the forefront of modern agricultural techniques in St. Lucia, which in turn will change the perception of gender dimensions in agriculture. Moreover, in a country such as St. Lucia, where tourism is the main driver of the economy and governments,

civil society and NGOs are now turning to ways to promote their countries as a destination of choice while trying to maintain an environment for sustainable development, such an initiative is vital. The project tangibly marries both the old and new economies of agriculture and tourism to support each other. It also provides a solution to the general problem of sourcing of local food from local farmers, while including the forgotten target group of women in agriculture. After all, we strongly believe that St. Lucian rural women's access to ICTs could level the playing field in the agricultural sector and open up economic opportunities that were otherwise unseen. ●

About the author

Keithlin Caroo was born and raised in a farming community in the Caribbean island of St. Lucia. She currently juggles the dual role of Founder and President of Helen's Daughters as well working at the United Nations Department of Political Affairs. http://helensdaughters.org/

Increasing income and productivity by empowering women farmers' access to information

Dorothy Okello

Recognizing that farmers in Uganda have not fully embraced ICTs, particularly women, WOUGNET works to develop gender-targeted approaches to facilitate access to relevant and timely agricultural information and digital tools.

The agricultural sector in Uganda employs over 60% of the country's population and contributes to over 70% of Uganda's export earnings – providing the largest percentage of raw materials for agrobased industries[1]. Despite the productivity of the agricultural sector in general, concerted efforts need to be put in place to overcome the gender gap: on average, only 27% of land plots and 20% of cultivated land is under sole management of women while 73% of plots and 80% of cultivated land is jointly managed by both men and women or only men[2]. In addition to the gender gap, there is also the technology gap. Women of Uganda Network (WOUGNET) notes that farmers in Uganda have not fully embraced technology, particularly advanced Information and communication technologies (ICTs), as tools that can improve on all aspects of the sector's value chain. In addition, women farmers are at a greater disadvantage since they are also limited by various cultural beliefs and norms.

Identifying the double gap, as such, WOUGNET works with women's farmers' networks – comprising of both women and men (70:30 ratio respectively) - to facilitate access to relevant and timely agricultural information to

...the ability of farmers, and particularly women farmers, to participate in and benefit from growth in the agricultural sector is linked to their ability to adopt new practices and knowledge, including technology.

farmers, on agricultural innovations and technologies. This ranges from information on the latest varieties of crops introduced or promoted by research institutions to marketability and best agronomic practices. Yet, recognising the particular and multi-faceted challenges women face, despite their significant contribution to all the production stages in the agricultural sector, led WOUGNET to develop a gender-targeted approach in their initiatives.

The WOUGNET approach identifies the biases and constraints – limitations in terms of resource allocation including ownership of land, lack of education, limited access to finances, and limited or no access to technology; lack of access to markets and extension services – at the initial stages of the implementation design in order to actively break down harmful structures, beliefs and norms that hinder women's progress in the sector. For example, WOUGNET Gender Evaluation Methodology (GEM) is both a tool for gender evaluation and a guide that helps break down gender-related concepts for initiatives, which use various technology aided tools for information dissemination.[3]

The WOUGNET model fosters gender-sensitive agricultural initiatives, ensure that women who make up a larger percentage of employees in the production sector of the value chain are catered for. This is based on the understanding that access to relevant and timely agricultural information is critical to the sector. And even more critical is how this information is accessed and who is able to access it. This has led to several multi-stakeholder partnerships covering a number of products – rice and green gram, cowpea, soya bean, groundnuts and sesame – and project areas including:

i.   Partnering with agricultural research institutions not only to provide agricultural information to small-holder women farmers of Northern Uganda but also to pilot and experiment directly latest agricultural technologies, for example, new varieties of rice (Narogram 1 &2) and inter-cropping with green gram;
ii. Support from the Technical Center for Agricultural and Rural Cooperation (ACP-EU (CTA)) initiated a project on Enhancing Access to Agricultural Information using ICTs (EAAI) project, which led to the setting up of the Kubere Information Center (KIC);
iii. Partnering with Makerere University to implement a project on Strengthening University – Farming Community Engagement for Sustainable Development (SUFACE). The SUFACE project was designed to develop an operational framework where universities can work with communities to enhance productivity and competitiveness of smallholder agriculture as well as the responsiveness and impact of universities in agricultural development, to name a few.

These have all demonstrated that a strong gender component is central to these project designs and implementation strategies and can guarantee a positive long-lasting impact on both the beneficiaries and implementing institutions.
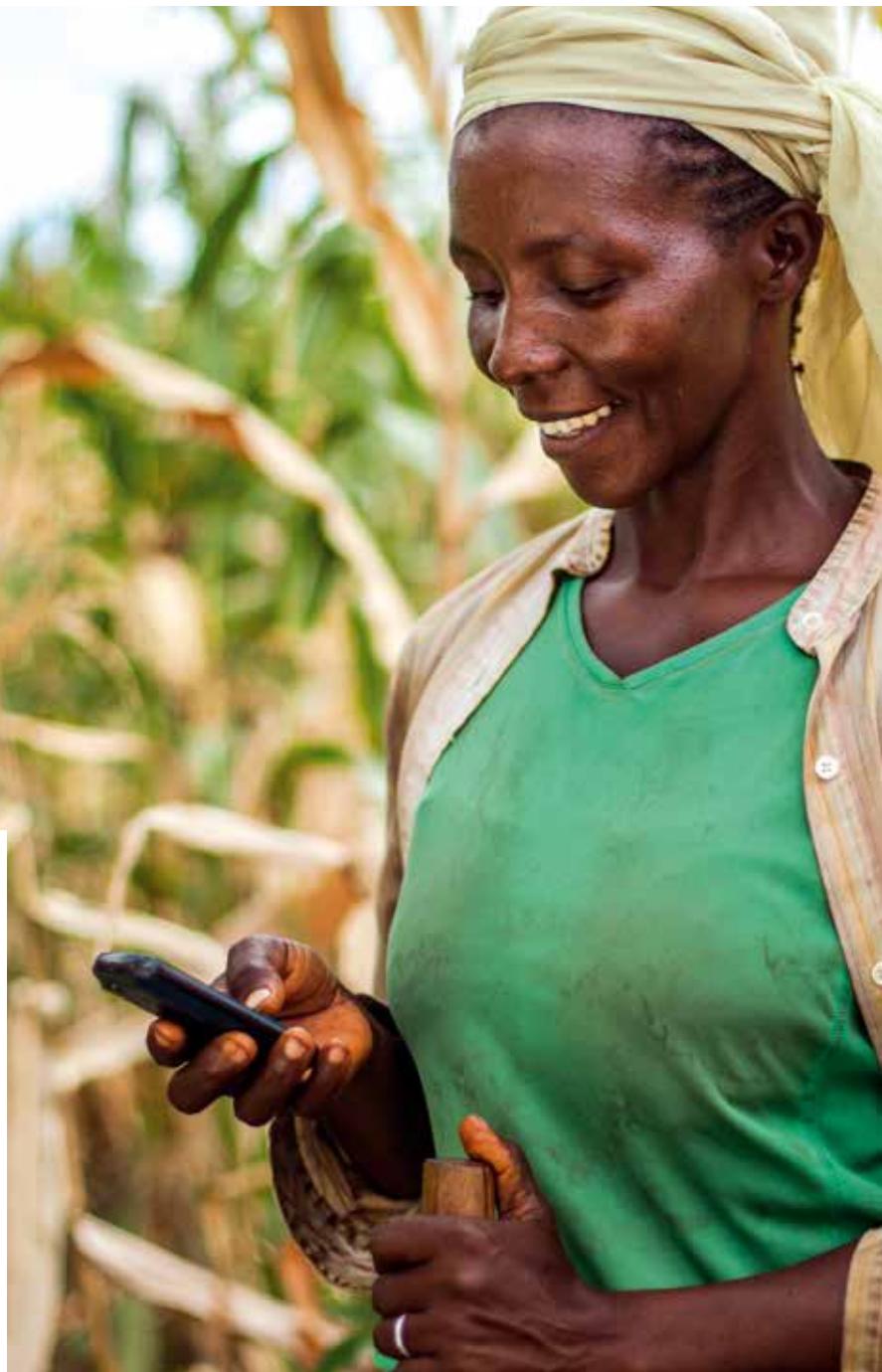
The various projects implemented by WOUGNET and partners have resulted in both increased production of improved varieties, as well as the improvement of women farmers' ICT skills. This was evidenced in recent project evaluation findings, whereby women farmers have reported a boost in confidence in the use and application of ICT tools that link them with researchers, as well as buyers of their produce through enhanced use of Smartphone technology and applications on pricing. Additionally, women farmers are now better able to produce quality seeds on their own due to various training and capacity building on mitigating post-harvest losses amongst others. Combined, these initiatives have had a positive impact on increase household income, which has improved standards of living for many women farmer-led households and enabled them to provide other essential needs, such as paying school fees for their children.

In WOUGNET's view, the ability of farmers, and particularly women farmers, to participate in and benefit from growth in the agricultural sector is linked to their ability to adopt new practices and knowledge, including technology, to solve problems and to set themselves dynamically in all key stages of the agricultural sector value chains. Enabling easy access to agricultural information through the use of various information and communication technologies is key, as the intended result is women empowerment and ultimately community development. For this, farmers - both men and women – need to be connected to communication channels that allow for easy and free flow of appropriate information. They also need to be encouraged to utilize these channels to share their experiences and expertise. After all, access to information and knowledge creation are key drivers of social and economic transformation, especially in the agricultural sector, where new information fuels innovation and increases productivity. ●

About the author

Dorothy Okello PhD is Chairperson of Women of Uganda Network (WOUGNET) She is Africa's first-ever Digital Woman of the Year and also won the Women Achievers Award for her service in empowering women and girls through Science and Technology in 2012. http://wougnet.org/home/

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[3] This tool was designed by the Association for Progressive Communications (APC) as an evaluation tool for ICT related empowering project

Women Leadership at the Head of the Pan-African Farmers' Organisation: the Integrated Rural Development Strategy

Fatma Ben Rejeb is the Chief Executive Officer of the Pan-African Farmers' Organisation (PAFO). PAFO is a network of Farmers' Organisations across the African continent that aims to improve communication, collaboration and information/knowledge sharing among stakeholders. It is Africa's first continent-wide farmers' organisation and is an important instrument for rallying direct farmer engagement on Africa's growth and development agenda. Fatma spoke to ICT Update about PAFO's work with women and digitalisation.

Q *What role do women play in the vision of PAFO (Pan-African Farmers' Organisation)?*

As you know, women have a significant place in agricultural production and processing in Africa. All our members are aware of this, and have support activities for women producers and processors, in both the formal and informal sectors.

The PAFO Constitution assigns women a seat on the PAFO Board of Directors. Moreover, our gender strategy in support of rural women was developed in an inclusive manner and was the subject of broad consultations.

With some of our partners, we are working to create a network of women entrepreneurs and to set up meetings with donors, investors and technology providers. We also develop funding projects and approach donors.

In our youth strategy, we also have a significant number of young women who are active in the rural and agricultural sector.

Q *As CEO of PAFO, what are your objectives?*

My aim is to encourage as many women as possible to apply for management positions and to strengthen their management and administrative skills. We need to lay the foundations for the next generation, with a good example given by the EAFF (Eastern African Farmers' Federation), whose current president is

a young female entrepreneur. I count on her, and on the women leaders in all the regional networks, to lead the way.

Even though most of the elected and leadership functions are still held by men, the members of African organisations support women and encourage them in their progress. However, traditions remain entrenched and it remains difficult for some rural women to establish themselves as leaders.

Q *How is digital technology integrated into your strategy?*
It's obviously a priority. We work in close collaboration with the CTA and Agricord on issues of integrated rural development. We cannot talk about sustainable development nowadays without taking digital dimensions into account. We'd like to strengthen the adoption of information and communication technologies, and the involvement in digitalisation, of an increasing number of women producers and processors so as to optimise their production, reduce post-harvest losses, and improve marketing.

The aim is to connect and network all of our members. In order to achieve this, digitalisation remains an important tool, particularly for accessing information, statistics, market data, prices, etc. Different partnerships then need to be studied and tested. Drone applications in support of cooperatives in rural areas have proved very effective. However, we need to bear in mind that more than 80% of farms are small and family-run. Our strategies need to reflect this reality by offering affordable solutions.

All of our networks are aware of digitalisation. We advocate support for grass-roots projects that support digitalisation for agricultural development and take into account the realities in rural areas.

Q *Have you noticed a difference in adoption of digital tools between men and women in agriculture?*
No, there is no difference. However, it's important to note that the rural world is divided into three categories, whose relation to digital varies enormously:
• Producers who have no formal education, for whom we need to provide support. It's even more difficult for women because the weight of tradition, or the family's financial constraints, often bring their education to a premature end. However, for anything to do with

digital, we need intensive support, irrespective of gender.
• Graduates: they have the knowledge and the skills. The challenge here lies in the need to create the necessary environment and infrastructure to convince them to stay in rural areas. They can then inject life into the environment and contribute to its development;
• Entrepreneurs in the sectors of production, processing and services linked to agriculture: for this group, many of whom are already successful through their own efforts, it is essential to scale up and adapt techniques to their own farms.

Q *Can you give us some examples of good practices or inspiring experiences that could be replicated through PAFO and the regional networks?*
We identify and document success stories in the different regions through Continental Briefings. We then look for funding to scale them up, as there are insufficient resources at farm level.

Here are some examples:
• In West Africa, a young woman entrepreneur launched her own business (Kati Farm) in Uganda. First, she developed ways for drying fish more effectively before setting up a cooperative that produces fish sausages both for domestic markets and for export.
• In Central Africa, a women's cooperative in Cameroon, SOCOOPMATPA, works on processed cassava products. Thanks to the partnership consortium between PAFO, CTA and Agricord, and after working to improve quality, this cooperative has signed agreements with a number of chefs who now use its processed cassava products in their hotels and restaurants.
• In West Africa, scientific research has supported women processing soya into milk; helping them to develop a technique to preserve the milk for up to six months.
• In Southern Africa, the Lakeshore Agro-Processing Enterprise (LAPE) in Malawi is managed by a young woman who works in agricultural processing (sunflower, soya, cassava).
• In North Africa, several women entrepreneurs head farms or processing companies in Tunisia. In addition, several women's cooperatives in Morocco work in the processing of argan oil.
These examples should inspire us, and we have to promote and capitalise

the experience. I'm thinking in particular of "Access Agriculture". They showed us how much can be done, even with a limited budget, through short films of 3, 4, 5 minutes, which have now been translated into several local languages. It's amazing! My challenge is to set up this type of communication within PAFO by strengthening our knowledge management spaces. Today, all you need is a small battery and piece of white cloth to show a video in a rural village using a "smart projector". Donors are not aware of everything that is being achieved and using video to show examples implemented in the field is a great way to promote them.

Q *What do you feel is the greatest challenge for women in agriculture?*
From education to training, through access to the means of production, to land, water, funding - everything is difficult for women.

Walking 10km a day to fetch water is not a dignified life! In the framework of the CAADP (Comprehensive Africa Agriculture Development Programme) from Maputo (2003) to Malabo (2014), African heads of state have promised to allocate 10% of their budget to agriculture, yet major infrastructures are the only ones to benefit. Investment in rural development is inseparable from agriculture. It's not just about building roads, but ensuring a dignified way of life, especially for women for whom inequalities persist in access to land, to education, to health, all in addition to the difficulty of their tasks. This is why we need a strong and mindful civil society, which ensures the inclusion of women. However, even with the best will in the world, this civil society is not a substitute for the state. ●

We advocate support for grass-roots projects that support digitalisation for agricultural development and take into account the realities in rural areas.

Resources

Gender and ICTs: Mainstreaming gender in the use of information and communication technologies for agriculture and rural development

FAO has published a report that looks at the benefits of Information and Communication Technologies (ICTs) when for men and women working in agriculture and in rural areas. The report analyses the challenges still to be overcome and makes recommendations.
https://bit.ly/2ERvYMw

The reduction of women's work burden in agricultural production.

FAO's publication describes the role women play as farmers, fishers, forest dwellers and/or livestock keepers. In order to address women's low use of technology it proposes development approaches that encourage more engagement among key players at the national level
https://bit.ly/2zHrYt3

Value4Her:Strengthening Women's Agribusiness Enterprises In ACP Countries

VALUE4HER is an ACP wide programme aimed at increasing value for women from agribusinesses through market access, improving knowledge, skills and networks and global advocacy aimed at addressing some of the key barriers for women's empowerment in agriculture.
https://bit.ly/2EaALYk

Sizing the mobile gender gap

GSMA's 2018 Mobile Gender Gap Report looks at mobile access & usage in low - and middle-income countries in an effort to "reduce the gender gap in mobile internet and mobile money services and unlock significant commercial opportunities for the mobile industry and socio-economic benefits for women."
https://bit.ly/2kOr8D0

Bridging the Digital Gender Divide: Reaching Rural Women through Mobile

An article describing five lessons in reaching rural women through mobile.
https://bit.ly/2AL7sHJ

Going Digital: Sustainable Development for Women in Agriculture

In this video, CTA and its partners, discuss the very important topic of women's access, use and participation in digitalisation for Agriculture at the 2018 European Development Days.
https://bit.ly/2BONgXj

Catalysing Actionable Knowledge to Make Next-Generation ACP Agriculture Work for Women

CTA partners and experts contribute on key insights and synthesise lessons on what really works for next-generation ACP agriculture and rural development. The workshop resulted in a series of publications to engage and inform policies and practices
https://bit.ly/2ARvIb3

No Ceilings: The Full Participation Project

The Bill & Melinda Gates Foundation and the No Ceilings initiative of the Bill, Hillary & Chelsea Clinton Foundation have gathered and analysed the gains made for women and girls over two decades (1995 – 2015), as well as the gaps that remain.

They provide an interactive map with data visualisations that gives a comprehensive view of global data on women and girls the 20-year period. By selecting different indicators from the six themes, you can measure both progress and setbacks in different countries.
Interactive maps https://bit.ly/2zCgiYI
Full report https://bit.ly/2FWhOdw

Gender and Open Data: Is there an app for that?

A past ICT Update article looking at the importance of ensuring that open data is gender disaggregated; that the term 'citizen' is broken down into gendered sub-categories when it comes to voice and participation, and that efforts to address information asymmetries go hand in hand with efforts to address 'empowerment asymmetries'.
https://bit.ly/2mOO87t

Is open data working for women in Africa?

This report from The World Wide Web Foundation "maps the current state of open data for women across Africa, with insights from country-specific research in Nigeria, Cameroon, Uganda and South Africa with additional data from a survey of experts in 12 countries across the continent."
https://bit.ly/2NTBLl7

The gender and open data intersection

In this video, the World Wide Web Foundation's Ana Brandusescu discusses open data through a gender lens, and address the current state, challenges, and recommendations to pave the way forward.
https://bit.ly/2BMFJbs