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# FEMALE FARMERS IN ZAMBIA: POSITIVE PROSPECTS FOR PRODUCTIVITY



WOMAN IN THE CHIPATA DISTRICT OF ZAMBIA PROUDLY HOLDS HER LAND CERTIFICATE  
PHOTO: SANDRA COBURN / THE CLOUDBURST GROUP  
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## INTRODUCTION

Insecure land tenure is a crucial problem that reduces agricultural investment and productivity. Both men and women suffer from tenure insecurity, but women are particularly disadvantaged by tenure insecurity in both statutory and customary land tenure systems (Meinzen-Dick et al., 2017; Pattanayak et al., 2003; Kiptot et al., 2014). In a famous study of customary land tenure within Ghana, Goldstein and Udry (2008) estimated that in 1997 Ghana lost 1% of its GDP because tenure insecurity led female farmers to invest less in agricultural productivity.

Tenure insecurity reduces Climate Smart Agricultural (CSA) investments in Zambia as well. Dillon and Voena (2017) show that in Zambian households where women have less tenure security, they apply 13–18% less fertilizer, fallow 4–5% less land area, and use intensive tillage techniques on 3–5% fewer acres. There is also evidence that women’s insecurity over land and tree resources reduces agroforestry adoption, which the Zambian government has promoted to improve soil fertility (Kiptot et al., 2014).

While there has been a great deal of USAID and other donor research on constraints facing smallholder farmers, there have been few rigorous empirical studies of interventions to reduce tenure insecurity on customary land or to increase agroforestry. Even rarer are studies that emphasize effects for women.<sup>1</sup> This gender brief outlines main gendered findings for male and female household heads based on a rigorous USAID-funded randomized control trial (RCT) in Zambia of the Tenure and Global Climate Change Program (TGCC). The evaluation examined whether the TGCC program successfully improved tenure security through informal customary land registration and whether that, in turn, led to increased farmer investment in sustainable agroforestry. Positive results of the TGCC program would point to a path of increased smallholder investments that could increase food security, ensure sustainable development and reduce poverty. This gender brief first highlights key findings, provides background on the Zambian context and the interventions and then delves into the differential outcomes by gender.

## KEY FINDINGS

### POSITIVE FINDINGS—STRONG MAIN RESULTS

- There is strong quantitative evidence that the TGCC Land Tenure intervention improved tenure security perceptions for male and female household heads.
- There is also strong quantitative evidence from the Agroforestry intervention showing increased rates of agroforestry adoption for male and female household heads.
- That the main results are similar for male and female household heads point to important equity benefits of the TGCC program and an absence of elite capture.

### RESULTS SPECIFICALLY FOR FEMALE- AND NOT MALE- HEADED HOUSEHOLDS

- Female-headed households (FHHs) benefited from linking the Land Tenure and Agroforestry interventions. This lends some limited support to the argument that, at least for more marginalized groups, stronger property rights affect a farmer’s decision to practice Climate Smart Agriculture (CSA) including agroforestry. For the overall household sample, there is no evidence to support a link

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<sup>1</sup> The Community Land Protection Program is a notable exception (see USAID, 2017a).

between tenure security and agroforestry uptake. For the long term, it will be valuable to track whether there is an overall relationship between tree survival and tenure security.

- The Agroforestry intervention increased both overall and FHH participation in land management meetings.
- However, the Agroforestry intervention increased perceptions among female household heads of unfairness for the poor in land management decisions. This may be related to poor women (including wives) disproportionately shouldering the burden of caring for saplings in a communal nursery.



*A villager draws water in the Chipata district of Zambia from a well that was sunk by TGCC agroforestry implementing partner COMACO.*

### **NEED FOR LONGER-TERM STUDIES**

- The evaluation findings support the scale-up of TGCC's documentation and boundary demarcation approach in Zambia and program piloting in other customary land systems.
- However, more time is necessary to explore the impact on longer-term outcomes such as willingness to fallow land or ensure tree survival. This longer-term perspective is crucial to understanding the success of these interventions, as the Agroforestry intervention requires years for trees to mature and not all certificates have been received by program beneficiaries due to delays by chiefs.
- The benefits of the Agroforestry intervention should be reexamined and other CSA activities considered, such as minimum tillage or crop rotation, given the large labor investment and challenge to keeping seedlings alive. If the Agroforestry intervention is continued, future programs should consider strengthening land management rules, introducing incentives for seedling survival or adding monitoring visits.

Currently, inconclusive results include key indicators of women’s empowerment and tenure security such as perceived threat of encroachment. More detail on land use is also necessary to understand gendered changes to farming practices. Only after chiefs have distributed all certificates will we be able to fully understand these effects.

## **ZAMBIAN CONTEXT AND EASTERN PROVINCE’S FEMALE FARMERS**

Zambia is a useful location to test the effects of agroforestry and land tenure interventions due to its prevalence of smallholder farmers on customary land yet limited uptake of agroforestry. Agroforestry in Zambia is expected to benefit smallholder farmers who struggle with low yields, unreliable access to fertilizer and vulnerability to climate change. Since these challenges are common across countries, results from Zambia may provide lessons in similar contexts (Mbow et al., 2014).

As in much of sub-Saharan Africa, customary use of land in Zambia is widespread, estimated at between 54 and 95 percent of land (USAID, 2017b). Customary land is administered by chiefs under the 1995 Land Act of Zambia. Chiefs, who are advised by a council of *indunas*, grant use and occupancy rights, regulate transfers of land, control use of communal land and hear disputes (Tetra Tech, 2014). Under the chiefs, the headmen with direct authority over the villages within their domain make decisions about local land management and allocations. Smallholder farmers rely on these traditional leaders for rights to use land. They commonly have no documentation of their rights to land, which can result in complex land disputes. Both traditional leaders and smallholders are increasingly attuned to the use of documentation as a mechanism to increase household security over occupancy rights to land and to help resolve conflicts.<sup>2</sup>

The study site of Eastern Province is rural and engages in subsistence farming. Eighty-seven percent of the roughly 1.5 million people who live in the Eastern Province reside in rural areas (IAPRI, 2016). It is heavily forested, and most households depend primarily on charcoal production and subsistence agricultural activities (Tembo and Sitko, 2013). Many smallholder farmers also grow subsistence crops of maize on customary land, as well as cash crops of cotton and tobacco (IAPRI, 2016). Women are responsible for foraging for forest products for household consumption, including mushrooms, caterpillars, and fruits (Stickler et al., 2017).

The Eastern Province has a substantial minority of female headed houses, and they are poorer than male headed households. Male-headed households have on average double the gross income of female-headed households. Twenty-five percent of households in Eastern Province are female-headed. Marriage rates are low while rates of divorce and separation are high: about 50% of household heads in Eastern Province are either widowed, separated or divorced. Marriage rates are lower in Eastern Province than the rest of Zambia, with 36% of households currently married (IAPRI, 2016).

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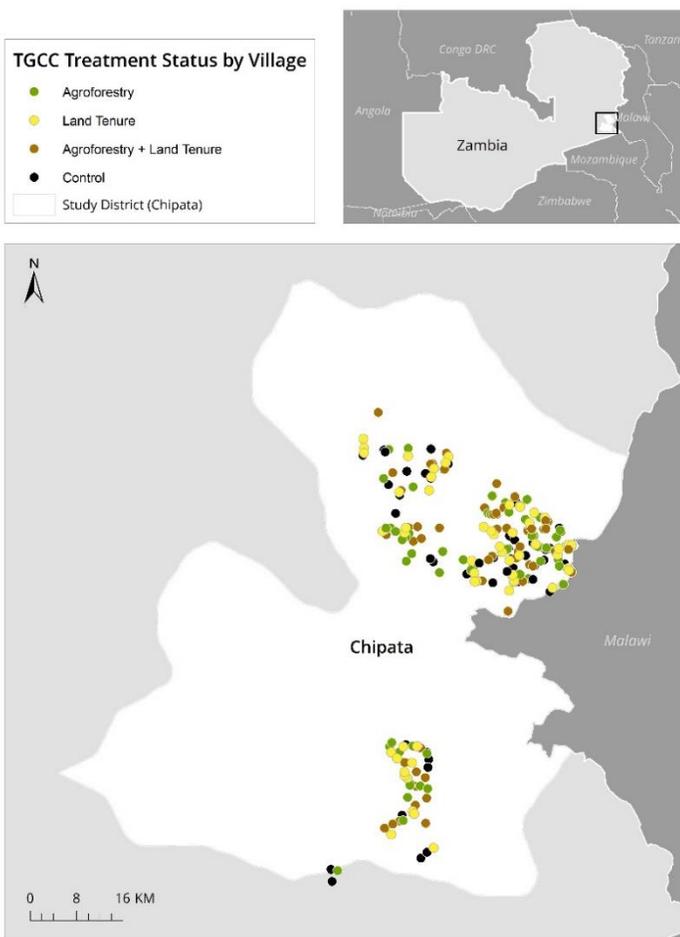
<sup>2</sup> However, there are also concerns that certification 1) will provide tenure security to non-Zambians in some cases, given migration patterns and cross-border kinship networks; and 2) may be a precursor to individualization of land rights, undermining traditional authority and systems.

## THE PROGRAM

The USAID Tenure and Global Climate Change (TGCC) program in Zambia lasted 3.5 years (2014–2018). TGCC supported agroforestry extension services and worked to increase customary tenure security at the village and household levels in the Chipata District of Zambia’s Eastern Province (see Figure 1). The program supported USAID development objectives of improved resource governance, reduced rural poverty and increased women’s empowerment through improved agricultural productivity of smallholders, natural resource management and resilience of vulnerable households.

**Land Tenure:** The Land Tenure intervention’s activities aimed to increase transparency of land allocation, administration, and decision-making processes and to strengthen smallholder rights to land and trees through dialogues, administrative support, mapping and documenting customary rules. Specifically, the village-level activities consisted of holding community workshops to establish Village Land Committees (VLCs), conducting participatory mapping of family parcels, resolving disputes and facilitating the issuance of customary land certificates to households. The Chipata District Land Alliance (CDLA), a community based organization, implemented the intervention.

**Agroforestry:** Through the Agroforestry intervention, an extension agent provided support related to planting and establishment of Musangu (*Faidherbia albida*) trees and/or Gliricidia (*Gliricidia Sepium*) on cropland. The NGO Community Markets for Conservation (COMACO) implemented this intervention. COMACO activities consisted of founding mixed-gender Farmer Groups in treatment villages and helping the Farmer Groups disseminate information; establishing nurseries and distributing seedlings; and providing the Farmer Groups with additional support,<sup>3</sup> training and agricultural extension services on nursery management and field establishment to those Farmer Groups. For more details on either intervention see the associated reports (Tetra Tech, 2014; USAID, 2014; USAID, 2018a; USAID, 2018b).



**Figure 1. TGCC Treatment Status by Village in Mnutwa, Mkanda, Mshawa, and Maguya Chiefdoms**

<sup>3</sup> In year 2, every village was given access to a groundnut “seed fund” to provide groundnut seeds to households who wished to intercrop their trees with groundnuts. This was not part of the original intervention design, but developed organically from community needs. Due to severe water shortages that threatened seedling survival, 47 communities were provided with a well as part of the Agroforestry intervention.

## THE IMPACT EVALUATION

The primary objective of the TGCC impact evaluation was to determine whether and how land tenure interventions strengthen smallholder tenure security and resource rights and, in turn, lead to increasing farmer investment in sustainable agroforestry and adoption of CSA practices. The impact evaluation studied the Land Tenure and Agroforestry interventions by randomly selecting villages to either participate in the Land Tenure intervention, the Agroforestry intervention or an intervention that did both. In other words, the impact evaluation was a multi-armed randomized control trial design. To our knowledge this is the first randomized tenure intervention that also uses randomization to rigorously compare with an agroforestry intervention.

The evaluation was implemented from 2014-2017 with the support and oversight of USAID's E3/Land and Urban Office. Baseline data was collected from June-August 2014, prior to the start of the TGCC program, and follow-up survey data was collected from June-August 2017, following the completion of the program. The data consisted of household and field panel datasets of over 6,000 respondent observations across 289 villages, along with village headman or headwoman surveys, quantitative key informant interviews with a lead farmer and a village land committee member in each village, and 62 focus group discussions (FGDs) with women and youth. Female focus groups included FHHs and wives.

## DEMOGRAPHIC CHARACTERISTICS AND PARTICIPATION

In total, the enumerators interviewed 3,395 households as part of the follow-up survey data gathering effort. In the large majority of cases, these were the same households interviewed at baseline (See USAID 2018a for more details). Of these, approximately 25% were female headed households.<sup>4</sup> The impact evaluation was especially interested in evaluating the intervention's impacts on women, and particularly female household heads (FHHs), so the enumerators made a concerted effort to interview enough female household heads to enable analyzing them separately from male household heads (MHHs).<sup>5</sup>

In terms of basic characteristics of the households, around 19% of FHHs were monogamously married as compared to 82% of MHHs. Another 4.3% of FHHs were polygamously married. Nineteen percent (153) of FHHs were divorced and 52% (423) widowed. Almost none were 'never married.' FHHs were markedly poorer than MHHs according to an index of wealth comprised of owning various assets, and MHHs had three times the salary of FHHs on average at baseline. Sixty-two percent of all respondents identify as members of the patrilineal N'goni tribe, and another third identify as members of the matrilineal Chewa tribe, the two major tribes in Eastern province. Respondents who identify as Chewa are most common in Mkanda chiefdom. These rates are similar for MHHs and FHHs. Sixty-eight percent of all respondents were born in the village where they currently live, and those who were not born in the village have lived there for an average of 23 years, although there is wide variation. The rate is lower for FHHs than MHHs, at 63% versus 70%.

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4 The results are not representative of women in general, but rather of women who are (and have been able to stay) female household heads. They may have different tenure situations, power dynamics, labor availability, access to other resources and social standing than women who are not heads of households.

5 The analyses conducted for this brief define a household as female-headed if they identify as female-headed at baseline even though some households switch to male-headed at endline. Analyses results are similar when different definitions of female-headed household (such as dropping households that switch) are used.

Enumerators interviewed 271 headmen or headwomen. Ninety percent were men. Women were more likely to serve as the headperson in the Mkanda chiefdom, where Chewas, a matrilineal tribe, dominate. In matrilineal tribes land passes through women according to customary inheritance norms, although the land is still managed by men.

With assistance from the headmen or headwomen, enumerators recruited focus group participants. When possible, enumerators recruited separate women’s groups and selected participants that were similar in age and socioeconomic status. Given the small sizes of the villages, often most members of the village would participate in the discussions. A majority (~75%) of the qualitative enumerators were female to help ensure that a female enumerator would lead the women’s FGDs.



*Enumerators train each other on the survey instruments for the endline data collection in Zambia.*

BEN EWING / THE CLOUDBURST GROUP

## **PARTICIPATION IN THE INTERVENTIONS**

Sixty-two villages participated in the Land Tenure intervention. These villages finished all steps of the program to receive certification of family land parcels. Across these villages, 29% of sampled FHHs reported participating, which is similar to the 34% participation rate reported by MHHs. The CDLA required one-third of the members of the Village Land Committees to be women, although not necessarily household heads. However, the recruitment of women proved difficult, as women did not readily volunteer. Instead, the village leadership appointed women. These recruiting methods led to VLCs that are on average 46% women; eighty-six percent of VLCs had at least one female member.

In the 60 villages involved in the Agroforestry intervention, roughly 50% of respondents had at least one household member participate. Generally, if a household participated, it participated in all or most of the activities. FHHs were similar in their participation rates to MHHs. One household member could join for each quarter hectare of land a household owns. This was often the male household head, although there is evidence from the FGDs that some wives wanted to claim trees in their own name and were unable to because the male household head had registered instead. Wives nonetheless participated because male household heads frequently sent wives to attend trainings and meetings.

## THE FINDINGS

### LAND TENURE FINDINGS

The Land Tenure intervention successfully increased perceived tenure security for MHHs and FHHs and its results were similar for both groups. Roughly 80% of treatment households believed that having a customary land certificate would make it less likely for their land to be taken, both now and in the future.<sup>6</sup> To test rigorously for reduced tenure insecurity, the research team created an index based on survey responses to questions on the perceived risk of appropriation from other households in the village, the headman, the extended family, other villages, the chief, and elites. It asked respondents what their level of perceived risk was in both the short (0-3 years) and long term (4 or more years). According to a regression model that compared tenure insecurity in the control and treatment villages, the Land Tenure intervention delivered a statistically significant reduction in perceived tenure insecurity.<sup>7</sup>

Households believed that the customary land certification process reduced disputes about inheritance (38%), and even more believed it will do so in the future (50%). FGDs further explain the benefits of the certification for resolving inheritance disputes. A male FGD participant in Mshawa elaborated on the certificate's benefit for women after the death of their husband. "Now I know, once I get my certificate, even my wife and children will be secure after I am dead. Because what happens is that the woman is told to go back to her parent's village and the relatives get the land for themselves... If on the certificate you are there registered, you will have the right because there is nowhere they can take you [r land...] the evidence is the certificate."

Based on qualitative findings, chiefs reported that conflicts occurred less in villages with widespread participation in the demarcation process. Unfortunately, the process of conflict resolution, which involved inspecting contested boundaries and agreeing upon landmarks to settle boundaries, sometimes excluded female headed households. The exclusion is likely because in traditional patrilineal systems the husband's family holds the land and makes decisions about it, even if a widow is currently using the land. There were a few cases reported in FGDs where only a few households, or only men, participated. According to a woman in Mshawa, "[T]hey had chosen 10 people, we were the ones who were going round the fields, we are here and also men. I was the only woman the rest were men, they were many". During demarcation, men walked the fields, women stayed behind "they [men] told us to stay behind and cook relish."

It is however unclear from the qualitative findings whether tenure protection will extend to women without children. In traditional patrilineal systems

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"My brothers and sisters  
no longer have a say over my land as  
they did when we called it  
the land of our parents.

**My wife and children have much  
more security over my land,  
because their names are on the  
certificate.**

I have secured their future  
by having a certificate for my land."

—FGD participant in Mkanda

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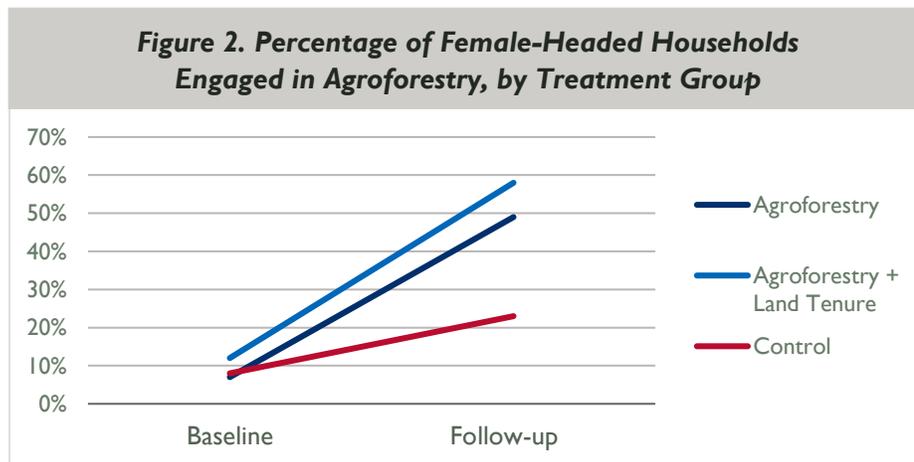
<sup>6</sup> Note that all households in villages with the TGCC Land Tenure intervention participated. In the TGCC Agroforestry intervention a subset of villagers received seeds and held meetings and trainings based on expressing interest at an initial meeting.

<sup>7</sup> Results are significant at the  $p < 0.05$  level, where statistical significance is a measure of the likelihood that results are not due to chance. For more details see the follow-up report (USAID, 2018a).

where land is held by the husband’s family, a widowed or divorced woman without children may be forced to return to her village and get land from her parents or brothers. As one wife from Mshawa chiefdom put it, “Us as women cannot be involved in land issues, it is the men’s duty to do so. The men are the ones who are supposed to sign for the land because they own the land, it is them who brought us here. We left our villages and came here, can we say that we have land? We have no land.” In most cases, it appears that customary land certificates protect women’s land rights through their children—women are seen as stewards of land until their children are grown, then the land passes to the adult children, who in turn provide for their mother.

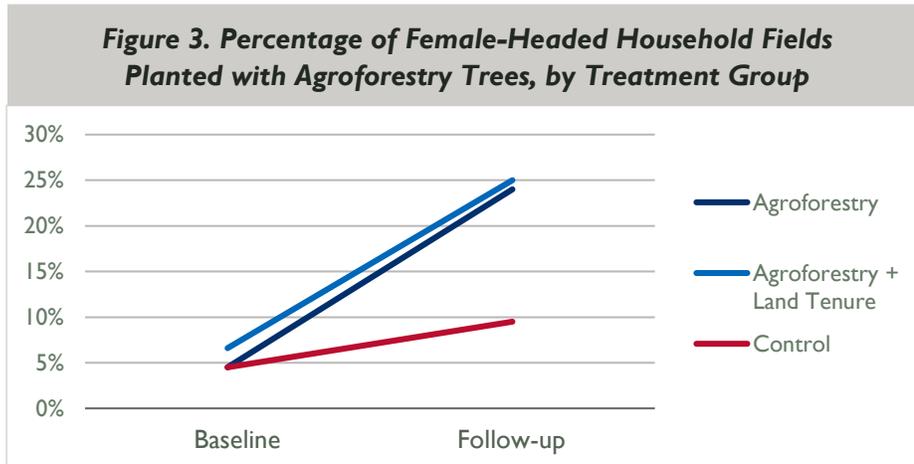
## AGROFORESTRY AND COMBINATION AGROFORESTRY & LAND TENURE RESULTS

The Agroforestry intervention as well as the combined Agroforestry & Land Tenure intervention successfully improved rates of agroforestry adoption for FHHs and increased the percentage of their fields covered with agroforestry seedlings or shrubs (see Figure 2).<sup>8</sup> In the Agroforestry intervention, while only 7% of FHHs engaged in agroforestry at baseline, 49% did at follow-up. Similarly, in the combined Agroforestry & Land Tenure intervention, 12% engaged in agroforestry at baseline compared to 58% at follow-up. In contrast, 8% of FHHs in control villages engaged in agroforestry at baseline and 23% did at follow-up.



<sup>8</sup> Both agroforestry adoption and coverage results are significant at the p<0.01 level.

This trend of increased agroforestry adoption is similar at the field level (see Figure 3.) At baseline for FHHs in agroforestry villages, approximately 4.5% of household fields were planted with agroforestry trees or bushes compared to 24% at follow-up. In the combination Agroforestry and Land Tenure intervention, 6.6% of household fields were planted at baseline compared to 25% at follow-up. In the control group however, 4.5% were planted at baseline and still only 9.5% were planted at follow-up.



The positive findings for the combination Agroforestry and Land Tenure intervention are particularly striking because they only hold for FHHs and not MHHs. Combining the Land Tenure intervention with the Agroforestry intervention leads more FHHs to adopt agroforestry trees than in the Agroforestry intervention alone. This stronger finding for FHHs supports the argument stronger property rights especially affect a farmer’s decision to practice Community Supported Agriculture such as agroforestry if the farmer is from a marginalized group (Kiptot et al., 2014).

Even at baseline and in control regions, participants demonstrated an understanding of the benefits of agroforestry. A female FGD participant in Maguya chiefdom described how she expected to benefit from agroforestry. “Growing little food has troubled us here in this village. If you don’t have fertilizer and at home you have a big family including grandchildren and the field is not productive so to hear that there are trees that can make soil fertile... so when fertility returns to the soil, people can grow enough food for their families. That is why we want agroforestry trees. Most of us can’t afford to buy fertilizer. So we want fertility to return to the soil so that we can reduce hunger in our homes.”<sup>9</sup>

Likely because of a drought during the study and these other challenges described below, seedling and tree survival rates among FHH (49%) are low according to the 70% survival rate benchmark used by a similar study in Zambia (Fink, Jack, and Masiye, 2015). However, this lag for FHH is expected given the labor and resource restrictions that they face. This trend, as well as whether there is a relationship between tree survival and tenure security, will be valuable to track for the long term.

<sup>9</sup> Interestingly, nonparticipants living under the one female chief in the project, who was part of a separate control group, were aware of the relationship between agroforestry and climate considerations. "Planting trees is actually encouraged by our female-chief. We are encouraged to plant trees not only in our fields but everywhere so that the whole community benefits from them. This way we are also addressing climate change and helping ourselves today and securing our children’s future" (Mkanda non-participants).

Female household heads – as well as wives that did work on behalf of their husbands – explained in focus groups that they faced many difficulties with the Agroforestry intervention. Seedlings required considerable resources in terms of labor and water to survive. Wives in some FGDs especially complained that the burden of raising the saplings in a village nursery fell on them. This type of burden can add to a woman’s time poverty and exacerbate gender inequalities. FHHs in treatment communities are slightly less likely to have planted gliricidia trees than MHHs (FHH: 35%, MHH: 40%). Based on monitoring and evaluation conversations with the COMACO implementation team, FHHs were more likely to struggle to transport their seedlings from the nursery to their fields, and the considerable number of gliricidia seedlings (100 gliricidia vs 25 musangu) may have been too much of an obstacle to carry or move.

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“When you transplant the seedlings and you delay to water, you find the plants have died.

When the sun hammers the plants, they lose moisture.

**That’s when you find the seedlings have died.”**

—Female FGD participant in Maguya,  
June 22, 2017

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The implementation of the program focused on heads of households; however, wives wanted to participate in their own names rather than their husbands' names. As one wife stated: “Let’s take for instance me as Jane, my husband and I are here and we get these forms, the names are announced and seeds as well have been sent, but those who distribute say that you are both from the same house only your husband will get, is this allowed?” (Mshawa, female Agroforestry non-participant).

Female FGDs also focused on seedling deaths due to lack of water, animal grazing and field burning. In addition to insufficient water and freely roaming cattle eating seeds, women complained that it was too labor-intensive to

weed fields by hand and so field-burning killed seeds. They requested: “to give us money so that we can pay for labor to make fire guards. When the field is big it is difficult to weed around it or to help us since there are difficulties in fields [Cross talk]. There are also herbicides. “If you give us herbicides to spray around our field so that fire does not penetrate” (Maguya Chiefdom, June 22, 2017). Many blamed children out to find mice to eat as well: “But the problem is just on the children who wants to catch mice, they would light a fire and run away from the scene and leave the fire burning. They are the ones who destroy these same trees ...” (Mkanda Chiefdom, Agroforestry intervention, September 8, 2017). As women often expressed reluctance to participate in land management it may be difficult for women to help prevent cattle grazing or field burning.

The Agroforestry intervention is also associated with increased participation in land management meetings (5%)<sup>10</sup> – including an 8%<sup>11</sup> increase for female-headed households. That said, FHHs increasingly felt that the poo<sup>12</sup> have been disadvantaged by land management decisions, possibly because of the disproportionate burden of raising trees shouldered by FHHs and wives.

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<sup>10</sup> Significant at the p<0.01 level.

<sup>11</sup> Significant at the p<0.05 level.

<sup>12</sup> Significant at the p<0.05 level.

## CONCLUSION

Marginalized groups—particularly women such as female household heads—are the most vulnerable to losing land through expropriation. These households often lack the social power to resist expropriation by elites or encroachment by other households. A woman’s adoption of agroforestry is constrained by her frequently greater insecurity over land and tree resources, as well as access to labor, capital and knowledge services (Kiptot et al., 2014). The TGCC Zambia Land Tenure intervention (mapping and demarcating boundaries) improved perceived tenure security for these marginalized female household heads, as well as for male household heads. In addition, qualitative data showed that some men increasingly saw the value of women's land tenure and its importance for their family's wellbeing overall.

The Agroforestry intervention (establishing trained farmers groups and distributing seedlings) also helped to promote the planting of agroforestry trees for female household heads and male household heads. The results also show that for female headed households (but not male headed households), it was even more impactful to combine program interventions – both increasing perception of tenure security and agroforestry knowledge and skills – for an even greater uptake of agroforestry. The finding from this combined treatment provides evidence that strengthening land tenure for marginalized groups, while not sufficient alone, helps improve agroforestry planting when combined with agroforestry treatments. The results, in combination with an absence of systematic differences in the main findings between men and women, point to important equity benefits to the TGCC program and an absence of elite capture.

The Zambia TGCC program would benefit from a longer-term follow-up to more deeply understand outcomes that take time to bear fruit, such as profits from tree maturation and changes in investment behavior after more secure land tenure. Future interventions can also benefit from qualitative results that suggest reconsidering the agroforestry extension. Other activities such as crop rotation and minimum tillage might improve soil fertility with less labor and time commitments. The potential of the current Agroforestry intervention to increase women's time poverty, entrench traditional gender roles around specific types of work, and exclude women from certain activities are issues that will need to be addressed. Accordingly, if the agroforestry extension is continued, norms surrounding women’s land management participation and their involvement in changing land management rules will be important issues to consider moving forward.

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