BRIEFING PAPER

GENDER MAINSTREAMING IN ICT FOR AGRICULTURE

INTRODUCTION

Women farmers experience a lack of access to resources globally—in the form of production inputs, labor, credit, training, and information. Their enormous contributions to food production, subsistence farming, and the agricultural labor force in the developing world means that ensuring gender mainstreaming in information and communication technology (ICT) is a priority for global food security. It is also central to a global development agenda based on human rights and effective and sustainable development outcomes.

The USAID Gender Equality policy places gender equality and female empowerment at the core of its development objectives. It is based on the recognition that no society can develop successfully without providing equitable opportunities, resources, and life prospects for both males and females so that they can shape their own lives and contribute to their families and communities. Of particular relevance to this discussion is the USAID goal to reduce gender disparities in access to, control over, and ability to benefit from resources, wealth, opportunities, and services—economic, social, political, and cultural.

Ensuring gender equality in agriculture involves ensuring the empowerment, agency, and inclusion of women in the agriculture sector. It means identifying ways to overcome the obstacles and constraints women face, and understanding the connections between women's empowerment, food security, and agricultural growth. The Women's Agricultural Empowerment Index is an example of this approach. It measures the roles and extent of women's engagement in the agriculture sector in five domains: (1) decisions about agricultural production, (2) access to and decision making power over productive resources, (3) control over use of income, (4) leadership in the community, and (5) time use. It also measures women's empowerment relative to men within their households. Work such as this provides a picture of the larger set of gender equality issues around agricultural production and food security. ICTs have the potential to facilitate the increased engagement of women in each of these domains.

This briefing paper addresses these and related approaches in ICT services for agriculture that support sustainable practices and promote gender equality.

CHALLENGES

Agriculture continues to be the main source of rural employment for both women and men in sub-Saharan Africa. Women make up 43 percent of the formal agricultural workforce globally. In most of the world, rural women are more likely to be engaged in self-employment (and thus less likely to be wage earners) than rural men. Women also tend to have access to fewer resources than men, such as agricultural inputs, credit, information, technology, and training/extension. A lack of female-targeted extension services are a major barrier for women farmers. Females make up only 15 percent of extension workers worldwide. Women often feel uncomfortable interacting with male extension agents, and male extension agents will sometimes overlook female farmers. A lack of female extension workers means that understanding women's perspectives, concerns, and abilities is often missing from agricultural knowledge exchange. Also, as females are traditionally more home-bound in rural areas, they often have fewer opportunities to actively participate in extension activities. As a result, extension services to date have tended to focus heavily on tasks and products dominated by men.[1]

As a result of these challenges, in Ghana, women are nearly 40 percent less likely to apply fertilizer than men, in India, women-headed households with land are 25 percent less likely to receive an extension visit, and in Kenya, women are three times less likely to obtain formal credit. Globally, women's landholdings are three times smaller than men's and in many countries they do not have land or property rights.[2] Women and men also have differing crop, household, and livestock management responsibilities. ICT will only address gender issues in agriculture if the content and format are tailored to provide information, access, and services that consider women's and men's differing interests and needs.

A range of barriers also exists to women's access, control, and use of ICTs, which have implications for the efficacy of ICT-based agricultural services. These are causing a "gender divide" that sees male access and ownership of ICTs exceed women's in the majority of countries globally.[3] They earn less money and are less likely to

---

[1] Harvey, Jeannie (2012). Extension agents: Why does it matter if they are male or female?
[2] IFAD (2011). Women and rural development.
[3] See http://www.itu.int/ITU-D/ict/.

buy ICT hardware, access, or training. Even in the case of mobile phones, which tend to be more accessible to women because of their cost and flexibility, women tend to be disadvantaged. In low-to-middle income countries a woman is 21 percent less likely to own a mobile phone than a man—a figure that increases to 23 percent if she lives in sub-Saharan Africa. In Rwanda, mobile phone owners tend to be wealthy, better educated, and male, while in Asia, women use "more than voice" options on their phones 14 percent less than males.[4]

Reasons for these disparities vary. Women in general have lower levels of literacy—they are two-thirds of the global non-literate population. Women's double day of family and production responsibilities means they work on average more hours per day than men worldwide. The global gender work gap is 2 hours and 28 minutes per 24-hour day, with significant divergence across countries. In South Africa women spend almost 4 hours per day on unpaid work compared to approximately 1.5 hours for men.[5] Women also earn less, tend to work in the non-formal sector, and tend to use their income for education and health of their children.

Challenges experienced in integrating women into the Community Knowledge Worker initiative in Uganda illustrate some of these barriers. The project trained local people to act as agricultural information mediaries in their communities. It proved difficult to identify women who met the minimum educational, language, and literacy requirements, since their higher labor

demands in the field and household left them with less time for training and infomediary activities. The average CKW puts in 10 hours of work per week, but it was found that female CKWs incurred greater costs in both time and money. Juggling CKW duties with household and farm responsibilities added extra time to their day, particularly when travel was required to conduct surveys. Female CKWs incurred additional financial costs because of the need to hire labor for household or farm activities in their absence. Finally, some female CKWs had less control of the mobiles provided than their male counterparts—many were required to share project airtime with their husbands.[6]

OPPORTUNITIES

Although they can be inhibiting, when these barriers for women's effective use of ICTs are addressed, the potential for impact is large. ICTs support access to production resources. They improve access to markets, pricing, and crop information, and increase contact with other points in the knowledge, value, and supply chains. The FAO estimates that when women have equal access to productive resources their farm output can increase by 20–30 percent, potentially raising agricultural output by 2.5–4 percent in developing countries and reducing global hunger by 12–17 percent (or 100–150 million individuals).[7] ICTs also decrease the time and cost of travel, as well as risks posed to women on long-distance trips. Women value these benefits: in Uganda, female farmers were more likely to use mobile phones to access agricultural information than men, even though they used the phones less overall.[8] The additional value of mobile phones is they allow farmers to

bypass the middleman entirely and charge higher prices for their goods. Other benefits of ICT use include expanded business and social networks as well as access to literacy training and reproductive health information. Gender equality benefits also occur. Many female entrepreneurs report increased influence in decision making on education, health services, crop management, and income allocation. Greater self-esteem and an increased sense of agency and security are also reported. In 2010, the GSMA and Cherie Blair Foundation for Women found that women using mobile phones experienced a sense of increased security (93 percent), greater independence (86 percent), and increased income and professional opportunities (41 percent).[9]

Important opportunities exist both in working with women's collectives and with individual women. ICTs can support female farmers to form production cooperatives and increase their profits. In Congo, a group of women farmers used computers to access and exchange agricultural information over email and Internet. They were able to source high-quality seeds from other countries and expand their information, networking, and market base. The increased income and status resulting from these benefits increased their influence in the household and the community.[10]

PREREQUISITES

Implementing gender-sensitive ICT services that women value and can use effectively will increase their access to production resources for agriculture. To do this, a range of prequisites will need to be in place to overcome gender barriers. The table on the following page presents examples of how innovative and flexible ICT approaches are accomplishing this.

[4]Blumenstock, J. E. and N. Eagle (2012). Divided We Call: Disparities in Access and Use of Mobile Phones in Rwanda. *Information Technologies for International Development,* 8 (2), and Zainudeen, A. and D. Ratnadiwakara, 2011. Are the Poor Stuck in Voice? Conditions for Adoption of More-Than-Voice Mobile Services. *Information Technologies for International Development,* 7 (3)
[5] Miranda, V. (2011). Cooking, Caring and Volunteering: Unpaid Work Around the World. OECD Social, Employment and Migration Working Papers, 116.

[6] World Bank (2011). ICT in Agriculture: Connecting Smallholders to Knowledge, Networks & Institutions. Washington DC.
[7] Food and Agriculture Organization, 2011. The State of Food and Agriculture. Women in Agriculture: Closing the Gap for Development. Rome: FAO.
[8] Masuki, K., et al (2010). Role of mobile phones in improving communication and information delivery for agricultural development: Lessons from south western Uganda.

[9] GSMA Development Fund and Cherie Blair Foundation for Women (2010). Women and Mobile: A Global Opportunity.
[10] Association for Progressive Communications (APC) (2010). GenARDIS 2002-2010: Small grants that made big changes for women in agriculture.

Prerequisite	Why/What?	Innovative examples
Meets women's pricing constraints/cost barriers	Women have lower levels of income and access to resources. They value affordable access as well as ways to increase their income.	• SMART (Philippines) provides Panolo Phone, a low-cost mobile with cheap airtime top-ups. It comes with an FM radio, a flashlight, calculator, access to a mobile money service, and a trial subscription to a job referral service.
Meets women's resource and education constraints	Technologies should take into account issues of illiteracy, lack of comfort with technology, and cost effectiveness. Strategies include providing options for non-literates, being easy to use, integrating into existing networks, and utilizing different ICT channels.	• Enhancing Access to Agricultural Information, WOUGNET (Uganda) supports two-way linkages with women farmers through radio, SMS, audiotape, videotape, CD-ROM, and local notice boards.
Helps women achieve their life and business goals	Long work days, lack of resources, and their family responsibilities lead women to choose options that are perceived to improve their workload, quality of life, children's health and education, and increase incomes.	• Cell phone use and reselling of airtime by women's farming cooperatives in Lesotho increased their income and public profile so that members have been able to participate in agricultural shows, trainings, and conferences through national programs to encourage small-scale farmers.
Uses a reliable and affordable power supply— solar, renewable, wind-up radios	Women make up the majority of population in rural areas in most regions, with less access to reliable power. Decreased earning power leaves them vulnerable to poor energy access.	• Community Listening Clubs in Niger encourage women to call local radio stations over their mobiles with questions and comments for local broadcast. Solar/wind-up radios and solar-charged mobile phones provide consistent access in remote areas. • The Turning Ox, used by Radio Maigaro (Central African Republic) and the Mobile Power bicycle phone charger (Uganda) are examples of renewable power generation.
Improves efficiency through time and money saved	Women need to reduce transaction and travel costs to increase profits and make their enterprises more productive. They do not have the same access to producer organizations, technical support, and capacity building.	• Market Extension and Mobile Phones for Women Chicken Farmers (Bangladesh) provided women farmers new leverage with a local trader and allowed them to increase the volume sold. Prices increased by 60 percent and prompted expanded production. • FEPPASI (Burkina Faso) provided female farmers with computers and training to manage their revenue-generating activities more efficiently.

LESSONS LEARNED

To ensure gender mainstreaming in the use of ICT for agriculture, project designers and implementers should consider four main lessons learned before moving forward:

1) A gender analysis of opportunities, roles, and access to resources in relation to choice of ICT and services is essential. Experience shows that unless specific efforts are made to consult women and identify the restrictions they face, they will be marginalized. Analysis should assess men's and women's roles and locations in the agricultural value chain and their differential access to resources including ICT.

2) A gender and ICT analysis will identify the services required to support women and men. What do women and men use or need ICT for? Do women have control over the technology or are they reliant on husbands or friends? Are they subscribers, pay-as-you-go, or cybercafe users? Can ICTs build on existing information networks? Are text-based or voice services most useful? What fees are women users willing to pay?

3) A gender and ICT-based agricultural analysis looks at how an ICT service can support targeted needs, while identifying related needs. For example, whether or not women own the land they are working will affect production techniques and income security. Smallholder farmers are much more likely to be able to use market price information to decide when to sell if they have viable ways to store their harvests with minimal losses. Women, who tend to have less access to extension and technology, may need supplemental support to improved drying and storage techniques.

4) Electricity and Internet/mobile coverage can be intermittent or spotty. This may require alternative energy sources and innovative strategies to transmit information beyond the Internet or mobile hub. MP3 players, low-cost video, radios, and village bulletin boards are all strategies to extend ICT networks.

Potential concerns in the form of unintended consequences and increased opportunities for harassment and control can result from women's use of mobile phones. Women can be accused of promiscuity if they own or use a mobile. The GSMA mWomen Programme found that 64 percent of Base of the Pyramid women in their surveys—particularly those in Uganda and Papua New Guinea—said that ownership or use of a mobile phone "makes my husband suspicious." Such suspicions can lead to domestic violence, jealousy, and accusations of infidelity. Others report that men use their wives' phones to control them by tracking their activities and whereabouts. In Iraq, problems for women phone users include risk of sexual harassment, discomfort in dealing with male sales representatives and customers, and reluctance to speak with customer care agents who are generally male.

PROJECT EXAMPLE

The VIDIYAL–Commonwealth of Learning project on Integrating Mobile Phone-Based Learning and Credit for Women Livestock Producers in India is an example of an ICT for agriculture project that provided a range of direct and indirect benefits for women sheep and goat producers.[11] Some key aspects of the project included providing distance learning to women producers. Part of this learning took place via a mobile phone-based learning tool, allowing them to engage in other activities—such as going to work or performing chores—while learning. COL and VIDIYAL worked with the women to develop a business proposal in which each member would obtain credit to buy nine female goats, one buck, and one mobile phone. The local bank provided a loan of US$270,000 in the names of the participating members. VIDIYAL also convinced a mobile network operator to send audio messages to the women's phones free of charge and enable free calls among group members as a market building exercise. Some of the

participants were trained in developing audio content for mobile phones. The materials were developed in consultation with the Tamil Nadu Veterinary and Animal Sciences University and adjusted to the local culture and dialects.

This project addressed a range of gender barriers for agricultural production and ICT use, including:

- Women's time constraints and long work days
- Their particular production and learning needs
- Supporting needs, such as access to banking and loan services, and improved communications with other producers and clients
- Local language and non-literate solutions
- Improved knowledge and skills to provide them with new opportunities

As this example shows, ICT for agriculture projects need to understand and take into account some of the critical barriers for women to participate and benefit fully. The World Bank-defined "Entry Points for Gender in ICT for Agriculture Projects" is a framework for ensuring that ICTs help female farmers to overcome challenges in access to agricultural resources and improving production.[12] The table on the following page identifies two main categories of blockage for female farmers that relate to: (1) gender differences and inequalities in agriculture; and (2) the need to improve access to agriculture services and agribusiness. Model ICT solutions are presented as examples of how these challenges can be overcome.

---

[11] Rudgard, S., et al. Module 6: ICTs as Enablers of Agricultural Innovation Systems.

[12] World Bank, Topic Note 4.1: Entry Points for ICT and Gender in Agriculture.

1. Gender differences and inequalities in agriculture	What is the challenge?	ICT solution
Access to productive resources	Women have consistently lower access to agricultural inputs, technology, training, education, and finance.	• GRAFED (Democratic Republic of Congo) supported women farmers to use computers to access high-quality seeds and production inputs.
Mobility and time constraints	Their extended work day means that women are looking to save time. They also tend to experience barriers to travel for reasons of cost, time, and security.	• Zambia National Farmers Union's SMS-based service allows farmers to coordinate their delivery times and organize a single location for traders to pick up goods in bulk. This saves time in travel to the Lusaka market.
Lack of access to income	Women's income is lower worldwide and they tend to work more in the non-formal and unpaid sectors.	• CROMABU (Tanzania) supported a women's collective to change their activities from subsistence to commercial farming through knowledge on crop techniques and access to new markets.
2. Improve women's access to agriculture services and agribusiness	What is the challenge?	ICT solution
Coordination with actors in the value chain	Women are in need of improved coordination with other producers, suppliers, and clients, and in need of contact and increased leverage with traders and middlemen. They often are left out of extension systems; agents are generally male.	• FEPPASI (Burkina Faso) provided female farmers with computers and training to present their interests, activities, and concerns in the local farmers organizations more effectively; • KenCall Kenya Farmer Helpline, "M-Kilimo" trains women as call center operators, consultants, and infomediaries.
Transparency in governance, business registration, and land administration	Ensuring access to legal and registration services and decision-making bodies; educating women about their rights; guarding against and reporting property seizure and disinheritance by relatives of female-headed households.	▪ The Togo Union des groupements des femmes (Association of rural women's organizations) uses the internet and mobile phones to inform women of their property rights.
Sex-disaggregated agricultural data	Shows to what extent women are participating and benefitting from an initiative; important to note whether women access or control/own the technology.	▪ A report by the GSMA Fund's mAgri program on IKSL's (India) "Green SIM" found that women were only 13 percent of direct users. As a result it initiated targeted activities to reach women farmers.
Control over income and access to financing	Critical lack for women; sex-disaggregated data and transaction records can provide a basis for credit applications; need to provide a tool for economic autonomy accessible to poor women.	▪ M-banking in Malawi allows women entrepreneurs to manage their money anywhere, avoiding risks in carrying cash to banks, saving transportation costs and time, and allowing them control of their own income.

SUSTAINABILITY / SCALABILITY

Ensuring sustainability and scalability of ICT for agriculture services will require, first of all, that women perceive concrete benefits from using the service to the extent that they are willing to invest money and/or other resources. This involves ascertaining, providing, and measuring what constitutes real value to female users, including use of market research techniques. For example, Grace, a participating farmer, is willing to pay for SMS messages sent by the Zambia National Farmers Union on agricultural pricing. They allow her to access the best prices for her goods and to save money on transport by allowing her to find the most economical option.[13]

Strategies for sustainability of services include combining free and fee-based services. Working with the private sector to understand the potential for profit in serving rural women farmers is another option. The GSMA mWomen initiative is working with mobile network operators in the developing world to assess the potential of the underserved women's market and to test the combination of services and technologies that will service this market effectively and profitably. Developing technology and services that meet the concerns and interests of female farmers so that they are willing to pay for and maintain access to a service is a critical component. Finally, community and collective ownership and management are important entry points for sustainability. In one case, cell phones distributed to women's farming cooperatives in Lesotho were provided ZAR500 (US$60) of airtime, three-quarters of which could be sold to other members of the community.[14] The phones improved

communications, access to market pricing, and decreased the need for transportation. The cooperatives were also able to buy additional airtime at discounted prices for sale in the community. This was so successful that one group purchased four more phones to distribute to its members. Reinvestment of proceeds allowed many cooperatives to branch out into new businesses such as cattle farming or tourism.

In another example, the Crop Marketing Bureau (CROMABU) in Tanzania set up a website to provide information on crops, goods, and prices. A number of women's business groups used these resources to increase incomes and find contacts and information to upgrade their production techniques. As a result of the CROMABU initiative, the Isandula Women's Group changed their activities from subsistence to commercial farming and currently sells mushrooms—a high-demand crop—in the nearby urban centre of Mwanza City.

CONCLUSION

Serving the needs and interests of female farmers with ICT services poses an area of great potential for increasing food security globally, promoting gender equality and women's empowerment, and achieving global development goals. Key strategies include:

- *Use simple and flexible approaches* that are affordable, appropriate for the local context, and incorporate non-text options.
- *Don't reivent the wheel.* Build on existing communications, social, and business networks.
- *Do a gender analysis*. Understand that women and men have different needs, interests, goals, and resources.
- *Work with women's producer and cooperative organizations.* They provide the greatest potential for sustainability of initiatives and promotion of women's empowerment.

- *Educate husbands and fathers* about the benefits that will accrue to the entire household as a result of ICT use—in income, security, education, and food production.

RESOURCES

Association for Progressive Communications (APC), 2010. GenARDIS 2002-2010: Small grants that made big changes for women in agriculture.

World Bank, Gender in Agriculture Sourcebook.

Food and Agriculture Organization, 2011. The State of Food and Agriculture. Women in Agriculture: Closing the Gap for Development. Rome: FAO.

GSMA mWomen Programme, 2012. Striving and Surviving: Exploring the Lives of Women at the Base of the Pyramid. London.

Martin, Brandie Lee and Eric Abbott, 2011. Mobile Phones and Rural Livelihoods: Diffusion, Uses, and Perceived Impacts Among Farmers in Rural Uganda. *Information Technology for International Development,* 7 (4), p. 17–34.

World Bank, 2011. ICT in Agriculture: Connecting Smallholders to Knowledge, Networks, and Institutions. Washington, DC: World Bank.

Women's Empowerment in Agriculture Index, International Food Policy Research Institute.

DIMITRA Newsletter – Rural Women, Gender and Development.

DISCLAIMER
The views expressed in this publication do not necessarily reflect the views of the U.S. Agency for International Development or the U.S. Government.

---

[13] World Bank (2011) ICT in Agriculture Sourcebook, Module 8
[14] Vincent, K., et al. (2009) Ever Upwardly Mobile: How do Cell Phones Benefit Vulnerable People?