



CHAPTER 5

# Beyond Access: Gender- Transformative Financial Inclusion in Agriculture and Entrepreneurship

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**A** core tenet underpinning financial inclusion is the notion that everyone has access to and usage of affordable financial products and services that meet their needs—whether those are savings, credit, insurance, or transactions or any combination of such services. Fulfilling this aspiration rests on a number of assumptions: that people need a range of financial products and services to fulfill their diverse daily activities; that such services will be worth using only if they are delivered with sufficient quality, including convenience and affordability, that everyone can safely use them; and that a well-functioning marketplace exists within which multiple competing providers operate in an enabling framework set through effective regulation. An increasingly central aspect of the financial inclusion vision involves the financial literacy and capability of the customers, who must have the knowledge, skills, and behaviors that enable them to make sound financial decisions.

Individuals and households need affordable and effective tools with which to borrow money, save and invest, make and receive payments, and manage risk. Access to financial products and services can help individuals and households make day-to-day transactions, plan for and pay recurring expenses, finance small businesses and grow assets, safeguard savings against theft, manage irregular cash flow to smooth consumption, and mitigate shocks from unforeseen expenses (CGAP 2017). Financial inclusion can also be a key enabler for achieving important life goals such as schooling, better health, asset building, or productivity-enhancing investments for microbusinesses and small businesses.

New Global Findex data reveal that globally the share of adults owning an account is 69 percent, an increase of seven percentage points since 2014. These numbers translate into 515 million adults who have gained access to financial tools (Demirgüç-Kunt et al. 2018). Despite this progress, about 1.7 billion adults remain unbanked—without an account at a financial institution or through a mobile money provider.

The growth in account ownership since 2011 has not benefited all groups equally and gender gaps persist. Women still are less likely than men to have an account. Globally, 72 percent of men and 65 percent of women have an account, a gender gap of seven percentage points that has remained relatively unchanged since 2011 (Demirgüç-Kunt et al. 2018). For women, financial inclusion can enhance their economic prospects and allow them to better manage their lives. Women, however, often face gender-based supply-and-demand-side-related barriers that limit their access to financial services and products or the benefits

from their use. Gender inequality is perpetuated by regulatory frameworks and sociocultural norms that structure what goes on at home, in communities, in relations, and in markets. One can have access to finance but be prevented from converting that access into business growth or enhanced productivity by domestic inequalities in financial decision making. Similarly, having a bank account does not mean that one can enjoy the social and economic benefits of that asset. On the other hand, women's underuse of some financial products does not always mean they lack access (Demirgüç-Kunt and Klapper 2014). Women can have access but choose not to use it. For example, women can be reluctant to use formal savings or credit despite having access at affordable rates, and instead prefer to use informal financial services such as savings groups.

This chapter focuses on financial inclusion for women as entrepreneurs in two sectors, agriculture and small and medium-sized enterprises, with a focus on Africa. These two sectors potentially offer women the opportunity to increase their own productivity and self-determination. Agriculture is a major source of livelihood for women in the developing world. Similarly, most women who are in the labor market are self-employed, operating small enterprises or microenterprises.

In this chapter we present a new gender-transformative approach to financial inclusion. A gender-transformative financial inclusion is defined as a way of doing financial inclusion explicitly directed toward creating gender-equal financial systems that enable all entrepreneurs, regardless of gender, to overcome supply- and demand-side constraints and improve their livelihoods on equal terms. Gender-transformative finance aspires toward three key outcomes. The first is enhanced women's empowerment—defined in terms of greater opportunities, choices, and decision-making power. The second is strengthened relationships and improved negotiation dynamics between people at home, in the workplace, and in markets, and between financial institutions and clients. The third is enabling policies and regulatory frameworks and sociocultural norms. As a study by Vossenberget al (2018: pg16) concluded, “gender-transformative financial inclusion is about making financial systems ‘women-able’ rather than making women ‘bankable.’” The chapter makes recommendations for policy makers and financial inclusion practitioners on how to make women's financial inclusion more transformative.

The next section examines the status of women's financial inclusion in Africa, the current barriers women face, both on the demand and supply side, and the implications of this for their livelihoods. The third section explores innovations

aimed at increasing women's financial inclusion and evidence of their effectiveness. Given the growing importance of digital tools for financial inclusion, the fourth section focuses on specific fintech (financial technology) innovations in the agriculture sector. The fifth section discusses how financial inclusion could be more gender transformative. The chapter concludes with recommendations for how actors on several levels, from financial institutions to policy makers, can act to make women's financial inclusion more transformative.

## *Women and Financial Inclusion*

For women, access to financial products and services can be a key enabler to improve their lives. Overall, there is evidence that women's financial inclusion can contribute to the growth of their businesses and to their own empowerment. A review by Gammage et al. (2017) found that meaningful financial inclusion for women can reduce gender inequality and that women with access to bank accounts and saving mechanisms as well as other financial services have more control over their earnings, make more choices about how they use their time (whether for employment, leisure, income-generating activities, or education), and have more substantive autonomy over their lives in decisions ranging from employment and marriage to whether to use contraception. The review also found that they may be better able to grow their businesses, raise their productivity and earnings, and reduce their chances of being poor. They are also better able to choose where and how to work and whether to leave abusive relationships (Gammage et al. 2017). At the macro level, an International Monetary Fund paper (Sahay et al. 2015) indicates positive effects of financial inclusion on gross domestic product growth, equality levels, and women's economic participation, as well as macro-level financial stability.

Improved access to financial services, even in the absence of other interventions, can challenge gendered social norms and intrahousehold dynamics, and this could have both positive and negative effects. For benefits of women's financial inclusion to be realized, however, we must recognize that men and women experience livelihood strategies differently, with different limitations and opportunities. A range of factors shapes such experiences, including the following:

- ***Time poverty and family care responsibilities.*** Childbirth, childcare, and care for other family members impose limitations on women's ability to work outside or far from home, and reduce the hours they have available for paid work or self-employment.

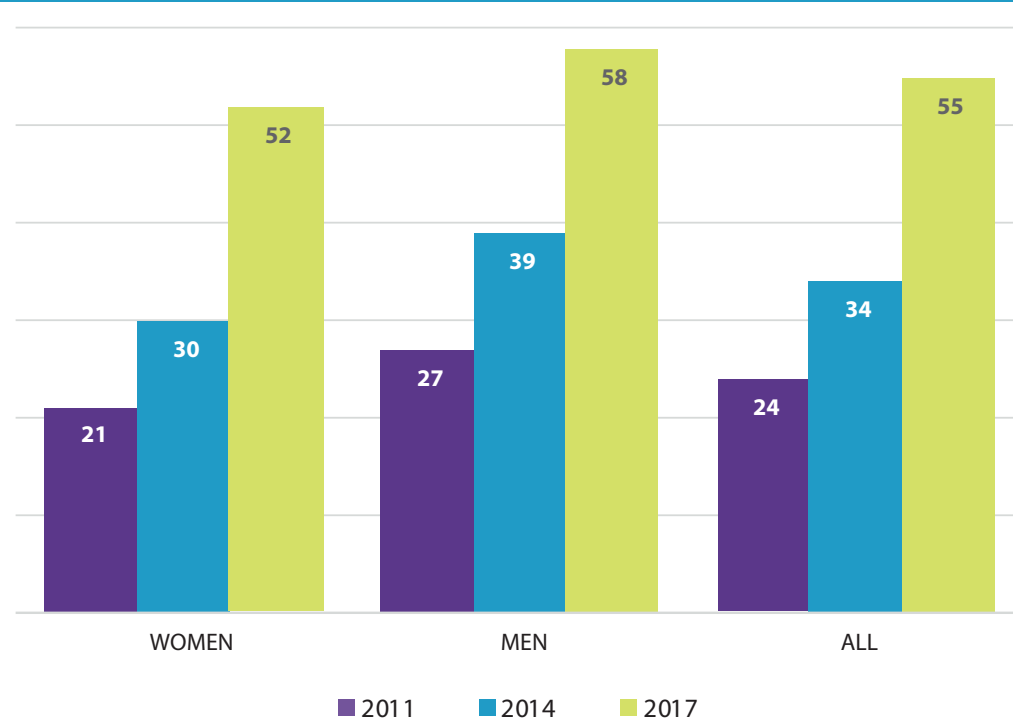
- ***Legal rights.*** While laws in most countries no longer discriminate against women in financial services, there are still legal and traditional limitations on landownership and ownership of other assets that limit women's ability to access finance.
- ***Security concerns.*** Physical security is a concern to many women, especially when carrying cash or valuables.
- ***Lower human capability.*** Compared with their male counterparts, women in Africa are less financially literate, have less experience with formal banks, have less access to information, and have lower ownership of mobile phones.

These factors can limit women's uptake and use of financial services, affecting their investments and returns to investments. For example, an IPA study in Uganda found that loans, grants, and training provided to participants raised men's profits by 58 percent but women's not at all (Fiala 2015). In addition to these differences, or because of them, there are persistent gaps in financial inclusion between men and women (Figure 5.1), and between women based on variables such as whether they are rural or urban, the different sectors they are in, and how socially connected they are, among others.

And while digitization and use of mobile technology increase access to financial services, this trend is a dual-edged sword—it makes reaching women easier, but it can also raise the barriers to access because women's access and use of technology lags behind that of men. In almost all the countries included in the Findex data for 2017, there is a gender gap in both bank account and mobile money account ownership (Demirgüç-Kunt et al. 2018).

Financial account ownership, and the gender gap therein, varies significantly across countries as shown in Table 5.1, but that gap also varies across sectors. For example, across six African countries for which data were available, the proportion of women smallholder farmers who had formal bank accounts ranged from 6 to 19 percent, while for women entrepreneurs, the range was 14 to 34 percent (see Figure 5.2). In Kenya, whereas 53 percent of male entrepreneurs had a bank account, only 34 percent of female entrepreneurs did. And for women smallholder farmers, 19 percent had a bank account compared with 34 percent of men who held bank accounts. What is clear is that across all countries, fewer female smallholder farmers and female entrepreneurs had bank accounts than did male smallholder farmers and entrepreneurs (from Anderson 2016, 2017; Anderson

**FIGURE 5.1—TRENDS IN OWNERSHIP OF A FORMAL ACCOUNT (NOT INCLUDING MOBILE ACCOUNTS) BY MEN AND WOMEN IN AFRICA SOUTH OF THE SAHARA (%), 2011-2017**



Source: World Bank Findex data for the years 2011, 2014, and 2017.

et al. 2016; National Bureau of Statistics, FSD Zambia and Bank of Zambia 2015; FinMark Trust 2014).

Access to credit also remains a big constraint. From Table 5.2, data from four countries—Uganda, Tanzania, Cote d'Ivoire and Mozambique—show that in both rural and urban areas, more men than women had a loan. What is however interesting is that when asked whether they had access to a loan through groups or associations, more women in rural areas than men indicated they had access.

Women often cite lack of money or regular income as the most important reason for not having an account. In fact, more women than men cite this as the primary reason for not having a bank account (FinMark Trust 2016). This is a function of their restricted position in the household, where the proceeds from

activities such as agriculture are often controlled by the male household head. Women farmers also tend to earn less from agriculture since they work on small plots and are less productive in terms of output per unit of land, and as many of the outputs are consumed in the home, they do not generate a cash income that passes through the women's hands.

Legal and societal restrictions on women's ability to inherit property and restrictions that limit their ability to engage in economic activity have a direct impact on women's ability to access finance because they prevent them from acquiring assets that can be used as collateral to obtain loans from financial institutions. Iqbal (2018) in the World Bank's Women, Business, and the Law reports that 42 percent of economies score 0 on the building credit indicator and four regions—East Asia and the Pacific, the Middle East and North Africa, South Asia, and Sub-Saharan Africa—each have an average score of 20 or below out of a maximum score of 100. The report, however, does contain indicators of significant progress with countries instituting several measures to increase women's access to institutions, including financial institutions. For example, in the Democratic Republic of the Congo, the reformed family code allows married women to sign contracts, get jobs, open bank accounts, and register businesses in the same way as married men. And in Zambia, the Gender Equity and Equality Act prohibits discrimination based on gender and marital status in access to credit.

Social norms are a far more complex barrier to women's entrepreneurship. They can force women into socially acceptable sectors and can shape their perceptions about what they are capable of achieving (Cirera and Qasim 2014; Oxfam 2017). In many cases, women rank lower than men in their perceptions of opportunity and self-confidence and higher on fear of failure (Koellinger et al. 2007). For example, data from the Global Entrepreneurship Monitor (GEM) project show that across countries, early-stage female entrepreneurs tend to exhibit significantly greater fear of failure than male entrepreneurs (Minniti 2010). The GEM dataset also estimates that subjective perceptions about one's own skills, likelihood of failure, and opportunities explain a significant proportion of the gender gap in entrepreneurial activity (Global Entrepreneurship Monitor 2016).

**TABLE 5.1—GENDER GAPS IN BANK AND MOBILE MONEY ACCOUNT OWNERSHIP FOR SELECTED COUNTRIES, 2017**

Country	Men's account ownership (%)	Women's account ownership (%)	Gender gap in all accounts (% points)	Gender gap in bank accounts (% points)	Gender gap in mobile money (% points)
Cameroon	39	30	9	8	4
Chad	29	15	14	7	9
DR Congo	27	24	3	1	5
Côte d'Ivoire	47	36	11	10	8
Gabon	64	54	10	9	5
Ghana	62	54	8	8	10
Kenya	86	78	8	19	8
Liberia	44	28	15.5	15	5
Mali	45	26	19.7	17	9
Mozambique	51	33	18	14	10
Uganda	66	53	13	12	16
Zimbabwe	59	52	7.6	10	5

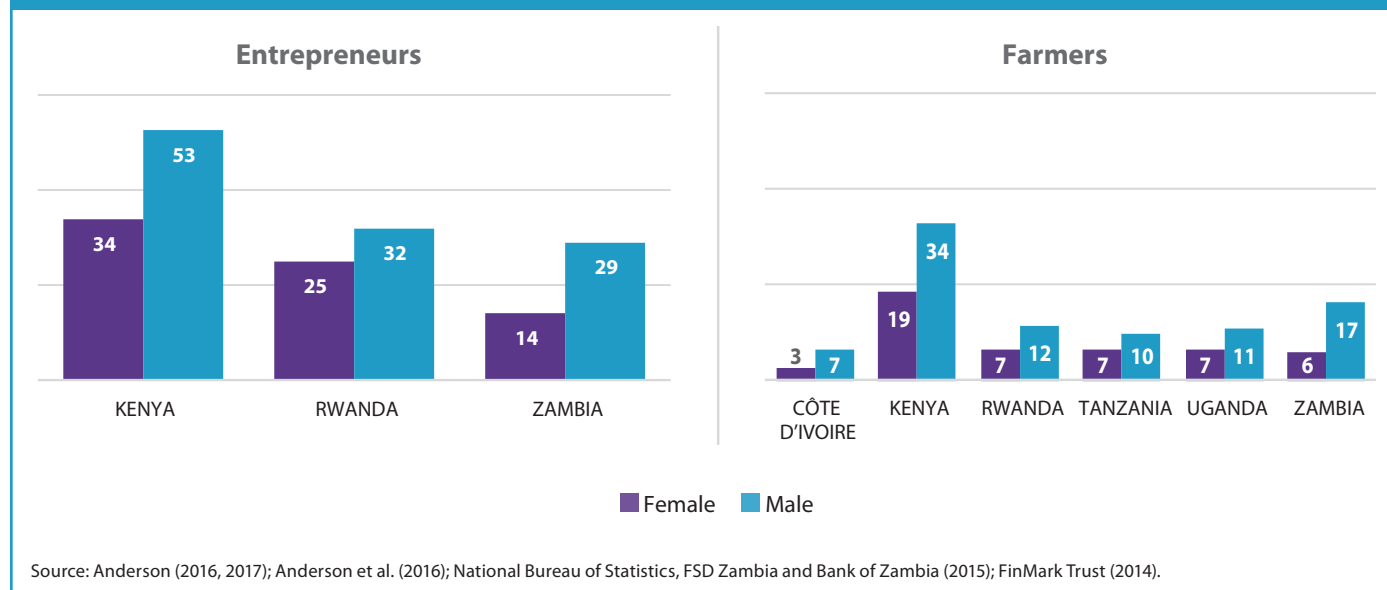
Source: Mayanda (2018).

Social norms dictate women's ability to negotiate within households and communities. They set boundaries for what can be bargained and how. As Agarwal (1997) effectively argues, the focus on intrahousehold dynamics without understanding how such dynamics are shaped by social norms is myopic. She points out that gender relations beyond the household matter and that extra household and intrahousehold gender relations are intricately intertwined to shape women's bargaining power both within and outside the household. Similarly, recent evidence from the Growth and Economic Opportunities for Women (GrOW) program covering 50 countries across Africa and Asia suggests that tackling adverse gendered social norms that hold women back is critical to achieving gender equality and women's economic empowerment (Marcus 2018). GrOW program research finds that social norms largely account for the stagnation in women's labor force participation in some contexts, the frequent concentration of women in relatively less

lucrative sectors and occupations than those occupied by men, and gendered barriers and challenges that disproportionately affect women. Field et al's (2016) work in India demonstrates how gender norms internalized by men have played an important role in keeping women out of the labor force. Deeply rooted and restrictive social norms and women's dual roles as caregivers and breadwinners also limit their choices and access to opportunities.

Women across Africa south of the Sahara (SSA) also tend to have lower levels of education, and while that is not the only factor

**FIGURE 5.2—PROPORTION OF FEMALE SMALLHOLDER ENTREPRENEURS AND FARMERS WITH BANK ACCOUNTS IN SELECTED COUNTRIES**



**TABLE 5.2—SELF-REPORTED CREDIT AVAILABILITY AND UPTAKE AMONG SMALLHOLDER FARMERS (%)**

	Currently has a loan (any type, including informal)				Reports having access to loans through groups or associations			
	Rural		Urban		Rural		Urban	
	Female	Male	Female	Male	Female	Male	Female	Male
Uganda	18	21	18	21	49	43	40	47
Tanzania	11	14	8	10	36	20	31	19
Côte d'Ivoire	8	4	3	4	14	12	16	16
Mozambique	5	6	9	12	19	12	9	0

Source: Anderson (2016), Anderson, Collins, and Musiime (2016), Anderson (2017b), Anderson, Moler, and Kretchun (2016).

that might influence whether they use financial services, it can influence their financial literacy. On average, there are still only 92 girls per 100 boys in primary school in the region (UNESCO 2015). Awareness-related barriers include women's lack of understanding about the benefits of having a financial product, how financial products work, the financial language used, and where and how to apply for a product. Attitude-related problems, such as women's feeling that formal financial services are not made for them, also play a role.

Equally important is the gap in asset ownership. This includes lower levels of phone ownership among women, which acts as a first-step barrier to accessing digital financial services. GSMA (2019) reports a 10 percent gap in mobile phone ownership with some countries having a gap as high as 58 percent. GSMA (2019) and Perlman (2017) recommend several actions to address the lack of phone ownership. Those include leveraging alternative financing mechanisms and channels; promoting the mobile phone as an effective development tool that creates education, health, and business opportunities; and helping to identify culturally relevant and acceptable ways of promoting mobile phone ownership among women and youth.

The design of products that do not suit the needs and priorities of women is another key barrier to women using financial services. Gender-blind marketing of products can also result in women not accessing information on products, including how to apply for them and how to use them. Other supply-side barriers include

inappropriate distribution channels, restrictive and often tedious account-opening requirements, and staff that are not trained on gender issues and how to address them. Table 5.3 summarizes many of the constraints women face in accessing finance.

These differences have implications for women's financial needs and their financial behavior. A review of gender dynamics in the financial diaries undertaken by Bankable Frontier Associates in "A Buck Short" (Zollmann and Sanford 2016) examined the financial behavior of households in Kenya, Mexico, and India. Although each country had its own unique experiences, the study identified some commonalities. Whereas women prioritized household responsibilities such as children's education and

housing, men prioritized business expenses and large investments such as land. The study indicated that women are much less likely to take risks than men. Their role tends to be that of defending and protecting the household from outside shocks. Women also face interruptions in their business or farming enterprise to give birth and to look after family members. Women have more horizontal than vertical

**TABLE 5.3—A SUMMARY OF GENDER-RELATED CONSTRAINTS IN FINANCING**

Demand side	Supply side
<ul style="list-style-type: none"> <li>• Unequal bargaining power in the household and market</li> <li>• Concentration in informal and micro activities</li> <li>• Limited time and mobility due to care work</li> <li>• Lack of assets for collateral</li> <li>• No formal identification</li> <li>• No cell phone ownership</li> <li>• Limited financial and digital literacy</li> <li>• No trust in banks</li> <li>• Limited access to (business) education</li> <li>• No role models</li> <li>• Powerless networks</li> </ul>	<ul style="list-style-type: none"> <li>• Inappropriate product and service offerings</li> <li>• Gender-blind marketing</li> <li>• Inappropriate distribution channels</li> <li>• Restrictive account-opening requirements</li> <li>• Inaccessible locations</li> <li>• Limited or disrespectful client engagement</li> <li>• Limited trust and belief in women's business success</li> </ul>

Source: Adapted and modified from Holloway et al. (2017).



networks—they are more likely to know other women in situations similar to theirs, while men are likely to know other men from a range of social and economic groups—enhancing their ability to expand their networks. Women are less likely to travel away from home; most of their transactions and income-generating activities are close to home. This is also reflected in their lower phone ownership and lesser ability to interact with people further away. Women are also more likely to conform to gender roles given stronger societal pressure to conform to gender norms, facing judgment from family members, when compared with men, who are less likely to conform to norms because the social penalties for men are lower.

Further, preferences and willingness to take risks are gendered, which may explain women’s preference for savings and liquidity. Using data from a field experiment in Kenya, Dupas and Robinson (2013) documented how low-income women place importance on financial liquidity in savings to be able to meet unexpected expenditures as opposed to earmarked money to mitigate future risk. Simply providing a safe place to keep money was sufficient to increase health savings; earmarking for preventative health reduced savings. Delavallade et al. (2015) also found that female farm managers were less likely to purchase agricultural insurance and more likely to invest in savings for emergencies, even when controlling for access to informal insurance and differences in crop choice.

Although having savings plays an important enabling role for women, women’s trust in institutions factors into this. An experimental study by Bachas et al. (2016) of conditional cash grant transfer recipients in Mexico found that lack of trust in formal financial institutions is a key barrier to formal savings among poor women. Building trust in financial institutions through a rollout of debit cards that enabled clients to monitor their transactions resulted in a notable increase in savings over time as women gained more trust and confidence in the institutions by regularly observing their accounts. Akter et al. (2016) also found that gendered differences in farmers’ level of trust in insurance institutions was key in shaping gender-differentiated preferences for weather-indexed insurance.

## Financial-Sector Innovations Focused on Women

Many initiatives over several decades have offered women financial services to improve their productivity in agriculture and informal business. In this section, we describe a few examples in low-income contexts.

### Microfinance Institutions

Microfinance institutions (MFIs) constitute one of the oldest initiatives to ensure that women have access to financial services and especially credit. With roots in Bangladesh and other countries of the developing world, such as Bolivia, MFIs such as Grameen and BRAC have reached tens of millions of women. Their innovations in the group-lending methodology have spread around the world. Table 5.4 provides some examples of MFIs in Asia and Africa that are mostly focused on women.

The effectiveness of MFIs to economically empower women has been mixed. Until recently, there was limited rigorous evaluation, but a recent meta-analysis (Gopaldaswamy et al. 2016) showed positive effects on asset accumulation and

**TABLE 5.4—SOME LARGE MFIs THAT ARE MOSTLY FOCUSED ON WOMEN**

Country	Institution name	Share of female membership	Approximate number of members (as of date)
Bangladesh	Grameen	97%	8.9 million (2017)
	BRAC	87%	5.4 million (2015)
India	ASA (Association for Social Advancement)	93%	5 million (2013)
	SKS (Bharat Financial Inclusion)	100%	6 million (2014)
	SEWA (Self Employed Women’s Association)	100%	1.4 million (2015)
Pakistan	Kashf Foundation	100%	230,810 (2013)
Uganda	BRAC	98%	176,624 (2015)
	Finance Trust	Not available	200,000 (2017)
Mexico	Compartamos	90%	2.5 million (2014)
Kenya	Kenya Women Microfinance Bank	100%	800,000 (2018)
Morocco	Foundation Albaraka	52%	145,870 (2017)

Source: Ng’weno et al. (2018).

income, as well as women's empowerment. However, the size of the effect is too low to move households out of poverty and cannot be considered transformational, except perhaps over the very long term (Duvendack et al. 2011).

In a review of 15 studies of evaluations of MFIs in Africa (in Ethiopia, Ghana, Kenya, Madagascar, Malawi, Rwanda, South Africa, Tanzania (Zanzibar), Uganda, and Zimbabwe), van Rooyen, Stewart, and de Wet (2012) found only one study on the impact of a rural microcredit program in Uganda that demonstrated greater empowerment among women taking part in the program, measured in terms of women's capability to have greater control over matters that affect their lives and livelihoods. Gaining financial management skills, owning bank accounts, greater mobility outside their homes, and contributing to household income were some of the contributing factors. There was also evidence of women's increased ownership of household assets microenterprises.

### Village Savings and Loan Associations

Another widespread intervention is the village savings and loan association (VSLA) approach, which is an improvement on the rotating savings and credit associations used by women in many traditional societies. VSLAs reach tens of millions of women in Asia and Africa. The approach is founded on the premise that small loans arising from savings within groups—not from a financial institution—can improve women's productivity. Rigorous evaluation of VSLA programs is relatively recent. Karlan et al. (2017) looked at VSLA programs run by CARE in Ghana, Malawi, and Uganda over three years and found positive effects on business income and women's empowerment but not on consumption. The impacts were described as positive but did not lead to substantive changes in agricultural production, livestock holdings, or the accumulation of household assets—at least not in the short term. Financial diaries of VSLA members compiled by Catholic Relief Services in Zambia from 2014 to 2016 showed an increase in business activity but no increase in income (Chang 2017). Nonetheless, the evidence is growing that women's collectives and savings groups can play important roles in enhancing women's economic empowerment and agency (Brody et al. 2015; Rickard and Johnsson 2019).

### *Fintech Solutions to Women's Financial Inclusion*

The spread of mobile money accounts has created new opportunities to better serve women, poor people, and other groups traditionally excluded from the formal financial system. But as we indicated earlier, whereas mobile and digital services do increase access to financial services, their presence can in some instances widen the gender gap.

Low-cost digital financial services such as mobile money address several barriers to financial inclusion for women, including proximity, affordability, and know-your-client requirements. However, women's lower rate of mobile phone ownership compared with men hinders their taking full advantage of such services. Although cell phone penetration in Africa is high (about 70 percent), women lag behind men in cell phone usage and access to cell phones in general. In Uganda, a country with one of the widest gender gaps in phone ownership in Africa, 77 percent of men own a mobile phone, while only 54 percent of women do (Pew Research Center 2015). According to GSMA (2015a), about 64 percent of women in SSA are unconnected.<sup>1</sup> Recent data from GSMA (2019) show that approximately 80 percent of women globally own mobile phones. And in Africa, one sees on average a 15 percent gap in phone ownership between men and women.

Having a phone, however, is only one of the issues. First, the type of phone matters, and the growth in use of smartphones, which most fintech solutions require, is unequal across populations. Whereas the average rate of smartphone ownership in the developed economies is 76 percent, in Africa it is much lower. In Kenya, for example, 41 percent of the population own smartphones, 45 percent own other types of phones, while 14 percent have no phones (Pew Research Center 2019).

Second, there is a big difference between mobile phone ownership and use for digital services. GSMA (2019) analyzed some of the barriers women face in using their mobile phones for Internet-enabled services, including demographic barriers such as literacy rates and labor force participation, social norms that limit women's mobility and financial decision making, unawareness of services, and security concerns. In Kenya, for example, 62 percent of women, versus 78 percent of men, are aware of the mobile Internet, and in Tanzania only 12 percent of women download or use any apps compared with 27 percent of men.

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<sup>1</sup> Unconnected females include those who do not own a mobile phone but may borrow one.



Notwithstanding the gaps described above, mobile banking and other financial-sector innovations that can accelerate the pace of financial inclusion are proliferating, especially in SSA, a region that has pioneered the use of mobile banking. According to the 2014 Global Findex database, 12 percent of adults in the region use mobile money, versus just 2 percent worldwide (Demirgüç-Kunt et al. 2015). This innovation has been instrumental in reaching those excluded from traditional banking services. So while bank access remains low, mobile money has been growing rapidly, especially in East Africa. There remain substantial gaps in banking access between men and women, but that gap is much smaller in mobile money and shrinking (Table 5.5).

Mobile money and mobile banking offer an opportunity to close the financial inclusion gap between men and women in the medium-term future. This has been a key driver of financial inclusion in East Africa, particularly among entrepreneurs. Table 5.6 shows the uptake of mobile accounts compared to traditional bank accounts.

A recent study by Genesis Analytics (2017) sought to understand the impact of fintech solutions on women. The study distinguishes between (1) innovations that transform the market—the “lift-all-boats” solutions; (2) fintech innovations that specifically target women; and (3) digitized institutions and services that serve women.

### Innovations That Lift All Boats

Some fintech solutions serve and benefit the market in general without having a specific gender focus. Given the huge impact on financial inclusion of M-Pesa-style *mobile money products* in an increasing number of markets, M-Pesa can be included in this classification. Equally important would be the emergence of M-Shwari and competing products in an increasing number of markets. Evidence shows that mobile services such as M-Pesa have an impact on women. For example, a study by Ndiaye (2014) found that women were much less likely to use their money when they saved it in M-Pesa versus saving in their homes. The study found that the e-savings platform allowed women to safeguard their money. Women who participated in the study reported that in the past, their husbands often used their money for personal items and left them with no money for income-generating

**TABLE 5.5—RATES OF OWNERSHIP OF AND ACCESS TO MOBILE PHONES AMONG SMALLHOLDERS AND ENTREPRENEURS**

	Has his or her own mobile phone (%)				Has access to a mobile phone (%)			
	Smallholders		Entrepreneurs		Smallholders		Entrepreneurs	
	Female	Male	Female	Male	Female	Male	Female	Male
Côte d'Ivoire	80	89	-	-	89	95	-	-
Kenya	69	75	84	90	-	-	-	-
Rwanda	55	65	81	88	83	87	95	95
Tanzania	76	83	-	-	95	97	-	-
Uganda	53	71	-	-	92	94	-	-
Zambia	40	61	67	75	71	80	83	85

Source: Anderson (2017b), Anderson, Collins, and Musiime (2016), Anderson (2016)

**TABLE 5.6—UPTAKE OF MOBILE MONEY ACCOUNTS VERSUS TRADITIONAL BANK ACCOUNTS AMONG SMALLHOLDERS AND ENTREPRENEURS**

	Currently has a mobile money account (%)			
	Smallholders		Entrepreneurs	
	Female	Male	Female	Male
Côte d'Ivoire	16	34	-	-
Kenya	59	67	77	84
Rwanda	23	37	50	66
Tanzania	43	51	-	-
Uganda	15	25	-	-
Zambia	26	49	51	69

Source: Anderson (2017b), Anderson, Collins, and Musiime (2016), Anderson (2016)

activities the following day. With their money saved in M-Pesa, their husbands no longer had easy access to it.

Genesis Analytics has confirmed these benefits with midterm evaluations of such interventions as UNCDF’s Mobile Money for the Poor, Mercy Corps’ AgriFin Accelerate, AGRA’s Financial Inclusion for Smallholder Farmers in Africa Project, and Microcred’s Mass Market Financial Inclusion project. In each of these

evaluations, women participants in focus group discussions and individual interviews highlighted the value of having increased financial independence, which has enabled them to invest in their businesses and also save for the future.

Another innovation in this category is *insurance delivered through mobile services*. According to GSMA, by 2015 insurance delivered through mobile phones was available in 33 emerging markets, predominantly in SSA (58 percent), South Asia (19 percent), and East Asia and the Pacific (18 percent). This has increased with new services launched since then. These products show signs of positive impact, especially in the lives of women. For example, Orange launched a mobile insurance product (Tin Nogoya) in Mali that activates automatically when a savings balance reaches about US\$66. It provides a payout in the event of death or permanent disability of about US\$260. Early results show that 97 percent of its female users had never been insured and 98 percent of surveyed users wish to continue saving to reach the insurance activation threshold (GSMA 2015b).

Low-income women in rural areas often face barriers to accessing a safe place to save due to mobility and time constraints. Thus, the innovation of *agency banking* using handheld, mobile, point-of-sale devices or roaming staff to link clients directly to the financial institution can reduce the risk, distance, and indirect cost of women's financial participation.

### ***Gender-Targeted Fintech Solutions***

An alternative lens is to consider how fintech is having an impact on areas of economic activity that are dominated by women or of particular concern to them. This could include education and health, given women's disproportionate care-giving role in the household, or social transfers, given women's greater eligibility for social grants due to their income levels. There have been very few fintech innovations targeting women specifically (Modato 2017).

Most such innovations are in the health and education sectors or in social transfer schemes. For example, Access Bank's Better Mama, Better Pikin in Nigeria is a mobile wallet that offers microsavings along with health and life insurance services for expectant mothers. A woman is required to save only a minimum of about US\$3 per month. The "premium" gives her medical insurance coverage of up to about US\$125 per annum and life insurance coverage of up to about US\$312 in case of death or permanent disability.

### ***Institutions Serving Women***

Fintech innovations have also been used to improve the efficiency and ease of use of financial services from institutions traditionally serving women such as

microfinance institutions (MFIs) and VSLAs. Most MFIs have small balance sheets and can hardly afford, maintain, or develop their information technology and management information systems. This means they end up having poor operational capabilities. To address these challenges, Musoni, a cloud-based banking system, developed a low-cost, cloud-based core banking system to help microfinance providers improve efficiency, reduce costs, and expand outreach. Musoni pioneered the use of new technology in microfinance, and it is integrated with multiple mobile money transfer services, including M-Pesa. It includes an SMS module for sending automated payment reminders, a tablet app that loan officers can use for offline data capture, a mobile banking app for clients, and credit scoring to improve lending decisions. Musoni helps MFIs to leverage technology at a fraction of the cost associated with traditional banking systems. The benefits of integrating with Musoni have been reported by multiple MFIs. The Mama Bahati Foundation (MBF), a Tanzanian institution providing microfinance to women entrepreneurs, is a good example. Within less than two years after integrating with Musoni, MBF expanded by more than 100 percent, with portfolio quality improving at the same time. MBF saw a significant reduction in cash handling, alongside the introduction of more efficient processes. These improvements have freed staff to concentrate on recruiting and helping clients rather than on administrative tasks, enabling the business to scale up its operations.

Another example is the digitization of savings groups, which has often proved difficult given both the engagement model and the location of many of the groups. When linked to formal banking institutions, these savings groups often require bespoke savings products that have reduced or no fees and at interest that can offset the cost of traveling to the bank. In addition, given their lack of experience with banking and low levels of literacy, groups often need additional help from bank staff to complete the account-opening process, and busy staff may lack the required time and incentive to help (Plan, Barclays, and CARE 2015).

In Kenya, Financial Sector Deepening Kenya (FSD Kenya) attempted to improve the quality of recordkeeping at groups by developing an electronic-recording app for a low-cost smartphone. FSD Kenya partnered with Software Group to develop an Android-based app called e-Recording to improve the quality and speed of data capture while enhancing transparency and security of the data. This convenient and reliable app is used to record all the transactions of a savings group. It also captures some sections of the group constitution, especially those that relate to financial transactions, as well as recording group and

member details. The application also does all the calculations—including share-out—reducing the time spent and errors associated with manual calculation.

## *Toward a Gender-Transformative Financial Inclusion Approach*

Notably, most of the innovations described in the previous sections have been largely introduced within business and social contexts characterized by significant gender bias. As a result, low-income rural women continue to face barriers in accessing financial services and achieving full financial inclusion. Some of the evidence presented also underscores the fact that financial services alone are not enough to transform livelihoods. Increasingly, we recognize that ensuring the impact of financial inclusion on women’s livelihoods cannot be done without addressing multiple gender inequalities embedded in the entrepreneurial ecosystem—including sociocultural norms and the gendered division of labor.

As Kabeer (2017) notes, improved access to new financial offerings provides possibilities, rather than a predetermined set of outcomes, and which of those possibilities are realized in practice depends on levels of gender equality across the ecosystem in which the new products are introduced. Other financial services available and the extent to which women can shape decisions around financial product consumption and patterns of use also determine these outcomes (Stamp 1989). This calls for a gender-transformative approach to financial inclusion defined as a way of doing financial inclusion explicitly directed toward creating gender-equal financial systems that enable all entrepreneurs, regardless of gender, to overcome supply-side and demand-side constraints and improve their livelihoods on equal terms.

Gender-transformative approaches depart from the notion that gender defines what women and men can have (resources, assets), do (actions, decisions), or be (roles, positions) and challenge the inequalities embedded in society (Cole et al. 2014; Risman 2004; Martin 2004). They are distinguished from more mainstream approaches to development by a strong commitment to alter and transform existing inequalities by challenging unequal power relations that are enforced by regulatory frameworks and adverse norms. Gender-transformative approaches are thus more political than mainstream development approaches because they deliberately urge a shift beyond “business as usual” and challenge systemic inequalities that underpin and shape social and economic systems.

In essence, gender-transformative approaches go beyond treating “symptoms” of women’s marginalization and gender inequality at the individual level to challenge power dynamics at institutional levels that systematically reinforce gendered inequalities (Rao and Kelleher 2005; Rottach, Schuler, and Hardee 2009; Hillenbrand et al. 2015). According to Martinez and Wu (2009) and Morgan (2014), outcomes of gender-transformative approaches can be examined across three key dimensions of change: (1) changes in individual or collective empowerment of women (for example, changes in their choices, skills, knowledge, self-identity, and access to and control over resources); (2) changes in intrahousehold and external relationships (for example, changing the expectations and dynamics embedded within relationships between people in the home, market, community, institutions, and organizations); and (3) changes in formal and informal rules and practices (such as regulatory systems and social norms).

Adopting a gender-transformative approach to financial inclusion automatically implies a shift in emphasis from how financial products and services enable access to financial offerings to how financial inclusion affects women’s lives in terms of empowerment and social justice. The central question is therefore simply how financial inclusion can serve as a means to realizing women’s empowerment and gender equality. Having a bank account or receiving digital transfers and payments are important, but they are means to an end. The ability to deploy these assets to mitigate shocks, leverage resources, and make financial decisions that respond to women’s needs, preferences, and aspirations is key. Table 5.7 shows some characteristics and outcomes of a gender transformative financial system.

**TABLE 5.7—CHARACTERISTICS AND OUTCOMES OF GENDER-TRANSFORMATIVE FINANCIAL INCLUSION**

Characteristics	Outcomes
<ul style="list-style-type: none"> <li>• Gender analysis of the entrepreneurial ecosystem</li> <li>• Capacity building on supply and demand sides</li> <li>• Diverse strategies and interventions, targeted toward multiple levels</li> <li>• Innovative partnerships and multistakeholder commitments to meaningful change</li> <li>• Action-learning integrated into strategies and interventions</li> </ul>	<ul style="list-style-type: none"> <li>• Enhanced women’s empowerment</li> <li>• Strengthened relationships and negotiation dynamics</li> <li>• Enabling formal institutions (policies and regulations)</li> <li>• Enabling informal institutions (sociocultural norms)</li> </ul>

Source: Vossenberget al. (2018).

To implement a gender-transformative financial inclusion model requires an analysis of how gender works in the entrepreneurial ecosystem and how that ecosystem may systematically reinforce gender inequalities by constraining the ability of women entrepreneurs to access and benefit from financial offerings. The term entrepreneurial ecosystem refers to the specific social, political, and economic systems in which entrepreneurs operate their lives and businesses. This ecosystem, sometimes also referred to as the business environment, offers the necessary means to build a viable business and influences entrepreneurial behavior, strategies, and outcomes (Brush et al. 2009).

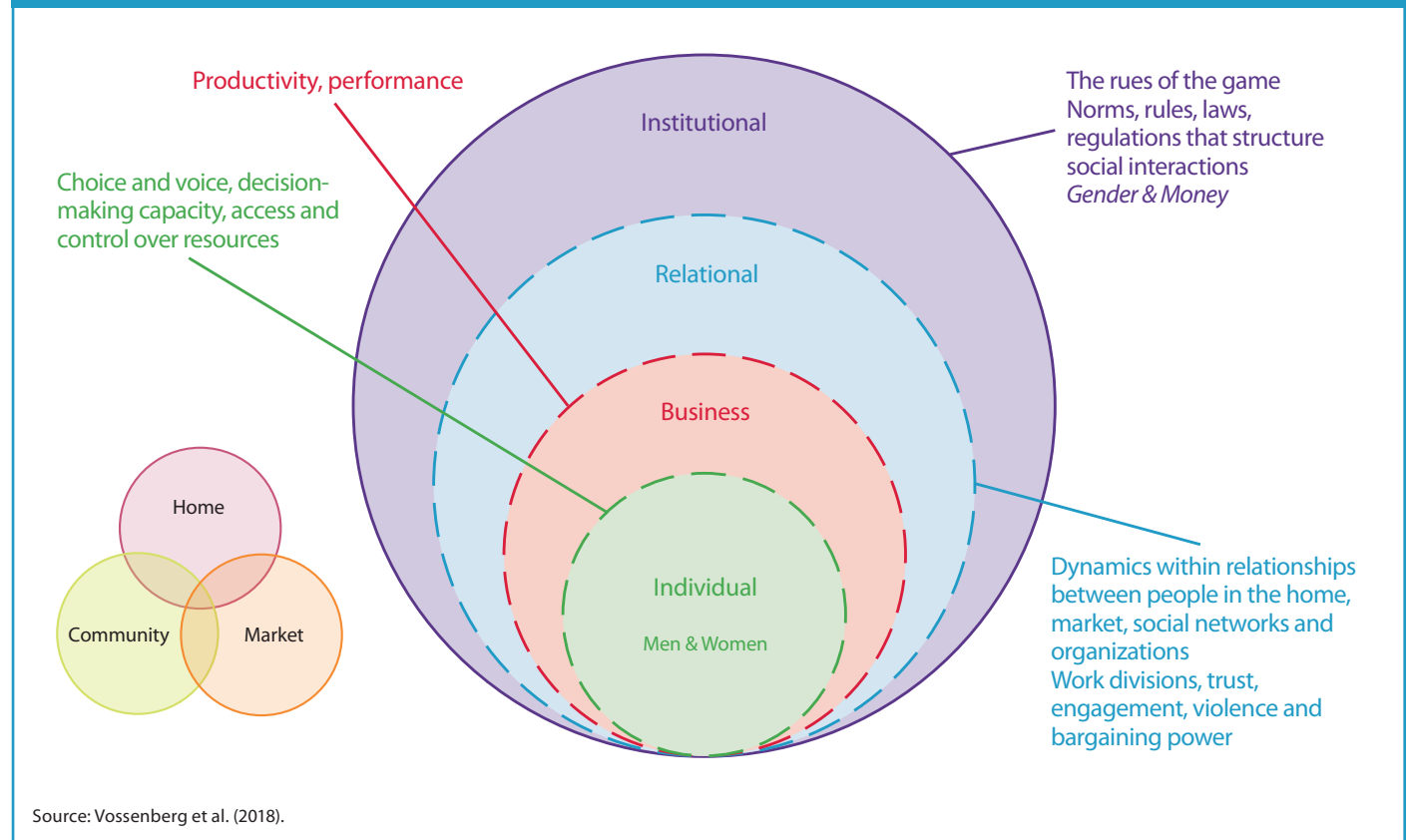
Figure 5.3 visualizes the entrepreneurial ecosystem. It shows that it consists of different and interconnected levels that can produce constraints on women entrepreneurs' ability to operate their businesses. At the macro level, it encompasses regulatory frameworks such as policies, laws, and bank regulations. At the meso level, sociocultural norms are at play, both in shaping the regulatory frameworks and what women and men can have (resources, assets), do (actions, decisions), or be (roles, positions) in markets, networks, or finance. But as in the home, at the heart of the ecosystem sits the household context, wherein women and men can have different roles and tasks in terms of care work, cleaning and cooking, and financial decision-making power.

Vossenberget al. (2018) apply this gender-transformative paradigm to the financial inclusion life cycle. The financial inclusion cycle describes the processes that financial institutions go through when offering financial products

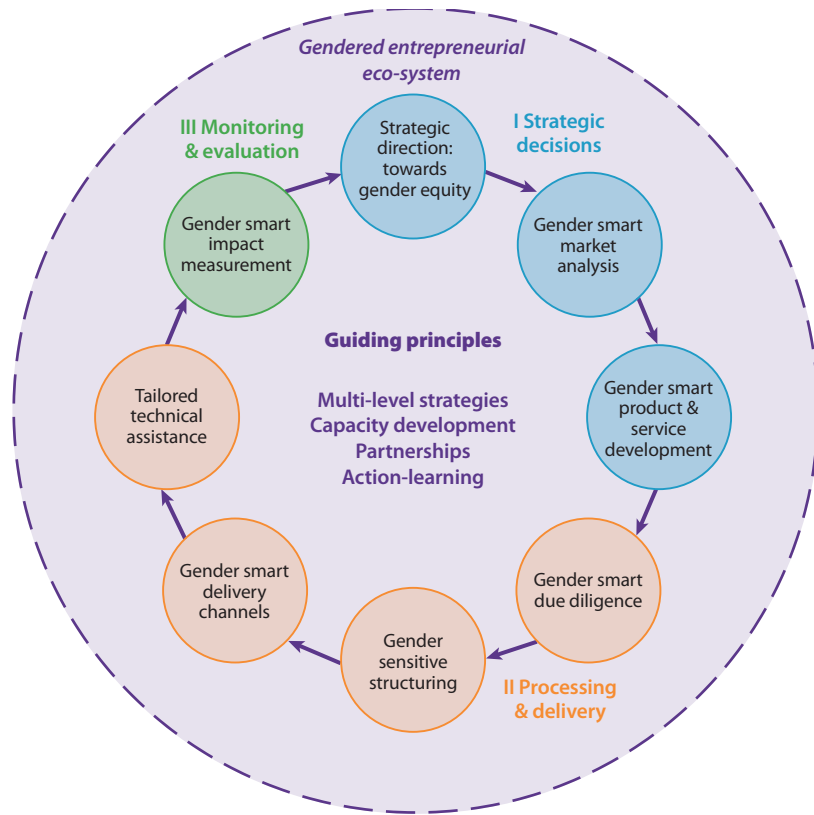
or services to their clients. It encompasses (1) **strategic decisions** (including all decisions for market segmentation and specific investments, market analysis, and product and service development); (2) **processing and delivery** (including due diligence, structuring of the product, product and service delivery, and technical assistance); and (3) **monitoring and evaluation** (including all indicators and evaluation of results and impacts). The cycle is presented in Figure 5.4. At each stage, we depict what a gender-transformative approach would look like in the process.

**Strategic decisions.** In the first phase of the financial inclusion life cycle, research and development of financial offerings is carried out. This encompasses all the *strategic decisions* financial institutions make for identifying and

**FIGURE 5.3—DIMENSIONS OF GENDER-TRANSFORMATIVE CHANGE IN FINANCIAL INCLUSION**



**FIGURE 5.4—GENDER-TRANSFORMATIVE APPROACH IN THE FINANCIAL INCLUSION LIFE CYCLE**



Source: Vossenberget al. (2018).

developing specific investments, products, services, and markets, and for understanding customers and their needs and risks and so on. This phase includes activities such as market analysis and product and service development, which entails translating broad ideas into new products or services, through prototyping, pilot executing, and final execution (Mastercard Innovation Lab 2017).

When a gender-transformative approach is applied, the strategic direction gets framed and directed toward gender-equality achievements and creating a meaningful impact on the lives of women. A holistic gender analysis of the

entrepreneurial ecosystem would be part and parcel of the R&D process. This entails more than making a statistical breakdown by gender when doing market research. It means analyzing how gender works at home, in markets, and in cultural and regulatory systems that shape the lives of men and women, and the power relations between them. Such an endeavor would reveal new business and commercial insights (IFC 2017). Since women entrepreneurs are not a homogeneous group, a gender-smart market segmentation study would reveal that there are different—and completely underserved—segments within the “women entrepreneurs market,” with distinct constraints, needs, and aspirations. The subsequent product design and service delivery would also reflect gender analysis, integrating so-called “gender-smart design features.” These include the use of women-centered design approaches such as, for example, the use of group formation or combining financial products with nonfinancial services such as leadership training for women.

One example that demonstrates elements of a gender-transformative approach to financial inclusion is a new partnership between CARE International, PostBank, and two local partners (CARE and DoubleXEconomy 2017). Together, they are implementing a project that aims to support women microentrepreneurs in rural areas of Western Uganda, organized in VSLAs. The project is introducing a “digital sub-wallet”—a mobile banking product specifically designed to meet women’s priority needs, such as saving for school fees or health care—and providing household financial counseling sessions to reduce inequalities and conflicts between men and women over financial decision making. In addition, capacity development is offered both on the demand and on the supply side, to create a deeper understanding and interaction between different actors. A study is also integrated into the approach to closely monitor uptake rates and to better understand factors that influence adoption of the practices and the experience of VSLA members. By means of mixed methods, the project-planning process is informed by factors such as community attitudes toward finance, relationships between men and women and institutions, household decisions, privacy, control over savings, and permission to leave home. Psychometrics such as the perception of control over one’s destiny, mental health risks, and self-esteem are also monitored. The study identified a number of constraints to uptake and usage of the new financial product, which allows the partners to improve their capacity building and outreach to achieve



greater impact in the lives of participating women entrepreneurs (CARE and DoubleXEconomy 2017).

**Processing and delivery.** Using a gender-transformative approach, one would do gender-smart due diligence to better understand the clients' context, at the home, business, and community levels. Gender-smart due diligence delves into what goes on in the business, what the entrepreneur aspires to achieve, and how this is interconnected with what goes on at home, in the market, and in the community. It goes beyond assessing risks at the businesses level to also assessing needs and opportunities at these three levels, collecting information from multiple actors, including from women's groups and business networks, and civil society organizations. It focuses on identifying what technical assistance, product and service structuring, pricing, marketing, and delivery channels best match the client ecosystem and preferences, so that products and services can be designed and delivered more responsively.

Another initiative that recognizes elements of a gender-transformative approach to financial inclusion is that of the Nawiri DaDa ("Sisters Achieve" in Swahili) campaign in Kenya, launched by Women's World Banking in 2013. This campaign was specifically designed to trigger positive change in sociocultural norms toward women and finance, using television as the delivery channel (IFC 2017). A soap opera called Makutano Junction was produced, consisting of six episodes with banking-related story lines (Women's World Banking 2013). The show tackles social issues that keep women from banking and conveys practical knowledge, such as the importance of a solid credit history and the considerations to weigh when opening a bank account. The story follows a female cabbage-shredder and shows how banking becomes an important part of her life. An evaluation of the campaign indicated a 9 percent increase in account ownership among low-income women in Kenya. Unfortunately, no impact assessment was made in terms of changes in behaviors, attitudes, and relations.

**Monitoring and evaluation.** Evaluation of the performance of financial inclusion against empowerment and gender-transformative outcomes must be gender-sensitive, careful, and deliberate. Gender and development studies and practitioners have a long history of measuring and operationalizing both tangible and intangible aspects of women's empowerment and exploring gender-transformative change. In the financial inclusion evaluation/literature, where randomized control trials are the gold standard, there is valuable knowledge and

expertise on measuring outcomes and longer-term impact. It is very worthwhile to further explore how an interchange of concepts of gender-transformative change and financial inclusion can be operationalized in quantitative methods, particularly in the randomized control trials used as the main methodology for impact measurement.

Beyond these barriers, however, there is a broader need for the financial inclusion industry to give greater recognition to the role of women in the economy. This is based on the limited evidence of how women's specific needs and contexts are factored into design and outreach. One of the ways to better reflect women's needs is by increasing the number of women involved in the industry, including the fintech industry, who can provide insight on ways to improve access for women. According to a report facilitated by Innotribe, only 5 percent of leadership positions in fintech are filled by women, compared with 15 percent in the tech industry as a whole (Maule and Duhaime 2015). Addressing diversity within the industry can in turn generate diversity across the entire playing field, as well as drive success (Hunt et al. 2018).

## Conclusions

Key barriers to women's financial inclusion remain with a persistent gender gap in financial inclusion. Despite advances in financial inclusion of a digital nature, some technological approaches, such as mobile phones, do not necessarily close the financial inclusion gender gap for several reasons, including women's lower access to phones, lower literacy rates, and low awareness of these digital tools, and social norms that limit women's economic activity, mobility, and decision making.

Whereas most advances in improving women's financial inclusion have largely focused on women themselves, this chapter has focused on how institutions can in themselves make financial inclusion transformative. This will require actions at different levels.

Financial institutions, including those that provide fintech such as mobile solutions to financial inclusion, need to understand the needs and constraints of women and the nature of their businesses and to develop financial products that address those needs and constraints. This could include coupling financial services with literacy and norm change programs, mobile money solutions that integrate gender messaging to influence how decisions on use of credit are made, training their staff on how to engage with women clients, using delivery

approaches that are empowering to women and partnering with civil society organizations working with women to engage on changing norms, and building women's agency to seek and utilize financial services.

Donors and multilateral organizations, and especially those providing commercial banks with guarantee schemes for women-focused lending such as the African Development Bank, should incentivize commercial and mobile financial inclusion providers to be more gender transformative—for example, by requiring them to have some basic requirements of the gender-transformative financial inclusion agenda.

For researchers, there is more research to be done to determine and test an appropriate set of activities that commercial financial inclusion operators can effectively and efficiently combine with the traditional financial inclusion activities to achieve gender-transformative change and what the impact of these sets of interventions are in achieving change. For example, how would including gender messaging during mobile money transactions influence decisions on expenditures?

Finally, policy makers need to push for policies that are inclusive, provide incentives for multilevel stakeholder engagement, and act as conveners of dialogue and bring together multiple actors in the ecosystem to address gender barriers and make the financial system more inclusive.

# Why Gender Matters for Agricultural Productivity in Africa

Cheryl Doss and Agnes Quisumbing<sup>1</sup>

Women are important to agriculture in Africa because of both the extent of their participation in agriculture and the size of the agricultural sector. Estimates of the proportion of economically active women working in the agricultural sector in Africa south of the Sahara range from 30 to 80 percent (FAO 2011). In addition, in the six African countries for which there are data, women provide 40 percent of the labor for crop agriculture (Palacios-Lopez, Christiaensen, and Kilic 2017). However, we are only beginning to understand the extent to which gender—the socially constructed relationships, norms, roles, and identities among women and men—underlies gender gaps in agricultural productivity.

Although measurement issues remain to be resolved, it is well documented that gender gaps exist in African agriculture (Kilic, Winters, and Carletto 2015; Oseni et al. 2015; Aguilar et al. 2015; Slavchevska 2015; Karamba and Winters 2015; de Brauw 2015; Kondylis et al. 2015; Doss et al. 2015) and that such gaps have consequences for agricultural productivity. Recent estimates of agricultural productivity gaps identify areas where gaps in access to and control of resources underlie productivity gaps (Kilic, Winters, and Carletto 2015; Oseni et al. 2015; Aguilar et al. 2015; Slavchevska 2015; Karamba and Winters 2015) and areas where the same resources held by men and women result in different returns—a signal of possible gender discrimination.

Recent policy documents have emphasized the missed opportunities created by gender gaps in agriculture. The FAO's *State of Food and Agriculture 2010–11*, for example, reports that “if women had the same access to productive resources as men, they could increase yields on their farms by 20–30 percent. This could raise total agricultural output in developing countries by 2.5–4 percent, which could, in turn, reduce the number of hungry people in the world by

12–17 percent” (FAO 2011, 5). The potential gains would vary by region, depending on how many women are currently engaged in agriculture, how much production or land they control, and how wide a gender gap they face. A 2015 UN Women report, *The Cost of the Gender Gap in Agricultural Productivity in Malawi, Tanzania, and Uganda*, used World Bank Living Standards Measurement Study–Integrated Surveys on Agriculture (LSMS-ISA) data from Malawi, Tanzania, and Uganda to analyze the consequences of gender gaps for crop production, agricultural GDP (gross domestic product), total GDP, poverty reduction, and adequate nutrition (UN Women et al. 2015).

This case study reviews the evidence on gender and agricultural productivity, identifying what we have learned as well as the limitations of studies that focus only on land productivity. It also queries the evidence base of most of this work, in which plots are classified into two mutually exclusive categories, depending on whether a man or a woman is the plot manager, even if many African agricultural households have both individually and jointly farmed plots.

## *Gender Gaps in Agricultural Productivity: Evidence and Options for Closing the Gap*

### Measurement Challenges<sup>2</sup>

In her review of the literature on women and agricultural productivity, Doss (2018) addresses the challenges involved in measuring agricultural productivity. These can broadly be classified into issues related to (1) measuring inputs; (2) measuring outputs; and (3) distinguishing women's agricultural productivity from that of men. Whereas the first two challenges are common to all studies of agricultural productivity, the last challenge is particularly relevant when

<sup>1</sup> Cheryl Doss was supported by the CGIAR Research Program on Policies, Institutions, and Markets (PIM) and Agnes Quisumbing by the Gender, Agriculture, and Assets Project, Phase 2, funded by the Bill & Melinda Gates Foundation, USAID, and A4NH

<sup>2</sup> This section draws heavily from Doss (2018).

we consider gender in agriculture. Although the literature typically compares productivity on plots managed by women with those managed by men, men and women are both involved in production and management in the majority of agricultural households worldwide.

Approaches to measuring productivity have generally taken a piecemeal view of inputs, focusing on one factor of production at a time. For example, the papers based on the World Bank's LSMS-ISA surveys that estimate productivity gaps all focus on land productivity, measuring the gross value of output per hectare (for example, Oseni et al. 2015; Aguilar et al. 2015; Karamba and Winters 2015). Estimating gender differences in land productivity requires disaggregating by the gender of the plot manager.<sup>3</sup>

Estimates of labor productivity do not require the assignment of output to individuals and instead measure how labor inputs of men and women affect total farm productivity. The challenge is to effectively measure labor inputs; this is a challenge for any analysis of labor productivity in agriculture, but even more so when considering gendered agricultural tasks. Low labor productivity of women relative to men points to women's lower access to nonlabor inputs that may enhance labor productivity or could imply that these are low-return activities for women, and that women may be better off allocating their labor elsewhere. However, most measures do not take into account the other, uncompensated tasks that women do. When labor inputs are measured in time units, women who are taking care of children while engaging in agricultural labor may show a lower level of output per unit of time of labor input. One reason is that the value of the childcare is not measured. While the "gold standard" for productivity measurement would be total factor productivity—comparing aggregate outputs to aggregate inputs—such an approach is very data intensive, requiring multiple observations over many seasons to address weather and other factors that may affect productivity.

Approaches to measuring outputs have similarly been piecemeal. The shift from comparisons of estimates of crop yield for only one crop to gross value of output allows comparisons across crops (such as maize and leafy vegetables) and

acknowledges the importance of intercropping in African farming systems. Yet aggregation of different types of outputs using prices introduces different biases. A household decision to maximize household outputs that has men specialize in high-value cash crops and women specialize in lower-value food crops primarily for household consumption will suggest that women are less productive. Aggregating by price also implicitly assumes that men and women have the same opportunities to choose what to grow on their plots and that they face the same market prices. But women may obtain lower market prices for the same crop if they lack transportation to bring goods to market (Hill and Vigneri 2014).

All these computations analyze the productivity of land, based on yield per hectare or gross value of output per hectare. Plots must then be assigned as either men's plots or women's plots. Three out of four papers that compute productivity differentials (Oseni et al. 2015; Aguilar et al. 2015; Karamba and Winters 2015) do so based on the gender of the reported plot manager (it is not clear how they handle jointly managed plots); Slavchevska 2015 compares plots managed solely by men, solely by women, and multiple managers. In order to decompose the productivity gap into one portion arising from unequal resources and the other portion owing to differences in returns to resources, known as the Oaxaca–Blinder decomposition, she combines sole male and multiple managers to compare them with sole female managers. Thus, none of the analyses considers any jointness in management or labor inputs, despite the sizable proportion of jointly managed plots in African agriculture (Slavchevska et al. 2017).

Almost all of the analyses of gender gaps in agricultural productivity consider only crops. Measuring the gender gaps in livestock production faces even greater challenges. Should we assign the output of specific animals to men and women based on the owner of the animal or the person who is responsible for the day-to-day care of the animal? How do we think about this in situations where there are competing objectives when women control the milk from cows but men have the right to sell or slaughter the animal? Yet livestock are an important part of smallholder farming systems, and production decisions

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3 Four of the countries in the LSMS-ISA surveys (Ethiopia, Malawi, Niger, and Nigeria) have data only on male and female plot managers; in the remaining two countries (Tanzania and Uganda), the data include whether the plot is managed by men, women, or jointly by both (World Bank and ONE 2014), but approaches to using these classifications in decomposing the gender productivity gap differ. Slavchevska (2015) combines male-managed plots with those with multiple managers (regardless of gender), coming up with two categories for the decomposition analysis (male/multiple versus female-only). De la O Campos, Covarrubias, and Patron (2016) maintain the three separate categories in their regression analysis but do pairwise comparisons (male holder, joint holder, male-only manager, joint manager versus only female, respectively) for the Oaxaca–Blinder decompositions.

will include potential trade-offs between maximizing the value of crop outputs and obtaining value from livestock. In addition, women's home gardens often do not count in the computation of agricultural productivity because home gardens are not considered "field crops," although they are an important source of in-kind and cash income for the household.

### Agricultural Productivity Gaps: What Do We Know?<sup>4</sup>

The FAO's 2011 estimates, cited earlier, of the potential increases in yields and agricultural output that would result if women had the same access to productive resources as men have been widely publicized. These estimates are plausible and have played an important role in highlighting the potential costs of the gender gap in agriculture. However, it is useful to note that these are simulations, based on increasing women's use of inputs to the level that men use, which would be a substantial increase in the total amount used. There is substantial scope for increases in crop productivity in Africa from increased use of inputs by both men and women farmers. The predicted increases are not based on the evaluation of programs that provide men and women with equal levels of input, such as a randomized controlled trial (Doss 2018).

More recently, estimates of the costs of gender gaps in access to resources have been further refined using data from the World Bank's LSMS-ISA and Oaxaca-Blinder decomposition analysis in six African countries south of the Sahara and are summarized in O'Sullivan et al. (2014). The value of total crop output per hectare is compared across plots managed by men and women. Analyses from Ethiopia, Malawi, Niger, Nigeria (analyzed separately for Northern and Southern Nigeria), Tanzania, and Uganda find statistically significant gender gaps in productivity for all but Northern Nigeria and Tanzania when simply comparing the differences in value of output per unit of land. According to O'Sullivan et al. (2014), a simple comparison of average male and female productivity shows gaps ranging from a low of 13 percent in Uganda to a high of 25 percent in Malawi. This suggests that in Malawi, for instance, male-managed plots produce on average 25 percent more per hectare than female-managed plots.

Many previous analyses have found that the gender gaps in productivity per unit of land decrease or disappear when the use of inputs is considered

(see Quisumbing 1996 for a review), suggesting that it is women's lack of access to improved seed, fertilizer, and extension information that is the cause of the gender productivity gaps. Most recent studies also estimate women's productivity if they used the same resources as men. For Niger, Northern Nigeria, Tanzania, and Uganda, after accounting for the differences in farm size, the gender gap widens, ranging from 23 percent in Tanzania to 66 percent in Niger (O'Sullivan et al. 2014). Doss (2018) points out that one reason for these dramatic differences is that women, on average, have smaller holdings than men. Given the inverse relationship typically found between farm size and productivity, we would expect that, all else equal, women, who typically have smaller farms, should have higher productivity per unit of land than men.

Similarly, the UN Women report uses the same World Bank LSMS-ISA data to estimate the costs of gender gaps in agricultural productivity in Malawi, Tanzania, and Uganda (UN Women et al. 2015). The authors first compute the differences in value of output per hectare obtained on male- and female-managed plots; this simple difference, which does not account for differences in plot sizes controlled by men and women, is called the unconditional gender gap in agricultural productivity. Based on the identified gender gap in agricultural productivity and the estimate of the share of land under women's control, the authors estimate the monetary equivalent of the gender gap in terms of potential gains in agricultural production and total economic output. According to their estimates, if these gaps were closed, annual crop output could increase by 2.1 percent in Tanzania, 2.8 percent in Uganda, and 7.3 percent in Malawi. The authors then use the contribution of crops to total agricultural output, the size of the agricultural sector in the overall economy, and spillover effects of higher agricultural output to other sectors of the economy to estimate the potential gross gains to GDP to be \$100 million in Malawi (or 1.85 percent of GDP), \$105 million in Tanzania (0.46 percent of GDP), and \$67 million in Uganda (0.42 percent of GDP).<sup>5</sup> The authors then use poverty-growth elasticities derived from an economywide general equilibrium approach (Dorosh and Thurlow 2014) to calculate the potential benefits of closing the gender gap in terms of poverty reduction. The gross gains from closing the unconditional gender gap in agricultural productivity translate into an annual 0.41 percent reduction in the poverty headcount,

<sup>4</sup> This section draws from Doss and Quisumbing (2018).

<sup>5</sup> Spillover effects are estimated using an estimated multiplier between the agricultural sector and the rest of the economy drawn from economywide models for each country.



which is equivalent to lifting nearly 80,000 people out of poverty every year (UN Women et al. 2015).

O’Sullivan et al. (2014) and the UN Women et al. (2015) report apply the Oaxaca–Blinder decomposition to the same data to identify key sources of the gender gaps: inequalities in the quantity of male labor per household; differences in men’s and women’s ability to grow high-value crops; differences in the use of agricultural implements, pesticides, and inorganic fertilizer; and differences in wealth, captured using a wealth index. The UN Women et al. (2015) report used the O’Sullivan et al. (2014) recommendations as a starting point for prioritizing programmatic and policy solutions to close these gaps.

## Options for Reducing Gender Gaps in Agricultural Productivity

A range of policy recommendations have been proposed to close the gender productivity gap. These include increasing women’s access to labor (particularly male labor), enabling women farmers to move into cultivation of high-value cash crops, and improving women farmers’ access to and use of nonlabor inputs in agricultural production.

Recommendations for closing the gender gap in labor inputs fall into two general categories: (1) enhancing women’s use of technologies that save their time on and off the farm, and (2) improving access to hired labor, particularly men’s labor. In much of Africa, the work that women do, both on and off the farm, is difficult and time-consuming. Labor-saving devices for women, such as stoves that use less fuel (recommended in the UN Women report), or providing access to water near the home would both reduce women’s labor burdens. These would both have a positive impact on women’s well-being and their ability to engage in other productive activities. However, it is not necessarily clear that these would result in women shifting time into agriculture. They could shift the time into home production activities, resulting in better health and nutrition for themselves and their children, or into nonfarm income-generating activities.

As with any proposed innovation, recommendations for labor-saving technology need to be carefully evaluated. In particular, their impacts on women must be considered. Many examples abound of technologies that were planned for women but were not widely adopted, either because they were difficult for women to use, were too expensive, or were not considered culturally

appropriate for women to use (see Quisumbing and Pandolfelli 2010 for a review and Johnson et al. 2016 for a synthesis of project experience).

A second priority area is to increase the value of crops grown by women. Typically this involves supporting women in growing higher-value cash crops, increasing women’s participation in agricultural producer groups, and improving access to markets.

Often a gender division exists in terms of which crops are seen as appropriate for women to grow. Within the existing gender norms, focusing agricultural research and extension on crops that women tend to grow could have impacts on productivity. Women often grow the food crops for household consumption, which means that they are concerned with both the production and consumption characteristics (Doss and Morris 2001). Crops grown for market may have different characteristics, since some characteristics, such as increased micro-nutrient content, may not be visible to buyers in the market and thus not have a higher market value. Thus, growing crops with higher nutrient content may have an important impact on household health and nutrition, without directly increasing the measured value of women’s productivity. As discussed extensively in the chapter on women’s control over income (see Chapter 11), women may choose to grow crops for the market for which they have greater control over the income. These are often crops that are sold in small quantities throughout the season in local markets. Changing gender norms to support women growing a broader range of crops, including more high-value crops, would require a different set of programs and policies, such as more agricultural extension targeted directly to women, better support for marketing women farmers’ output, increasing women’s control over income, and addressing the gender-based constraints women farmers face more generally.

Women participate much less than men in farmer producer groups. This is both because the groups are often not welcoming to women and because women face time and labor constraints that limit their ability to participate. The formation of women’s producer groups and the promotion of women’s participation in producer groups with men have been advanced as ways to increase women’s agricultural productivity. Such approaches may be useful, but groups require time and resources to form and are not always effective unless they provide the critical resources women cannot obtain on their own, such as transportation, access to up-to-date price information, and fair prices. Groups

may be able to negotiate for better contractual terms, but one cannot assume that will happen automatically once a group is formed. It may also be useful to address other barriers to women participating in markets, such as assumptions that only men engage in the markets,

Finally, much of the gender productivity gap literature demonstrates that women are less likely to use other inputs, particularly fertilizer and machinery. Recommendations for increasing fertilizer and pesticide use by women include packaging fertilizer in small amounts, innovative delivery mechanisms such as free delivery, information-and-communication-based nudges using mobile phones, cash and in-kind transfers for input purchases, and reducing risk through social protection schemes and crop insurance. Many programs are being developed to increase input use generally, but often they do not specifically address the needs of women farmers. Women farmers typically face multiple constraints, and it is useful to address them simultaneously. For example, although small packages and lower up-front costs of purchasing inputs may relieve the burden for women farmers, they may not address the reluctance to invest in these inputs given the inherently risky nature of agriculture. Social protection schemes and crop insurance may need to be part of efforts to increase input use, because transfer programs by themselves to encourage take-up of these inputs are costly and unlikely to be financially sustainable.

Expanding the use of machinery for women requires ensuring that the machinery is seen as culturally appropriate for women to use and that women have the means to purchase or hire such machinery. Women's voices that include discussion of both the opportunities and constraints for women's access to machinery need to be incorporated from the beginning of the design of such policies. Machinery that is appropriate for women must be developed. Women need access to the markets to buy machinery and the cash or credit to purchase it. Some types of machinery, such as tractors, are often hired in rather than purchased. It is often not simply the machinery itself that is hired but also the machine operator. Thus, the programs need to be designed in such a way that

women have access to the financial capital to hire in the machinery and that it is socially appropriate for women to do so.

## *Gender and Agricultural Productivity: What Are We Missing?*

The foregoing discussion and summary of recent policy reports highlights the importance of closing gender gaps in agricultural productivity. Yet, in focusing on a land-based measure of productivity and on gaps that are calculated based on plots that men and women control, we may be missing key insights into agricultural households.

Most of the analyses on which productivity decompositions are based assume that men and women are the sole managers of some plots of land and are making the decisions independent of what else is going on in their household. While it may be the case that some women heads of household solely manage all household plots, in many households both men and women are engaged in farming and their farming decisions reflect the intrahousehold relations. For example, in a study of the adoption of maize technologies in Ghana, Doss and Morris (2001) found that there were no significant differences in technology adoption between men and women farmers living in male-headed households. However, women living in female-headed households were less likely to adopt the technologies, even after controlling for other characteristics. This suggests that women living in male-headed households had access to information or other resources through their households that women in female-headed households were not able to access.

Considering women's contributions to agricultural productivity only if they are the plot managers ignores the inputs of women who do not manage their own plots but contribute to the production on plots managed by men. Similarly, neglecting the jointness of household production and targeting inputs and trainings to women exclusively without taking into account the households in which the women live may lead us to miss out on potential gains from cooperation.<sup>6</sup>

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6 Interestingly, emerging evidence on gains from cooperation comes from studies on risk sharing. A recent study in Malawi by Josephson (2016) tests the assumption that all household income is pooled, accounting for joint income as well as income earned individually by men and women. Exploiting the variation in expenditure by different income earners resulting from exogenous variation in rainfall, she finds that household members partially insure one another for expenditure on essential goods (such as food, clothing, education, and healthcare) but do not insure one another for luxury goods, including cigarettes and alcohol, recreation, and housing and utilities. Her finding that households partially insure is contrary to the findings of previous studies, which fail to find even partial insurance within households.

Research is beginning to explore the circumstances under which households cooperate and the circumstances under which there are gains to cooperation. Some such research is inspired by work on collective action and natural resource management (see an extensive review in Doss and Meinzen-Dick 2015), by more detailed data that are better able to identify sole and joint asset ownership, and by findings from impact evaluations.

Failing to recognize jointness in decision making and control of productive resources may neglect gains from cooperation and gains from involving men as well as women. For example, most agricultural programs target extension advice about agriculture to men, and nutrition messages, as relevant, to women. A HarvestPlus project (the Reaching End Users Orange Sweet Potato Project) that disseminated biofortified orange sweet potato (OSP) vines to farmers' groups gave nutrition messages about vitamin A to women but not to their husbands. In examining adoption decisions within households, Gilligan et al. (2014) found that plots of land exclusively controlled by women are not more likely to contain OSP, but plots under joint control of men and women, in which a woman has primary control over decision making, are significantly more likely to contain OSP. Plots that men control exclusively are the least likely to contain OSP. This evidence indicates that women play an important role, and often a leading role, in the decision to adopt OSP, but that this decision is often jointly made with their husbands. Because of the jointness of these decisions, the current strategy of targeting only women with nutritional training may be missing an opportunity to create an awareness of the benefits of OSP among men.

Numerous studies have shown that providing information to one spouse, typically the husband, does not result in the other spouse receiving the information. A study in Kenya by Bernier et al. (2015) found that extension services, farmer organizations, and agriservice providers (the most commonly used channels in development projects) do not raise awareness of most climate-smart agricultural practices, especially for women. By contrast, access to information from religious groups and radio did significantly increase awareness of climate-smart practices such as terracing, composting, water harvesting, and improved livestock management practices. In another example, a dairy development project in Mozambique initially targeted training to men but later found that training two people within the household, instead of only the male household head, resulted in higher levels of milk production (Johnson et al. 2015).

A recent study of social networks and the adoption of agricultural technologies in India is also relevant (Magnan et al. 2013). This study found that men and women in the same households have very distinct networks of agricultural contacts. Although women's networks are as large as men's or, in the case of poor households, substantially larger, women's connections are more likely to be with poorer households that are less likely to adopt new technology. In contrast, poor men with smaller agricultural networks tend to be connected to wealthier and more progressive farmers who are more likely to be early technology adopters—either because being wealthy or progressive has a direct positive influence on adoption or because these factors attract extension assistance. Because of their wider reach, public extension services and private service providers could use women's social networks, particularly among poor households, to facilitate inclusive technology dissemination.

## *Beyond Agricultural Productivity*

While increasing women's productivity on the plots that they manage is an important policy goal, it is important to look beyond this single measure of agricultural productivity. If the policy goal is simply to increase the value of crop production, then this may be an important focus. But policy may have other goals within the agricultural sector as well.

Because many of Africa's farmers are poor and live in marginalized areas, one focus may also be to use agricultural interventions to reduce poverty. In this case, it is important to consider not only the value of output per unit of land but also the value of output per unit of labor. It suggests considerations not only of the on-farm but also of the off-farm sectors. On poor-quality land, poverty reduction may involve farmers becoming engaged in off-farm activities with higher returns.

Agricultural interventions may also have a negative impact on women's productivity and well-being. There is a long history of policies and projects that did not take gender issues into consideration and thus worsened the situation for women. For example, if women's access to land is insecure, then increased land productivity may result in the land being taken away from women to be farmed by men (Goldstein and Udry 2008). Thus, ensuring women's tenure security before such programs begin may be necessary. Projects that require women's labor but do not involve women in either the decision making or the benefits may either fail if women choose not to participate or disempower the women if social norms require that they participate.

Improving health and nutrition is another goal that goes beyond increasing agricultural productivity. Women can be encouraged to grow crops that can contribute to a diverse and nutrient-rich diet, but their decisions to grow those crops as well as their ability to control the fruits of their labor need to be considered. While increasing agricultural production and income may mean more food that can potentially be consumed or output that can be sold to purchase food, the potential impacts on workload must be recognized. Women's time use is a factor that links efforts to increase agricultural productivity and their impacts on health and nutrition. By producing higher-value crops women may increase their ability to influence household decisions, but it is also possible that their husbands may capture the increased benefits.

Finally, we need to ask whether efforts to increase agricultural productivity are consistent with the goal of gender equality and women's empowerment. Simply increasing the output on women's fields without considering their access to markets and control over the income will not necessarily make them better off. Substantial increases to women's already heavy work burdens may be disempowering. Efforts to increase agricultural productivity must ensure that the approaches empower women with additional access to information, resources, and the control over outputs. Programs to increase agricultural productivity have the opportunity to publicly recognize women's contributions by including them in their programming and ensuring that women benefit from the increased productivity.

# Developing Gender-Inclusive Products and Programs: The Role of Gender in Adoption and Consumption of Biofortified Crops

Dorene Asare-Marfo, Johanna Bergman Lodin, Ekin Birol, and Bho Mudyahoto<sup>1</sup>

**M**icronutrient malnutrition, also known as “hidden hunger,” affects one in three people globally. Women, adolescent girls, and children are most at risk of hidden hunger due to their higher biological needs for key micronutrients, such as iron, zinc, and vitamin A (see, for example, Black et al. 2013; Branca et al. 2015; Ruel-Bergeron et al. 2015; and De-Regil, Harding, and Roche 2016), coupled with their limited access to micronutrient-rich foods, such as animal-source foods, which are often allocated to men or adolescent boys in the household (see, for example, Gittelsohn and Vastine 2003; Herrador et al. 2015). In the absence of diverse, equitable, year-round nutritious diets, there are several strategies for alleviating hidden hunger, such as fortification, supplementation, and biofortification.

## *Biofortification: A Nutrition-Smart Agricultural Innovation on the Brink of Scale-Up*

Biofortification is the process of increasing the micronutrient content of staple crops through breeding, in order to improve the micronutrient intake, and hence the micronutrient deficiency status, of populations. Biofortification is especially relevant for people in rural areas whose diets comprise mainly home-grown staple crops. The impact, scalability, and sustainability of biofortification depends on whether (1) conventional crop breeding can increase nutrient levels without compromising yield, (2) extra nutrients in crops can measurably improve micronutrient status, (3) farmers are willing to grow biofortified crops and consumers

are willing to eat them, and (4) the entire process is cost-effective. Several recent papers have summarized the evidence supporting success on all four points (see, for example, Birol and Bouis 2019; Oparinde and Birol 2019; Lividini et al. 2018; Saltzman et al. 2017; and Bouis and Saltzman 2017), as well as proposed a road map for scaling up biofortified crops to benefit 1 billion people by 2030 (see Bouis et al. 2019). This case study focuses on understanding the importance of gender in the scaling up of an agricultural technology that delivers nutrition outcomes such as biofortification. It presents the experience of HarvestPlus, the global leader in biofortification technology and policy, in accounting for gender considerations when developing, delivering, and promoting biofortified crops to farming households, so as to ensure maximum adoption and consumption outcomes.

## *Gender and Biofortification*

The role that gender plays in agriculture-nutrition interventions has been well established in the literature (for example, Quisumbing et al. 2014; Meinzen-Dick et al. 2012; FAO 2011). Differences in the roles that men and women farmers play may affect the overall impact of an intervention. Understanding and addressing these differences along the impact pathway from production to marketing to processing and consumption for an intervention such as biofortification is critical to the success of the intervention.

To increase production, it is important to know how men and women farmers’ preferences affect adoption of a new technology. When an intervention

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such as a biofortified crop is promoted to farmers, women and men may respond differently. For example, women, who are often the main decision-makers in feeding their families, may be more inclined to adopt the new crop based on nutritional messaging as well as consumption and cooking qualities, while men might be drawn to biofortified crops for their superior agronomic traits. The nature, depth, and frequency of information flows between and among men and women tend to differ as well, which may additionally affect the extent and intensity of adoption by men and women farmers differently. Sources of information also tend to vary for men and women (see, for example, Smale and Mason 2012). At the household level, it is important to understand who typically has access to inputs, such as planting material, and how these are obtained. Women may be more likely to obtain planting material through their social networks, especially when it comes to vegetatively propagated crops (such as cassava or sweet potato) (see, for example, Smale and Mason 2012; Low et al. 2017). It is also important to know who in the household makes decisions on production, and what the power dynamics are between the production and consumption decision-makers. Proximity to markets, membership in farmers' groups, and access to extension services are additional constraints and facilitating factors that may affect men and women's adoption decisions differentially.

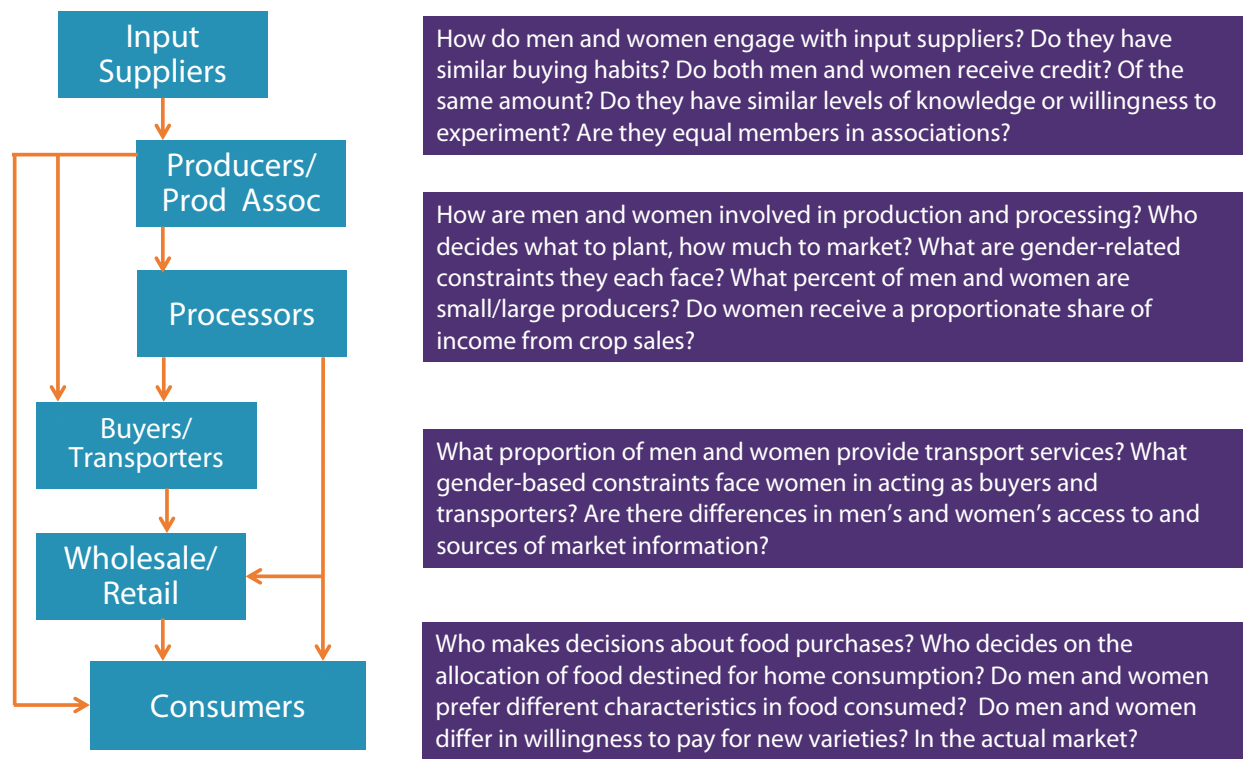
Patterns, preferences, and decision-making around consumption are important to consider as well. Men and women may have different preferences and levels of influence within the family regarding home consumption and storage versus sale of biofortified crops. For example, perceptions of biofortified crops, especially those that differ from traditional crops in an attribute such as color (for instance, Vitamin A maize, which is orange), may be gender specific. If biofortified crops are seen to be more profitable, men (and possibly women) may be more inclined to sell their biofortified output for income, rather than feed it to the family. Moreover, men, women, and children may have different consumption preferences, affecting the intake of micronutrients through biofortified foods and, ultimately, the overall impact of the intervention. In most developing countries, women are responsible for domestic tasks, particularly providing infant care, which includes feeding and food preparation tasks that directly affect the nutrition outcomes of children. Time and energy spent on domestic and agricultural activities affect the mother's health status and her own nutritional outcomes

as well. All of these factors ultimately impact nutritional status. Figure C4.1 depicts various gender considerations along the biofortified crop value chain.

To assess the adoption and utilization of biofortified crops, once there is significant uptake, HarvestPlus and partners conduct outcome monitoring surveys in sentinel sites, as well as nationally representative adoption surveys. These evaluative, gender-sensitive surveys have three components: (1) a listing of all crop-producing households in the sentinel site or representative primary sampling unit to assess adoption and diffusion; (2) a representative (quantitative) survey to understand adoption history, production, and consumption; and often (3) a qualitative investigation for a deeper dive into the (gendered) factors that facilitate or hinder adoption and intrahousehold production, consumption, and sales decision-making. These outcome-monitoring and adoption surveys are designed to generate results that inform further development and improvement of biofortified varieties of crops; improve delivery programs; and shape context-specific behavior change communication and promotional messages that promote access to and utilization of biofortified crops by rural households, in particular among women, adolescent girls, and children.

The gender-sensitive qualitative studies are complementary to the quantitative survey component. They provide a deeper understanding of the results from the quantitative studies by shedding light on the factors that influence men's and women's decisions, as well as their perceptions, preferences, and experiences pertaining to biofortified crops and foods. For these qualitative studies, men and women beneficiaries (or nonbeneficiaries in beneficiary locations) of different ages are sampled using a mixed random and purposive sampling strategy, and allocated to either key informant interviews or focus group discussions. Four key research questions are used to guide qualitative assessments: (1) what factors influence the choice of crop varieties to grow at the household level; (2) what factors motivate farmers to consume, share, or sell their crops, or to recycle grain as seed, or not to do these things; (3) the gendered roles and decision-making patterns related to growing, consuming, and selling biofortified crops (that is, the intrahousehold decision-making process); and (4) how knowledge, attitudes, and perceptions of, and experiences with biofortified crops differ among or within gender groups. The next section presents some results originating from two qualitative investigations, one in Zambia for vitamin A maize, and one in Rwanda for iron beans.

**FIGURE C4.1—GENDERED BIOFORTIFICATION VALUE CHAIN ILLUSTRATION**



Source: Cook et al. (2014).

decisions on which variety of maize to eat are mainly made by women, who are also usually the ones who go to the market to purchase food, including maize when a household's own stocks are depleted. Both women and men reported appreciating the orange color (the majority of maize consumed in Zambia is white) and the taste of the vitamin A maize, describing it as "attractive," "very tasty," "sweeter compared with local and hybrid," and "having a nice aroma." These findings corroborate those by Meenakshi and others (2012). Women said they found vitamin A maize to be more labor intensive to process, one saying, "orange maize is difficult to shell compared with white maize," and more time-consuming to cook than white maize. Researchers communicated these findings to breeders and product developers for consideration in ongoing breeding activities for the next generation of vitamin A maize varieties.

Women farmers said they consider nutrition to be an important characteristic of food, particularly food they feed to their children; however, their awareness of the vitamin A content of orange maize was low. Instead, they considered all maize to

be nutritious. These findings highlight the importance of reaching women with nutrition messages through the specific information channels they use, which often tend to be informal (for example, neighbors, friends, women's groups), though ultimately sourced from formal channels (for example, clinics during child health weeks, radio).

There was less consensus on who makes production decisions, with this factor appearing to vary across households. There was also no consensus on

### *Reflections from Zambia and Rwanda*

HarvestPlus and partners have been delivering vitamin A–biofortified orange maize in Zambia since 2012. A monitoring survey was conducted in 2017/2018 to assess the adoption and utilization of vitamin A maize. The qualitative survey revealed that women and men have different roles and responsibilities with regard to maize production, and that they receive information about new varieties through different channels. Survey respondents were in agreement that

how vitamin A maize performed agronomically. Because few of the respondents had firsthand experience in growing it, their opinions were mainly based on what they had heard. Interestingly, at one of the study sites, men reported that it performed very well but women said the opposite. Similarly, men ranked vitamin A maize higher, in general, compared with other varieties than did women. Here, it is worth recalling that men usually have better access to information than women (see, for example, Smale and Mason 2012), a fact confirmed by survey respondents; for example, a woman in one of the focus groups stated, “Men are more informed about agriculture practices because they move around a lot and attend many meetings and trainings, unlike women, who are home keepers, taking care of their families.” The fact that men usually have better access to information than women calls for gender-sensitive information dissemination on vitamin A maize to reach women as well as men.

A 2015 study in Rwanda assessed the adoption of iron-rich bean varieties following eight seasons of seed delivery efforts. In addition to the listing and the quantitative surveys as mentioned above (Asare-Marfo et al. 2016; Vaiknoras et al. 2019), a qualitative study was conducted to shed light on intrahousehold decision-making processes with regard to iron bean production and consumption, and men’s and women’s preferences for iron bean varieties (Mutesi 2016). The results of the qualitative study confirmed that women were responsible for growing food crops, such as beans, whereas men were responsible for growing cash crops. Women were reported to control the storage of all crops (including beans): those for household consumption and those to be used as planting material for the next cropping season. This finding confirms that women should be included in agronomic trainings on seed selection and storage for iron beans. Men, respondents said, controlled the income from the sales of both cash crops and food crops, given their role as “breadwinners.” This is an important finding—if iron beans fetch higher prices in the markets (as reported below), men may be more likely to sell them rather than keep them for consumption at home. Whether or not this increased income translates to the purchase of more nutritious food is uncertain, because women, who do not have access to the income from bean sales, decide what to feed their families. This finding also supports the idea that both men and women should be made aware of the nutritional value of iron beans, so that men don’t sell all of the household’s iron bean output.

Most Rwandan farmers interviewed said that intrahousehold decision-making in general and selection of bean varieties in particular were men’s domain, though the spouses consulted with each other. Studies from one to two

decades ago, when women-headed households were in the majority following the genocide, and even previously, labeled beans as a “women’s crop.” The findings of the qualitative study allude to the changing demographic structure, with the proportion of male-headed households increasing over time. It is also possible that as beans become more marketed, men will have greater decision-making power over the disposition of the crop, a hypothesis to be investigated in the coming years. A significant proportion of farmers—men and women—were aware of the iron beans; were enthusiastic about growing them; and thought them to be nutritious, early maturing, high yielding, and fast cooking compared with other varieties. They said, however, that these varieties require more inputs (for example, organic fertilizer and labor—the majority of the latter by women) to attain high yields, though they also pointed out that these varieties fetch higher prices in the market. Many women farmers said iron beans cook faster than other beans, thereby requiring less cooking time, less fuelwood, and less time spent fetching fuelwood. A more detailed investigation of women’s time costs and savings resulting from iron bean adoption is needed.

## *Conclusions*

Biofortification of staple crops widely grown and consumed by rural populations is now proven to be an efficacious and cost-effective strategy for improving micronutrient intake and hence reducing micronutrient deficiencies. At the end of 2018, 7.6 million farming households globally (5.3 million in Africa) were growing and consuming biofortified crops (including vitamin A maize, vitamin A sweet potatoes, iron beans, and vitamin A cassava), according to monitoring and evaluation data from HarvestPlus country programs (HarvestPlus 2019). The targeted micronutrient content in these biofortified crops is based on the biophysical requirements of women, children, and adolescent girls in rural areas of developing countries—because these groups are most in need of such micronutrients but have the least access to them. In addition to this biological consideration, HarvestPlus also takes gender considerations into account when developing, delivering, and promoting biofortified crops, and when evaluating the success of these interventions. Gender differences can influence production, marketing, and consumption decisions for rural households, thereby affecting who gains nutritional and economic benefits from the biofortified crop. This case study has presented examples of two qualitative studies conducted to help provide information to ensure that biofortified crops are accessible to and acceptable by both men and women farmers.