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## REDUCING THE GENDER GAP IN AGRICULTURAL EXTENSION AND ADVISORY SERVICES

How to Find the Best Fit for Men and Women Farmers

*By Cristina Manfre, Deborah Rubin,  
Andrea Allen, Gale Summerfield,  
Kathleen Colverson, Mercy Akeredolu*

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April 2013



**USAID**  
FROM THE AMERICAN PEOPLE





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# REDUCING THE GENDER GAP IN AGRICULTURAL EXTENSION AND ADVISORY SERVICES

How to Find the Best Fit for Men and Women Farmers

MEAS Discussion Paper Series on Good Practices and Best Fit Approaches  
in Extension and Advisory Service Provision

April 2013

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## **Note from the Editors**

The Modernizing Extension and Advisory Services (MEAS) Discussion Paper series is designed to further the comparative analysis and learning from international extension efforts. The papers contain a review of extension and advisory service best practices drawn from the global body of experience in successfully reaching resource-limited farmers. The papers identify the underlying principles associated with high levels of success in reaching women and men farmers and how, in differing contexts, these core principles have been successfully adapted to fit local conditions in establishing productive, profitable and sustainable relationships with individual producers, producer groups, the private sector and associated research and education institutions.

The series, and the companion MEAS Working Papers, include papers on a wide range of topics, such as the realities of pluralistic extension provisioning, sustainable financing, human resource development, the role of farmer organizations, linking farmers to markets, the importance of gender, health and nutrition, use of information and communication technologies and climate change adaptation. The papers target policy makers, donor agency and project staff, researchers, teachers and international development practitioners. All papers are available for download from the MEAS project website, [www.meas-extension.org](http://www.meas-extension.org).

The Editors,

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## **Acknowledgements**

This particular MEAS discussion paper addresses the concept of gender in agricultural extension and advisory services. It explores the significance of gender relations for the design, operation, and monitoring of agricultural extension and advisory services. This chapter provides readers with a summary of key issues and debates from the literature on gender in agricultural extension and advisory services, and draws on case material to highlight these issues. The chapter begins with a historical overview of how extension and advisory services have attempted to incorporate gender issues, followed by an analysis of the “best fit” framework (Birner et al., 2006, and elsewhere in this volume) from a gender perspective. It also identifies common constraints that small farmers, especially women, face in accessing and then implementing the guidance of EAS providers. Against this background, the chapter concludes with a discussion of principles of design for achieving gender-equitable EAS programming.

The paper is a collective effort of Cristina Manfre and Deborah Rubin (Cultural Practice, LLC), Andrea Allen (Michigan State University), Gale Summerfield (University of Illinois, Champaign-Urbana), Kathy Colverson (University of Florida), and Mercy Akeredolu (SAFE/Winrock International).

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## **Reducing the Gender Gap in Agricultural Extension and Advisory Services: How to Find the Best Fit for Men and Women Farmers**

*“Extension takes place in complex environments structured a priori by gender relations....Conceptualizing extension as a technical value-free activity is seriously mistaken” (Farnworth, 2010).*

### **I. Introduction**

Once again at the center of global debates, agriculture is recognized as a fundamental driver of economic growth and poverty reduction for many developing countries and a priority area for investment. A characteristic of the revitalization of the agriculture sector has been the recognition that past efforts have failed in part because they overlooked women’s role in the sector and the role of gender inequalities in reducing agricultural productivity. According to the 2010-11 FAO report “The State of Food and Agriculture,” “Women comprise, on average, 43 percent of the agricultural labor force in developing countries, ranging from 20 percent in Latin America to 50 percent in Eastern Asia and Sub-Saharan Africa” (FAO, 2011: 5). The report argues that reducing gender inequalities in access to productive resources and services could produce an increase in yields on women’s farms of between 20 percent and 30 percent, which could raise agricultural output in developing countries by 2.5 percent to 4 percent (FAO, 2011).<sup>1</sup>

Realizing these gains requires men and women farmers to have access to the information, skills, and tools they need to improve their yields. This, in turn, requires reforming the institutions involved in the delivery of those services. A fundamental aspect of this process is recognizing that agriculture writ large, and specifically the processes of providing effective extension and advisory services (EAS), involve much more than technical solutions. A complex array of individual characteristics -- including age, marital status, income, and educational attainment-- as well as social categories such as ethnicity and gender influence the abilities of technicians to deliver the knowledge they have and the willingness and capacity of producers and processors to make use of the services offered. These factors also shape the influence that men and women farmers have on the content of EAS programs and the manner in which it is delivered. Furthermore, the structure and policies of institutions that contribute to and influence agricultural development are also shaped by the values, behaviors, gender relations, and social norms of societies in which they are situated. Maximizing the benefits from agricultural growth for smallholder farmers and the economy at large depends on understanding these influences and designing programs that take them into account.

This chapter examines one feature of this context: gender relations. It explores the significance of gender relations for the design, operation, and monitoring of agricultural extension and advisory services. The chapter provides readers with a summary of key issues and debates from the literature on gender issues in agricultural extension and advisory services, and draws on case material to highlight these issues. It begins with a historical overview of how extension and

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<sup>1</sup> The data is based on the share of women agricultural holders available for 52 countries. For more detailed information on the definitions and calculations used to quantify the potential gains, consult the FAO report cited above.

advisory services have attempted to incorporate gender issues and a brief discussion of why addressing gender issues in EAS matters. This is followed by an analysis drawing on case material of the gender issues that require attention to identify a “best fit”<sup>2</sup> for men and women farmers. It identifies common constraints that small farmers, especially women, face in accessing and then implementing the guidance of EAS providers. Against this background, the chapter concludes with a discussion of principles of design for achieving gender-equitable EAS programming.

**Box 1: Key concepts and terms**

**Gender** is a social construct that refers to relations between and among sexes, based on their relative roles. It encompasses the economic, political, and socio-cultural attributes, constraints, and opportunities associated with being a man or a woman. Though often confused with **sex**, which refers to universal biological characteristics that differentiate males and females, gender is socially constructed, is defined differently around the world, and changes over time. Although often used interchangeably, the terms “women” and “gender” are not the same.

**Gender roles** refer to the socially defined tasks, responsibilities, and behaviors that are considered appropriate for men and women. These, too, are context-specific and can change over time. For example, the introduction of new technology or services can alter the on-farm division of labor, shifting some tasks from women to men or vice versa.

**Gender relations** define the ways men and women interact with one another and come to be recognized as men and as women. Both gender roles and relations are reinforced by social institutions, are socially constructed, and are historically specific. In many places, gender relations embody and justify unequal power relations. The interaction of men and women in public -- for example, with bank officers or extension agents -- can be different both within and across countries.

**Gender analysis** refers to the systematic gathering and analysis of information on gender differences and social relations to identify and understand the different roles, divisions of labor, resources, constraints, needs, opportunities, and interests of various groups including men and women, girls and boys, and transgendered persons in a given context. Data can be collated using quantitative and qualitative methods. A gender analysis will first describe existing gender relations in a particular context, ranging from households to firms, producer groups, and policy-making institutions. It aims to clarify how gender roles and relations create opportunities for or obstacles to achieving development objectives.

**Gender integration** refers to the process of using evidence to make informed decisions on how to address gender equality and female empowerment systematically across USAID initiatives, ongoing programs and projects, performance monitoring and evaluations, and procurements.

*Adapted from USAID (2010a) and USAID (2012).*

<sup>2</sup> This phrase references a conceptual framework presented in Birner, R., et al. 2006.



## II. Historical overview

Advice for improving agricultural production dates back to ancient times, as evidenced in Mesopotamian clay tablets, Egyptian hieroglyphics, Greek and Roman writings, and Chinese texts. These recommendations from antiquity were targeted at the landed elite and their tenants to control the maintenance and improvement of their estates, and to enhance revenue and tax collections. The idea of an agricultural extension service *per se* emerged much later, in the mid-1800s, when the Earl of Clarendon and the Royal Agricultural Improvement Society of Ireland sought to spread knowledge about the cultivation of nutritious root crops to combat the Irish potato famine. Parallel developments emerged in many European countries, including Finland, Germany, Austria, and France. The biodynamic and organic agriculture movements and associated practices were widely disseminated in the early years of the 20th century. Visitors from Canada and the United States to Europe, in turn, brought back this concept to North America. In the United States, the concept of combining research, teaching, and extension was institutionalized in the land-grant college model, which was strengthened by the passage of the Smith-Lever Act of 1914 and its authorization of federal funds for cooperative extension. It brought the results of university research to the local farmer, the latest in home economics to his wife, and eventually the 4-H model<sup>3</sup> to their children (Jones and Garforth, 1997).

The establishment of national agricultural services in the newly independent states of the developing world during the 1950s and '60s led to expanded efforts to bring new agricultural knowledge to farmers. The approach was top-down and linear, a fashion generally inherited from colonial predecessors. It was not until economist Ester Boserup (1970) published her groundbreaking work, *Women's Role in Economic Development*, building on ethnographic data, that significant attention in both academic and development communities focused on women's productive roles in agriculture. From that point forward, a growing body of literature emerged, initially identifying the failure of development programs to incorporate women as producers and, eventually, exploring what approaches actually worked. The early "training and visit" (T&V) extension systems, based on an efficiency model of transferring new technologies to farmers, did not effectively reach women farmers, small-scale producers (women or men), or farmers in some ethnic populations. Within the T&V system, women were largely viewed as beneficiaries, in a welfare sense, but not as actors in their own right in agricultural production. At the institutional level, this period marks the beginning of increased attention to gender issues within personnel policies, but gender imbalances remained a major inadequacy (World Bank, 2009).

From these early beginnings, gender analysis of advisory services challenged not only the composition of services but the very nature of their construction. Kathleen Staudt (1975, 1977), for example, examined extension service delivery to a sample of 212 households in Western Kenya in the 1970s and discovered that about half (49 percent) of the women farm managers reported they had never been visited by agricultural instructors. This compared with 28 percent of farms jointly managed by women and men (1977: 6). Instruction was offered through group

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<sup>3</sup> 4-H is the largest youth development organization in the United States. It began as a way of connecting public school education to rural challenges in agriculture and local industries. In 1914 it became part of the United States Department of Agriculture's Cooperative Extension System and nationalized these agricultural clubs. For more information see, [www.4-h.org](http://www.4-h.org).

meetings in the community, on demonstration plots, and at residential training courses. The proportion of women in the sample who had not attended the demonstration plot sessions was 62 percent (compared with 46 percent for men), and 95 percent of the women had not attended a residential course (compared with 80 percent of the men). Staudt concluded that “...extensive inequities in the provision of agricultural services were shown to exist between farms managed by women and farms with a man present” in this one location studied (1977: 19).

The World Development Report 1982 stated outright that “...extension services are often biased toward work with men and neglect the very important role of women as farmers in most parts of the world” (1983: 73). On the basis of the limited number of empirical studies on women’s participation in agricultural extension available at the time, Berger et al. (1984) similarly concluded that existing agricultural extension services were “...not working well for small farmers in general, much less women farmers”, and that some very fundamental changes needed to take place, not only in the type of technology that was developed but in the structure of the service delivery system itself.

Saito and Weidemann (1990) examined the extension service selection criteria for targeting farmers in Kenya, noting the addition of “unofficial” selection factors such as minimum land size, literacy, and ability to purchase inputs, apparently designed to increase the likelihood of production increases. They found that it was often the village chiefs and the field extension agents -- generally men-- who made this selection, and that, as a consequence of the structural biases in the selection criteria as well as men’s preferences (see also Saito and Spurling, 1992), comparatively few women ever received services.

The development of the Farming System Research and Extension approach (FSR/E) initially ignored gender issues as well. However, a series of research activities and data-sharing opportunities during the 1980s and early 1990s that drew attention to intra-household decision making (e.g., Cloud, 1985; Due, 1988), gender-sensitive field methods (e.g., Thomas-Slayter et al., 1993), and evidence that attention to women’s roles yielded positive results led to modifications of the FSR/E model to better incorporate gender issues (e.g., Feldstein and Poats, 1989; see also Feldstein, 2000, for an in-depth history of gender analysis in FSR/E).

In one of the few reports published on women’s role in agriculture and agricultural extension programs, the FAO reviewed 24 agricultural extension program case studies considered “successful” in Africa, Asia, and Latin America and concluded that “...rural women’s access to agricultural extension services was still very poor and the number of women extension personnel was also extremely low” (1993: iii). The presence of women extension agents, where it existed, was found to be important in eliciting the participation of women farmers. Yet the report noted that increasing the number of women agents alone is not sufficient for reaching women farmers; programs must also seek to address the needs of small-scale producers, Women farmers were rarely among the large-scale commodity producers often targeted by agricultural extension programs.

In 1998, Jiggins et al. carried out an ambitious review of findings to date on the array of constraints faced by women in accessing agricultural extension services and how, once these constraints were removed, such services could indeed prove beneficial for women as well as men. Case studies by European, U.S., Nigerian, Chinese, and Indian researchers were featured, thereby providing a highly diverse international perspective. Findings from these case studies demonstrated how gender analysis provides essential insights into the agricultural enterprise (e.g., Akor, 1990; Janelid, 1975; Shiva, 1991), intra-household dynamics and social structure (Berger et al., 1984; Keller, 1986; Olawoye, 1985 and 1989), the specific constraints and opportunities for reaching rural women, and the case study evidence for the approaches that actually work in a variety of specific contexts (Chen et al., 1986; Gittinger et al., 1990; Horenstein, 1989; Huang Xiushen, 1995; Jiggins, 1989a and 1989b; Spring, 1985 and 1986; Urban and Rojas, 1994).

In 2000, the World Bank introduced the Agricultural Knowledge/Information System (AKIS) approach. The AKIS perspective went a long way toward improving the inclusion of gender issues in general, and specifically in the research process and personnel policies. Despite the greater attention to gender issues, many of the constraints that impede women's ability to access extension services remained overlooked. For example, during this period, the possibility of paying for information, which had become the expectation in many advisory services, ignored the challenges that women producers and other disadvantaged groups face in generating income (World Bank, 2009).

Most recently, other perspectives have emerged. The Agricultural Innovation Systems (AIS) perspective to agricultural development has a broad focus "on the factors that stimulate innovative behavior" and "linkages and partnerships with a wide range of stakeholders along agricultural value chains, including the agribusiness sector" (Anderson, 2007: 9-10). With an expanded set of stakeholders and variables, this emerging perspective embodies a more complete transition away from a simple "best practice" or one-size-fits-all approach toward the customized "best fit" application of service principles, based on assessment of contextual factors (Birner et al., 2006; Anderson, 2007). Livelihoods approaches, integrated poverty reduction, natural resource management, and other rural development concerns have been brought into EAS with a broader and perhaps stronger impact than previous EAS efforts. In both cases, the additional layers of focus have not always explicitly addressed gender dynamics. Nevertheless, women are now viewed as critical actors in agricultural development, and this recognition needs to translate into more equitably designed services and mechanisms for influencing extension policies and practices. Market linkages for producers have been strengthened within the EAS, but the need remains for even more substantive inclusion of women in such efforts. An explicit gender dimension is needed to adequately remove inequalities that impede women from becoming active agents in improving their livelihoods and those of their households (World Bank, 2009).

### III. Why finding the “best fit” for men and women farmers matters

There are a number of compelling reasons why addressing gender issues in agricultural extension matters. These range from **business case** arguments that link reducing gender inequalities in extension services and agricultural production with improved institutional efficiency and development outcomes to **development arguments** that stress the importance of upholding international and national policy commitments eliminating discrimination between men and women and upholding gender equality (Table 1).

**Table 1. Gender equality and extension and advisory services – making the case.**

The business case	The development case
<p><b>Improve the efficiency of business.</b> Men are often perceived as the “real” farmers and receive a greater proportion of technical assistance and extension services, even for tasks and crops that women manage. As a result, EAS do not flow to the appropriate individuals, thus reducing service providers’ impact on the quality and quantity of goods produced and marketed. Adopting business practices that reduce these inefficiencies -- for example, by hiring women extension officers and by targeting both men and women for technical assistance -- will increase the impact of EAS.</p>	<p><b>Strengthen food security and poverty reduction outcomes.</b> The agriculture sector is considered the engine of growth for many countries. Adopting improved seeds and other inputs and new agricultural practices helps to increase productivity that boosts food availability and, when crops are sold, increases producers’ and processors’ incomes. Providing EAS to women ensures that all household members can benefit from new technologies and practices and increase yields and incomes. “Farming for the family business” approaches mean that sharing extension advice will benefit the household as a whole.</p>
<p><b>Ensure the flow of quality goods.</b> A significant portion of the individuals involved in producing and handling crops are women. However, as low- wage and unpaid workers, women have few incentives to invest their time and energy into improving production and processing practices. Evidence from Kenya reveals that, under these circumstances, women may withdraw their labor, particularly if others, such as spouses, reap the economic benefits from their work. This then endangers the constant supply of materials necessary for a functioning value chain. Addressing women’s lack of incentives to participate in the value chain can go a long way to ensuring the long-term supply of quality products to the value chain.</p>	<p><b>Removing discriminatory beliefs and practices.</b> Gender inequalities are often the result of discriminatory beliefs and practices that restrict women’s (or men’s) full participation in agriculture and the terms and conditions of their participation. Biases against pursuing careers in agriculture or discriminatory practices in recruitment and retention of extension officers go against commitments to uphold equality of opportunity and create inefficiencies in human capital and productivity. As humans, both men and women have a right to live free from discrimination that reduces their access to education, skills, and employment opportunities for which they are qualified.</p>
<p><b>Creating new business opportunities.</b> Women are often invisible and underserved buyers and suppliers in agricultural value chains. Sometimes they are sidelined as chains become more formalized, or they can be inhibited from participating in developed chains controlled by men. EAS can help women to enter chains as suppliers of key inputs and services (e.g., artificial insemination services or packing supplies) or to start production or processing of new products.</p>	<p><b>Improving household nutrition.</b> Women’s contributions to household food production, including their work with small ruminants and cultivation of vegetable gardens, help to increase essential micronutrient intake needed for child cognitive development. Studies establish a strong relationship between women’s control over earnings and greater investments in children’s health and education (Quisumbing, 2003).</p>

Though the underlying foundations of these sets of arguments may differ, they are not in competition. Addressing gender inequalities in EAS is important not only for poverty reduction and food security reasons but also because it makes for more efficient EAS practices. Addressing both the equity and efficiency constraints is mutually supportive and will produce more broad-based and sustainable outcomes.

#### **IV. How to find the “best fit” for men and women farmers**

Recent figures on men’s and women’s access to advisory services continue to show relatively low levels of contact between farmers and extension agents, with disproportionately lower levels of access for women. A 2010 review of selected regions of Ethiopia, India, and Ghana found that the levels of access to agricultural extension varied by region and by type of crop or livestock, but that women’s access was regularly less than men’s. In Ethiopia, women’s access was 20 percent compared with men’s at 27 percent; in India, levels were 18 percent of women-headed households and 29 percent of men-headed households; in Ghana, only 2 percent of women-headed households and 12 percent of men-headed households reported receiving extension advice (World Bank, 2010). In Tanzania in the 1990s, research found that the two-thirds of government agents who were men visited women farmers less frequently than men farmers and women-headed households hardly at all. These results were reconfirmed by the Tanzanian agricultural census of 2003 (Due, 1988; United Republic of Tanzania, 2006) (Box 2).

##### **Box 2: Provision of EAS to households headed by men and by women in Tanzania**

At the national level, there is a 5 percent difference in access to extension services between men- and women-headed households, with 36 percent of men-headed households reporting receipt of extension services compared with 31 percent of women-headed households. These percentages differ quite a bit across the regions, however. Lindi and Mtwara regions in the southeast are at the bottom of the list in extension service provision, with less than 20 percent of households headed by men or women reporting that they have received extension services. In Lindi, the figures are 18.7 percent for men-headed households and 11.1 percent of women-headed households; in Mtwara, the figures are 19.4 percent and 12 percent, respectively. In neighboring Ruvuma, the figures are much higher -- 37.4 percent for households headed by men and 21.4 percent for households headed by women (URT, 2006).

The reasons for this continued gender gap in EAS are numerous. The section that follows explores areas where the institutions that deliver EAS face gender-related barriers that result in differential access to EAS by men and women.

#### **A. Who is a Farmer?**

Much of the literature on gender and agricultural extension is embedded in a larger debate about the household unit and the definitions used to establish exactly who should be eligible to receive extension information. Social beliefs are instrumental in shaping the perceptions about who is

“the farmer.” Doss (2002) provided several ways to define farmers: as head of farming households, as the owner of land that is farmed, or as the individual who is entitled to the revenue earned from the sale of produce. Each of these definitions, however, poses challenges for providing equitable EAS.

## **1. Head of household**

Although there is increasing recognition that farming is a family business, in many societies the head of household, whether a man or a woman, is still defined as the primary farmer and is perceived as the only appropriate recipient of agricultural extension information. Though this is slowly changing, according to a report by the World Bank (2010), many institutions continue to operate under the perception that “women are not farmers” (World Bank 2010). As a result, women are underserved as clients of extension services in their own right, often seen to be only helping. Alternatively, they are targeted for agricultural information related to home economics. The assumption that their role in agriculture is linked to their household responsibilities ignores substantial evidence of women’s contributions to the production and harvesting of cash crops. Some of these beliefs are reinforced by women as well. In Honduras, Colverson (1995) found that women described their agricultural activities as simply “helping their husbands.” In Trinidad, women also characterized backyard gardens as supplemental activities (Payson-Roopschand, 2006). Defining gender relations between men and women in the same farming household in this way also leads to “trickle across” assumptions that information flows freely between men and women, and, therefore, that targeting men is sufficient for relaying agricultural information, even when it concerns tasks for which women are responsible (Fong and Bhushan, 1996).

The view that the man, as household head, is the primary farmer draws on an older unitary and Western model of the household that posits an “altruistic dictator” who makes decisions on behalf of other members, such that all members share a single preference (Becker, 1981). A different and more heterogeneous vision emerged from later theoretical and empirical studies that stressed the importance of bargaining and decision making within families. Sen (1990) described the family (or household unit) as a site of “cooperative conflict”. According to this approach, several factors are particularly important in influencing outcomes of bargaining within the family, including the perception of contributions by the person from her/his own view and from the viewpoints of others, as well as the source of income.

## **2. Land owner**

Historically, extension services were designed for farmers with access to or ownership over land (Meinzen-Dick et al., 2010: 34). This poses a challenge for women, whose access to land is shaped by a complicated web of social, legal, and customary norms. Globally, women’s land ownership lags behind men’s. In sub-Saharan Africa, women make up roughly 15 percent of agricultural land holders, but huge differences exist by country: in Mali, less than 5 percent of agricultural land holders are women; in Botswana, Cape Verde and Malawi, they make up over 30 percent (FAO, 2011: 23). In contrast to Latin America, where the share of women agricultural land holders is close to 20 percent, in southern Asia and southeastern Asia the proportion is closer to 10 percent

(FAO, 2011: 25).<sup>4</sup> Gender inequalities in land ownership reduce women's access to extension services where land serves as a key criterion for establishing who extension clients are. When women do own land, their plots are small, often of poor quality, requiring extension advice tailored to the agronomic potential of their land holdings. Land ownership often facilitates eligibility for access to other productive resources, such as credit or producer associations, which allow men and women farmers to act on the information they receive. Moreover, research has shown that strengthening land rights for women has a number of positive outcomes (Box 3).

**Box 3: Strengthening women's access to land**

A complicated set of social relations and norms confer access to, use of, and ownership of land to men and women. Gender relations and power define these rights within the household and community, while overlapping legal and customary law govern access both within and beyond the household. Women's access to land is less than men's, and this disparity is a widespread barrier to enhancing development outcomes.

Furthermore, women's insecure access to land is a stumbling block for enhancing the effectiveness of EAS programming where lack of secure access to land precludes women from receiving services or making decisions about improved agricultural practices.

Deininger (2003) argues that strengthening women's land rights is central to increasing agricultural productivity and leads to greater human capital investments in the household, and research from around the world seems to support these claims.

- In Ghana, research by Goldstein and Udry (2005) research found that productivity differentials between men and women farmers are the result of women's higher level of tenure insecurity. Women will avoid investing in following their land and will continuously farm it or risk losing access to the land from one season to the next.
- Deininger, Ayalew and Yamano (2006) saw that the propensity to undertake soil conservation measures increased when households became aware of land rights in Uganda's 1998 Land Act, which strengthened tenure security and legal protection of customary owners, including women.
- In Honduras and Nicaragua, Katz and Chamorro (2003) found that strengthening women's land rights improves their role in the household economy, increasing their control over income and facilitating access to credit.
- Katz and Chamorro (2003) and Quisumbing and Maluccio (2003) also found a positive correlation between women's land rights and increased bargaining power in the household.
- In India, Panda and Agarwal (2005) show that women who own property are less vulnerable to domestic violence.

Solving gender issues in land security remains a challenge. Quisumbing and Pandolfelli (2009) identify a number of promising avenues for increasing women's access to land, including creating leasing opportunities, raising awareness among households of men's and women's rights, and changing property law to include the opportunity for individual or joint titling of land for women.

<sup>4</sup>Data on land ownership is generally poor, and few data sources collect sex-disaggregated data. The data cited here originate from the FAO Gender and Lands Rights Database published in the State of Food and Agriculture 2010-2011 report.

### **3. Farm income earner**

EAS may also be tailored and delivered to farmers on the basis of the destination of those crops -- the market or the household. This dichotomy of cash crops versus food crops is often characterized along gender lines as “men’s crops” and “women’s crops,” despite empirical evidence that reveals greater variability in control over the income from crops and much greater collaboration on the production, processing, and marketing of crops than these labels reflect.

The use of the terms “women’s crops” and “men’s crops” emphasizes a false division of labor that assigns the production of food crops to women and cash crops to men. Doss’s (2002) careful investigation of the actual practices of men and women in Ghana concluded that, though there are cultural perceptions about men’s and women’s crops, they cannot be verified. Using household survey data, she found that no crops are grown exclusively or predominantly by women, and only a few are grown exclusively or predominantly by men, although there are gendered cropping patterns in some ecological zones, and men and women may be differently affected by some types of agricultural policies. She concludes, “Most crops cannot be distinguished as being grown primarily either by men or women” (2002: 1991). Furthermore, where certain crops and tasks are tied to gender, this association can be temporal. In Cambodia, Ogawa (2004) describes that, though there is a rough division of tasks between men and women, years of conflict and the shortage of men’s labor forced women to take on many activities formerly considered men’s work without any stigma or shame. In the Gambia and Burkina Faso, despite women’s recognized responsibility for rice, the introduction of irrigation schemes meant to improve women’s rice yields increased the value such that the rights to the land and the crops were appropriated by men (Carney, 1988; Dey, 1984).

Unfortunately, technology packages delivered by extension services sometimes reinforce stereotypic divisions of labor. Ethiopia’s Women’s Development and Change extension package provides advice related to home gardens and poultry on the basis of the assumption that women do not farm but garden (Cohen and Lemma, 2011). In Nicaragua, FondeAgro focused its efforts on women’s patio gardens and failed to build on their important roles in the production and processing of coffee and in dairy, even though this was envisaged in the design stage (Farnworth, 2010). That women and other members of the household need information about how to improve the productivity of crops destined for consumption is not in question. The segregation of information by gender, however, reinforces stereotypes about men’s and women’s roles in the household. It does not reflect the overlapping and complementarity of men’s and women’s contributions to the production of a range of crops, some of which are consumed by the household while others are sold.

Rubin (2010) summarized:

For many years, an economically-oriented definition was used that defined a farmer as a person who earns 50 percent or more of his/her income from farming and agriculturally-oriented activities. This is a problematic definition for many women since some income may be pooled and some kept independently by men and by women within the same farming household. It also focuses on income



rather than on activity. An approach that accepts any individual who calls him/herself a farmer, would allow both women and men, including those who farm primarily for home consumption to be considered as “farmers” (Rubin, 2010: 12).

Such an approach would drive EAS to meet men’s and women’s needs on the basis of an assessment of their current activities and preferences. It places a greater responsibility on extension service providers to continually renew their understanding of clients’ needs in order to meet the evolving activities, preferences, and demands of men and women farmers.

## **B. Extension Techniques and Advisory Methods**

Extension services rely on a number of techniques and methods to deliver EAS programming, including individual or group visits, organized meetings, use of model farmers, demonstration plots, information and communication technologies (ICTs), and farmer field schools. The plurality of modes of service delivery offers the opportunity to reach various types of farmers with different needs in various settings. Furthermore, EAS has moved beyond a single type of provider—historically, the public sector—to include private sector providers and non-governmental organizations (NGO). These actors are increasingly stepping in where the public sector has failed to have an impact, bringing innovative methods to diverse agricultural clients. As a result, there should be greater opportunity for identifying effective mechanisms for ensuring that both men and women farmers acquire the information they need. The following review outlines a number of areas where gender issues influence the choice of extension techniques and advisory methods.

### **1. Using farmer groups to deliver EAS**

Because of limited resources, EAS programs need to be selective about the methods they use to deliver services. Extension agents will not be able to serve all farmers at all times. Services are increasingly being channeled through group or community meetings and community-based organizations (CBOs) as a means of enhancing the reach of extension services. This practice is not without a set of challenges for women. Women fare poorly when services are delivered through group or community meetings held by extension agents: in Ghana, 0 to 6 percent of women-headed households and 5 to 9 percent of women spouses versus 11 to 24 percent of men-headed households participate in meetings, and in Ethiopia, 11 percent versus 28 percent of women and men, respectively (World Bank, 2010). Women may also be excluded from membership-based groups such as producer associations or dairy cooperatives. In Ethiopia, 24 percent of men and 4 percent of women belonged to some kind of cooperative, and 13 percent of men and 2 percent of women belonged to agricultural cooperatives (World Bank, 2010). Gender differences also exist in Ghana: 2 to 5 percent of female spouses and only 3 to 7 percent of female-headed households belonged to a CBO (World Bank, 2010). Women are also excluded from rising to leadership positions in these organizations as a result of biases about their skills. In Ethiopia, men are five times more likely than women to hold a leadership position within a cooperative; in India, only 10 percent of dairy cooperatives had women chairpersons (World Bank, 2010).

One of the challenges in channeling EAS programs through producer associations or CBOs is in the definition of membership criteria for admission to these organizations. If membership criteria rely on a narrow definition of who is a farmer, reserving access to land owners or heads of households, women and other household members may not be eligible for admission to these organizations. Other criteria, such as age, education, or civil status, can also exclude women and other resource-poor farmers from becoming members and participating in activities that flow through these organizations. For example, in a number of states in India, joint forest management groups (JFMs) allowed one member per household to join, effectively privileging the head of household and excluding others (Agarwal, 2001).

A number of strategies have been used to make producer associations more equitable in their membership. Elsewhere in India, JFMs set rules that permit both spouses to register as members or allow all village adults to become members of the JFM (Agarwal, 2001). The USAID-funded Kenya Horticulture Development Program worked with several groups to change membership criteria to allow a husband, wife, and eldest child at home to register as members of groups and attend meetings (USAID, 2010b). Although men are the majority of tea smallholders in Kenya, the tea company Eastern Produce Kenya (EPK) acknowledges the importance of women's contributions to the production of tea by inviting women to trainings and field days to disseminate information directly to them (Chan, 2010b). In Tanzania, the Karagwe District Cooperative Union, in partnership with Twin, a U.K.-based fair trade organization, sets quotas for women's participation in capacity-building workshops, which have led to women making up between 40 percent and 45 percent of participants in the workshops (Chan, 2010a). Because different actors are involved in setting the rules of membership in cooperatives or community forest groups, modifying the membership criteria may need to be advocated for or agreed upon at the community, district, or state levels.

Even when women are able to participate in trainings and producer organizations, gender norms may impede them from voicing their opinions and needs in the presence of men. It may be useful in some places to consider working through single-sex groups or with socially sanctioned women's groups such as rotating savings and credit associations (ROSCAS), church groups, or self-help groups. Many of them support women's needs through labor exchanges or lending merry-go-rounds. Women build social capital within these groups fostering communication and information sharing that would be extremely valuable for disseminating extension messages. Whether working through women's groups or working through mixed groups to reach women farmers offers greater success is a question to which there is no straightforward answer, however, and extension officers need to be able to ascertain which mode of delivery will work best in various contexts (Box 4).

**Box 4: Working with women's groups -- an effective strategy for increasing women's participation?**

One pathway for extending the reach of EAS is by working through FBOs and CBOs. These institutions engage farmers directly but do not necessarily address equity or gender concerns and can exclude women. A growing body of literature on gender, collective action, and social capital is examining how and under what conditions single- or mixed-sex groups lead to better outcomes.

**Mixed-sex groups:** Women in mixed-sex groups are able to overcome their own resource limitations by tapping into men's networks, resources, and information, which are often wider than women's. Research on forestry governance also reveals that women's participation in mixed-sex groups is associated with better decision making and improved resource management. Mixed-sex groups, however, often reproduce gendered patterns of behavior and resource distribution that limit women's voice and leadership.

**Single-sex groups:** Single-sex groups can offer women more opportunities for empowerment and have been shown to build confidence and leadership skills among women in Mozambique. In Honduras, women expressed a preference for training with other women because men dominate discussion. Free of norms that influence how men and women interact with each other, women can work together to identify solutions to common constraints and develop leadership skills. Single-sex groups, however, risk reinforcing stereotypes about women (e.g., they are only interested in crops for home consumption) or inequalities in access to resources between men and women.

Rather than assuming that mixed or single-sex groups are the more effective avenue for reaching women, a gender-equitable EAS needs to be able to analyze current local conditions and allow for flexibility between and within these two strategies. Single-sex groups may be necessary in contexts with a high degree of gender segregation. Mixed-sex groups may be workable in other contexts. Mixed-sex groups can also be divided into smaller groups on the basis of gender or other social variables for specific activities or trainings. Extension agents will need to be equipped with the skills to assess the gender dynamics and the ability to deploy a number of techniques that elicit the participation of men and women in various contexts.

*Sources: Agarwal, 2009, 2010; Acharya and Gentle, 2006; Kariuki and Place, 2005; Gotschi et al., 2009; Colverson, 1995.*

## 2. Accounting for time and mobility constraints

The literature documenting the household division of labor highlights women's double or triple burden of responsibility for productive, household, and community activities. In many developing countries, women are primarily responsible for household chores including cooking, cleaning, and childcare. This is often in addition to tasks such as collecting water and firewood, tending to kitchen gardens, and informal income-generating activities, and the expectation that they will contribute their labor to the production and processing of crops or livestock under their spouses'

management. This amounts to a disproportionate amount of time spent on certain types of activities by women. Women in India spend 354 minutes a day, compared with 36 minutes by men, on household activities including cooking and caring for children (Budlender, 2010). In Tanzania, women spend 270 minutes per day, compared with men's 54 minutes, on similar tasks (Budlender, 2010).

Carefully designed EAS will account for women's lack of time by identifying strategies for disseminating agricultural information at times and in places convenient to women. Extension officers need to be conscious of the times when women are available for meetings and schedule training at those times. Training may need to be divided into short modules to accommodate women's schedules and provide women with the ability to attend meetings and still manage their day-to-day tasks. Working with women on their own plots or on plots close to their homes will reduce women's time spent traveling. Alternatively, subsidizing the cost of taking transportation to training can facilitate women's ability to participate in such events. The World Vegetable Center in Tanzania provides transportation and daily stipends to encourage men and women to participate in extension programs and also offers on-site residential facilities for long-term trainings (Rubin et al., 2009). Offering childcare on site can be vital, and in countries such as Bangladesh, provision may need to be made for male chaperones to accompany women (though not participate in training).

### **3. Adapting to differing levels of education and literacy**

Although the global literacy rate for adult and young women has increased over the past decade to 70 percent and 87 percent, respectively, significant disparities persist at the regional level (UN, 2010). 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.

Information and communication technologies (ICTs) are a major contributor to extending the reach of extension services into remote locations -- where the networks exist -- and to diverse populations. The proliferation of audio- and video-based technologies creates new alternatives to literacy-dependent content and technology. For ICTs to reach women effectively, they need to account for women's lack of financial resources to pay for ICTs, higher levels of technology and language illiteracy, norms that discourage women from using technology, and lack of control over or ownership of technologies (Manfre, 2011). Service providers have been using a number of technologies, from radio to video to mobile applications, to ensure that women and men receive agriculture information (Box 5).

#### **Box 5. Innovative uses of ICTs to reach women farmers**

The Sustainable Tree Crops Program in Ghana delivers training to cocoa 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, which facilitate discussions complemented by a 10- to 15-minute

video on a range of integrated crop and pest management topics. Thirty-two out of 56 video clubs were women-only clubs; the remaining were mixed-sex groups.

Kenya's largest call center and business processing operator, KenCall, developed the Kenya farmer helpline known as "M-Kilimo" ([www.m-kilimo.com/](http://www.m-kilimo.com/)), with support from the Rockefeller Foundation, to improve the transfer of knowledge to farmers. Instead of receiving messages via Short Message Service, 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.

In Uganda, the Women of Uganda Network (WOUGNET) ([www.wougnet.org](http://www.wougnet.org)) relies on the strength of local information channels to increase the audience for its services. Women's groups are given a mobile phone and a radio/cassette player 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 -- and also engaged existing informal communication networks.

Digital Green in India works with women's self-help groups to produce and screen locally adapted agricultural extension videos. Videos of 8 to 10 minutes in length are developed by women and men farmers and are shared through public screenings in a number of villages. Women and men are engaged in the identification of appropriate content, the filming of agricultural techniques, and the dissemination of messages to other farmers and groups.

*Source: Adapted from Manfre (2011) and Digital Green short documentary.*

## **C. Capacity, Staffing, and Management**

The ability of any institution to respond to the needs of men and women farmers equitably is a function of its institutional structure and organizational culture. Examining the characteristics of capacity building and management of extension systems in relation to gender considers the extent to which the institution delivering services is equipped with the skills and resources (both financial and human) to reach both men and women farmers. This requires that extension agents have the capacity to identify and address the differing needs and preferences of men and women farmers, as well as to create the conditions for women to have equal opportunity to contribute to and shape the institutions responsible for agricultural education, research, and extension.

### **1. Agricultural education and research**

Institutional biases create a leaky pipeline of women leaving the agricultural science disciplines in secondary and tertiary education. Poverty in developing countries keeps many girls out of school. Even in countries where gender parity has been reached at the primary level, such as Ghana, gender disparities persist in higher education.

Agricultural sciences face significant constraints in attracting men and women. Women are underrepresented in the agricultural sciences around the world. Beintema (2006: 1) reports that only "one in five agricultural researchers in the developing world are female." A UNESCO study

found that, in 2000, women made up 20 percent of the agriculture students in African and Arab countries compared with 47 percent in Europe (2003: 81). The women who do enter agricultural professions often face discrimination and practical barriers to career advancement. The end result is fewer women than men filling the ranks of extension agents and agricultural scientists (Box 6). They also take on a limited range of occupations in these services.

**Box 6: Women's enrollment in agricultural and related sciences education**

**Ghana** falls fairly low among African countries in supporting women's study in the agricultural sciences. According to a study conducted in 14 African countries, "...women accounted for less than 20 percent of the student populations in agricultural science in Ghana" This is the third lowest level of women's enrollment and graduation rate. A very high proportion of these women were enrolled for bachelor's degrees. The number of postgraduate degrees was quite small (Beintema and Di Marcantonio, 2009).

Although in **Kazakhstan** about 40 percent to 45 percent of students completing undergraduate degrees in the agricultural sciences are women, only a tiny proportion go on for further study in the field. In 2008, only seven women were granted Ph.D. degrees in the agricultural sciences, compared with 97 men, and the absolute numbers of those pursuing higher level degrees in agricultural fields in Kazakhstan has been decreasing over time (Agency on Statistics of Republic of Kazakhstan, 2009). The proportion of those studying in agriculture overall is only 1 percent of the college and university population.

A recent global review of women's participation in higher education in the agricultural sciences in 12 countries ranks **Senegal** in the second lowest position in the share of women in total student enrollments. Women's share of enrollment at the undergraduate and master's levels was about 8 percent (Beintema and Di Marcantonio, 2009: 4).

Young women in **Tajikistan** made up about 35 percent of higher education students despite the large outmigration of men to work in neighboring countries, which left women a majority in the country. Severe sex-segmented patterns of educational choices of study are clear. Young women are only 7 percent of students studying agriculture. The lack of women in agriculture and other technical fields reverberates throughout the national economy. These gendered occupational choices translate into a lack of human capital in some of the most critically important areas to the Tajikistan economy, such as agriculture and agribusiness (Falkingham, 2000).

Girls and young women still face many of the same disincentives and barriers that were identified in a five-country study (Cote d'Ivoire, the Philippines, Nigeria, Jordan, and the Caribbean region) in the late 1990s. At that time, financial poverty, time poverty, and discriminatory social beliefs were found to inhibit girls' progress in the study of agriculture. Girls may be pressured to leave school and to marry early or to refrain from continuing to study after marriage (van Crowder, 1997). Programs such as the one by the Sasakawa Foundation seek to support women who do enter the field (Box 7).

**Box 7: Opportunities for midcareer training: Sasakawa Africa Fund for Extension Education**

Launched in 1991, the Sasakawa Africa Fund for Extension Education (SAFE) initiative aims to strengthen the design of training programs to build the capacity of agricultural extension staff members in a select number of universities and colleges in sub-Saharan Africa. SAFE currently has 16 fully established programs in institutions of higher agricultural education spread across the continent, offering undergraduate and diploma training programs in agricultural extension. Among its key objectives, SAFE aims to increase the number of midcareer women graduating from its program in an effort to enhance the presence of agricultural professional women in training and employment.

So far, men make up 1,588 and women 410 (about 21 percent) of the total number of participating midcareer agricultural staff members who have graduated and assumed wider leadership responsibilities within public and private agricultural extension organizations in their respective countries. More than 600 midcareer students are currently at various stages of their training programs in partner colleges and universities in Africa. The proportion of women midcareer students is lower than the percentage of midcareer women graduates. About 17 percent of the current midcareer students across the 16 participating universities and colleges in the nine African countries are women. A number of factors make it difficult to increase the number of women in agricultural extension programs such as SAFE:

- Institutional bias that considers agriculture to be the domain of men and hinders investments in women's education.
- Women's limited access to information about additional educational opportunities.
- Lack of programs tailored for women professionals.
- Familial responsibilities, time constraints, and socio-cultural or religious barriers that hamper women's ability to participate in full-time training programs.

Adapted from Akeredolu, 2009, and <http://safe-africa.net/Participating%20Univ.html>.

## **2. Recruiting women**

Over the years, few studies have examined the impact of recruiting women as extension agents on women farmers' participation in extension activities, although the recommendation is often made. A 1993 FAO evaluation of 24 extension programs in Latin America, Africa, and Asia concluded that the presence of women was a factor in increasing women's participation in extension activities. The Swiss Agency for Development and Cooperation recommends that women-to-women extension results in better transfer of information to women farmers than men-to-women extension (SDC, 1995: 18).

Various data collected from several African countries indicate a low number of women extension officers relative to men at the field and policy-making levels. In Mali, among the 302 extension

officers at the management level, there is only one female officer (Akeredolu, 2008a). A World Bank and IFPRI (2010) study found that, in Ghana, of the 70 extension agents surveyed only 10 were women. In the same study conducted in Karnataka, India, there were no women among the 41 agricultural extension workers surveyed, one woman among 41 junior engineers, and four women out of 40 veterinary assistants. There is a similarly disparate gender representation in Ethiopia. In Uganda, the situation is much better, with women well- represented at the degree, diploma, and certificate educational levels in the agricultural extension profession (Akeredolu, 2008b). Although disparities continue to exist in Nigeria, efforts to improve extension services to women farmers led to greater emphasis on hiring women extension agents (Box 8).

**Box 8: Nigeria's Women-in-Agriculture program**

The Women-in-Agriculture (WIA) program started in response to the limited success achieved in boosting women's productivity despite more than 10 years of World Bank assistance in agricultural extension service. In 1990, the WIA programs were created within the existing state agricultural development programs (ADPs) to address gender-related deficiencies. Before WIA, women in the ADPs were engaged mainly in home economics and other home-related activities. The WIA program extended agricultural extension services for women mainly by retraining existing home economics agents in agriculture and extension methodologies. This training provided the limited number of women extension agents with the necessary skills to appreciate agricultural constraints faced by women farmers and offer solutions on their behalf.

Establishment of the WIA program ensured that extension services in each state in Nigeria had female extension workers at every level of operation. The formation of WIA farmers' groups facilitated the dissemination of agricultural innovations and improved women farmers' access to farm inputs and credit. Improved family food security and increased financial contribution to household needs were other reported benefits of the program. Shortages of female extension agents still abound. The ratio of extension staff members to farm families is still low, so it is not feasible to individually meet all the women farmers. Most of WIA extension workers are neither purely agriculture-based nor trained in agriculture. The lack of adequate support from ADP management is another problem faced by the WIA program. It has taken quite some time for the WIA approach to find its way into the daily work schedules of most decision makers in the ADPs.

*Sources: World Bank, 2003; Chale, 1990.*

Recruiting women extension agents as a strategy for improving access to women farmers may be only one piece of the solution. The arguments for increasing the participation of women extension agents often hinge on evidence about social norms that restrict interaction between men and women and that assume that women learn better from other women than from men. In the former case, hiring more women extension agents is considered a direct path toward improving women's access to services and productivity. The evidence, however, is less clear on whether this strategy leads to women's adoption of new technologies. A Danida (2009) evaluation of four agricultural development projects in India found that focusing on women



extension agents was insufficient for improving women’s access to services and that, in some cases, it marginalized women extension officers and women farmers, and reinforced negative stereotypes. Due et al. reported that 35 percent of men interviewed in Tanzania preferred to work with extension agents who are men; 40 percent of women interviewed preferred to work with extension agents who are women; and that 34 percent of the respondents had no preference in the sex of the agent (see Table 2 for full results) (1996: 10). As Due et al. explain, “Farmers often stated that what was important was an extension agent who would assist them and not the gender of the agent” (1996: 11).

**Table 2. Preference for working with men or women extension agents in Tanzania (1995).**

Preferred sex of the extension agent	Among male farmers		Among female farmers		Among all farmers	
	Number	Percent	Number	Percent	Number	Percent
Male	42	35	30	26	72	31
Female	35	30	45	40	80	35
No preference	42	35	39	34	81	34
Total	119	100%	114	100%	233	100%

*Source: Tanzania Agricultural Extension Survey data reported in Due et al. (1996: 10).*

In Ethiopia, research revealed that both men and women farmers consider the sex of the extension agent less important than the ability of the agent to pay attention to gender issues (Cohen and Lemma, 2011). In this study, men farmers also expressed they would be willing to seek advice from women extension officers.

The socio-cultural norms of some communities make it necessary to recruit more women into EAS if women farmers are going to benefit from EAS. Regional variation in norms around interaction between men and women across states in Nigeria made it necessary for the Women-in-Agriculture (WIA) program to increase the number of women extension agents in field offices as well as provide gender training to both men and women extension agents (Quisumbing and Pandolfelli, 2009). In Jordan, Al Rimawi (2002) concluded that women’s preference for women extension agents was likely the result of social norms governing the interaction of men and women, especially in the case of young women. A similar situation was evident in Ethiopia, where social norms restricted the extension staff members, who were predominantly men, from interacting with women farmers (Meinzen-Dick et al., 2010).

The challenges in recruiting and retaining women extension officers are numerous. First, as noted previously, a major challenge is rooted in the low number of women in agricultural research and education. Women extension officers, especially those with families, may resist moving to remote locations if these lack adequate housing, medical, and education facilities. Married women extension officers with working husbands may also find it difficult to take a posting in the field if their spouses are unable to relocate. Sexual harassment or physical insecurity in some locations can also be a deterrent. Cultural restrictions that limit women’s mobility or interactions

with men can also reduce their incentives to seek positions with little opportunity for advancement or professional development.

Given the exigencies of managing a demand-driven EAS, a number of service providers are identifying strategies to overcome the shortage of women extension officers. Quotas were used by the Agricultural Technology Management Agency (ATMA) in India, which mandated that women needed to make up 30 percent of the governing board of these semiautonomous service delivery organizations (World Bank, 2009). The service providers working with the FondeAgro program in Nicaragua successfully attracted and deployed young unmarried women who had just completed their studies and saw a two-year stint in the field as a career boost (Farnworth, 2010). CARE in Ethiopia provided a number of incentives, such as higher salaries and good housing, although it still had trouble recruiting women officers (Farnworth, 2010).

Other efforts are using a bottom-up approach, recruiting and training women farmers in the community to take on the role of extension agents. These women face constraints, including lower levels of education than men and lack of time, that require a different set of strategies than those targeting women extension agents in the public system to include them in community-level extension efforts. EPK, a tea company that sources its raw materials from smallholder farmers, altered its criteria for selecting farmer trainers to draw in a greater number of women. It raised the importance of community involvement and participation and lowered the academic requirements (Chan, 2010b: 85). The Community Knowledge Worker (CKW) program being implemented in Uganda is exploring ways of delivering agricultural information through cell phone voice commands and call centers to allow women and men with lower literacy levels to become CKWs (Grameen Foundation). The African Women Leaders in Agriculture and the Environment (AWLAE) program sponsored by Winrock International took bold steps to address women farmers' needs by providing support directly to them and aspiring agricultural professionals. Among its achievements, AWLAE provided scholarships to 570 women for advanced studies; equipped over 1,500 women with leadership skills; enabled more than 50,000 disadvantaged girls to pursue their education; and provided training in new technologies to some 100,000 women farmers (Winrock, 2008).

The evidence about whether or not women extension officers are necessary for improving women farmer's access to extension services and increasing technology adoption rates remains inconclusive. Certainly they are necessary in some contexts. Some women extension agents may also be more effective in reaching women farmers. Elsewhere, emphasis needs to be placed on creating equal opportunities for women who wish to enter agricultural extension roles to be able to do so. A major focus of all EAS, however, needs to be on identifying strategies to improve the system's ability to meet and respond to women farmers' needs. One of those strategies may be increasing numbers of women extension agents, but it should not be the only one.

### **3. Building the capacity of staff members**

Building the capacity of advisory institutions to deliver equitable services requires training extension agents on gender and agriculture-related topics. Topics for training can range from

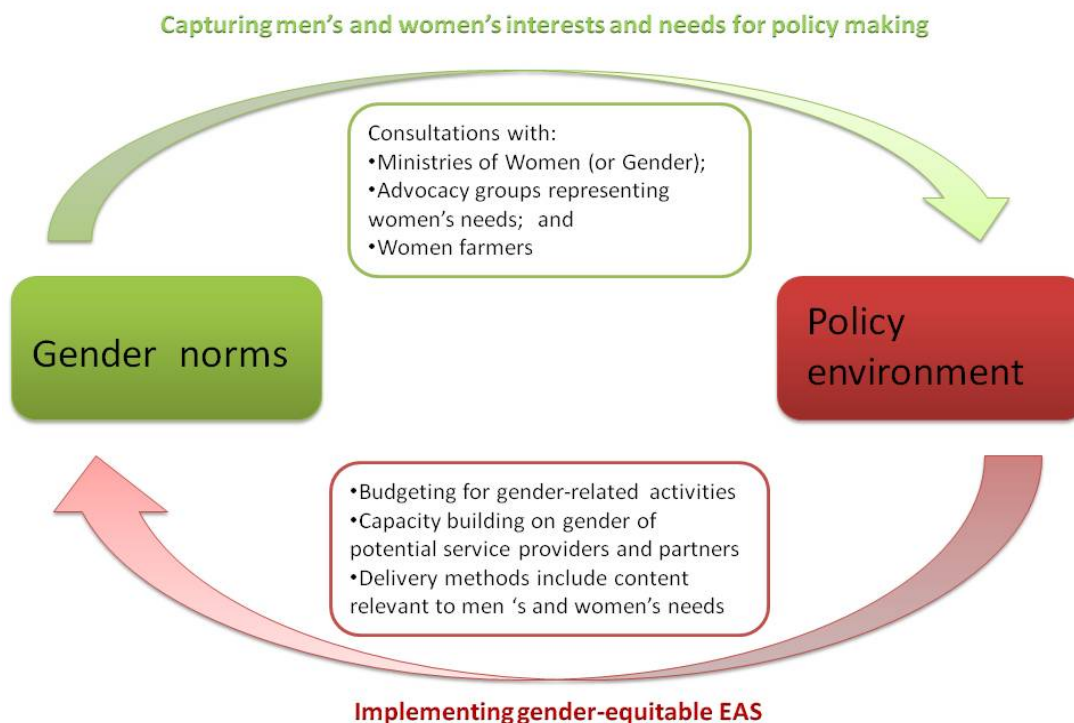
equipping extension agents with tools to design gender-responsive participatory visits to providing instruction on strategies and technological choices that would better support men and women farmers -- e.g., labor- and time-saving technologies. Farnworth (2010) found in reviewing Kenya's National Agriculture and Livestock Program (NALEP) that extension officers in some locations were limited in their ability to meet gender objectives by available gender expertise of district-level extension teams and the teams' inability to negotiate local socio-cultural dynamics.

## **D. Policy and Enabling Environment**

Efforts at the global and national levels to raise awareness of gender inequalities and women's role in development have led to the inclusion of language or policy directives related to gender mainstreaming in government policies, ministries, and development plans. Many countries have mandates to improve attention to gender issues or mainstream gender across governmental ministries and have established ministries of gender or women, assigned gender focal points to various line ministries, or developed national gender policies. Yet, as discussed below, the policy and practice of gender mainstreaming have often been ineffective and reflect gender norms operating within institutions promulgating and implementing policies. As Figure 1 depicts, the relationship between gender norms and the policy environment is mutually conditioning: gender norms affect how the policy environment is shaped, and, in turn, the policy environment influences how gender differences are accounted for in programs and policies.

In agriculture, an increasing number of agricultural development policies highlight gender inequalities as a critical constraint to growth and recognize the contributions of women to the sector. Many countries have established a policy architecture under which more gender-equitable EAS could be developed. India's National Agriculture Policy, for example, recognizes women's role as farmers needing appropriate structural, functional, and institutional measures to build their capacity (Department of Agriculture & Cooperation, Ministry of Agriculture). The government of Ghana's Food and Agriculture Sector Development Policy (FASDEP II) states the need to work toward gender equity and considers inclusivity of men, women, and youth one of its guiding principles. It commits to ensuring that "[A]ll policies and programmes will be designed from a gender perspective, enabling the government to work towards greater gender equality in the agriculture sector" (Republic of Ghana, 2007: 23). In its extension programs, FASDEP adopts a strategy of integrating attention to gender in extension programming "to ensure relevance of information to men and women and equitable access to services" (Republic of Ghana, 2007: 39). In Kenya, the National Agriculture Sector Extension Policy (NASEP) emphasizes the importance of the participation of end beneficiaries and states that extension is affected by a number of cross-cutting issues including gender and HIV/AIDS (Farnworth, 2010). Licensed extension service providers are also meant to disseminate gender-sensitive technologies and mainstream gender issues into training activities (CGD, 2009).

### **Figure 1. Gender and policy environment.**



Source: Authors' work.

Despite the presence of these mandates, there is a large gap between policy directives and implementation. Understaffing, weak linkages across line ministries, lack of authority, and few or no budget allocations are pervasive problems that limit implementation. In Zambia, tight budgets resulted in funds for gender-related activities in the Ministry of Agriculture and Cooperatives being cut (Farnworth, 2010). The gender unit in Mozambique is very isolated, and the Ministry of Agriculture's gender coordinator has little decision-making authority or institutional support (Farnworth, 2010). In many cases, large-scale efforts are falling short of national commitments even while smaller successes are being achieved. In Ghana, the Women in Agriculture Department (WIAD) plays an advisory role within the Ministry of Agriculture but has limited decision-making power. It has, however, begun to work with the ministry to collect sex-disaggregated data and, with support from IFAD, is creating good practice centers where women learn new agricultural processing practices (Dejene, 2008). Tanzania's Kilimo Kwanza (Agriculture First) strategy, developed in 2009, pays scant attention to gender issues in the agriculture sector, despite the fact that the government collects valuable sex-disaggregated farm-level data that could have been used to inform the policy (URT, 2006).

How these policies are developed, whose interests they serve, and the resources allocated to implementing them are not gender-neutral processes. Interest groups with links and networks to the policymaking process can influence the content of those policies. Without concerted efforts to include the voices, interests, and needs of various interests groups, such as women's

advocacy groups, an institutional bias is established that begins at the policy level and extends to the field, where services either overlook women's distinct needs or are supplied on the basis of assumed roles of men and women. Ultimately, these problems reflect a lack of political will, which Kardam (1997) explains is necessary to mainstream gender and change organizational culture, goals, and patterns of resource allocation.

## **E. Performance and impact**

A number of tools are available for measuring the quality of extension services. Identifying and developing channels through which farmers can provide feedback on the services and products they are receiving is a critical component to establishing a demand-driven system that is accountable to its clients, both men and women farmers. The World Bank uses beneficiary assessments to gather information about the value of certain activities (e.g., agricultural extension) as perceived by its principal users (e.g., farmers). The AKIS team used these assessments in 10 African countries between 1994 and 1999, with women making up 39 percent of the population assessed. The assessments revealed that, despite women's interest in participating in extension efforts, women farmers were excluded from receiving services delivered by groups or through direct contact with extension officers (Salmen, 1999). Citizen Report Cards (CRCs) are another example. These were developed and implemented initially in Bangalore in 1993 to rate the public satisfaction with services provided by public agencies. Criteria such as staff behavior, quality of service and information provided, and bribes paid were included in two surveys applied to users from high- and medium-, and low- income households. The results are used to rank the performance of various agencies and motivate reforms within those agencies toward user responsiveness. Since 1993, CRCs have been utilized in Ukraine, China, Nepal, Sri Lanka, Vietnam, the Philippines, Indonesia, Ethiopia, Gambia, Ghana, Nigeria, Rwanda, Peru, Argentina, and other countries. An assessment conducted by the World Bank of the experience in Bangalore found that, though citizens felt they were better able to demand improved services after the CRC program was implemented, institutional responses varied widely and were dependent on a number of factors, including the responsiveness of officials and resources available for instituting change (Bhatnagar, et al., n.d.).

Similar principles to those that have been described elsewhere in this chapter on how to reach men and women farmers apply here as well. To capture women's opinions of the effectiveness of EAS, efforts must be made to reach them where they are and at times that are convenient to them, and to use methods that are appropriate to their literacy and numeracy levels.

Indicators, as mentioned above, need to be sex-disaggregated and applied at multiple levels of impact (Table 3). Household-level and individual-level indicators should be used to better understand the relationship between improvements at the farmer or plot level and livelihood and household well-being. Indicators need to move beyond counting individual men and women only and capture sex-disaggregated differences in adoption rates, labor, and time use, income, and productivity. Indicators that measure women's participation in extension activities are only the beginning. Though creating equal opportunity to participate in extension programs is important, outcomes and impact need to be measured to determine the extent to which

participation is meeting women’s needs and leading to meaningful changes in men’s and women’s farming practices and livelihoods. Furthermore, indicators need to be sure to capture their impact on women and on the reduction of gender disparities. For example, they need to capture the numbers of women receiving agricultural extension services and measure whether the gap between men and women receiving agricultural extension is being reduced.

**Table 3. Illustrative monitoring and evaluation indicators for gender-equitable EAS.**

Indicator title	Level of disaggregation
Gross margin per unit of land or animal of selected product (crops/animals selected varies by country)	Commodity, gendered household type
Value of incremental sales (collected at farm level) attributed to Feed the Future implementation	Targeted commodities / sex
Number of additional hectares under improved technologies or management practices as a result of assistance	Sex
Number of farmers and others who have applied new technologies or management practices as a result of assistance	Sex
Number of individuals who have received short-term agricultural sector productivity or food security training	Sex
Number of individuals who have received supported long-term agricultural sector productivity or food security training	Sex
Number of members of producer organizations and community-based organizations receiving assistance	Sex
Number of rural households benefiting directly from interventions	Gendered HH type
Number of U.S. government social assistance beneficiaries participating in productive safety nets	Sex, type of asset
Number of vulnerable households benefiting directly from interventions	Gendered HH type
Number of people trained in child health and nutrition through health area programs	Sex
Number of children under 5 years of age who received vitamin A from programs	Sex
Number of children under age 5 reached by nutrition programs	Sex

Source: Adapted from USAID, [www.feedthefuture.gov/resource/volume-6-feed-future-measuring-gender-impact-guidance](http://www.feedthefuture.gov/resource/volume-6-feed-future-measuring-gender-impact-guidance).

NOTE: The Feed the Future guidance explains the construction of “gendered household type” as follows: “For household (HH) level indicators, data should be disaggregated by ‘gendered household types’, which are: 1) HH with male and female adults, 2) HH with male adult, no female adult, and 3) HH with female adult, no male adult. This categorization is somewhat different than the standard ‘male-headed vs. female-headed’ households, and the distinction and change is very meaningful. The concept of ‘head of household’ is very loaded, presumes certain characteristics that may or may not be present in household gender dynamics, and often reflects the bias of the

researcher or respondent. Additionally, the head of household concept may perpetuate existing social relations of inequality and further a prioritization of household responsibilities that is not useful” (page 1).

## **V. Principles for gender-equitable extension and advisory services**

A significant constraint identified through this best fit review was the lack of consolidated and systematic sex-disaggregated data and information on extension practices that successfully reduce gender inequalities in agricultural development. A multitude of actors deliver extension services, and many of them are likely confronting challenges in designing demand-driven and gender-equitable services.

The review of gender and EAS literature led us to a number of key principles that need to be considered as EAS are modernized. Because gender categories change over time and space, the principles provide guidelines but do not prescribe specific actions. These would need to be designed on the basis of further assessment of local socio-cultural contexts and in consultation with farmers. The following list identifies entry points for collaboration between farmers, service providers, donors, and policymakers in the building of a more equitable EAS system.

**Increase the proportion of women extension officers.** A number of strategies designed to recruit women extension officers were highlighted in this review. They included the use of quotas, gender-specific incentives and modified recruitment criteria, and leadership training. No single strategy is likely to produce the desired results; a combination may be needed to attract and retain women to the profession, beginning at the tertiary education level. In addition to improving the conditions of traditional extension occupations, the advent of ICT-enabled extension services may be creating alternative opportunities for agricultural extension officers. These opportunities may exist as call center operators as, for example, with M-Kilimo (Box 5), or at the community level as information intermediaries. In Uganda, the Community Knowledge Worker program trains and hires men and women to provide agricultural information via mobile applications (Manfre, 2011).

**Equip all extension officers with the knowledge and skills to address men and women farmers equitably.** Increasing the number of women extension agents is an important goal in its own right, but it is not the only avenue for reaching more women producers and entrepreneurs. Male technical agents should be equally responsible for and capable of reaching women and vice versa (while being attentive to local cultural norms that in some places require same-sex contacts only). This requires two things. First, it requires creating an institutional culture of equality, whereby extension officers, whether they are men or women, are committed to upholding principles of inclusion. Secondly, it requires equipping both men and women extension officers with the participatory tools and skills to manage diverse cultural contexts, power dynamics, and exclusionary practices.

**Adapt gender-responsive techniques and methods to local context.** The appropriate methods for reaching men and women farmers equitably will differ both across and within countries. Extension and advisory service providers need to be prepared to make choices about methods and techniques on the basis of the gender and social norms that influence women’s time,

mobility, and education. This paper outlined a set of criteria that can be used to make informed decisions about what techniques will work. These are summarized in Table 4.

**Table 4. Summary of key gender issues in the selection of extension techniques.**

Gender issue	Key considerations	Illustrative strategies
<b>Using farmer groups to deliver EAS</b>	<ul style="list-style-type: none"> <li>• What kinds of assets are required to receive EAS: physical (e.g., land); financial (incl. credit); social (e.g., FBO)</li> <li>• Are women eligible to become members of FBOs?</li> <li>• Do these requirements exclude the possibility for women / other resource-poor farmers to receive services?</li> <li>• Can men and women interact freely in public?</li> <li>• Do social norms limit women’s ability to speak in the presence of men?</li> <li>• Are women able to voice their needs in mixed groups?</li> <li>• Do women belong to other community groups?</li> </ul>	<ul style="list-style-type: none"> <li>• Work with organizations to adopt more equitable eligibility criteria for membership.</li> <li>• Provide recommendations for equitable governance structures in FBOs to support women in leadership positions.</li> <li>• Identify and consult women’s groups that could serve as vehicles for capturing and delivering information.</li> <li>• Where women cannot interact with men outside the community, work through community leaders to introduce men extension agents to the community and gain acceptance. Alternatively, hire women extension agents who can interact more freely with women farmers.</li> <li>• Organize single-sex group meetings if social norms limit women’s ability speak in men’s presence</li> </ul>
<b>Accounting for time and mobility</b>	<ul style="list-style-type: none"> <li>• How much time do women have available to attend meetings?</li> <li>• What day of the week and time of day are appropriate for reaching them?</li> <li>• How far can women travel (given time and mobility constraints)?</li> <li>• Where can they meet?</li> <li>• Are women with children among the targeted population?</li> </ul>	<ul style="list-style-type: none"> <li>• Schedule trainings at times when women can attend. For example, the Kenya Horticulture Development Program held training outside of lunch hours to avoid conflicts with their household responsibilities. They also limited the length of training so that women could attend and still see to other activities.</li> <li>• Take training to farmer demonstration plots or to individual plots can ease the burden of traveling for women.</li> <li>• Provide transportation and daily stipends and/or encourage men and women to stay at the on-site residential facilities when they are attending trainings.</li> <li>• Organize childcare service.</li> </ul>
<b>Adapting to differing levels of education and literacy</b>	<ul style="list-style-type: none"> <li>• What training methods are appropriate to the education level of women farmers?</li> <li>• Can audio or visual methods be incorporated?</li> </ul>	<ul style="list-style-type: none"> <li>• Adapt methods to numeracy and literacy levels. For example, in Mozambique, the International Potato Center used colors instead of words to allow men and women to indicate preferences among sweet potato varieties.</li> <li>• Incorporate ICTs to deliver messages (see Box 5).</li> </ul>

**Deliver cross-sectoral programming.** Capturing the differences between men and women is necessary for designing responsive services, but it is equally important to support collaborative household strategies between men and women. For example, improving household food security requires an understanding of both how to create a surplus for the market and of the nutritional value of crops that can be grown at home. The USAID-funded Gender Informed Nutrition and Agriculture project (GINA) brought together agriculture extensionists and nutritionists to reach



malnourished and vulnerable households by linking food production to nutrition. In Mozambique, this led to an increase in the number of men participating in nutrition education and outreach on the one hand, and the number of women participating in agricultural production groups on the other (USAID, 2010b). Similar programs combining nutrition education and microcredit programs were initiated by the Global Livestock Collaborative Support Program in Ghana and were then successfully turned over to local NGOs and rural banks and significantly expanded. In Egypt, family health concerns are considered women's responsibilities, even though men make important decisions that determine family health. The TAHSEEN project brought together the Ministry of Health and Population, Ministry of Agriculture, and Ministry of Water Resources and Irrigation to design a curriculum that used farming analogies to improve men's understanding of reproductive health concepts (e.g., describing the importance of optimal birth spacing like crop spacing). The training post-test revealed an increase in the participants' knowledge of optimal birth spacing from 27 percent to 96 percent (USAID, n.d.).

**Collect sex-disaggregated data.** The lack of sex-disaggregated data collected by national statistical units, ministries, and donor-funded projects severely limits the ability to assess the effectiveness of EAS programs. One of the challenges in preparing this best fit review was the lack of sex-disaggregated data that would provide a more robust picture of women's and men's participation in the agriculture sector as farmers, workers, and extension officers. The reports cited here are among the few available that have made an attempt to quantify and understand women's contributions.

**Evaluate the impact of extension services on reducing gender disparities in agricultural productivity.** The shift from top-down and technology-driven approaches to demand- and market-driven approaches is meant to create more responsive service delivery. This should translate into women farmers being able to shape service delivery to meet their needs. A few studies have examined whether improving attention to women's needs in extension leads to better outcomes. For example in Oyo State, Nigeria, women's higher adoption rates for maize varieties compared with men's were attributed to extension workers understanding women's needs and preferences (Odurukwe, et al. 2006). Results from the Ghana Grains Development Project show that women adopted new varieties of maize and cowpea and management practices at a lower rate than men (39 percent versus 59 percent). The study attributed these lower rates to differences in access to assets and services and, particularly, a bias in extension services (World Bank, 2009). Greater investments need to be made to systematically evaluate these impacts and to identify the strategies that have been most successful in influencing men's and women practices.

## **VI. Design for the future: critical gaps in gender and EAS programming**

No one can predict the future with certainty, but it is clear that, over the next decades, the agriculture sector will face a rapidly changing biophysical and demographic landscape. This gender review of EAS identified several gaps in research and programming that will be important to fill to design future EAS to respond to the changing landscape.

- **The experience of private sector EAS in reaching women farmers.** As the private sector's role in EAS expands, it will be important to document and learn from that experience in reaching both men and women farmers. Research should focus on documenting how well private extension captures and addresses women farmers' needs and the strategies used to deliver services.
- **The comparative advantage of public, private, or NGO-led EAS in reaching women farmers.** Much of the research on the successes of EAS approaches led by various actors overlooks the gender dimension. Put another way, the research on whether public, private, or NGO-led EAS have a comparative advantage in serving women farmers is inconclusive.
- **Gender-responsive climate-smart agriculture.** Increasing climatic volatility is forcing men and women farmers to seek adaptation strategies, and these responses are not gender-neutral. Research is finding that men's and women's differential access to productive resources has an impact on the types of strategies they employ in the face of climate change (Nelson et al., 2002; Djoudi and Brockhaus, 2010). Climate-smart agricultural practices will need to be tailored to accommodate these differences.
- **Equipping the next generation of farmers.** Many countries are experiencing a "youth bulge" – typically defined as a high proportion of youth between the ages of 15 and 29 relative to the adult population. Governments in sub-Saharan Africa and the Middle East, especially, will need to manage the entry of these young people into the workforce and identify mechanisms for drawing a proportion of them into the agriculture sector. This might include multi-sectoral school-based K-12 and extracurricular outreach programs for children and youth. These efforts can be single- or mixed-sex programs as is appropriate for various ages and cultural settings, but they should include targeted efforts to encourage girls and young women to excel in math and sciences. Mentor programs, scholarships, and other incentives have been successful in increasing the participation of women in the agricultural sciences.
- **The potential of ICTs to capture and respond to women farmers' needs.** ICTs have already had a profound impact on the way we receive and send information. Initial forays into using ICTs in EAS programs have shown that they can be an effective means for communicating with women farmers. On-going research on the strengths and weaknesses of various types of ICTs and their ability to reduce gender gaps in information and access to EAS is needed to ensure that they are used to respond to women farmers' needs.

## References Cited

- Acharya, K.P., and P. Gentle. 2006. Improving the effectiveness of collective action: Sharing experiences from community forestry in Nepal. CAPRI Working Paper No. 54. Washington, D.C.: International Food Policy Research Institute.
- Agarwal, B. 2001. Participatory exclusions, community forestry, and gender: an analysis for South Asia and a conceptual framework. *World Development* 29(10): 1623-1648.
- . 2009. Gender and forest conservation: The impact of women's participation in community forest governance. *Ecological Economics* 68: 2785-2799.
- . 2010. Does women's proportional strength affect their participation? Governing local forests in South Asia. *World Development* 38(1): 98-112.
- Agency on Statistics of Republic of Kazakhstan 2009 Women and Men in Kazakhstan: Statistical Brochure. Astana: Agency on Statistics of Republic of Kazakhstan.
- Akeredolu, M. 2008a. Women in leadership positions in the Malian Ministry of Agriculture: Constraints and challenges. *SASAE Journal of Agricultural Extension, South Africa*. Tydskr. Landbouvoorl, South African Journal of Agricultural Extension Vol.37, 208: 27-44.
- . 2008b. Report on gender workshops in Mali, Uganda, Nigeria, and Ethiopia Organized by SAA and SAFE. Unpublished.
- . 2009. Female Students' Participation in the University Mid-Career Agricultural Extension Training Programme in West Africa: Constraints and Challenges. Proceedings of the 25th Annual Meeting of the Association for International Agricultural and Extension Education (AIAEE), May 24-27, 2009, in San Juan, Puerto Rico.
- Akor, R. 1990. The role of women in agriculture and constraints to their effective participation in agricultural development in Nigeria. Paper presented at UNDP/ILO/DFRRI training workshop, Monitoring and Evaluation of Rural Women in Productive Skills Project.
- Al Rimawi, A. 2002. The role of Jordanian Women Farmers in Livestock Production with Implications to Agricultural Extension Education. *Journal of International Agricultural and Extension Education* Vol. 9, (1): 11-19.
- Anderson, J.R. 2007. Agricultural advisory services. Background paper for the World Bank Development Report 2008. Washington, D.C: Agriculture and Rural Development Department, World Bank.
- Becker, G. 1981. A treatise on the family. Cambridge, Mass., U.S.A.: Harvard University Press.
- Beintema, N. 2006. Participation of Female Agricultural Scientists in Developing Countries. Agricultural Science and Technology Indicators Brief. Washington, D.C.: International Food Policy Research Institute.
- Beintema, N., and F. Di Marcantonio. 2009. Women's participation in agricultural research and higher education Trends in sub-Saharan Africa. Agricultural Science and Technology Indicators, IFPRI and CGIAR Gender and Diversity Program. Available at [www.asti.cgiar.org/pdf/ASTI-AWARD-brief.pdf](http://www.asti.cgiar.org/pdf/ASTI-AWARD-brief.pdf).

- Berger, M., V. DeLancey, and A. Mellencamp. 1984. Bridging the gender gap in agricultural extension. Prepared for the office of Women in Development, USAID. Washington, D.C.: International Center for Research on Women.
- Bhatnagar, D., A. Dewan, M. Moreno Torres, and P. Kanungo. N.d. Citizen's Report Cards on Public Services: Bangalore, India. World Bank. Available at [http://siteresources.worldbank.org/INTEMPowerment/Resources/14832\\_Bangalore-web.pdf](http://siteresources.worldbank.org/INTEMPowerment/Resources/14832_Bangalore-web.pdf)
- Birner, R., et al. 2006. From 'Best Practice' to 'Best Fit': A Framework for Analyzing Pluralistic Agricultural Advisory Services Worldwide. DSGD Discussion Paper No. 37. Washington, D.C.: International Food Policy Research Institute.
- Boserup, E. 1970. Women's Role in Economic Development. New York: Saint Martins Press.
- Budlender, D. 2010. Time Use Studies and Unpaid Care Work. UN Research Institute for Social Development. New York: Routledge.
- Carney, J. 1998 Struggles over land and crops in an irrigated rice scheme: The Gambia. In J. Davison (ed.), Agriculture, Women and Land. Boulder, Colo., U.S.A.: Westview Press.
- Center for Governance and Development (CGD). 2009. A Gender Analysis of NASEP. CGD Policy Brief Issue 01/09. Kenya: Center for Governance and Development.
- Chale, F. 1990. Strengthening agricultural extension in Nigeria: A study of problems and constraints in extension strategies and methods for reaching rural women. Rome: United Nations Development Programme/ Food and Agriculture Organization of the United Nations.
- Chan, M. 2010a. Improving Opportunities for Women in Smallholder-based Supply Chains: Business case and practical guidance for international food companies. Prepared for the Bill and Melinda Gates Foundation. Available at [www.gatesfoundation.org/learning/Documents/gender-value-chain-guide.pdf](http://www.gatesfoundation.org/learning/Documents/gender-value-chain-guide.pdf).
- . 2010b. Improving Opportunities for Women in Smallholder-based Supply Chains: Appendix. Prepared for the Bill and Melinda Gates Foundation.
- Chen, M., M. Mitra, G. Athreya, A. Dholakia, P. Law, and A. Rao. 1986. Indian women: A study of their role in the dairy movement. New Delhi: Shakti Books.
- Cloud, K. 1985. Women's productivity in agricultural systems: considerations for project design. In Overholt, C., M.B. Anderson, K. Cloud, and J.E. Austin (eds.), Gender Roles in Development Projects. West Hartford, Conn., U.S.A.: Kumarian Press.
- Cohen, M., and M. Lemma. 2011. Agricultural Extension Services and Gender Equality: An Institutional Analysis of Four Districts in Ethiopia. IFPRI Discussion Paper 010904. Washington, D.C.: International Food Policy Research Institute.
- Colverson, K. 1995. Rural Women's Access to Agricultural Information: A Participatory Study of Two Honduran Communities. Research paper prepared for 11th Annual Meeting of the Association for International Agricultural and Extension Education, March 23-25, 1995, Little Rock, Arkansas, U.S.A.
- Danida. 2009. Danida Evaluation: Farm Women in Development. Aarhus, Denmark: Ministry of Foreign Affairs.

- Deininger, K. 2003. Land Policies for Growth and Poverty Reduction. Washington, D.C.: World Bank and Oxford University Press.
- Deininger, K., D. Ayalew, and Y. Takashi. 2006. Legal knowledge and economic development: the case of land rights in Uganda, Policy Research Working Paper Series 3868. Washington, D.C.: World Bank.
- Dejene, Y. 2008. Ghana Country Gender Profile. Tunis-Belvédère, Tunisia: African Development Fund.
- Nicaragua Department of Agriculture and Cooperation, Ministry of Agriculture. 2005. Concept Note on Gender Resource Centre. Available at <http://agricoop.nic.in/PolicyIncentives/GRConcept.htm>
- Dey, J. 1984. Women in Food Production and Food Security in Africa. Rome: Food and Agriculture Organization of the United Nations.
- Digital Green Short Documentary. Available at [www.youtube.com/watch?v=gg\\_BkPB2QPg&noredirect=1](http://www.youtube.com/watch?v=gg_BkPB2QPg&noredirect=1).
- Djoudi, H., and M. Brockhaus. 2010. Is adaptation to climate change gender neutral? A case study from northern Mali. Paper presented at Inter-Agency Standing Committee, 13<sup>th</sup> Biennial Conference, January 2011, Hyderabad, India.
- Doss, C. 2002. Men's Crops? Women's Crops? The Gender Patterns of Cropping in Ghana. *World Development* 30 (11): 1987-2000.
- Due, J.M. 1988. Intrahousehold gender issues in farming systems in Tanzania, Zambia and Malawi. In Poats, S., et al. (eds.), *Gender issues in farming systems research and extension*. Boulder, Colo., U.S.A.: Westview Press.
- Due, J.M., et al. 1996. *Small Holder Farmers' Perception of Extension by Gender in Tanzania*. Morogoro, Tanzania and Urbana-Champaign, Ill., U.S.A.: Sokoine University of Agriculture and the University of Illinois.
- Falkingham, J. 2000. Women and Gender Relations in Tajikistan. Asian Development Bank. <http://untj.org/files/reports/Women%20and%20Gender%20Relations%20in%20Tajikistan.pdf>.
- Farnworth, C.R. 2010. Gender Aware Approaches in Agricultural Programmes: A study of Sida-supported Agricultural Programmes. *Sida Evaluation* 2010: 3.
- Feldstein, H. Sims. 2000. Gender analysis: making women visible and improving analysis. In M. Collinson (ed.). *A History of Farming Systems Research*. Rome, Italy, and Oxen, U.K.: United Nations Food and Agriculture Organization and CABI Publishing.
- Feldstein, H. Sims, and S.V. Poats (eds.). 1989. *Working Together: Gender Analysis in Agriculture*, Volume 1. Hartford, Conn., U.S.A.: Kumarian Press.
- Fong, M., and A. Bhushan. 1996. *Toolkit: Gender Issues in Agriculture*. Washington, D.C.: World Bank.
- Food and Agriculture Organization. 2011. *The State of Food and Agriculture 2010-2011*. Rome: Food and Agriculture Organization of the United Nations.

- . 1993. Agricultural extension and farm women in the 1980s. Rome: Food and Agriculture Organization of the United Nations.
- Gittinger, J.P., S. Chernick, N. Horenstein, and K. Saito. 1990. Household food security and the role of women. Washington, D.C.: World Bank.
- Goldstein, M., and C. Udry. 2005. The profits of power: Land rights and agricultural investment in Ghana. Center Discussion Paper No. 929. New Haven, Conn., U.S.A.: Yale University.
- Gotschi, E., J. Njuki and R. Delve. 2009. Equal numbers, equal chances? A case study of gender differences in the distribution of social capital in smallholder farmer groups in Búzi District, Mozambique. *European Journal of Development Research* 21: 264-282.
- Grameen Foundation. Community Knowledge Worker Pilot Report. Available at <http://grameenfoundation.org/sites/default/files/Grameen-Foundation-Community-Knowledge-Worker-Pilot-Report.pdf>.
- Hallman, K., D. Lewis and S. Begum. 2007. Assessing the impact of vegetable and fishpond technologies on poverty in rural Bangladesh. In M. Adato and R. Meinzen-Dick (eds.), *Agricultural research, livelihoods, and poverty: Studies of economic and social impacts in six countries*. Washington, D.C.: International Food Policy Research Institute.
- Horenstein, N.R. 1989. Women and food security in Kenya. Washington, D.C.: World Bank.
- Huang, X. 1995. Implement projects, learn skills and get benefits -- Discussion about the new way of rural women's technical training. Paper presented at International Seminar on Women in Agriculture and Their Participation in development of Agricultural Technologies, Beijing, China-European Union Centre for Agricultural Technology (CECAT).
- Janelid, I. 1975. The role of women in Nigerian agriculture. Rome: Food and Agriculture Organization of the United Nations.
- Jiggins, J., R.K. Samanta and J.E. Olawoye. 1998. Improving women farmers' access to extension services. In B. Swanson, R.P. Bentz, and A.J. Sofranko (eds.), *Improving Agricultural Extension: A Reference Manual*. Rome: FAO. Available at [www.fao.org/docrep/W5830E/w5830e0b.htm](http://www.fao.org/docrep/W5830E/w5830e0b.htm).
- Jiggins, J. 1989a. How poor women earn income in sub-Saharan Africa and what works against them. *World Development* 17 (7), 953-963.
- Jiggins, J. 1989b. Agricultural technology: Impact, issues and action (chapter 1, part I). In R.S. Gallin, M. Aronoff, and A. Ferguson (eds.), *The women and international development annual: Vol. I*. Boulder, Colo., U.S.A: Westview Press.
- Jones, G., and C. Garforth. 1997. The history, development and future of agricultural extension. In B. Swanson, R.P. Bentz, and A.J. Sofranko (eds.), *Improving Agricultural Extension: A Reference Manual*. Rome: Food and Agriculture Organization of the United Nations. Available at [www.fao.org/docrep/W5830E/w5830e00.htm](http://www.fao.org/docrep/W5830E/w5830e00.htm).
- Kardam, N. 1997. Changing institutions in women's interests. *World Development* 25 (7): 1111-1115.
- Kariuki, G., and F. Place. 2005. Initiatives for rural development through collective action: The case of household participation in group activities in the highlands of central Kenya. CAPRI Working Paper 43. Washington, D.C.: International Food Policy Research Institute.

- Katz, E., and J.S. Chamorro. 2003. Gender, Land Rights and the Household Economy in Rural Nicaragua and Honduras. Paper presented at the annual conference of the Latin American and Caribbean Economics Association, Oct. 9-11, 2003 in Puebla, Mexico.
- Keller, B. 1986. Development for rural Zambian women. In Training for agriculture and rural development. Rome: Food and Agriculture Organization of the United Nations.
- Manfre, C. 2011. Extending the Benefits: Gender-equitable, ICT-enabled Agricultural Development. In ICT in Agriculture: Connecting Smallholders to Knowledge, Networks, and Institutions E-sourcebook. Washington, D.C.: The World Bank. Available at [www.ictinagriculture.org/ictinag/content/ict-agriculture-sourcebook](http://www.ictinagriculture.org/ictinag/content/ict-agriculture-sourcebook).
- Meinzen-Dick, R., A. Quisumbing, J. Behrman, P. Biermayr-Jenzano, V. Wilde, M. Noordeloos, C. Ragasa, and N. Beintema. 2010. Engendering Agricultural Research. IFPRI Discussion Paper 00973. Washington, D.C.: International Food Policy Research Institute.
- Nelson, V., K. Meadows, T. Cannon, J. Morton, and A. Martin. 2002. Uncertain prediction, invisible impacts and the need to mainstream gender in climate change adaptation. *Gender and Development* 10(2): 51-59.
- Odurukwe, S.N., E.C. Matthews-Njoku, and N. Ejiogu-Okereke. 2006. Impacts of the women-in-agriculture (WIA) extension programme on women's lives; implications for subsistence agricultural production of women in Imo State, Nigeria. *Livestock Research for Rural Development* 18, Article #18. [www.lrrd.org/lrrd18/2/odur18018.htm](http://www.lrrd.org/lrrd18/2/odur18018.htm).
- Ogawa, Y. 2004. Are Agricultural Extension Programs Gender Sensitive? Cases from Cambodia. *Gender, Technology and Development* 8 (3): 359-380.
- Olawoye, J.E. 1985. Rural women's role in agricultural production: An occupational survey of women from six selected rural communities in Oyo State, Nigeria. *Nigerian Journal of Rural Sociology* 2(1-2): 34-37.
- Olawoye, J.E. 1989a. Difficulties for rural women in securing resources for agricultural production: Two case studies from Oyo State, Nigeria. *Rural Development in Nigeria* 3 (2): 77-81.
- Quisumbing, A. R. 2003. Household Decisions, Gender and Development: A Synthesis of Recent Research. Washington, D.C.: International Food Policy Research Institute.
- Quisumbing, A. R., and J. A. Maluccio. 2003. Resources at marriage and intrahousehold allocation: Evidence from Bangladesh, Ethiopia, Indonesia, and South Arica. *Oxford Bulletin of Economics and Statistics* 65 (3): 283-328.
- Quisumbing, A. R., and L. Pandolfelli. 2009. Promising approaches to address the needs of poor female farmers: resources, constraints, and interventions. IFPRI Discussion Paper 00882. Washington, D.C.: International Food Policy Research Institute.
- Panda, P., and B. Agarwal. 2005. Marital Violence, Human Development and Women's Property Status in India. *World Development* 33(5): 823-50.
- Payson-Roopchand, K. 2006 Engaging farmers: recognizing and responding to gender and social diversity in farming systems in Trinidad. Dissertation presentation to the Graduate School of the University of Florida.

- Republic of Ghana, Ministry of Food and Agriculture. 2007. Food and Agriculture Sector Development Policy (FASDEP II). Accra: Ministry of Food and Agriculture.
- Rubin, D. 2010. Gender and agriculture in mainland Tanzania: A literature review for CARE/Tanzania. Unpublished.
- Rubin, D., C. Manfre and K. Nichols Barrett. 2009. Promoting Gender Equitable Opportunities in Agricultural Value Chains: A Handbook. USAID/WID Greater Access to Trade Expansion (GATE) Project. Washington, D.C.: United States Agency for International Development.
- Saito, K., and D. Spurling. 1992. Developing Agricultural Extension for Women Farmers. Discussion Paper No. 156. Washington, D.C.: World Bank.
- Saito, K., and J.C. Weideman. 1990. Agricultural Extension for Women Farmers in Africa. Discussion Paper No. 103. Washington, D.C.: World Bank.
- Salmen, Lawrence. 1999. The Voice of the Farmer in Agricultural Extension. AKIS Discussion Paper. Available at [www.aline.org.uk/pool/voice-of-farmer-in-ag-research-wbank.pdf](http://www.aline.org.uk/pool/voice-of-farmer-in-ag-research-wbank.pdf).
- Sen, A. 1990. Gender and cooperative conflicts. In I. Tinker (ed.), *Persistent inequalities: Women and world development*. New York: Oxford University Press.
- Shiva, V. 1991. *Most farmers in India are women*. New Delhi, India: Food and Agriculture Organization of the United Nations.
- Spring, A. 1985. The women in agricultural development project in Malawi: Making gender free development work. In R.S. Gallin and A. Spring (eds.), *Women creating wealth: Transforming economic development*. Washington, D.C.: Association for Women in Development.
- Spring, A. 1986. Reaching female farmers through male extension workers in Malawi. In *Training for agriculture and rural development*. Rome: FAO.
- Staudt, K.A. 1975. Women farmers and inequities in agricultural services. *Rural Africana* 29: 81-93.
- Staudt, K.A. 1977. Inequities in the delivery of services to a female farm clientele: some implications for policy. Nairobi, Kenya: Institute for Development Studies, University of Nairobi.
- Swiss Agency for Development and Cooperation (SDC). 1995. *Agricultural Extension*. Berne, Switzerland: Swiss Agency for Development Cooperation.
- Thomas-Slayter, B.A., Lee Esser, and M. Dale Shields. 1993. *Tools of Gender Analysis: A Guide to Field Methods for Bringing Gender into Sustainable Resource Management*. Worcester, Mass., U.S.A.: Clark University.
- United Nations Educational, Scientific, and Cultural Organization (UNESCO). 2003. *Gender and Education for All: The Leap to Equality*. Paris: United Nations Education, Scientific, and Cultural Organization.
- United Nations. 2010. *The World's Women 2010: Trends and Statistics*. Department of Economic and Social Affairs. ST/ESA/STAT/SER.K/19. New York: United Nations. Available at <http://unstats.un.org/unsd/demographic/products/Worldswomen/WW2010pub.htm>.
- United Republic of Tanzania (URT). 2006. *National Sample Census of Agriculture 2002/2003. Volume IV: Gender Profile of Smallholder Rural Agriculture Population in Tanzania Mainland*, Dar es Salaam: Ministry of Agriculture.



- Urban, A-M., and M.H. Rojas. 1994. Shifting boundaries: Gender, migration and community resources in the foothills of Choluteca, Honduras. ECOGEN Case Studies Series. Worcester, Mass., U.S.A.: Clark University.
- USAID. (No date.) Best Practice in Egypt: Mobilizing Agricultural and Irrigation Extension Workers. Available at [http://pdf.usaid.gov/pdf\\_docs/PNADF243.pdf](http://pdf.usaid.gov/pdf_docs/PNADF243.pdf).
- . Measuring the Gender Impacts of FtF. Volume 6, Feed the Future M&E Guidance. Available at [www.feedthefuture.gov/documents/Volume6\\_FTFGender.pdf](http://www.feedthefuture.gov/documents/Volume6_FTFGender.pdf).
- . 2010a. Guide to Gender Integration and Analysis: Additional Help for ADS Chapters 201 and 203. Available at <http://transition.usaid.gov/policy/ads/200/201sab.pdf>.
- . 2010b. Initiative to End Hunger in Africa (IEHA) Gender Assessment: Synthesis Report. Washington, D.C.: United States Agency for International Development.
- . 2012. Gender Equality and Female Empowerment Policy. Available at [http://transition.usaid.gov/our\\_work/policy\\_planning\\_and\\_learning/documents/GenderEqualityPolicy.pdf](http://transition.usaid.gov/our_work/policy_planning_and_learning/documents/GenderEqualityPolicy.pdf).
- Van Crowder, L. 1997. FAO Research, Extension and Training Division: Women in Agricultural Education and Extension, Education and Communication Service (SDRE), April, 1997.
- Winrock. 2008. Women Leaders Shaping the Future of Africa. Little Rock, Arkansas: Winrock International.
- World Bank. 1983. World Development Report 1982: Agriculture and Economic Development. Washington, D.C.: World Bank.
- . 2003. Nigeria: Women in agriculture. In: Sharing Experiences—Examples of Participatory Approaches. The World Bank Participation Sourcebook. Washington, D.C.: World Bank.
- . 2007. World Development Report 2008: Agriculture for Development. Washington, D.C.: World Bank.
- . 2009. Gender in Agriculture Sourcebook. Washington, D.C.: World Bank.
- . 2010. Gender and Governance in Rural Services: Insights from India, Ghana and Ethiopia. Washington, D.C.: World Bank.

### **Additional References**

- Akeredolu, M., C. Asinobi, and I. Ilesanmi. 2007. Trends in Production Constraints among the Bambara People of Mali. AIAEE Proceedings of Internationalizing with Cultural Leadership, May 20-24, 2007, in Polson, Montana, U.S.A.
- Baker, J. 2000. Evaluating the impact of development projects on poverty: A handbook for practitioners. Washington, D.C.: World Bank.
- Behrman, J.R., and J. Hoddinott. 2005. Program evaluation with unobserved heterogeneity and selective implementation: The Mexican PROGRESA impact on child nutrition. Oxford Bulletin of Economics and Statistics 67 (4): 547-569.

- Bezabih, M., and S.T. Holden. 2006. Tenure insecurity, transaction costs in the land lease market and their implications for gendered productivity differentials. Paper presented at the 26th International Conference of the International Association of Agricultural Economists, August 12-18, 2006. Gold Coast, Australia.
- Dolan, C. 2001. "The Good "Wife": Struggles over resources in the Kenyan Horticulture Sector. *Journal of Development Studies* 37 (3): 39-70.
- . 2001. Designing Agricultural Technology for African Women Farmers: Lessons from 25 Years of Experience. *World Development* 29 (12): 2075-2092.
- Doss, C.R., and M.L. Morris. 2001. How does gender affect the adoption of agricultural innovations? The case of improved maize technology in Ghana. *Agricultural Economics* 25 (1): 27-39.
- Farnworth, C.R., and J. Jiggins. 2006. Participatory plant breeding and gender analysis. PPB Monograph 4. System-wide Program on Participatory Research and Gender Analysis. Cali, Colombia: Consultative Group on International Agricultural Research.
- Fleck, S. 1994. Extension "woman to woman" – training peasant women liaisons to reach peasant women: a case study of lessons learned through FAO projects in Honduras. Rome: Food and Agriculture Organization of the United Nations.
- Gilbert, R.A., W.D. Sakala, and T. Benson. 2002. Gender Analysis of a Nationwide Cropping System Trial Survey in Malawi. *African Studies Quarterly* 6, No.1. Available at <http://web.africa.ufl.edu/asq/v6/v6i1a9.htm>.
- Giovarelli, R. 2006. Overcoming gender biases in established and transitional property rights systems. In J. Bruce (ed.), *Land law reform: Achieving development policy objective*. Law, Justice, and Development Series. Washington, D.C.: World Bank.
- Lastarria-Cornhiel, S. 1997. Impact of privatization on gender and property rights in Africa. *World Development* 25 (8): 1317-1333.
- Maertens, M., and J. Swinnen. 2009. Trade, standards, and poverty: Evidence from Senegal. *World Development* 37(1): 161-178.
- Mutimba, J., H.C. Knipscheer, and D. Naibakelao. 2010. The Role of Universities in Food Security and Safety: Perspectives based on the Sasakawa Africa Fund for Extension Education. *Journal of Developments in Sustainable Agriculture* 5: 12-22.
- Olawoye, J.E. 1990. Women in extension. In W.M. Rivera and T.O. Ogunfiditimi (eds.), *Extension for development: Concepts and issues*. Ibadan, Nigeria: Lidato Press.
- Panda, S.M. 2006. Women's collective action and sustainable water management: Case of SEWA's water campaign in Gujarat, India. CAPRI Working Paper 61. Washington, D.C.: International Food Policy Research Institute.
- Pandolfelli, L., R. Meinzen-Dick, and S. Dohrn. 2008. Gender and collective action: Motivations, effectiveness, and impact. *Journal of International Development* 20 (1): 1-11.
- Paris, T., H.S. Feldstein, and G. Duron. 2001. Technology in empowering women to achieve food security. In A.R. Quisumbing and R.S. Meinzen-Dick (eds.), *2020 Focus 6, Policy Brief No. 5*. Washington, D.C.: International Food Policy Research Institute.

- Paris, T., A. Singh, and J. Luis. 2001. Listening to farmers' perceptions through participatory rice varietal selection: A case study in villages in Eastern Uttar Pradesh, India. Paper presented at the Systemwide Program on Participatory Research and Gender Analysis for Technology and Institutional Innovation Workshop, May 1-5, 2000, Cali, Colombia.
- Porter, G., and K. Philips-Howard. 1997. Comparing contracts: An evaluation of contract Farming schemes in Africa. *World Development* 25(2): 227-238.
- Ravallion, M. 2008. Evaluating anti-poverty programs. In T. Schultz and J. Strauss (eds.), *Handbook of development economics*, Vol. 4. Amsterdam, The Netherlands: North Holland.
- Schneider, K., and M.K. Gugerty. 2010. Gender and Contract Farming in Sub-Saharan Africa: Literature Review. Prepared for the Bill and Melinda Gates Foundation. Seattle: University of Washington.
- Von Bulow, D., and A. Sorensen. 1993. Gender and contract farming: Tea outgrower schemes in Kenya. *Review of African Political Economy* 20(56): 38-52. Available at [www.informaworld.com/index/769331381.pdf](http://www.informaworld.com/index/769331381.pdf).