Module 4: **EXTENDING THE BENEFITS: GENDER-EQUITABLE, ICT-ENABLED AGRICULTURAL DEVELOPMENT**

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**IN THIS MODULE**

**Overview.** Although information communication technology (ICT) provides powerful tools for spreading valuable agricultural information and thus boosting productivity and incomes, it is important for projects that use ICT to carefully consider gender equity during planning and implementation. This module discusses how socioeconomic and cultural factors can affect access to and use of ICTs and offers strategies for the equitable introduction of ICTs.

**Topic Note 4.1: Entry Points for ICT and Gender in Agriculture.** After highlighting key gender differences and inequalities, this topic note discusses ways in which ICTs can help even the playing field in the agricultural sector. ICTs can benefit women directly, through greater access to information and services, or indirectly, by improving the efficiency and transparency of systems already in place, such as government regulatory bodies or supply chains.

- Community Knowledge Worker Initiative in Uganda

**OVERVIEW**

The resurgence of agriculture on the development agenda has come with the recognition of the need to engage the full range of actors to reduce food insecurity and poverty, from men and women smallholder farmers to multinational food corporations. There is now broad consensus that bolstering the participation and position of smallholder farmers in agriculture is key to economic growth in developing countries. Smallholder farmers are not an undifferentiated group, and the process of their integration must account for the differences in their assets, knowledge, and capabilities if the most gains are to be made. Specifically, investments in smallholder farmers and other stakeholders must account for gender inequalities and the differences between men and women that constrain growth and reduce opportunities for improving the livelihoods and well-being of rural and urban poor populations.

While both men and women contribute to the sector, they do so in different ways as a result of differences in their access to productive resources, their beliefs and perceptions about appropriate work for them, and other factors that limit their full participation. This observation is widely acknowledged and supported by empirical evidence that underscores why addressing gender issues is important for inclusive agricultural development. Empirical evidence includes:

- Asset inequality has been shown to have negative impacts on growth in the agriculture sector (Birdsall, Ross, and Sabot 1995; Deininger and Squire 1998; Sabates-Wheeler 2004.). This includes differences in men’s and women’s access to land, labor, inputs, and human and financial capital. These inequalities reduce the potential total gains in yields and output by an estimated 20–30 percent and 2.5–4 percent, respectively (FAO 2011).

- Women are important actors at multiple levels of the agricultural value chain as unpaid family workers, wage workers, traders, and entrepreneurs. According to recent estimates, women comprise 43 percent of the agricultural labor force worldwide. This percentage however, masks regional variations and differences across and within countries. For example, in Sub-Saharan Africa and East Asia they make up 60 percent of the agricultural labor force (FAO 2011). Given this high rate of participation, it is clear that harnessing women’s full potential would have a significant impact on agricultural growth.

- Abundant evidence shows that increasing women’s access to income has beneficial human capital development effects through investments in the health and education of children (Quisumbing 2003; Ranis, Stewart, and Ramires 2000; Smith et al. 2003).
Reducing the barriers that limit women’s access to income and supporting gender equality are therefore important for improving well-being and reducing the nonmonetary dimensions of poverty.

In recent decades, ICT tools have been heralded for their ability to reduce transaction and information costs. Development programs are attracted to the potential ICTs embody for bringing technology solutions to poverty reduction. The objective of this module is to explore the interplay between gender issues and ICT applications in agricultural development. It considers the full range of ICT applications—from well-established technologies, such as radio and television, to more recent innovations in mobile technologies and applications. Given the explicit focus of this module on gender categories, it begins with a short overview of gender issues in agriculture, which is followed by a discussion of how gender inequalities affect the applicability and use of ICTs. The module concludes with an Innovative Practice Summary that describes how the Community Knowledge Worker program in Uganda is attempting to reach both men and women farmers.

Gender Dimensions of ICTs

The advent of new ICTs and applications creates new opportunities for men and women in agriculture. Nonetheless, challenges remain. ICTs do not inherently reduce inequalities. The “digital divide” exists because men and women within and across developed and developing countries have different opportunities to use and access ICTs. Access and use of ICTs is determined by the availability of the physical infrastructure on which ICTs depend as well as socioeconomic factors such as knowledge and skills, which are often mediated by gender, class, and race. Generally, rural women in developing countries are among those who have the least access to ICTs, a result of constraints (see box 4.1) that affect them with greater intensity than other groups are affected.

The potential for ICTs to be effective in facilitating women’s entry into and performance in agricultural development depends on whether they are designed to accommodate men’s and women’s different capabilities and opportunities. Differences in education and literacy between and among men and women will limit the effectiveness of certain ICTs. Although the global literacy rate for adult and young women has increased over the last decade and stands at 79 percent and 87 percent respectively, significant disparities persist at the regional level (image 4.1). In Sub-Saharan Africa and South-Central Asia, the gender gap in adult literacy ranges from 7 to 24 percentage points. Roughly 70 percent of young women and 79 percent of young men are literate in Africa (United Nations 2010, 45–47). With the proliferation of audio- and video-based technologies, there are more alternatives to literacy-dependent content and technology. The Sustainable Tree Crops Program in Ghana delivers training to cocoa

**BOX 4.1: Key Constraints Restricting Women’s Access to ICTs**

- Lack of financial resources to secure the use of ICTs
- Higher levels of technological and language illiteracy among women and girls
- Norms that discourage women and girls from using technology
- Lack of control over and ownership of technology

Source: E-Agriculture and GenARDIS 2011.

**IMAGE 4.1: Levels of Literacy Affects Women’s Participation in Agriculture Learning**

Source: Ray Litlin, World Bank.
ECONOMIC AND SECTOR WORK

farmers using the Farmer Field School methodology and Video Viewing Clubs. Illiterate and semi-literate women farmers are the primary target for the video clubs. The clubs host facilitated discussions that are complemented by a 10–15 minute video on a range of integrated crop and pest management topics. Thirty-two out of 56 video clubs were women-only clubs, and the remaining were mixed-sex groups (World Cocoa Foundation 2011; Chan 2010, appendix).

Greater integration of ICTs into information dissemination systems has the potential to reduce information costs significantly for both public and private entities. Since men and women are responsible for managing different crops and livestock and undertake different agricultural tasks, the potential for ICTs to address gender issues in value chains can only be achieved if the content is tailored to provide information and services that are relevant to women and men. As an example of why this is critical, extension services have failed to account for women’s information needs, focusing heavily on tasks and products dominated by men (FAO, IFAD, and ILO 2010). A better appreciation of the types of information needed is required. In addition, content for applications should be developed in local languages and use a variety of media, including text, audio, and video.

ICT use in value chains must account for norms that limit women’s access to, use of, and control over ICTs. Women may not have the same control as men over the radio dial, mobile phones, or the television, which can impede their ability to use these technologies for their own purposes. In Uganda, rural women form listening groups to gather for special radio programs produced by and for women (WB, FAO, and IFAD 2009). Resources to use ICTs can also be a constraint for some women. Recent research on mobile phone use, however, suggests that rural women will divert income away from other uses to pay for phones (GSMA 2010). This indicates that women value the benefits of mobile phones and suggests that using phones as a platform for delivering other extension and services could yield greater results.

ICTs cannot solve all the gender-related disadvantages women and men face in value chain development or in other agricultural activities, but they can alleviate challenges that are intensified by the constraints on women’s time and mobility. Women may not be able to frequent public Internet cafés, but mobile phones can provide an alternative means of gathering and exchanging information on market prices. Short message service (SMS) technology allows this information to be sent directly to women with mobile phones without requiring them to travel or interrupt activities.

KEY CHALLENGES AND ENABLERS

Despite the clear advantages that exist for using ICT to increase and extend agricultural innovation and improve coordination among different stakeholders, two specific challenges reduce the potential for ICT applications to contribute to gender-equitable agriculture development. First, smallholder farmers are often considered an undifferentiated group of beneficiaries, with the same needs and the same opportunities. Second, ICTs are assumed to be gender neutral, that men and women have the same ability to access, use, and control ICTs. Combined, these challenges present a different landscape of the potential opportunities and constraints to using ICTs to enhance agricultural gains; one in which gender plays a central role in determining how men and women participate in agricultural activities, access ICTs, and derive benefits from agricultural growth. Therefore, practitioners must carefully consider how to optimize the benefits of ICT in specific contexts where men and women may have different opportunities and capabilities. The following strategies and enablers focus on overcoming the challenges associated with using ICT in agriculture, with a specific focus on the gender implications involved.

Conduct a gender analysis to identify opportunities on how ICTs can enhance current practices. The analysis should describe where and how men and women participate in the specific value chain or agricultural activity. It should capture what information and services men and women need and how they are currently meeting those needs. It should also assess what ICTs are already in use and the type of access men and women have to them (direct or mediated). Sex-disaggregated data on education and income, as well as attitudes toward technology use should also be collected to help identify the most appropriate ICT application.

Develop appropriate content to meet the needs of women and men farmers. Women farmers’ needs and activities are often overlooked in the design of extension service and delivery. Their on-farm activities can differ from men’s by crop and livestock. Women and men take part in different production, processing, and marketing activities even when they are working in the same value chain. As a result, women and men farmers do not always share the same information needs. For ICT applications to improve the productivity of women and men farmers, it is necessary to ensure that appropriate content is developed for them.

Consider using a range of ICTs. While the inclination may be to find ways of integrating the most cutting-edge
technology into value chains, practitioners should recognize the infrastructure constraints as well as gender-based constraints that can limit the effectiveness of these technologies. Programs need to identify what ICTs are most appropriate for overcoming specific constraints and must avoid the temptation to design programs around ICTs. Using the radio arguably remains one of the most effective means of reaching farmers in the field because the infrastructure already exists. Reports indicate that combined ICT programming—using radio and mobile phone, might provide new opportunities for women (see IPS “Farm Radio International Involves Men and Women Farmers” in Module 6). Although there can be disputes over control of the radio, programming can be designed to interest both men and women farmers.

**Use ICTs to complement existing information channels.** Men and women farmers are already exchanging information. Often through word-of-mouth, farmers share farming practices, experiences with different inputs, preparation of different crops for consumption, and so on. Women especially rely on these channels because their time and mobility constraints often limit their exposure to new information providers. ICTs can support and enhance these information channels by providing access to expertise and more up-to-date information. In Uganda, the Women of Uganda Network (http://www.wougnet.org) relies on the strength of locally developed information channels to increase the audience for its services. Women’s groups are given a mobile phone and a radio cassette player that are used to listen to local agricultural radio shows, call extension officers, or share information between groups. Information is disseminated in the local language and the groups are encouraged to spread the word to other women farmers through word-of-mouth. The program has been successful in part because it worked within channels that were familiar to women; in this case, the radio and extension officers (GSMA 2010).

**Develop direct relationships with men and women farmers.** The most recent ICT innovations will fail to bring women into agricultural programs if leaders and practitioners are not intentional about engaging women directly. Buyers, extension agents, input suppliers, and other service providers must reward the appropriate individuals for their participation in the value chain. Because ICTs reduce overall transaction cost for firms, this can allow firms to invest more in developing relationships directly with their suppliers. Firms can contract men and women separately and, more importantly, ensure that payment is distributed to reward the man or woman responsible for the labor.

**Identify employment opportunities for women with agricultural-related ICT service providers.** The potential for women to find employment with agricultural-related ICT service providers should not be overlooked. Much of the literature reviewed for this module outlined the benefits of ICT applications for farmers, buyers, or the value chain as a whole. Little research exists that examines the potential for creating new ICT-related employment opportunities for men or women in agriculture. However, the research suggests at least two areas of opportunity for women. First, women can be employed as call center consultants and operators, for example, with M-Kilimo, delivering agricultural information to farmers. This may be a particularly attractive option for women agricultural extension officers who find it challenging to travel to remote districts to meet with farmers. Second, rural women should be recruited and trained at the village-level to act as information intermediaries for other farmers (see IPS “Community Knowledge Worker Initiative in Uganda”).

**Design two-way ICT programs to collect and disseminate information.** The transmission of information through ICTs must consider not only “pushing out,” but also “pulling in” information. In gathering data on farmers, it is critical to ensure that the data being collected are sex-disaggregated. This includes sex-disaggregated data to fill long-standing gaps in information on land holdings, productivity, and labor force participation. Although increasing the volume of agricultural data is important, a real innovation would be to make sure that the data are collected separately for men and women so that the data could be used to improve our understanding of the gender-based constraints and opportunities in agriculture. Establishing mechanisms for men and women to become cocreators of knowledge products will enhance understanding of innovation occurring at the local level or for capturing men’s and women’s climate adaption and mitigation strategies.

**Develop gender-equitable national or regional ICT policy.** The gender dimensions of rural infrastructure and the enabling environment are also important to consider; ICTs can only impact women’s lives if infrastructure reaches them and appropriate policies and programs are in place to address poverty and gender issues in accessing and using ICTs. Box 4.2 provides an example of policy recommendations for equitable rural infrastructure development.
For actors within the agriculture sector to equitably implement ICT solutions, it is critical that they understand the basic issues surrounding gender-related inequity within the sector. This topic note reviews key gender issues (for a thorough treatment of these issues, see the Gender in Agriculture Sourcebook, http://worldbank.org/genderinag) and discusses ways in which ICTs can be used to address these issues.

**Gender Differences and Inequalities in Agriculture**

As the following sections illustrate, gender disparities in the agriculture sector are prevalent and often quantifiable. These disparities tend to arise from a combination of socioeconomic and cultural factors.

**Gender Inequalities in Access to Productive Resources**

Relative to men, women generally have less access to land, labor, information, education and training, and inputs. Intra-household dynamics and social and legal institutions affect access to and accumulation of these resources by men and women. Access to land and secure property rights are critical to increasing agricultural productivity. Women’s ownership of land lags behind men’s around the world, and when they do hold land it is often of smaller size and lesser quality. Furthermore, access to land facilitates access to other inputs, producer associations, and contract farming opportunities. For example, women’s formal participation in contract farming is mixed and is constrained by lack of access to land and financial resources (Schneider and Gugerty 2010). As a result, it varies from one location to another. Research by Masakure and Henson (2005, cited in Schneider and Gugerty 2010) found that in Zimbabwe, 61 percent of contract farmers in vegetables were women. According to Dolan (2001), women made up only 10 percent of farmers in the fresh fruit and vegetable sectors in Kenya. Even when women have access or user rights to land, their access to labor, inputs, information, and training is less than men’s. Women have fewer resources to hire labor compared to men, who have greater financial resources and are able to mobilize the labor of their spouses and other family members. Women are often left out of agricultural extension and training programs because men are the socially recognized farmers even when they are not the principal manager of a farm. Globally, only an estimated 5 percent of agricultural extension resources are directed toward women (FAO 2011). A 2008 study found that women in Vietnam made up 25 percent of an animal husbandry training program and just

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**BOX 4.2: Policy Recommendations for Gender-Aware Universal Access and Rural Development**

1. **Improve and expand rural infrastructure by focusing on public shared access facilities**, with special focus on wireless technologies and electrical power sources. Policy efforts should make sure infrastructure extends into rural and remote areas.

2. **Invest in and promote shared access for rural communities**. Community-based approaches can overcome barriers to individual ownership and provide the setting for additional training programs.

3. **Promote and support the development of local content in local languages**. Local language content will improve the accessibility and inclusiveness of ICT applications. It can also serve as an opportunity to capture and record local practices and knowledge.

4. **Support adult literacy programs in rural areas**. Although many ICTs make use of audio and video to overcome illiteracy, ongoing support for adult literacy remains an important issue to address.

5. **Promote and facilitate the establishment of public-private partnerships in the implementation of rural projects**. As the overview module revealed, both public and private actors are integrating a range of ICTs in agricultural value chains (see Module 1). Collaboration between them can reduce costs and help extend the benefits to a greater number of individuals.

**Source:** Adapted from Association for Progressive Communications 2010.
10 percent of crop cultivation training (Kabeer 2008, cited in FAO, IFAD, and ILO 2010). In Senegal, a 1998/1999 census revealed that men plot managers received extension services three times more than women plot managers (ibid.).

**Women’s Mobility and Time Constraints**

Social norms that place the responsibility for productive and reproductive activities on women create time and mobility constraints that limit their ability to participate in other activities. The disproportionate distribution of reproductive tasks in particular mean that women have less time to invest in training and capacity building opportunities (image 4.2). Women in India spend 354 minutes a day, compared to 36 minutes by men on household activities including cooking and caring for children (Budlender 2009). In Tanzania, women spend 270 minutes and men 54 minutes on daily tasks (ibid). In comparison to their urban counterparts, rural women spend even more time in activities such as collecting water and fetching firewood because they have less access to basic services. These activities translate into less time to invest in networking, communicating with buyers, and developing market skills to further their productive activities. This also limits time available to learn about and become familiar with ICTs.

**Women’s Lack of Access to Income**

Women’s participation in agricultural supply chains is not always commensurate with the benefits they derive from their labor. Gender norms often set expectations about who controls income and the decision making over how it will be spent. While women often have control over the small amounts of income they generate through local sale of food and other microenterprises, larger sums of money are often controlled or can be appropriated by men. On smallholder farms, married women and daughters work as unpaid family laborers with the expectation that income derived from the sale of crops will return to the household. For example, a 1993 study of the Kenyan tea sector found that marital conflicts increased when women did not have the access they had expected to the income they earned for the household (Von Bulow and Sorensen 1993 cited in Schneider and Gugerty 2010). Also in Kenya, women supplied 72 percent of the labor inputs in French beans but received only 38 percent of the income (Dolan 2001). This means they have few incentives to participate in agricultural activities. Not receiving their fair share of income impedes their ability to invest in upgrading strategies that would improve their performance in value chains and also reduces their ability to access risk management instruments, through the purchase of insurance or accumulation of assets. Furthermore, unequal bargaining power and control over resources in the household limits the positive impact of integrating smallholder women farmers into value chains.

**How ICT Can Improve Women’s Access to Agriculture Services and Agribusiness**

If approached properly, ICT can improve women’s ability to act effectively and productively in agriculture. New applications and cheaper devices have created opportunities for women to engage in agriculture in ways previously unavailable to them. The following section highlights these opportunities.

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**IMAGE 4.2: Women Often Integrate Domestic Roles with Others**

Source: John Issac, World Bank.
services which can in turn close gender gaps in yields and productivity.

Kenya’s largest call center and business processing operator, KenCall, developed the Kenya Farmer Helpline known as “M-Kilimo” (http://www.m-kilimo.com/), with support from the Rockefeller Foundation, to improve the transfer of knowledge to farmers. The service provides an interactive alternative to agricultural information services delivery via mobile phones. Instead of receiving messages via SMS, farmers can talk to a real person to get agricultural expertise and information to help them make informed decisions on land preparation, planting, pest management, and marketing. Farmers receive information in English, Swahili, or other local languages. In its first 18 months of operation, the program reached 25,000 farmers. An estimated 43 percent of callers are women farmers (GSMA 2010).

Collaboration between Bharti Airtel and Indian Farmer’s Fertiliser Co-operative (IFFCO) led to the development of a similar program in India. The IFFCO Kisan Sanchar Ltd. Agri Helpline aims to provide information, inputs, and services in real time through affordable mobile communication. Farmers can purchase a “Green SIM” card that allows them to receive five free voicemail messages daily on a range of agricultural topics. In addition, the service provides a helpline farmers can call to ask questions. Although women reportedly make up a number of the listeners of the daily messages, they are only 13 percent of direct users (Pshenichnaya 2011). The majority of SIM card holders are men. (See also IPS “Long Experience in Farm Communities Benefits IFFCO Kisan Sanchar Limited” in Module 2.)

Also in India, the Self Employed Women’s Association (http://www.sewaict.org) provides current and future commodity prices, which allow members to make more informed decisions about when and where to sell their produce. Women with mobile phones can receive SMS messages directly, while women without mobile phones can visit a computer-based village notice board that also posts the prices. To overcome illiteracy constraints, the association is piloting an interactive voice response system that would provide the same information using speech recognition software. Initial results from the pilot indicate that over 20,000 women are using the system (GSMA 2010).

Knowing & Growing, a collaboration between Networked Intelligence for Development and the Jamaica Organic Agriculture Movement, offers training for women producers in the English-speaking Caribbean on how to grow organic vegetables and use ICTs to manage their farms (Tandon 2010). Organic farming requires the intensive management of information about agricultural production to meet certification standards and is therefore well suited for ICT use. The project helps women use ICTs for business management and marketing. It teaches participants how to create an e-mail address, how to access information on markets and prices for their products, how to enter financial and agricultural data about their vegetable production, and how to market their products.

Improving Coordination Between Women Farmers and Other Actors in the Value Chain

As the previous examples have made clear, ICTs can facilitate greater communication between farmers and other service providers, like extension agents. They reduce the time and coordination challenges between different actors, allowing farmers to receive better information on product specifications and volumes, coordinate transport, and deliver goods at times when they can secure the best prices. ICTs can also improve the functioning of producer groups, recording financial accounts, registration, and management processes—but women will only benefit from these efficiency gains if they can access the associations and are also trained to use ICTs (see Module 8 on farmers organizations). For women, ICTs that reduce the need to travel to speak with an input supplier, buyer, or transporter helps overcome their time and mobility constraints.

Enhancing Transparency in Governance, Business Registration, and Land Administration

A number of different modules in this Sourcebook describe the advantages of integrating ICTs into governance and administrative procedures in the agriculture sector. (See, for example, Module 13 and Module 14.) Improving the timeliness, accuracy, and transparency of these processes are among the key advantages of ICTs. These same benefits can be applied to support gender-equitable objectives. More accurate and transparent record keeping can identify the gender gaps in land administration and provide information to advocacy groups supporting women’s land rights For women traders and entrepreneurs, increasing the efficiency of business registration and customs facilitation can ease time burdens and may also reduce opportunities for corruption.

Contributing to the Collection of Sex-Disaggregated Agricultural Data

The lack of sex-disaggregated agricultural data is a frequently cited constraint to understanding women’s contributions to and benefits from the agriculture sector. Agricultural census data in many countries are not sex-disaggregated, and donor-funded agricultural development programs have been slow
to recognize the importance of assessing gender-differentiated results. ICT applications alone will not motivate change in the behavior of these institutions, but they can ease the burden of gathering and recording sex-disaggregated data on farmers, suppliers, buyers, and other stakeholders. Whether obtained through the use of AgriManagr software or by registering farmers when they call into M-Kilimo, these data provide more information about the needs, capabilities, productivity, and earnings of farmers, both men and women.

Improving sex-disaggregated data offers additional benefits to farmers. As described in Module 10 on ICT applications for building inclusive supply chains, AgriManagr’s records include a history of previous transactions and earnings, which serves as a proxy of the farmer’s creditworthiness. This information acts as a type of credit history and collateral that can facilitate access to loans and credit. Establishing a recorded history of women’s farming experience and creditworthiness may go a long way in increasing their access to credit and other financial services, especially since they often lack other forms of collateral, such as land.

**Improving Women’s Control Over Income and Access to Financial Services**

Women’s lack of access to income is a significant constraint on their participation and productivity in agriculture. Without access to and control over income, women are unable to accumulate lump sums to pay for inputs and services or invest in upgrading activities. Moreover, when women contribute to agricultural activities without seeing the income invested in the household, they lack the incentives to improve their position in agricultural value chains (image 4.3).

**IMAGE 4.3: Women Can Play a Significant Role in Acquiring Family Income**

Some of the most impressive innovations are occurring in the mobile money and mobile banking fields. These applications are helping rural and underserved populations obtain financial services that allow them to weather emergencies and risks associated with jobs and harvest loss (Plyler, Haas, and Nagarajan 2010). The most well-known of these services is M-PESA (see IPS “M-PESA Pioneering Money Transfer Service” in Module 2), a mobile phone-based service for sending and storing money offered by Safaricom in Kenya. Other mobile phone service providers, like Zain and MTN, have replicated these services on their networks.

The importance of these technologies for women is quickly becoming clear. The number of women m-Pesa subscribers in Kenya rose from 38 percent of users in 2008 to 44 percent in 2009 (Jack 2010). Women are found among the rural receivers of transfers of regular sums of cash that act as a source of income or lump sums to pay for school fees or inputs (Morawczynski and Pickens 2009). One of the advantages of m-Pesa and other similar services is that they allow women to receive transfers of cash without a bank account, or needing to travel to the bank or the post office. Among the most valued effects of m-Pesa, women report the ability to accumulate cash and keep it secure, presumably from other family members, neighbors, or others.

Opportunity International is adding another layer to improving women’s secure access to income. Using smartcards and biometric fingerprint technology, clients in developing countries, globally of whom 84 percent are women, are able to open a bank account without formal identification (Opportunity International 2011). Clients receive a smartcard that is associated with their fingerprint which allows only them to access the banking services. This technology is complemented by an expansion of kiosks, ATMs, vans, and handheld point-of-sale devices that increase the mobility and availability of banking services in rural areas.

**INNOVATIVE PRACTICE SUMMARY**

**Community Knowledge Worker Initiative in Uganda**

It is easy to underestimate the impact mobile technology has had on our world. Mobile phones and the growth of technology applications associated with them have changed the way we communicate with others, stay informed,
and network with colleagues, friends, and peers. More importantly, their impact has not been limited to users in developed countries. Mobile phones are in the hands of the young and old, men and women, urban activists, and rural farmers in developing and developed countries. The expectation is that the number of subscribers, especially women subscribers, is set to increase. Emerging research is exploring the links between mobile phones and economic growth, and finding some interesting connections (box 4.3) (see also Module 3 for more details on the impacts of mobile phones).

**BOX 4.3: Mobile Phones and Economic Growth**

- A 2007 report by Deloitte found a 10% increase in mobile phone penetration is linked to a 1.2% increase in GDP in low- and middle-income countries.
- In India, 3.6 million jobs were created, directly and indirectly, in the mobile phone industry. The industry is expected to continue to add a million jobs annually.
- Mobile phones contributed to a 62% and 59% increase in profits in South Africa and Egypt, respectively.

Source: GSMA 2010.

According to research conducted by GSMA (2010), there are 1.25 billion people in low- and middle-income countries that live in areas with mobile network coverage but who do not own mobile phones. Women were found to be less likely to own a mobile phone than a man, with the incidence being higher in Africa (23 percent), the Middle East (24 percent), and South Asia (37 percent). The study found that among women in low- and middle-income countries, 26 percent could benefit from mobile communications but do not, compared to 17 percent of men. This means that an additional 750 million women and 500 million men potential mobile phone subscribers exist. While the market potential for expanding mobile phones in developing countries is there, it is important to understand from a development perspective how closing the mobile phone gap translates into better outcomes for men and women in terms of income generation, poverty reduction, and improved well-being. One such avenue is by using mobile phones to reduce gender gaps in performance in agricultural value chains.

This Innovative Practice Summary focuses on the Community Knowledge Worker initiative (http://www.grameenfoundation.applab.org/ckw/section/index) implemented by Grameen Foundation in Uganda. A pilot phase for the project occurred between December 2008 and August 2009, and much of the information in this summary draws on lessons learned from that period. The project was implemented with support from the Bill and Melinda Gates Foundation (BMGF) and in collaboration with MTN-Uganda, the International Institute of Tropical Agriculture (IITA), and Uganda’s National Agricultural Research Organization (NARO). A number of other organizations supported technology development, farmer organization, and other components of the project. After the pilot phase, the project received a four-year follow-on grant from BMGF to scale operations to the rest of the country.

**Program Objective and Description**

The Community Knowledge Worker initiative aims to build a cross-country network of village-level information intermediaries that deliver agricultural information to smallholder farmers through mobile technology. The program targets smallholder men and women farmers who live on less than US$ 2 a day. It develops mobile services and applications that Community Knowledge Workers (CKWs) use to provide smallholder farmers with actionable and real-time agricultural information. Farmers can receive agricultural tips and advice, weather forecasts, market prices, an input supplier directory, and detailed farming information on crops and livestock.

The program identifies, recruits, and trains community members to act as trusted information intermediaries for farmers. In the pilot phase, 38 CKWs were recruited and trained. CKWs provided on average 15 services to farmers per week and responded to more than 8,000 queries on organic agricultural techniques for bananas and coffee, market prices, location and contact information for input dealers, and banana disease control. Multiple mobile applications were deployed for accessing and disseminating information to farmers (see IPS “Community Knowledge Workers in Uganda Link Farmers and Experts to Cope with Risk” in Module 11 for complete list).

1 This section was developed using Grameen Foundation 2011a and Grameen Foundation 2011b.
A second line of action was data collection. CKWs were trained on survey techniques to collect information for the Uganda Commodity Exchange, the World Food Program, IITA, and NARO. Over 6,000 surveys were conducted on topics ranging from smallholder bulking and marketing behavior to banana disease incidence. Demographic and baseline data on farmer households was also collected and weekly customer satisfaction surveys were conducted.

**Gender Approach**

The program committed to ensuring that both men and women are represented among the CKWs and farmer beneficiaries. A desire for greater participation by women pushed the designers to aim for one-third of CKW nominees to be women. The criteria for selecting CKWs included experience in community outreach, being a trusted resident of the area, literacy, and fluency in English. The initial recruitment process did not consider differences in men’s and women’s ability to meet these criteria, although it was acknowledged later that relative to men, women have lower education levels and are less likely to be fluent in English. The project is therefore exploring ways of delivering agricultural information through voice commands and call centers to allow women and men with lower literacy levels to become CKWs. To facilitate women’s entry into the network, the project also provided childcare at training sessions to alleviate certain time constraints and household responsibilities.

The follow-on project developed a more thorough gender and social equity plan. This includes conducting a gender and social assessment; a capacity-building plan for staff, CKWs, and farmer beneficiaries; a policy and advocacy plan; and a monitoring framework. The plan aims to equip the Grameen Foundation with the tools necessary to implement a gender equitable project, identify like-minded partners to further these goals, and monitor the progress of its actions on meeting specific gender-related goals and objectives.

**Benefits and Impact**

Although the pilot project operated for a short period of time, there are indications that with greater attention to gender issues, the follow-on project could bring significant benefits to both men and women. To achieve this, the project would need to address the barriers women face in becoming CKWs and tailor the information for women farmers’ needs.

Women were found to face higher entry barriers to becoming CKWs than men. First, although relying on partners to identify and recruit potential CKWs was found to be fairly successful, the process was not without its complications. The more decentralized the process, the more political it became, especially with local extension offices. These partners found it more challenging to identify potential women CKWs. Women were also less exposed to the nominating organizations, which suggested the project should think about engaging more women’s organizations or other partners that have a greater link to women in the community.

Relative to men, women have lower education and are less likely to be fluent in English, which meant that finding women who met the minimum criteria posed a challenge. Moreover, women’s higher labor demands, both in the field and in the household, meant they had less time to dedicate to trainings and to meet with farmers. Although CKWs put in an average of 10 hours of work per week, the pilot found that women CKWs incurred greater costs both in terms of time and money. Women CKWs had to juggle their CKW duties with their household and farm responsibilities, adding extra time to their day, especially when they had to travel to conduct surveys. They also incurred financial costs because they hired labor to manage the household or farm activities in their absence. Some women also hired men to ride the bike they were given to conduct outreach and survey activities while they rode on the back. Finally, some women were found to have less control over the mobile devices than their male counterparts. They had to share the airtime they received from the project with their husbands, who were not CKWs.

Nonetheless, preliminary research reveals that recruiting women CKWs will be important for the program to meet its goal of reaching women farmers. The program is finding that women farmers are more likely to seek advice if the CKW is a woman. Sixty-three percent of women farmers are receiving their information from a woman CKW. Furthermore, women farmers were more likely to return to a woman CKW than a man CKW (Hahn 2010). Finally, despite the greater constraints facing women CKWs, there was no notable difference in the performance of men and women CKWs.
Lessons Learned and Wider Applicability to Value Chains and Agricultural Extension

The CKW project was not designed to alleviate the constraints of a specific value chain, nor was it introduced by an agroprocessing firm. Nonetheless, it could easily have been designed, for example, to procure passion fruit from smallholders for a processing company. The CKW project’s focus on improving access to information relieves a common bottleneck in agricultural value chains—and a pervasive constraint for women farmers. Lessons learned from this experience have wider applicability to using ICTs to address gender issues in a range of agricultural value chains:

**The social and gender contexts matter.** Ensuring that ICTs support inclusive agricultural value chains is as much about identifying appropriate technology uses as it is about understanding the context in which they are going to be applied. As the CKW project discovered, the recruitment process was hampered not only by local power structures but by structural gender inequalities that resulted in fewer women meeting the basic education requirements.

**ICT applications have limits.** Some problems cannot be solved with ICTs (image 4.4). The CKW project identified strategies to overcome the differences in men’s and women’s literacy by using video and audio, but addressing local power structures must be addressed through other avenues. For this, the CKW project realized it needed to engage women’s groups and other organizations that tap into women’s networks. A project can increase women’s information about fertilizers, for example, but may have to find other solutions to ensure they actually receive them. Recognizing that not all gender inequalities have an ICT solution is important. This is ultimately why gender-based constraints in the value chain need to be identified prior to assessing where and how ICTs can address specific constraints.

**Opportunities for mediated or direct access to ICTs must be identified.** It is not necessary to put mobile phones into the hands of every man and woman farmer for them to benefit from the services the mobiles provide. The CKW project demonstrates how designing a program built on mediated access to ICTs can be effective when it is embedded in the social context. Identifying appropriate leaders to become CKWs can be tricky, but when it is done well, it can overcome several different gender issues. Mediated access to ICTs using community leaders can overcome the financial constraints that limit women’s ability to purchase their own mobile phones and create issues around control of technology when women have to share devices with spouses.

**It is important to engage women beyond the farm.** While it is important to ensure that women farmers receive agricultural information that can help close agricultural productivity gaps, it is equally important to identify ways of supporting their participation in other ways. Like many of us who learn on the job, women can use the farm skills they acquire to move into related activities, such as information service providers or software developers. This project set a goal to recruit women CKWs and found that this helped attract more women to request services from the CKWs. Expanding the opportunities for women to participate in the project not only as end-receivers of information but also as service providers led to better outcomes all around.
REFERENCES AND FURTHER READING


ICT IN AGRICULTURE