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Can Integrated Agriculture-Nutrition Programs Change Gender Norms on Land and Asset Ownership?

Evidence from Burkina Faso

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ABSTRACT

There is a high degree of interest in the potential for agricultural programs to be designed and implemented to achieve health and nutrition objectives. Policymakers have often looked to the experience of civil society organizations in designing and implementing such programs, particularly in different social and cultural contexts. For the past 20 years, Helen Keller International (HKI) has implemented homestead food production programs in Asia and recently has started to adapt and implement these programs in Africa south of the Sahara. The goal of these programs is to improve the nutritional status of infants and young children through a number of production and nutrition interventions. These interventions are targeted to mothers under the presumption that increasing women's access to and control over productive assets and enhancing women's human capital to improve production and health and nutrition care practices will translate into improved nutritional status for their children. However, there is very little evidence documenting the ways in which HKI's homestead food production programs influence women's access to and control over productive assets and enhance women's human capital in ways that may improve nutritional outcomes. This paper uses a mixed-methods approach to analyze the impact of HKI's Enhanced-Homestead Food Production pilot program in Burkina Faso on women's and men's assets and on norms regarding ownership, use, and control of those assets. Even though men continue to own and control most land and specific assets in the study area, women's control over and ownership of assets has started to change, both in terms of quantifiable changes as well as changes in people's perceptions and opinions about who can own and control certain assets. The paper also discusses the implications of such changes for program sustainability.

Keywords: assets, gender, homestead food production, Helen Keller International, Burkina Faso

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1. INTRODUCTION

In response to a growing concern that programs designed to increase agricultural productivity do not necessarily improve the food security and nutritional status of producers and consumers, emphasis is increasingly placed on the pathways through which programs affect nutritional status. Ruel and Alderman (2013) identify six pathways through which agricultural interventions can affect nutrition: agriculture as a source of food for own consumption, agriculture as a source of income, the impact of agricultural policies on prices of food and nonfood crops, the effect of women's social status and empowerment on their access to and control over resources, the impact of women's participation in agriculture on their time allocation, and the impact of women's participation in agriculture on their own health and nutritional status.

A key factor that hence affects the impact of agricultural interventions on nutrition is whether the agricultural intervention enhances women's control over assets[1]. Although assets can be held collectively, jointly, or individually, women in the developing world generally have fewer assets than men, have control over or ownership of different types of assets than men, and use the assets they have differently from the way men do (Meinzen-Dick et al. 2011a, 2011b).[2] Furthermore, because the way in which assets are allocated within a household affects the bargaining power of individuals in that household, and as women and men often have different preferences for allocating resources, the gender of the person who has access to and control over assets can have a significant influence on the health and nutritional outcomes of other household members, particularly children (Alderman et al. 1995; Hoddinott and Haddad 1995; Quisumbing and Maluccio 2003; Quisumbing 2003). Increasing women's control over assets—specifically financial and physical assets such as land—has been shown to have positive impacts on food security, child nutrition, education, and women's own well-being (Quisumbing 2003; Smith et al. 2003; World Bank 2001).

Despite this, in many contexts there are widespread beliefs that women should not be allowed to own certain types of assets (for example, land or large livestock) or that women should not be engaged in activities that involve particular assets.[3] Relative to men, women therefore usually face more constraints in acquiring, using, and gaining ownership rights to certain assets. Many customary systems rely heavily on family structure, inheritance practices, and marriage laws to determine who has the right to what type of asset. Because gender plays an important role in kinship systems and in sociocultural practices, structures, and values, it is often a determinant of who does or does not have rights to certain assets. In many customary systems in Africa, women often have indirect access to land (for example, through the relationship with their husbands, brothers, or fathers), meaning that although they may have access rights to land (they can use it and may have some decision-making power over the products from that land), they usually do not have ownership rights (Kevane and Gray 1999; Lastarria-Cornhiel 1997). As part of a study in western Burkina Faso, research by Kevane and Gray demonstrated that women often worked on land controlled by men but rarely had direct control over land (barring exceptional circumstances, such as if a woman had been widowed). However, whereas married women from certain ethnic groups (for example, the Mossi) farmed plots of land independently from their husbands, having considerable control

[1] Assets can include (1) natural resource capital such as land; (2) physical capital such as livestock, agricultural assets (seeds, plants, equipment), or household assets (cars, radios, mobile phones); (3) human capital (education, skills, health); (4) financial capital (savings, credit); (5) social capital (membership in organizations, networks); and (6) political capital (citizenship, participation).

[2] Different categories of *rights* can help further define an individual's degree of access to, control over, and ownership of a particular asset. Whereas access and withdrawal are often considered to be *use rights*, exclusion, management, and alienation are often considered to be more empowering *control rights*. Ownership encompasses both such "bundles of rights," although this undoubtedly varies depending on the context (Meinzen-Dick et al. 2011b).

[3] For example, Lastarria-Cornhiel (1997) discusses various customary land-tenure systems across Africa, and what this means in terms of rights to land for men and women; in some societies, such as some parts of Ethiopia, women may own land but are prohibited from plowing (Mogues et al. 2009). Doss and Deere (2006) discuss a variety of studies that look at gender asset gaps and reasons why such gaps persist.

over what was planted as well as over the income from those plots, women from other ethnic groups such as the Bwa and the Lobi had very little access rights, demonstrating significant differences between ethnic groups (Kevane and Gray 1999).

In light of these issues, agricultural programs seeking to be gender sensitive or transformative specifically target women under the assumption that transferring ownership of (or control over) assets, knowledge, and skills to them will empower them and in turn will optimize the health, agricultural, and nutritional impacts of the program. A recent systematic review suggests that the evidence on the positive impacts of cash transfers and similar interventions targeted to women on child health and nutrition is robust (Yoong, Rabinovich, and Diepeveen 2012). However, thus far there is limited evidence on the impact of *agricultural* interventions on women's control over and ownership of assets, and the evidence that does exist shows mixed results (Meinzen-Dick et al. 2011a; van den Bold, Quisumbing, and Gillespie 2013).[4]

In 2010, Helen Keller International (HKI) started a two-year Enhanced-Homestead Food Production (E-HFP) program in Gourma Province in eastern Burkina Faso. The program aimed to improve women's agricultural production of nutrient-rich foods, their health- and nutrition-related knowledge and practices, and ultimately nutrition and health outcomes for women themselves and their children. Given the potential benefits of targeting agricultural interventions directly to women, mothers with children between the ages of three and 12 months at the time of the baseline survey were eligible for the program. Two key components of the program sought to directly increase women's access to and control over physical assets. First, HKI worked with landowners in the communities to identify land that women "village farm leaders" could use for a communal "village model farm" (VMF) and sensitized the communities about the program and the importance of targeting the program to women. Second, HKI provided the beneficiary women with gardening inputs (for example, seeds, saplings, and small gardening tools) and chicks so that they could establish home-gardening activities. These components were, in turn, expected to contribute to achieving the overall aims of the program of improving women's agricultural production and the health and nutrition outcomes of beneficiary women and children. In this paper we examine how HKI's E-HFP program influenced women's accumulation of, ownership of, and control over agricultural assets and small animals, and what the implications of such changes might be with regard to program sustainability and overall community development.

We use a mixed-methods approach to discern the impact of the E-HFP program on men's and women's assets, as well as norms regarding the ownership, use, and control of those assets. We seek to answer the following questions: (1) Did the E-HFP program increase asset ownership by women, men, or both? (2) Did the land agreements or project activities influence community norms vis-à-vis women's landownership or land rights, and if so, how? (3) Were women able to maintain control over the E-HFP activities and outputs as intended in the program design? And what were the barriers to or facilitators of maintaining or not maintaining that control? We present results from the quantitative longitudinal impact evaluation on the program's impact on men's and women's assets, and then provide a more nuanced interpretation of that impact using two rounds of qualitative research.

[4] Whereas some studies on the impacts of agricultural interventions on various measures of women's empowerment have demonstrated increases in women's income, control over income, or participation in household decision making (for example, Bushamuka et al. 2005; HKI 2004, 2006; Iannotti, Cunningham, and Ruel 2009; Mullins et al. 1996; Nielsen 1996), others have found no such impacts (for example, Begum 1994; Hagenimana et al. 1999; Mulokozi et al. 2000) or mixed results (Brugere, McAndrew, and Bulcock 2001; Kumar and Quisumbing 2011; Naved 2000; Quisumbing and Kumar 2011). In some cases men saw a higher increase in income than did women (Begum 1994; Tangka, Ouma, and Staal 1999), seemed to maintain control over income and household resources (Hagenimana et al. 1999; Tangka, Ouma, and Staal 1999), maintained control over higher-value assets, or took over control of certain assets as they became more profitable (Carney 1988; von Braun and Webb 1989). Patterns may be inconsistent across countries, as demonstrated by Tangka, Ouma, and Staal (1999), who found an increase in income in one country and not in the other.

2. PROGRAM DESCRIPTION

HKI started its HFP programs in Bangladesh in the 1980s with the main objective of tackling child undernutrition (Iannotti, Cunningham, and Ruel 2009; Talukder et al. 2010). Promoting a package that integrates small-animal production, home gardening, and nutrition education through behavior change communication (BCC), and by targeting women, the current generation of HFP programs' end goal is to improve child and maternal health and nutrition outcomes. These improvements are expected to come through three primary program impact pathways:

1. Increased availability of nutrient-rich foods through household production during the secondary agriculture season
2. Income generation through the sale of surplus household production
3. Increased knowledge and adoption of optimal nutritional practices including consumption of nutrient-rich foods

Although programs have improved the production and consumption of nutrient-rich foods (Iannotti, Cunningham, and Ruel 2009; Talukder et al. 2010; Olney et al. 2009), evidence of the impact of HFP programs on maternal and child health and nutrition outcomes from rigorous randomized control trials is lacking (Dillon et al. 2012).

In recent years, to optimize the potential impact of its HFP program, HKI has worked to enhance the program by strengthening existing components such as the BCC strategy and adding additional components such as a stronger focus on targeting women. Furthermore, HKI has sought to replicate the program in a few countries in Africa, including Burkina Faso and Tanzania.

In Burkina Faso, to strengthen its effort to target women, HKI worked with communities to identify land that women village farm leaders could use for a VMF, which served as the training site for the program. Traditionally, the VMF was run by a household that had a large piece of land and experience with farming and was meant to serve as the training site; however, that model tended to favor male farmers who ran the VMF as a business rather than as part of a community development program (Hillenbrand 2010). The E-HFP program in Burkina Faso aimed to change that practice by obtaining rights to community land for the VMF, which was then run by women VFLs who were themselves beneficiaries of the E-HFP program. The VMFs served as training sites for participating women to learn about homestead food production and the rearing of small animals, as a way to encourage them to set up their own home gardens and raise their own animals, and in some cases as a place where beneficiary women could work and reap the benefits of the agricultural production from the VMFs. These VMFs were supplied with inputs from HKI to establish the gardening and chicken production activities, and in a few communities, goat milk production activities. Another way in which HKI aimed to maintain and strengthen its focus on targeting women was by directly providing the beneficiary women with gardening inputs and chicks for their own home production activities. The E-HFP program specifically targeted women who had children between the ages of three and 12 months at the time of the baseline survey in 2010.

3. STUDY DESIGN AND METHODOLOGY

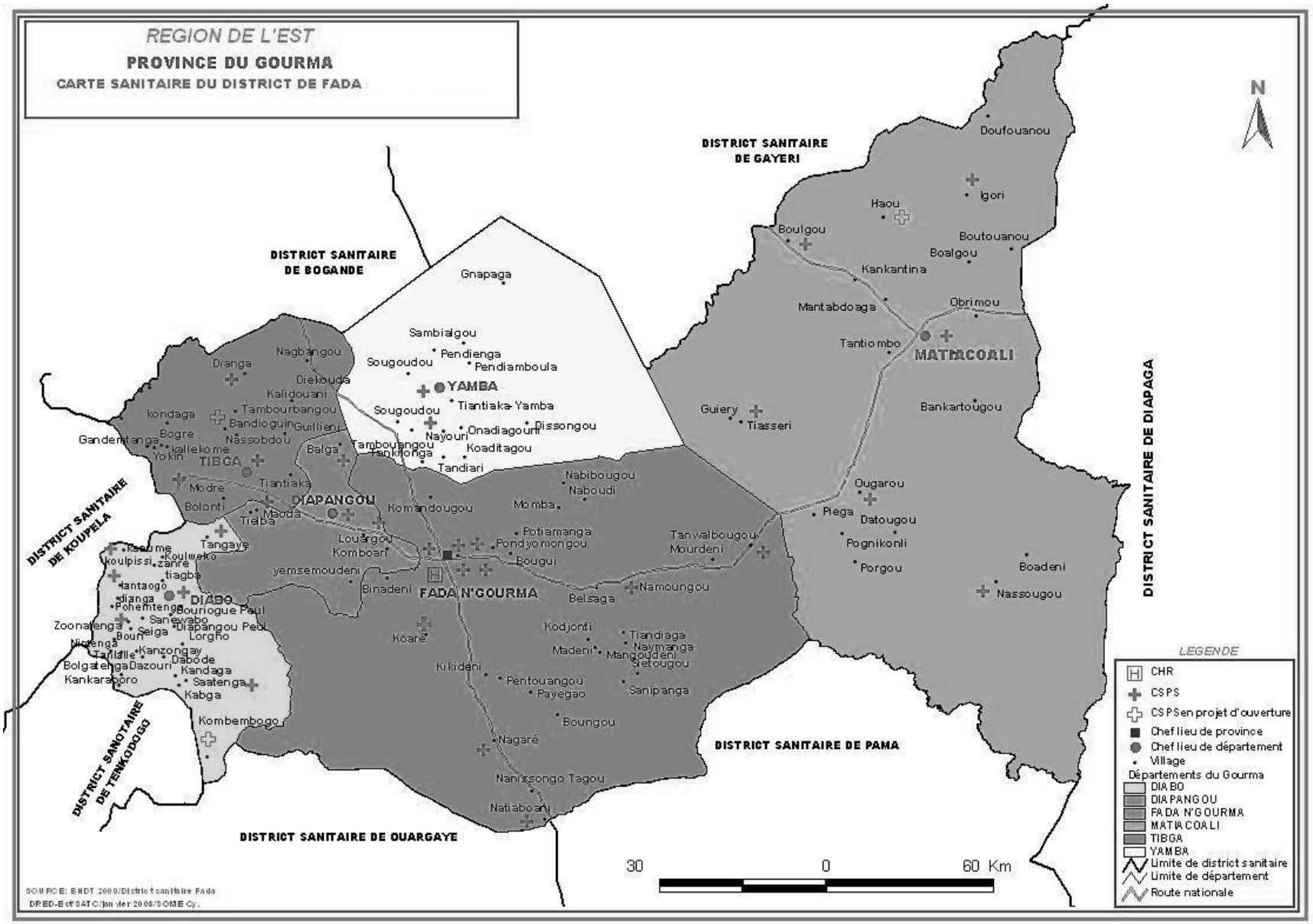
HKI partnered with the International Food Policy Research Institute (IFPRI) to understand the impacts of the program on child and maternal health and nutrition outcomes by using a randomized control design evaluation strategy coupled with two rounds of qualitative research, with the latter using the same sampling frame as the randomized control trial. The quantitative longitudinal impact evaluation aimed to assess the program's impact on a variety of outcomes, including production, consumption, asset ownership, food security, health- and nutrition-related knowledge and practices, and maternal and child health and nutrition outcomes. The two rounds of qualitative research were designed to understand how and why the program did or did not have the expected impacts. In addition, part of the qualitative research aimed to acquire an in-depth understanding of how the E-HFP program in Burkina Faso influenced women's accumulation of, control over, and ownership of productive assets.

Sampling

Impact Evaluation

The impact evaluation for this program used a cluster randomized control trial. Villages were selected according to a three-step process (see Figure 3.1 for a map of the study area). First, Gourma Province in eastern Burkina Faso was selected because HKI already had experience with implementing nutrition and health programs in that area. Within that region, four districts were selected where HKI and other nongovernmental organizations (NGOs) did not have much prior activity. This was done to avoid biasing the results due to participation in other (possibly similar) programs. Second, within those four districts, villages that had access to water in the dry season and were therefore capable of carrying out a gardening project were identified (n = 55). Based on those geographic and water availability criteria, a list of households with children under 12 months of age was compiled. Third, after stratifying the villages by department and village size to maintain a balanced distribution of geographic locations and village sizes between intervention and control villages, villages were selected into three groups: 25 control villages and two groups of 15 intervention villages, amounting to a total of 30 intervention villages. Both groups of intervention villages received the gardening and small-animal-raising interventions and received nutritional counseling through HKI's behavior change communication (BCC) strategy. The two groups of intervention villages differed only by *who* delivered the health and nutrition counseling to the beneficiary women. In one group of 15 intervention villages, the BCC strategy was carried out by older women leaders (OWLs), and in the other group of 15 intervention villages it was carried out by village health committees (HCs). All households in these villages that had children between three and 12 months at baseline were invited to participate in the study. The same households were asked to participate in the endline survey.

Figure 3.1 Repartition of villages in Gourma Province



Source: Base Nationale de Données Topographiques (BNDT) 2000/district sanitaire Fada.

Qualitative Research

Participants for the qualitative research were randomly selected from each of the 30 villages participating in the E-HFP program, and from each of 15 (of the 25) control villages that had participated in the baseline survey. For the first round of qualitative research (2011), semistructured interviews (SSIs) were conducted with five randomly selected households (selected from the list of households that had participated in the baseline study) in each village that was included in the qualitative research. Two of these households in each village were selected to complete a longer SSI that aimed to collect more in-depth information related to the topics of interest. This amounted to a total of 150 households from intervention villages and 75 from control villages participating in basic SSIs and, of those, 60 households from intervention villages and 30 from control villages participating in the more in-depth SSIs (Table 3.1). The same households participated in the first and second rounds of qualitative research to the extent possible. If a household from the first round of qualitative research was not available to participate in the second round of qualitative research, a replacement household was randomly selected from the list of households that participated in the baseline survey in order to achieve our sample sizes per village.

Study Methods

Impact Evaluation

Household Interview

The units of analysis for the impact evaluation were the household as well as individuals within the household (women, men, and children). The questionnaire aimed to collect information on the different ways in which the program may have had an impact. Hence, the household head was asked to answer questions on the different household members, their health, education, and dwellings. Both male and female respondents were then interviewed separately about issues such as assets, agricultural production, household food security, livestock, labor allocations, food and nonfood expenditures, and sources of revenue. The person in charge of food preparation, usually the mother, was asked about food consumption in the household. Mothers of children in the household between three and 12 months old were asked knowledge questions related to child health and nutrition, their infant and young child feeding practices, stress, and postnatal depression. Lastly, child anthropometry indicators (height and weight) and hemoglobin of the target children were measured (Dillon et al. 2012).

Qualitative Research

SSIs with households in intervention and control villages and with key informants were carried out in the three different groups (control villages, intervention HC villages, and intervention OWL villages). In the first round of qualitative research, SSIs with intervention households covered a range of issues to determine whether the different components of the program were implemented and used as planned, to examine the way in which the quality of the program components was perceived, and to identify the barriers and enablers to inform optimal implementation and use of the key program components. SSIs were also carried out with control households to establish a counterfactual for several of the outcomes. The second round of qualitative research (2012) used SSIs to understand men's and women's views about acquisition, use, and ownership of land and agricultural decisionmaking. Similar questions were asked of men and women living in control communities to determine whether the program changed local perceptions regarding land, particularly for women. Intervention households were asked additional questions in relation to their experience participating in the E-HFP program, the impact of the program on local perceptions of landownership, as well as potential changes in control over different types of assets.

Table 3.1 Overview of methods and participants from health committee and older women leader intervention villages and control villages

Methods/participants	Intervention villages		Control villages	Total
	HC villages	OWL villages		
Impact evaluation				
Number of villages	15[a]	15	25	55
Number of households				
Baseline (2010)				
Household interview	511	512	734	1,757
Endline (2012)				
Household interview	436	444	590	1,470
Qualitative research				
Number of villages	14[a]	15	15	44
Number of households				
First round (2011)				
Basic semistructured interviews	70	75	75	220
In-depth semistructured interviews	28	30	30	88
Second round (2012)				
Semistructured interviews	70	75	75	220

Source: Compiled by authors.

Note: HC = health committee; OWL = older women leader.

[a] One village from the HC intervention group dropped out of the program and study before the first round of qualitative research, resulting in a total of 14 villages for the first and second rounds of qualitative research and for the endline survey for the impact evaluation.

Data Collection

For both the impact evaluation and the qualitative research, fieldworkers fluent in either Gourmantché or Mooré and proficient in French were selected to collect the data. Training for fieldworkers conducted by HKI and IFPRI took place before each round of data collection for the impact evaluation as well as for the qualitative research. Questionnaires were written in French and verbally translated into Gourmantché or Mooré. Responses in either of those two languages were recorded directly into French for the qualitative data collected.

Impact Evaluation

The baseline survey for the impact evaluation was carried out between February and April 2010 and targeted households with children between the ages of three and 12 months. The endline survey was carried out between February and April 2012 and targeted the households that participated in the baseline study where the target children were between 21 and 40 months of age at that point in time.

Qualitative Research

The first round of qualitative data collection was carried out in May and June of 2011. The second round of qualitative research was carried out in May and June of 2012. The two rounds of qualitative research differed, with the first being more focused on program implementation and use, and the second being more focused on collecting more in-depth information about issues related to some of the potential gender-related impacts of the E-HFP program.

Data Analysis

Impact Evaluation

The data were analyzed using SPSS version 19 and STATA version 12. In the results section, the variables or indicators of interest are presented as percentages or means and standard deviations as

appropriate. In all results tables, the variables and indicators are presented by stratum. The final sample size for all variables and indicators is reported in the results tables.

For the outcomes from the impact evaluation, the analysis makes comparisons between the three groups within our dataset: a control group and two treatment groups. As described previously, the two treatment groups varied only by *who* delivered the BCC strategy in the two groups of intervention villages. One group of intervention villages had the BCC strategy delivered by OWLs and the other by HC members.

Program impacts were estimated for specific outcomes comparing results from the intervention villages (HC + OWL) with those from the control villages, using a double-difference with covariates specification. The pooled specification was estimated with the following regression:

$$\Delta Y_{Endline} - Y_{Baseline} = \beta Treated + \gamma X_{Baseline} + \varepsilon,$$

where $\Delta Y_{Endline} - Y_{Baseline}$ is the change in program indicator variable between the endline and baseline survey, which could be either a household-level, mother-specific, or child-specific indicator. *Treated* indicates whether the household or individual had received the E-HFP program or not (1 = treated, 0 = not treated). The specification also included baseline characteristics of the household or child depending on the program indicator variable chosen. Though the program was randomly assigned and baseline characteristics should on average be balanced between treatment and control groups, some baseline characteristics may not have been entirely balanced due to the relatively small number of villages in the baseline survey. Baseline characteristics were included to correct for this potential bias; in this particular specification, the baseline value of the indicator was used. The regressions were estimated with corrections for clustering at the village level, the unit at which treatment was assigned, and attrition. Results were considered statistically significant at $p < 0.05$. All variables and indicators are presented by stratum.

Qualitative Research

Data from both rounds of qualitative research were entered into Microsoft Access and converted to SPSS files for purposes of analysis. SPSS versions 18 and 19 were used to analyze the quantitative data from the SSIs and are presented as percentages or means and standard deviations as appropriate. Qualitative data were manually coded by grouping similar responses together and looking for common themes among the respondents. Results from the quantitative and qualitative data were combined according to major topics to address the key research questions.

Evaluation of Key Questions on Gender

Both the impact evaluation and the qualitative research addressed questions that aimed to understand the gender-related impacts of the program. Table 3.2 outlines which questions were addressed by each data source.

Table 3.2 Gender-specific questions

Key questions	Impact evaluation	Qualitative research
1. Did the E-HFP program increase women's or men's ownership of assets?	✓	
2. Did the land agreements or project activities influence community norms vis-à-vis women's landownership or land rights, and if so, how?		✓
3. Were women able to maintain control over the HFP activities and outputs as intended in the program design? What were the facilitators of or barriers to maintaining or not maintaining such control?	✓	✓

Source: Author's compilation based on survey questionnaire.

4. RESULTS

Impacts on Men's and Women's Nonland Productive Assets

The E-HFP program transferred agricultural assets and small animals (chickens) directly to women. In select villages, goats were given to the VMF. Part of the evaluation hence aimed to assess whether implementation of the program resulted in changes in ownership of assets, particularly agricultural assets and small animals, by men and women. The impact evaluation specifically examined changes in the amount and value of household durables, agricultural assets, small animals, and large livestock held by men and women between baseline and endline. The results of these analyses are reported in this section.

Household and Agricultural Assets

At both baseline and endline, women owned approximately three times as many household durables as men, but the assets tended to be less valuable. The total value of men's assets was more than two times greater than the total value of women's assets (Table 4.1). Both men and women in intervention villages and men in control villages saw an increase in the average number of household items between baseline and endline, whereas women in control villages experienced a slight decline (Figure 4.1). However, the difference in the change of the number of household durables owned between baseline and endline was not statistically significant between intervention and control villages for either men or women (Table 4.2).

With regard to agricultural assets, men owned about 2.5 times as many agricultural assets as women at baseline in both intervention and control villages (Figure 4.2, Table 4.1). For both men and women in intervention and control villages, the average number of agricultural assets increased between the baseline and endline surveys. However, the dynamics of the changes between baseline and endline for the number of agricultural assets owned by men and women differed between intervention and control villages. Specifically, men in the control villages had a statistically significant greater average increase in the number of agricultural assets owned than did men in intervention villages (Figure 4.2, Table 4.2). However, women in intervention villages had a statistically significant greater increase in the average number of agricultural assets owned than did women living in control villages (Figure 4.2, Table 4.2). These differential changes resulted in a decrease in the ratio between men's and women's ownership of agricultural assets in intervention villages (baseline = 2.6, endline = 1.7), while the ratio stayed the same for those in control villages (baseline = 2.4, endline = 2.4). The difference in the change in household ownership of agricultural assets between intervention and control villages from baseline to endline was not statistically significant.

At baseline, men in intervention villages held nearly 15 times the value of agricultural assets held by women in intervention villages (for control villages this ratio was about 11.5). At endline, men in intervention villages still held a higher *value* of agricultural assets, but the ratio between men and women had fallen from 14.6 to 5.9, with men holding 19,095 CFA francs (down from 22,367 CFA francs) and women in intervention villages now holding 3,255 CFA francs in agricultural assets at endline (up from 1,536 CFA francs). For control villages, this ratio changed in the opposite direction, from 11.7 at baseline to 12.6 at endline (Table 4.1).

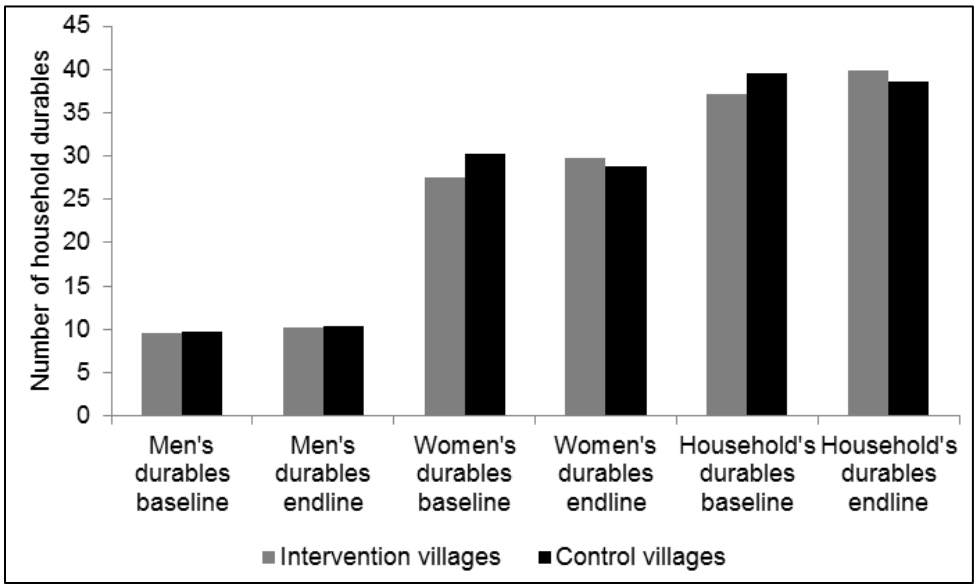
Table 4.1 Household durables and agricultural assets, at household level and by gender

	Baseline				Endline			
Variable	**Treatment**	**Control**	**Treatment: OWL**	**Treatment: HC**	**Treatment**	**Control**	**Treatment: OWL**	**Treatment: HC**
HH durables count	1,025	620	512	513	884	597	444	440
Men	9.61	9.74	9.92	9.30	10.26	10.36	11.34	9.18
	(9.81)	(8.38)	(9.80)	(9.82)	(10.13)	(10.02)	(11.42)	(8.51)
HH durables count	1,025	620	512	513	884	597	444	440
Women	27.53	30.21	27.38	27.67	29.81	28.76	31.35	28.27
	(17.26)	(19.24)	(16.39)	(18.10)	(22.33)	(21.50)	(21.12)	(23.39)
HH durables count	1,025	620	512	513	884	597	444	440
Households	37.14	39.55	37.30	36.98	39.84	38.63	42.23	37.45
	(21.51)	(22.11)	(20.40)	(22.57)	(27.96)	(25.61)	(27.01)	(28.71)
Agricultural capital count	1,025	620	512	513	884	597	444	440
Men	6.95	6.38	7.00	6.89	7.72	8.10	8.34	7.10
	(5.43)	(4.35)	(5.23)	(5.63)	(5.96)	(6.56)	(6.38)	(5.44)
Agricultural capital count	1,025	620	512	513	884	597	444	440
Women	2.70	2.67	2.66	2.73	4.43	3.32	4.61	4.26
	(2.59)	(2.43)	(2.42)	(2.75)	(3.67)	(3.03)	(4.00)	(3.31)
Agricultural capital count	1,025	620	512	513	884	597	444	440
Households	9.63	9.05	9.67	9.59	12.16	11.42	12.95	11.36
	(6.33)	(5.57)	(6.01)	(6.64)	(7.38)	(7.69)	(7.48)	(7.20)
HH durables value	105,325	111,648	114,772	95,918	90,847	101,352	108,582	73,279
Men	(155,740)	(150,964)	(159,733)	(151,229)	(145,698)	(138,321)	(172,953)	(109,777)
HH durables	1,024	620	512	512	884	597	444	440
Value—women	44,592	48,931	48,932	40,296	43,758	48,446	50,479	37,042
	(53,544)	(48,789)	(62,782)	(42,087)	(48,687)	(48,371)	(53,546)	(42,298)
HH durables	1,016	620	511	505	878	592	438	440
Value—households	146,497	160,578	162,022	130,948	132,142	146,319	154,271	110,321
	(169,011)	(173,142)	(179,726)	(156,187)	(160,072)	(159,855)	(184,444)	(128,219)
Agricultural capital	1,024	620	511	513	884	596	444	440
Value—men	22,367	22,260	24,662	20,104	19,095	23,460	22,548	15,647
	(36,655)	(35,258)	(44,866)	(25,991)	(33,325)	(51,762)	(42,079)	(20,728)
Agricultural capital	1,025	620	512	513	884	597	444	440
Value—women	1,536	1,903	1,575	1,497	3,255	1,868	3,465	3,046
	(3,227)	(4,046)	(3,074)	(3,374)	(9,130)	(7,182)	(4,476)	(12,113)
Agricultural capital	1,024	620	511	513	884	596	444	440
Value—households	23,902	24,163	26,234	21,601	22,351	25,329	26,012	18,693
	(36,928)	(35,599)	(45,062)	(26,416)	(34,779)	(52,688)	(42,665)	(23,985)

Source: Authors' computations.

Notes: OWL = older woman leader; HC = health committee; HH = households. The number of observations, mean, and standard deviation (in parentheses, if necessary) are presented for each variable. All values reported in CFA francs, which are fixed to the euro in a ratio of 1 euro = 655.957 CFA francs or 1 CFA franc = 0.00152449 euros. Treatment groups are "OWL" and "HC".

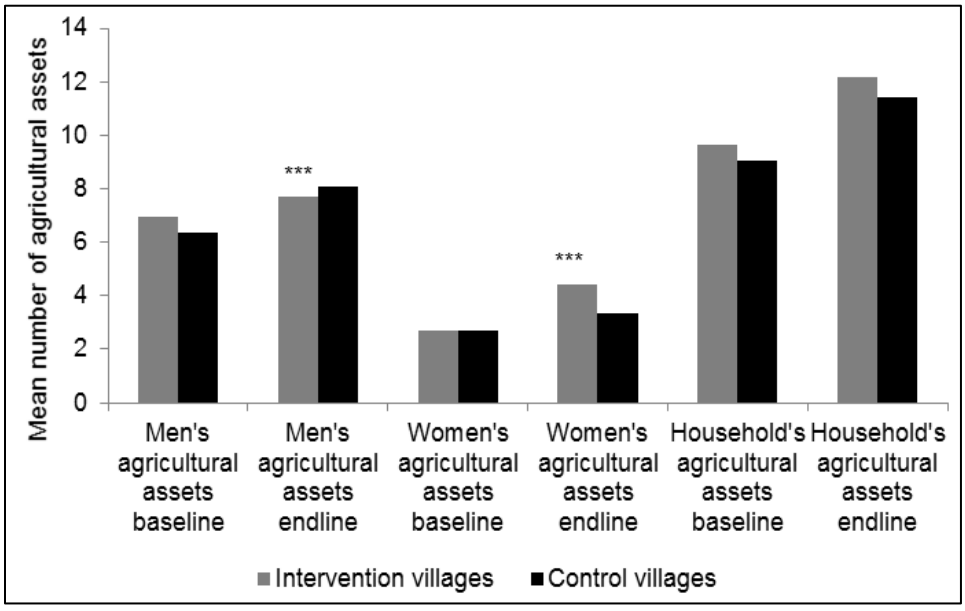
Figure 4.1 Ownership of household durables, by men and women in intervention and control villages at baseline and endline



Source: Authors' computations.

Notes: Comparison is to a control group that did not receive any program services. All estimates controlled for clustering and attrition.

Figure 4.2 Ownership of agricultural assets, by men and women in intervention and control villages at baseline and endline



Source: Authors' computations.

Notes: Comparison is to a control group that did not receive any program services. All estimates controlled for clustering and attrition. *** $p < 0.01$.

Table 4.2 Double-difference estimates of the impact of the program on the number of household and agricultural assets, by gender of owner

	Household (HH) durables	HH durables	HH agricultural assets	HH agricultural assets
Indicator	**Male**	**Female**	**Male**	**Female**
	n = 1,380	*n* = 1,380	*n* = 1,380	*n* = 1,380
Treatment	-0.56	2.89	-1.36***	1.02***
	(1.03)	(2.09)	(0.43)	(0.30)
p-value	0.59	0.17	0.003	0.001

Source: Authors' computations.

Notes: Comparison is to a control group that did not receive any program services. All estimates controlled for clustering and attrition. All values are coefficient (standard error (SE)). *** $p < 0.001$.

Livestock

Overall, men owned the majority of livestock both in terms of the value of animals as well as the number of animals at baseline and at endline. Men in control villages on average held slightly more small animals and large livestock at baseline than men in intervention villages, but at endline men in intervention villages held more small animals and large livestock on average than those in control villages (Figure 4.3, Table 4.3). This differential change in ownership for small animals between men in intervention as compared to control villages from baseline to endline was statistically significant (Table 4.4). Men in both intervention and control villages experienced an increase in the value of small animals and large livestock between baseline and endline (Table 4.3).

Women in intervention and control villages held the same average number of small animals at baseline (Figure 4.3, Table 4.3). However, although the number of small animals remained the same for women in control villages, women in intervention villages saw a statistically significant increase in the average number of small animals owned by 2.7 animals (Figure 4.3, Table 4.4). Since the program distributed chicks to women, this indicates that the number of animals for which women were responsible increased at endline. On average, women in neither control nor intervention villages reported owning any large livestock (Table 4.3).

In terms of value, women in both intervention and control villages saw an increase in the value of small animals, although that increase was higher for the women from intervention villages. At baseline, small animals held by women were valued between 25,697 and 28,609 CFA francs in intervention and control villages, respectively, but at endline small animals held by women in intervention and control villages were valued at 40,222 and 39,219 CFA francs, respectively (Table 4.3). As with agricultural assets, the greater increase in ownership of small animals among women living in intervention villages as compared to control villages also resulted in a decrease in the ratio of male to female ownership of small animals in intervention villages (baseline = 4.0, endline = 2.8), whereas the ratio in control villages (baseline = 4.4, endline = 4.2) showed virtually no change.

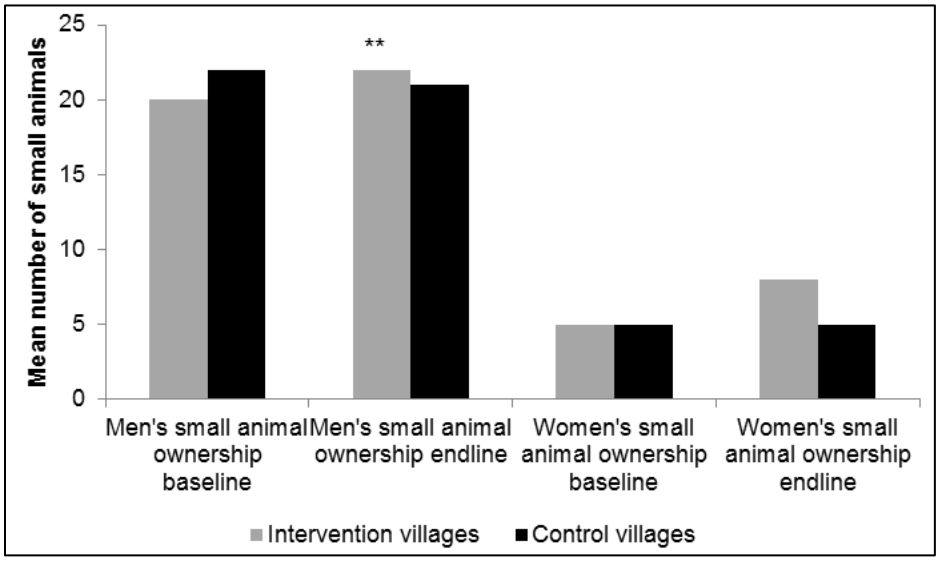
Table 4.3 Household livestock holdings, by gender

	Baseline				Endline			
Variable	**Treatment**	**Control**	**Treatment: OWL**	**Treatment: HC**	**Treatment**	**Control**	**Treatment: OWL**	**Treatment: HC**
Small animals, count	1,025	738	512	513	884	597	444	440
Men	20	22	21	19	22	21	24	20
	(20)	(25)	(21)	(20)	(23)	(22)	(25)	(20)
Women	5	5	5	5	8	5	9	7
	(7)	(7)	(7)	(7)	(9)	(8)	(9)	(9)
Households	25	27	25	24	30	26	32	27
	(23)	(28)	(24)	(22)	(27)	(25)	(29)	(24)
Large livestock	1,025	620	512	513	884	597	444	440
Men	5	6	5	5	6	5	6	5
	(8)	(8)	(8)	(7)	(10)	(8)	(12)	(8)
Women	0	0	0	0	0	0	0	0
	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(0)
Households	5	6	5	5	6	6	7	6
	(8)	(9)	(8)	(7)	(11)	(8)	(13)	(8)
Small animals, value	1,025	738	512	513	884	597	444	440
Men	92,841	107,207	95,630	90,086	112,101	132,171	135,209	89,014
	(132,058)	(165,881)	(137,459)	(126,568)	(183,721)	(212,197)	(218,745)	(136,663)
Women	25,697	28,609	26,908	24,501	40,222	39,219	46,694	33,756
	(47,310)	(54,837)	(52,889)	(41,077)	(65,605)	(71,742)	(70,478)	(59,729)
Households	118,538	135,816	122,538	114,586	152,323	171,389	181,903	122,770
	(153,730)	(187,127)	(161,671)	(145,506)	(211,030)	(237,025)	(245,390)	(164,968)
Large livestock, value	1,025	738	512	513	884	597	444	440
Men	549,250	616,676	571,386	527,374	583,127	656,449	629,003	537,291
	(901,856)	(1,007,868)	(982,879)	(814,278)	(978,693)	(1,009,600)	(1,099,432)	(839,705)
Women	11,987	18,365	14,948	9,060	5,584	6,571	5,977	5,192
	(87,920)	(102,522)	(96,407)	(78,623)	(51,360)	(51,914)	(47,708)	(54,817)
Households	561,236	635,042	586,333	536,434	595,307	674,979	645,246	545,413
	(925,555)	(1,018,756)	(1,014,926)	(828,065)	(988,079)	(1,016,225)	(1,106,697)	(851,622)

Source: Authors' computations.

Notes: OWL = older woman leader; HC = health committee. The number of observations, mean, and standard deviation (in parentheses, if necessary) are presented for each variable. All values reported in CFA francs, which are fixed to the euro in a ratio of 1 euro = 655.957 CFA francs or 1 CFA franc = 0.00152449 euros. Treatment groups are "OWL" and "HC".

Figure 4.3 Ownership of small animals, by men and women in intervention and control villages at baseline and endline



Source: Authors' computations.

Notes: Comparison is to a control group that did not receive any program services. All estimates controlled for clustering and attrition. ** $p < 0.05$, *** $p < 0.01$.

Table 4.4 Double-difference estimates of the impact of the program on the number of small animals, by gender of owner

	Small animal quantity	
Indicator	**Male**	**Female**
N	1,380	1,380
Treatment	3.67**	2.75***
	(1.71)	(0.78)
p-value	0.036	0.001

Source: Authors' computations.

Notes: Comparison is to a control group that did not receive any program services. All estimates controlled for clustering and attrition. All values are coefficient (standard error (SE)). ** $p < 0.05$, *** $p < 0.01$

Influences on Community Norms Regarding Land

Men's and Women's Ability to Inherit, Own, and Use Land

In the villages sampled for the second round of qualitative research (2012), nearly all women and men in both intervention and control villages reported that land for agricultural purposes was primarily obtained through inheritance and gifts, and around half of men and women in both types of villages reported that marriage and widowhood were also ways to obtain land. Most men and women reported differences between the ways in which men could obtain land and the ways in which women could obtain land. Although most respondents in both intervention and control villages stated that men could inherit land, women generally could not, and were able to obtain land only through marriage or gifts. A female respondent in an intervention village explained, "The men receive land through inheritance or through gifts but for women it is only through gifts."

More than half of men and women in both intervention and control villages reported that women would *not* inherit land upon their husband's death, although this was slightly higher for respondents in control villages. The overwhelming reason was said to be traditional inheritance and usage rules. Furthermore, mature children would usually inherit the land from their father, or the land traditionally belonged to the husband's family and would therefore be returned to them. Moreover, wives were considered *strangers* (not originally from the village). As one woman in an intervention HC village reported: "She is a stranger and cannot inherit." A woman reportedly inherited land from her deceased husband only if she had young children with him, if she wanted to stay in the home or family, if she was too old to marry another man, or if her husband's family allowed her to.[5] One woman from an OWL village reported that "social considerations prevent women from inheriting land from her husband if she does not have children or if she has only girls." Vice versa, around half of men and women in both types of villages reported that men would usually inherit the land if their wife died.[6] More men and women in intervention villages than in control villages reported that it depended upon the agreement that was in place with the previous owner.

Respondents in both intervention and control villages reported that women faced significant obstacles to owning land whereas men did not. More than half of men and women in intervention villages, compared with about half of women and men in control villages, reported that women faced obstacles (intervention villages: women = 91/145 [63 percent], men = 66/118 [56 percent]; control villages: women = 38/75 [51 percent], men = 29/63 [46 percent]). More than 80 percent of women and men in intervention villages reported that the main obstacles to women's ability to own land were traditional or social barriers (intervention villages: women = 39/46 [81 percent], men = 56/66 [85 percent]), compared with closer to 70 percent for women and men in control villages (control villages: women = 26/38 [68 percent], men = 19/29 [66 percent]). A woman in an intervention HC village said that "tradition reduces the chances for women to own land." A second reason was that women were regarded as "strangers" or "nomads" (intervention villages: women = 29/91 [32 percent], men = 17/66 [26 percent]; control villages: women = 11/38 [29 percent], men = 6/29 [21 percent]). Other reasons included inheritance rules, mind-set/noninvolvement of women in land issues, and lack of fertile lands. Ways in which women's ability to own land could be improved were reported to relate to the sensitization of stakeholders regarding women's landownership and the granting or distributing of land to women. Government, local authorities, and NGOs were all expected to play a role in this.

Changes in Women's Ability to Own and Use Land and Opinions Related to These Issues over the Two Years in Which HKI Was Operating Its E-HFP Program

Despite the obstacles to women's ability to own land described by men and women in both control and intervention villages, a greater proportion of male and female respondents in intervention villages than of those in control villages noted that there had been changes in women's ability to own and use land and opinions regarding these issues over the two years that the E-HFP program operated (Table 4.5).[7]

[5] A woman was not able to inherit the land if she wanted to remarry outside of the husband's family, although this was reported more among women than among men (intervention villages: women = 17/34 [50 percent], men = 11/29 [38 percent]). Furthermore, women were unable to inherit land from her husband if she had no children with him (intervention villages: women = 15/34 [44 percent], men = 12/29 [41 percent]).

[6] For those who reported that this was not the case, this was usually because children were mature enough to inherit land or because the land belonged to the wife's family.

[7] T-tests (not reported here) indicate that for all outcomes reported in Table 4.5, differences between intervention and control villages are significant at $p < 0.001$.

Table 4.5 Changes in opinion on ownership and use of land among men and women in intervention villages over the past two years (the time HKI was implementing its E-HFP program)

	Women				Men			
	Intervention villages			Control villages	Intervention villages			Control villages
Variable	HC	OWL	All	Control	HC	OWL	All	Control
Change in own opinion about who can own and/or use land for the production of fruits and vegetables	*n* = 70 46 (66)	*n* = 75 49 (68)	*n* = 145 95 (67)	*n* = 75 11 (16)	*n* = 57 32 (56)	*n* = 58 36 (62)	*n* = 114 68 (60)	*n* = 60 14 (23)
Perceived changes in other people's opinions about who can own and/or use land for the production of fruits and vegetables	*n* = 56 24 (43)	*n* = 56 31 (55)	*n* = 112 55 (49)	*n* = 65 8 (12)	*n* = 46 21 (46)	*n* = 51 24 (47)	*n* = 97 45 (46)	*n* = 52 5 (10)
Perceived changes related to women's ability to **own** land in the village	*n* = 69 18 (26)	*n* = 67 15 (22)	*n* = 136 33 (24)	*n* = 73 1 (1)	*n* = 57 16 (28)	*n* = 59 15 (25)	*n* = 116 31 (27)	*n* = 60 2 (3)
Perceived changes related to women's ability to **use** land for growing food in the village	*n* = 68 29 (43)	*n* = 70 32 (46)	*n* = 138 61 (44)	*n* = 74 3 (4)	*n* = 55 27 (49)	*n* = 53 21 (40)	*n* = 108 48 (44)	*n* = 61 1 (2)

Source: Authors' computations.

Notes: HC = health committee; OWL = older women leader. Numbers are *n* (percent). Responses were obtained through semi-structured interviews. Treatment groups are OWL and HC members.

More than half of men and women in intervention villages as compared to less than one-quarter of men and women in control villages explained that their opinions related to *who* can own or use land for the production of fruits and vegetables had changed over the past two years (the years in which HKI was operating its E-HFP program) (Table 4.5). The respondents who had changed their opinions explained that the primary reasons for having changed their opinions about this over the past two years related to changes in gender roles, the HKI intervention, and changes in consumption, such as increased consumption of vegetables, consumption of vegetables in the dry season, and because of an enhanced understanding of the importance of fruits and vegetables for nutrition and dietary diversity. The most frequently reported reason for changing opinions was a change in gender roles in favor of greater resources controlled by women, with respondents emphasizing women's ability to use or manage land or women's ability to now have a garden (intervention villages: women = 77/95 [81 percent], men = 44/65 [65 percent]; control villages: women = 6/11 [54 percent], men = 6/14 [43 percent]). The E-HFP program was also specifically noted as a primary reason for the changes in opinion among respondents from intervention villages (intervention villages: women = 29/95 [31 percent], men = 24/65 [37 percent]; control villages: women = 0/11 [0 percent], men = 0/14 [0 percent]). One respondent in an intervention HC village stated, "Thanks to HKI, I realized that a woman can garden. And the case of the VMF convinced me of the benefit." Another reported that "the women proved that they had the capabilities to manage the land well" (HC). Those who said that their opinions had *not* changed reported that one key reason was tradition or custom, or both, as well as issues related to traditional gender roles, and mainly in relation to rules around ownership.

In addition to changes in their own opinions, a greater proportion of men and women in intervention villages than in control villages saw changes in *other* people's opinions over the past two years (Table 4.5). Those who had seen changes in other people's opinions observed that women increasingly had more access to land for gardening and explained that non-beneficiaries in intervention villages had been copying those participating in the program. For example, a participant in one of the OWL villages stated that "non-beneficiary men and women copied the idea and set up homestead gardens." Another stated that "landowners and household heads now give land [to women] for gardens."

In accordance with the changes noted in opinions, we see similar trends in reported actual changes in women's ability to own land among respondents in intervention villages as compared to control villages. Whereas approximately one-quarter of both female and male respondents from intervention villages stated that women's ability to own land had changed over the past two years, there was minimal change in control villages (Table 4.5). Those who had seen changes in women's ability to own land in intervention villages discussed that the changes mainly related to the fact that husbands or HKI, or both, granted land to women (intervention villages: women = 18/33 [55 percent], men = 14/31 [45 percent]), and that women now had community gardens (intervention villages: women = 15/33 [45 percent], men = 3/31 [10 percent]). As one man from an HC village explained, "Thanks to HKI, women gain access to land when they ask for it" and that "thanks to HKI, the women are owners of the VMF." Women from participating OWL villages reported that "the women possess more and more land granted by their husbands" and that "women gain more and more land due to the presence of the HKI project." In contrast, no differences were noted for men's ability to own and use land for agricultural purposes during the program period in either intervention or control villages.

Similar to changes reported in women's ability to *own* land, close to half of men and women in intervention villages explained that there *had* been changes over the past two years in women's ability to *use* land for growing food (Table 4.5). The main reported changes related to support with agricultural inputs and equipment/tools, although this was reported only among respondents from intervention villages (intervention villages: women = 43/61 [70 percent], men = 32/48 [67 percent]), and increased access to land for women due to transfers from men and due to advocacy (intervention villages: women = 33/61 [54 percent], men = 15/48 [31 percent]).

Although there was an indication that women's ability to *use* land for agricultural purposes had changed in intervention villages, a number of obstacles to women's ability to use land in this way were noted by respondents from both intervention and control villages. The primary obstacles reported

included the lack of cultivable lands, lack of rain or unfavorable rainfall, lack of agricultural inputs such as tools, and traditional practices related to women's roles. Ways to improve women's ability to use land related to support with inputs (seeds, fertilizer) and agricultural materials/tools, although this was reported more so in intervention villages.[8] Furthermore, sensitization of all stakeholders was mentioned by respondents in both intervention and control villages, with government and local authorities and NGOs expected to play the main roles.

A significant proportion of men and women in both types of villages said that they expected to see changes related to the way in which women will be able to own or use land in the future (intervention villages: women = 65/145 [45 percent], men = 51/118 [43 percent]; control villages: women = 32/75 [43 percent], men = 31/63 [49 percent]). Those who expected changes mostly reported that women are expected to gradually gain more access to land with support from NGOs and the government. Around a third of all groups believed that women will be able to acquire land through purchase or lease. Another expected change was that women will gain more access to land through sensitization of stakeholders, although this was reported more by those living in intervention villages. Some women in both types of villages also reported that a lack of land will reduce rights to landownership in the future. Those who did *not* expect changes in women's ability to own or use land—primarily in control villages—cited traditional practices as the primary barrier, as well as women's lack of rights to land and women's dependence on men.[9] Interestingly, both men and women (though more so in control villages) expected that customary rules around gifts and inheritance of land would no longer be as important in the future.

Control over E-HFP Activities and Outputs

The two rounds of qualitative research carried out in 2011 and 2012 aimed to assess whether the women participating in the E-HFP program had been able to maintain control over program activities and outputs. In addition to the agricultural and nutrition trainings at the VMF and encouraging women to start their own homestead gardens, the E-HFP program provided participating women with key agricultural inputs such as seeds and saplings, chicks, and in some cases goats to support production at the VMF as well as the home gardens. To assess potential changes in control over these inputs and assets, the qualitative research examined *who* in the household had control over and responsibility for the home gardens and produce, the chickens, and the goats. The results reported below are based on SSIs with women in the intervention villages.

Garden and Produce

In 2011, 84 percent (114/136) of women in intervention villages had a home garden, and for 90 percent (103/114) of those women this was new since joining the program in 2010. By contrast, only 4 percent (3/74) of women in control villages had a home garden in 2011. In 2012, 81 percent (117/145) of women in intervention villages reported that they had land near their home that was used to grow fruits and vegetables, compared to 5 percent (4/75) of women in control villages.

Land on which the garden was established was mainly owned by men, and this had actually increased from 44 percent (19/43) in 2011 to 64 percent (75/117) in 2012, possibly due to an increase in overall household ownership of land. Although women were unlikely to report that they owned the land

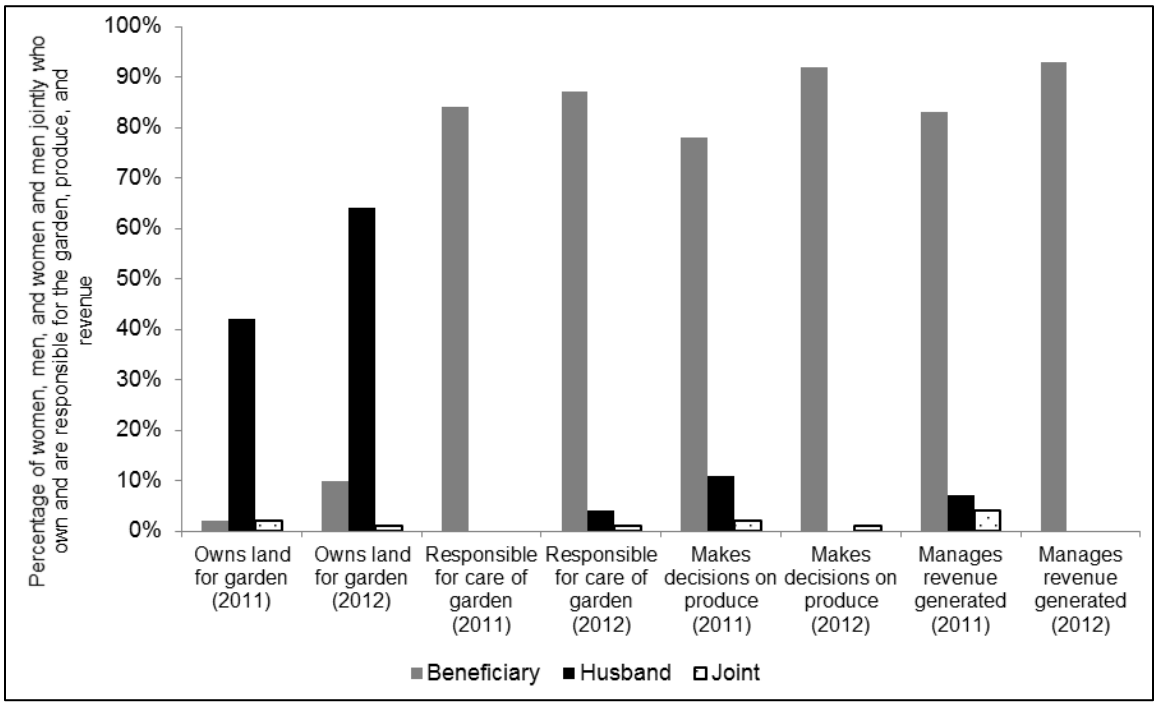
[8] This was reported more in intervention villages than in control villages. Support with materials/means of production: intervention villages: women = 60/145 (41 percent), men = 56/118 (47 percent); control villages: women = 21/75 (28 percent), men = 10/63 (16 percent). Support with seeds and fertilizer: intervention villages: women = 64/145 (44 percent), men = 52/118 (44 percent); control villages: women = 15/75 (20 percent), men = 15/63 (24 percent).

[9] A significant proportion of men and women in both control and intervention villages also expected to see changes in the way in which *men* were able to own or use land in the future (intervention villages: women = 60/145 [41 percent], men = 57/118 [48 percent]; control villages: women = 33/75 [44 percent], men = 39/63 [62 percent]). Changes were expected to occur mainly in relation to the ability to purchase or lease land and government distribution of lands as well as an expectation that a lack of land will make access to cultivable lands increasingly difficult. Both men and women in participating villages expected that some form of land development and redistribution or subdivision of land would occur. Those who did *not* expect any future changes in men's ability to own or use land cited traditional practices as the main reason.

on which the gardens were established, the proportion of women who reportedly owned this land increased slightly from 2011 to 2012, from 2 percent (1/43) in 2011 to 10 percent (12/117) in 2012. Joint ownership remained the same at 2 percent (1/43) in 2011 and 1 percent (1/117) in 2012 (Figure 4.4).

Women were primarily responsible for the care of the garden, and that did not change much between 2011 and 2012 (Figure 4.4). In addition, women reportedly were responsible for making most of the decisions regarding the produce from the garden, and they were also the main managers of the revenue generated from the sale of that produce (Figure 4.4). Between 2011 and 2012, women's decision making on produce increased from 75 percent (24/32) to 92 percent (103/112), whereas male decision making decreased from 9 percent (3/32) to 0 percent (0/112). Similarly, the percentage of women who managed revenue from the sale of produce increased from 83 percent (26/31) in 2011 to 93 percent (38/41) in 2012, whereas male management decreased from 7 percent (2/31) to 0 percent (0/41) (Figure 4.4).

Figure 4.4 Ownership and responsibility for the home gardens, produce, and revenue generated from produce, as reported by beneficiary women in 2011 and 2012



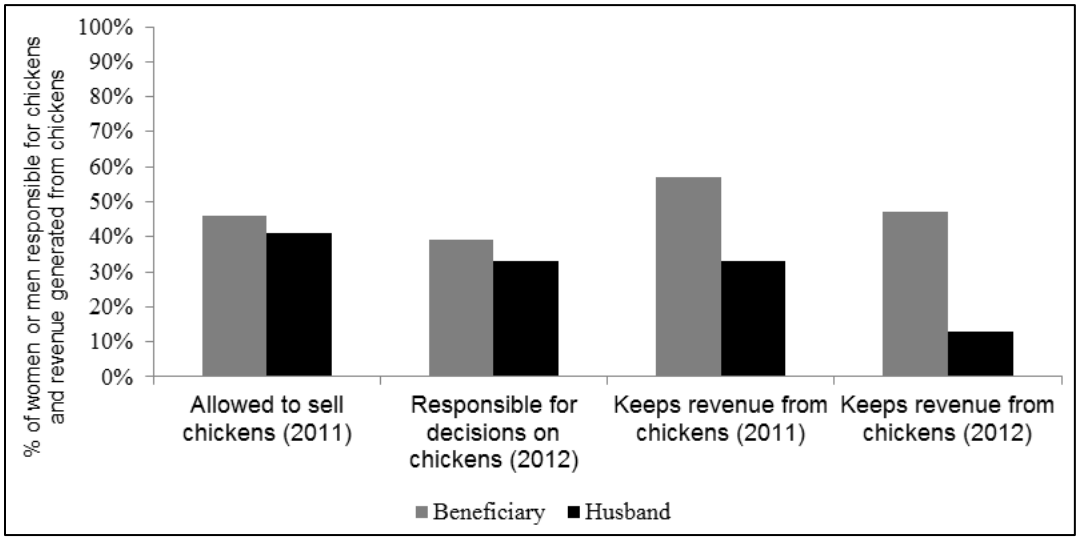
Source: Authors' computations.

The vast majority of respondents in intervention villages said that they expected that the land dedicated to growing fruits and vegetables would always continue to be used for that purpose (intervention villages: women = 91/104 [88 percent], men = 58/67 [87 percent]; control villages: women = 4/4 [100 percent], men = 4/4 [100 percent]). About 28 percent of women (29/104) in intervention villages said that they believed that the land would always be dedicated to growing fruits and vegetables because it provided the household with that particular produce, about 24 percent of women (25/104) explained that they saw it as a very beneficial activity, and about 21 percent of women (15/104) said that they would continue to grow fruits and vegetables for financial reasons.

Chickens

With regard to responsibility for chickens, slightly more women (24/52 [46 percent]) than men (20/52 [38 percent]) in intervention villages were allowed to sell chickens in 2011. In 2012, a slightly different question was asked, showing that slightly more women (52/126 [41 percent]) than men (44/126 [35 percent]) in intervention villages were responsible for decision making on chickens. This compared to 29 percent (16/55) of women and 58 percent (32/55) of men who had responsibility for decision making on chickens, as reported by women in control villages in 2012. Given these results, it appears that in 2012 women and men in intervention villages were almost equally likely to make decisions about chickens whereas in control villages women reported that men were twice as likely as they were to make decisions related to chickens. With regard to revenue, although the proportion of women who kept the income from the sale of chickens dropped between 2011 and 2012 from 54 percent (26/48) to 48 percent (28/59), the proportion of men who kept the revenue from the sale of chickens also dropped, from 35 percent (17/48) to 14 percent (8/59). Despite the overall decrease in absolute percentages, the changes reflect an overall increase in the likelihood of women to keep the income from the sale of chickens as compared to men, as the gap in the ratio between the likelihood of women keeping the revenue as compared to men increased from 1.2 to 2.5 from 2011 to 2012 (Figure 4.5).

Figure 4.5 Responsibility for chickens and revenue generated from chickens, as reported by beneficiary women in 2011 and 2012



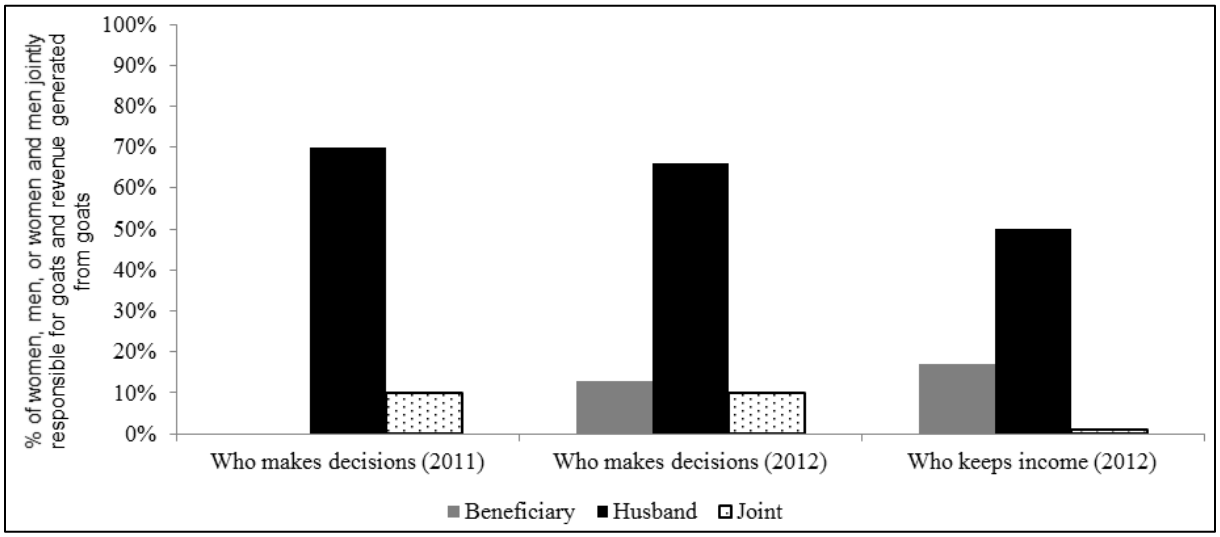
Source: Authors' computations.

Of the men and women in intervention and control villages who had land close to home used to raise chickens (intervention villages: women = 133/145 [92 percent], men = 100/118 [85 percent]; control villages: women = 55/75 [73 percent], men = 52/64 [81 percent]), nearly everyone reported that they planned to continue to raise chickens on this land (intervention villages: women = 133/133 [100 percent], men = 97/100 [97 percent]; control villages: women = 54/55 [98 percent], men = 50/52 [96 percent]). Around 95 percent of women in intervention villages (126/133) gave consumption benefits as a key reason (for example, consumption of the meat and the eggs and the benefits of that for children), and about 83 percent of women (112/135) reported reasons related to improved revenue from the sale of the chickens.

Goats

Results show that men were in charge of decision making about the sale of goats and that they retained the income from such sales. In 2011, women in intervention villages reported that men made 68 percent (28/41) of decisions on goats, joint decision making was at 10 percent (4/41), and women did not make any decisions (0/41 [0 percent]). In 2012, men made the majority of the decisions at 66 percent (41/62); however, there was a notable increase for women from 0 percent (0/41) in 2011 to 13 percent (8/62) in 2012. There was no change for joint decision making, which remained at 10 percent (6/62 in 2012). In 2012, 50 percent (15/30) of women in intervention villages reported that the revenue from the sale of goats was kept mainly by men, although 17 percent (5/30) of women kept income from the sale of goats (Figure 4.6).

Figure 4.6 Responsibility for goats and revenue generated from goats, as reported by beneficiary women in 2011 and 2012



Source: Authors' computations.

For those who reported that they had land close to their home for raising goats (intervention villages: women = 62/145 [43 percent], men = 73/118 [62 percent]; control villages: women = 35/75 [47 percent], men = 40/64 [63 percent]), almost all stated that they expected the land would continue to be used for that purpose (intervention villages: women = 59/62 [95 percent], men = 71/73 [97 percent]; control villages: women = 35/35 [100 percent], men = 37/40 [97 percent]). In intervention villages, around 90 percent of women (53/59) reported that they expected this because goats were a source of revenue, and around 25 percent of women (15/59) reported that they expected this because goats were intended for consumption.

5. DISCUSSION AND CONCLUSIONS

The paper aimed to examine whether a homestead food production intervention had any impact on asset ownership and control by men and women, and whether social norms regarding asset ownership and control had also changed as a result of the intervention.

Results indicate that men continued to have the majority of control over and ownership of land and assets in sample villages in eastern Burkina Faso. However, the evidence also points to shifting patterns with regard to women's control and ownership of assets—both in terms of quantifiable changes in number and value of assets, as well as changes in communities' perceptions and opinions. For example, we found a small increase in the percentage of women who reported that they owned the land for their home garden from 2011 to 2012. Because a gift is one of the ways in which women can obtain land, it seems plausible that the changes reported here relate to women having received grants of land from their husbands or through HKI.

In agreement with these reported changes, men and women in intervention villages noted changes in their own opinions as well as the opinions of others in their villages with regard to women's ability to use and own land. They cited the changes in gender roles and the HKI E-HFP program as being drivers of those changes. Furthermore, they expected additional such changes in the future with support from NGOs and the government as well as sensitization efforts. A few people specifically noted that they now realized that women could have their own gardens and were capable of doing the same work as men. In addition to the changes seen among the beneficiaries themselves, some also noted that people who were not program participants had started to copy the gardens, indicating the potential for spillover of program impacts. These changes in opinion regarding women's landownership show, qualitatively, that to some degree the program has had an impact on perceptions of women's landownership in villages and potentially in their abilities to own and use land within those villages. This is potentially important as evidence suggests that more secure land rights contribute to investment in land (Fenske 2011), such as increased tree planting (Quisumbing et al. 2001; Goldstein and Udry 2008) and the adoption of soil conservation techniques (Deininger, Ali, and Yamano 2008), even in areas where formalization of land rights is not accompanied by titling (for example, land registration efforts in Ethiopia and Rwanda [Deininger et al. 2008; Ali, Deininger, and Goldstein 2011]). Data from the impact evaluation of the E-HFP program in Burkina Faso indicated a positive change in the proportion of plots cultivated by women for which manure was used among those living in intervention villages (baseline = 12 percent, endline = 44 percent) as compared to control villages (baseline = 14 percent, endline = 11 percent). This may suggest an increase in investment in improving the fertility of the land that they are using for their home gardens (Dillon et al. 2012).

In addition to the qualitative changes noted with regard to perceptions and opinions of women's ability to own and use land, we found statistically significant greater changes in the average number of agricultural assets and small animals owned by women in intervention villages than in control villages over the course of the two-year program period. This was accompanied by a statistically significant greater average increase in the number of agricultural assets owned by men in control villages than in intervention villages. This indicates that although there was no overall increase in household ownership of agricultural assets, there was a shift in the pattern of ownership that narrowed the proportional gap in ownership of agricultural assets between men and women in intervention villages. This did not happen in control villages. The significance of this relatively small increase in ownership of agricultural assets and a shift in pattern is unclear, but it adheres to the intention of the program design, which aimed to transfer small agricultural assets to women. In terms of small-animal ownership, both women and men in intervention villages saw relatively greater increases than those in control villages, which could contribute to greater availability of eggs and chickens at the household level, greater intake of these products, and potential increases in revenue.

Accompanying the positive changes noted above for women in intervention villages, women in those villages also reported being able to control their gardens and use of the products and being able to manage the income generated from their gardens. In addition, women living in intervention villages also

had more decision-making power than men with regard to chickens; such was not the case in control villages. Women in intervention villages also were more likely to keep the revenue from the sale of chickens in 2012 than in 2011. Women in intervention villages also experienced a notable increase in their decision-making power over goats, although men remained largely in charge of these higher-value animals. These differences between control and intervention villages, and over time in intervention villages, may have been influenced by the E-HFP program activities in the intervention villages. Male control of goats (compared to chickens) may have been reinforced because the program gave chickens directly to the women, whereas the goats that were given out were only part of a pilot project in a few of the villages. Moreover, they were given to the VMF at the village level. Hence, one would expect that men would own these higher-value animals and there would not be a major change in the ownership or control of goats because women were never given goats directly. Again the implications of these relatively small changes and differences in women's decision-making power are unclear, but they could have positive impacts on things such as food security, child nutrition, education, and women's own well-being (Quisumbing 2003; Smith et al. 2003; World Bank 2001).

These findings are consistent with other studies of value-chain projects in Malawi and Uganda, where women are more likely to control commodities generating lower average revenues, whereas men control commodities that are high-revenue generators, often sold in formal markets (Njuki et al. 2011). Although the results indicate that the most significant changes in ownership and control mostly occurred in relation to assets that were generally of lower value (seeds, produce, chickens) as opposed to higher-value assets (land, goats), the changes that did occur were notable. As the impact evaluation of the program was carried out between 2010 and 2012 and the qualitative research was carried out in 2011 and 2012, these changes occurred within a relatively short time frame. Although views about the importance of tradition and custom of course remain, there are indications that people anticipate that such traditions may change in the future, that women are just as capable as men in cultivating land, and that they will be able to gain access to more land in the future. Such views were not generally expressed in the control villages.

Because the E-HFP was a two-year pilot program, it remains to be seen whether the changes in asset ownership and control will remain the way they are now, whether such changes will continue, or whether the situation will revert back to the way it was before the program started. Respondents noted that the main reasons for the changes related to the changes in traditional gender roles brought about by the HKI intervention, but it is difficult to determine whether such changes are sustainable after completion of the program, especially if these communities become more integrated into agricultural markets. Nevertheless, the results point to the potential that agricultural programs of this type have to improve women's control over and ownership of assets, and the potential they have to change perceptions and opinions about gender norms.

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