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Making Climate-Smart Cocoa Inclusive: Towards a Framework for Gender Transformation

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ABSTRACT
Climate-Smart Cocoa (CSC), a strategic offshoot of the wider Climate-Smart Agriculture, is gaining ground in Ghana, a cocoa export-dependent country. CSC is imperative, given the rapidly declining forests, prolonged periods of drought, pest and disease infestations, and fluctuating cocoa yields attributed to climate variability and change. Although many interventions are instituted to restore sustainable cocoa production, they are largely technicist because they do not pay attention to gender relations of production in the communities. Given the context of the embeddedness of gender inequality in access to resources, we used some CSC interventions in Ghana to reflect on the lingering questions of CSC production practices. We relied on CSC project documents, extant literature, farmer surveys and qualitative data to highlight the need for climate-smart agricultural approaches to be sensitive to structural and systemic issues that exclude female farmers. We argue that transforming norms that perpetuate unequal access to land, labour, input and extension services between men and women should be central to approaches that aim to promote sustainable and ecologically sound agricultural practices in cocoa production systems.

KEYWORDS
Ghana; climate smart cocoa; gender; land; labour

Introduction

The dire effects of climate change on crop production have given rise to the need to adopt broader systems and farm-level production practices to build resilience. In recent times, these production management strategies have been labelled as climate-smart. Climate-Smart Agriculture has come to represent a set of practices and technologies that build climate resilience while also reducing the negative effects of climate change on soil, water, fauna, flora, pests and diseases, and post-harvest losses (Chandra et al. 2018; Sain et al. 2017). The generalities of climate impacts on agricultural production are widely known and recognized. In addition, there is growing acknowledgement that the context of production systems and relations structured by unequal access to resources by men and women provide analytical clarity to unpack the situatedness of

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climate impacts. Community and household production relations are embedded in structural inequalities that shape the opportunities and vulnerabilities of women and men. The economic, social and cultural conditions that structure and reinforce gender inequalities persist in many regions. As a result, climate change adaptive capacities are also gendered (Ashby et al. 2012). This means that CSA interventions must be aware of the asymmetries and differences between women and men which privilege some and disadvantage others. The recognition of essential gender and class differences in agrarian communities should be considered in CSA interventions to avoid deepening gender inequalities.

Currently, CSA is implemented in contexts with existing structural disparities between men and women. Like many conventional interventions in agriculture, CSA tends to be technicist and highly focused on promoting the uptake of a set of technical practices that build the climate resilience of farmers. It has been intimated that the interventions and practices that CSA promotes tend to impose additional labour and financial burdens on farmers, thus exacerbating existing gender inequalities (Nguyen-Perperidis et al. 2023). Some scholars have argued that the introduction of innovative technologies and new labour requirements through CSA produce and reproduce different forms of unequal gendered gains and losses. Also, the practices can create and/or deepen inequality through shifts in production and production relations (Collins 2018; Clapp et al. 2018).

Climate-Smart Cocoa, an offshoot of CSA interventions that aims at tackling climate challenges in cocoa production, is not an exception to the technicist orientation of the CSA approach. Climate-related changes to weather patterns are expected to reduce yields in current cocoa plantations. The severity of extreme weather events, high average temperatures and variable rainfall patterns in Ghana are also expected to reduce the suitability of many areas for cocoa production (Bunn et al. 2019). Due to the risks of climate impacts on cocoa, there are several recommended mitigation and adaptation practices designed to make cocoa production climate-smart. CSC builds on complementary synergies between climate change mitigation, cocoa yield improvement and agroforestry (Asare et al. 2019). These include forest conservation strategies such as Cocoa REDD+ and Cocoa and Forest initiatives (mitigative) and farm management practices such as agroforestry and fertilizer application (adaptive).

The International Institute of Tropical Agriculture (IITA)-led CSC intervention, implemented as part of the Research Programme on Climate Change Agriculture and Food Security by the Consultative Group on International Agricultural Research (CGIAR), is an epitome of CSC intervention in Ghana. As part of the programme, Bunn et al. (2019) together with stakeholders in Ghana's cocoa sector developed climate impact zones and site-specific climate-smart practices and innovative measures for adaptation. With a focus on practices and innovations, the initial phase of the programme focused on the technicalities of making cocoa production climate-smart. However, with an ambition to scale up CSC, the second phase of the programme segmented and assigned farmers with similar socioeconomic characteristics into unique groups and designed a stepwise investment pathway to support farmers to adopt CSC based on their resource endowment. While recognition was given to the integral role of diverse resource endowments of farmers for their uptake of CSC, gender relations, which are a fundamental source of structural inequalities, were overlooked.

We use the IITA-led CSC intervention in Ghana to reflect on the nexus between gender and CSC production practices. We used a structured questionnaire to collect data on access

to land, ownership, and use; access to labour and cost for productive and reproductive work; as well as access to inputs and extension services. In addition, we conducted 12 focus group discussion (FGD) sessions with men, women and youth in the communities. With insights from these data, we unpack how structural gendered inequalities manifest in unequal capacities of men and women to take up CSC. We argue that transforming norms that perpetuate unequal access to land, labour, input and extension services between men and women should be central to approaches that aim to promote CSC. Thus, we make a case for a gender transformative approach (GTA) to CSC as an imperative.

In the remainder of the paper, we present a critical reflection on gender and CSA, after which we present the methods for the research. We then present our discussions on the resource embeddedness of CSC, highlighting its gender dynamics. Afterwards, we present our framework towards a GTA to inclusive CSC before our conclusions.

Gender and CSA: a critical reflection

CSA interventions have gained ground in development agriculture since the late 2000s. Within the period, several crop-specific value chains have adopted CSA interventions for production enhancement. CSA emanates from the need to respond to a changing climate that is negatively impacting production systems, and a need for an adjustment of agricultural production within the ethos of sustainable agroecological practices. Within the growing climatic threats to production and consumer advocacy for a change in production practices, export crop commodity production, which historically has been critiqued for its agroecological destruction, continues to attract interventions aimed at building resilience in production. Cocoa is one such crop with significant attention due to its expansion drives, which have ecological consequences for the present and future. Given that cocoa production occurs in the household unit and the context of gender inequality, implementing CSC as a conventional intervention that is blind to gender inequalities can have the unintended consequence of deepening gender inequalities.

GTAs have become popular in the development discourse because of the realization that conventional approaches are unable to tackle underlying structures that perpetuate gender inequality. Cole et al. (2020) show that interventions that work towards women's empowerment by accommodating them within existing structures are often less impactful. However, approaches that consciously aim to transform existing gender norms achieve longer-lasting results. The lasting impacts of GTAs are well documented (see Van den Berg et al. 2013; Pulerwitz et al. 2015). Interventions that use GTAs that challenge underlying social structures perpetuating gender-based inequality in resource access, such as extension and advisory services, are crucial for sustainable impacts on the production system (Farnworth and Colverson, 2015).

GTAs embody ways of transforming underlying structures that serve as a foundation for unequal power relations and associated gender inequalities (Wong et al. 2019). They contextualize the constraints to equity and gender equality and work towards changing the power structures that establish hierarchies in ways that obstruct the equitable distribution of resources with effects on access to opportunities and programme outcomes (Morgan et al. 2015; Interagency Gender Working Group 2017; Cole et al. 2020). GTAs envision deep and enduring change in gender relations rather than closing visible gender gaps (Kantor et al. 2015). Thus, GTAs combine multiple approaches and

tools including engaging with different institutions and constituencies to find the root causes of persisting gender inequalities. The approaches also tackle the inherent power hierarchies institutionalized in fair resource access obstructing norms. Finally, GTAs consciously work towards transformation at the individual, community, organization and policy levels.

GTAs are evidenced by certain core characteristics. These include addressing underlying social norms rooted in institutions that produce inequalities; critically reflecting on such social norms to understand power dynamics and challenge same; consciously engaging men, boys and influential gatekeepers of social norms such as chiefs and elected representatives as allies of change to bring about the needed paradigm shift at all levels (FAO, IFAD and WFP 2020). According to Wong et al. (2019), GTAs are framed to engender change in three interrelated dimensions, or what Sarapura and Puskur (2014) call sites of change. These are individual capacities, social relations and social structures.

Individual capacities encompass building the knowledge, attitudes, social relations, skills, strengths and opportunities with an emphasis on fostering agency and actions to critically examine gender norms and inequality (Wong et al. 2019). In some instances, this involves building the capacity of women to use more labour-saving technologies to reduce their domestic workload (FAO, IFAD and WFP 2020). Changing social relations encompasses changing the norms that define social relations within different sites, including the household, families and community. It focuses on changing intra-household, inter-household and community-level social relations that perpetuate gender inequalities and shape unequal access to and ownership of resources, voice and decision-making (Wong et al. 2019). It involves developing consciousness and agency to challenge and change existing norms (Farnworth and Colverson, 2015).

Researching climate-smart cocoa in Ghana

The primary data for the study were collected in the project's demarcated climatic impact zones of Ghana, namely, incremental adaptation zone (Cope zone) and systemic adaption zone (Adjust zone) (see Bunn et al. 2019 for more details). We selected one district each in the two zones and two communities in each district for the study (Figure 1). We selected Sompre and Yebrebrenyini communities in the Amenfi West Municipality located in the Cope zone. The Cope zone remains suitable for cocoa now and into the future in terms of the climate impact trajectories. This means farmers require basic management practices and therefore will have to focus on general good agricultural practices to build stronger systems to enhance adaptive capacity. We also selected Betinko and Katakyiwaa communities in the Atwima Mponua district in the Adjust zone. The Adjust zone experiences higher annual average temperature, a weak dry season (short, with comparatively higher precipitation in the driest quarter) and higher annual precipitation. This means farmers will have to incrementally adjust their farming practices to be adaptive to climate change.

A total of 201 cocoa farmers drawn from the project's database were surveyed on gendered access to resources crucial for the uptake of CSC. Many (70 per cent) of the farmers are smallholders with less than 2 hectares of land. Forty-five per cent were female. We also drew on authors' experiences from engagement with farmers at workshops and during

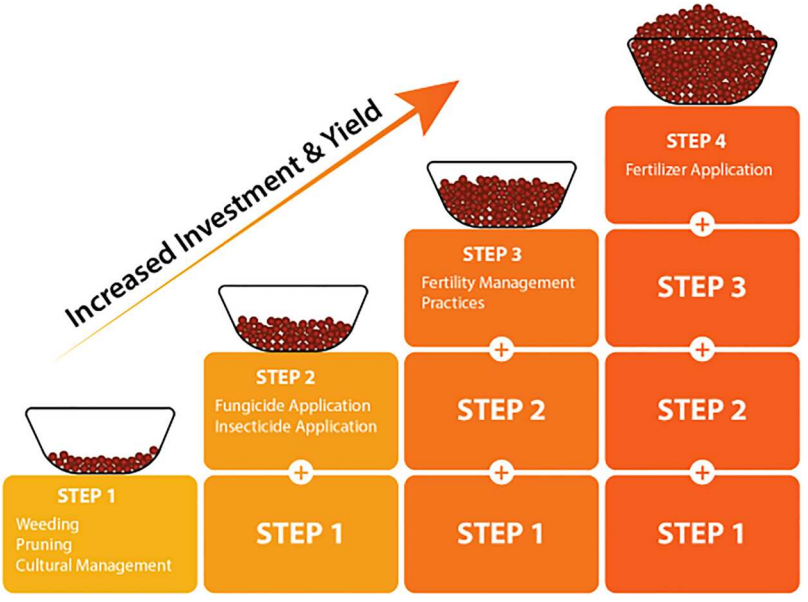

Figure 1. Climate-smart stepwise investment pathway.
Source: Dalaa et al. (2019).

field experiments in this project as well as broad engagements with cocoa farmers on other projects.

Resource embeddedness in CSC practices

The climate-smart stepwise investment pathway CSC is a particular type of on-farm CSC with resource dimensions. Its resource embeddedness is delinked from an inclusive framework where all farmers can participate equally and gain equal outcomes. Here resources are crucial for the uptake of CSC and it strengthens our argument on why CSC needs to be gender transformative to be inclusive.

The CSC stepwise investment pathway (see Figure 1) consists of four steps comprising sets of good agronomic practices. Each step requires resources, specific timelines and frequency of application.

Weeding, pruning and cultural management form part of the practices in the first step and are essential for cocoa tree growth and health. The activities must be done at least three times a year, making it labour-intensive for farmers. Both weeding and pruning require agricultural tools such as cutlass and/or motorized slashers (for weeding), motorized pruners (for pruning) and personal protective equipment (PPE). Although cutlasses are cheaper and widely owned by many farmers, the rest of the equipment is costly and not affordable for many. These practices, especially pruning, need the right knowledge and skills to carry out, thus requiring constant interaction with extension officers.

The second step involves pesticide (fungicide and insecticide) application in addition to practices in step 1. This has become a necessity in cocoa production due to the high incidence of pests and disease infestation. Pesticides must be applied at most five

times at specific times in the year. For pesticide application, the farmer requires a spraying machine, chemicals, water, PPE, skills and knowledge. As is the case for pruning and weeding, extension support, knowledge and skills are required in addition to capital to procure the pesticides.

For a farmer to meet its requirements, they must either hire labour or carry out the activities themselves. The estimated costs of the above tools are as follows: cutlass, $5; motorized slasher, $128; motorized pruner, $287; and a complete set of PPE comprising working gear, nose mask, eye goggles, safety boots and hand gloves cost about $ 73. These cost elements show the capital-intensive nature of CSC practices. The third step is soil fertility management practices, which are a combination of the first two steps and other activities including the addition of organic amendments (manure and/or compost) to enhance soil fertility.

The fourth step is the application of inorganic fertilizers in addition to all the practices in steps 1–3. With increasing soil fertility loss, both organic and inorganic fertilizers are required to breathe life back into the soil. Large quantities of these are needed to achieve results. At the same time, the availability and affordability of both organic and inorganic fertilizers are challenging in most cocoa farming areas in Ghana and so farmers need capital to purchase manure. Farmers who apply compost rely on expert advice and extension. The application of inorganic fertilizer is done twice a year, at the beginning of the major and minor rainy seasons. Applying organic and inorganic fertilizers has similar requirements for water, knowledge, skills and financial resources. In addition to these, irrigation is advised in the context of long drought and erratic rainfall situations. Climate change impacts on cocoa require that the plants have a well-balanced distribution of water for at least six months of the year including the dry season. Irrigation is a capital-intensive venture, and it is a practice that is virtually absent on mature cocoa farms even though some provision is done in nurseries and early established seedlings in the field.

CSC uptake even for the basics of step 1 requires farmers to have timely and adequate access to labour, capital, knowledge and skills. These resources are core to the uptake of CSC in addition to land tenure arrangements that guarantee farmers the security to make long-term decisions and make climate-smart investments in their farms. Structural inequalities such as gendered differences in access to these resources, therefore, have implications for how CSC becomes relevant to farmers and how CSC interventions can be made gender inclusive. However, even when social issues were considered in the second phase of the project, they were framed instrumentally to provide an enabling environment for the technical components of the interventions to be scaled up. Gender was rarely integrated and in the few instances where data were aggregated by sex, analysis was rarely critical (see Dalaa et al. 2020).

Land and gender questions in CSC interventions

Cocoa is a perennial crop with a lifespan of 30–40 years. Thus, secured access to land is crucial for its cultivation and for decisions and investment in climate-smart practices. Ownership, access and use rights of land are crucial for the uptake of CSC. However, land relations in the cocoa landscape are gendered (see Chiputwa et al. 2021) and this has implications for gendered differences in the uptake of CSC. In Ghana's cocoa frontier, land is primarily governed by customs and norms that tend to prioritize male ownership,

access and use, to the disadvantage of women (Bugri and Yeboah 2017). In the study areas, the farmer survey results show customary freehold (50 per cent) and sharecropping (47 per cent) as the commonest landholding structures. The customary freehold is mostly through inheritance, renting or purchasing and all these access types discriminate against women (Chiputwa et al. 2021). With the study communities being matrilineal, recognition is given to the land rights for women to access lineage lands to cultivate cocoa. However, even in these matrilineal societies, women still face land access problems. Land is transferred from deceased men to their brothers or nephews within the matrilineal inheritance customary structures (Quisumbing et al. 2001). Additionally, while both men and women rely on lineage land for cocoa production, men have better purchasing power, so they can acquire land for cocoa farming in addition to lineage lands. In sharecropping arrangements as well, landowners favour men over women. Thus, although the study communities are matrilineal, men have larger farm sizes (averaging 9–13 acres) than women (averaging 4–9 acres).

Indeed, cocoa has long been considered a "male crop" (Dalberg 2012), and only about 25 per cent of recognized cocoa farmers are females (Marston 2016). Cocoa cultivation in Ghana started at a time when land market between chiefs and migrants had emerged in the forest frontier of Ghana (Hill 1963). As a perennial tree crop traditionally grown on forest lands, men with good socioeconomic standing had an advantage in the outright purchase of forest lands (Hill 1963; Amanor 2010) or culturally had an advantage in acquiring lineage forest lands through first clearance (Otsuka et al. 2003; Oxfam 2016), and have thus dominated cocoa production. Outright purchases and first clearance grant men larger holdings and secured tenure arrangements (Nara et al. 2021). Women, on the other hand, have smaller land holdings (Barrientos and Bobie 2016) with less tenure security (Bymolt et al. 2018), emanating largely from access through inheritance and gifting (see Tsikata and Eweh 2018).

Land size and tenure security are crucial for farm management practices including CSC. Tenure security is also central to cocoa-related decision-making, which includes agroforestry and other farm management practices. With the land tenure structure that privileges men, agroforestry farm management practices will elude women. A field experience during the implementation of aspects of the CSC in the study communities exposes the veneer of women's land access problems and how it affects adaptive capacities. While one of the authors was setting up demonstration fields, he interacted with a female cocoa farmer who narrated a story of losing her husband in an accident. The couple were cultivating three cocoa plots, all with a shareholding land tenure agreement. The landowner lived in a community nearby. Two of the farms were very productive and had minimal pest and disease infestation. The couple's third farm was infested with pests and faced many other challenges. After the man's tragic demise, the landowner seized the two most productive cocoa farms from the woman, thereby curtailing the sharecropping agreement abruptly and arbitrarily. The woman was left with the least-productive farm, receiving one-third of the proceeds as per the sharecropping contract terms. She indicated to field officers that the landowner took the land from her because he did not believe she could take care of the farms alone after the demise of her husband. Since then, the woman has felt insecure and uncertain about production on the land, leading to a decrease in investments on the farm, including neglecting to plant shade trees.

CSC practices in the cocoa landscape are long-term investments for which tenure security is pertinent. One core climate-mitigative action in agroforestry linked to cocoa production is the planting of shade trees. Shade trees help regulate the temperature in cocoa farms by providing shelter from direct sunlight and preventing excessive temperature fluctuations, which can damage cocoa pods and affect cocoa bean quality. They help conserve soil moisture by reducing evaporation and preventing water loss from the soil. Shade trees promote biodiversity in cocoa farms by creating a more diverse ecosystem; they also provide economic benefits when mature as they serve as timber. With women having smaller land sizes, tree diversity in their farms is likely to be less, requiring intentionality in planting shade trees on their farms. FGDs by Asare and Ræbild (2016) in their study on tree diversity and shade cover in cocoa growing systems in Ghana revealed that almost all the women indicated their vulnerability in terms of customary rights to protect or negotiate for compensation of highly valuable timber tree resources on their farms. Rocheleau and Edmunds (1997) also argue that African women are handicapped in their access to trees and forest resources because of their exclusion from formal tenure regimes. The result of this is low diversity and a limited number of valuable shade trees on women's cocoa farms (Asare and Ræbild 2016). Hence, with less secured access to lands, tree planting and other CSC management practices become less appealing to women. The implementation of CSC within existing gender relations around land is thus less inclusive for women due to the high risks.

Our survey shows that men own larger tracts of land than women. However, women commit more of their landholding to cocoa production than men. In the Cope zone, for example, women own an average of four acres of land, of which they commit between about 60 per cent and 70 per cent to cocoa production, whereas men's land size averaged 10 acres and they commit 53–57 per cent to cocoa farming. In the Adjust zone, while women's land size averaged 11 acres, of which they commit between 45 per cent and 52 per cent to cocoa cultivation, men's land sizes averaged 12 acres; they, however, commit only 42–48 per cent to cocoa farming. The implication of the land-holding structure for the CSC protocols means that women's lands are the most overcultivated and will require the application of on-farm management practices that call for the use of fertilizers and other inputs. The land-holding structure and size point to an important structural constraint for women's CSC uptake because land intersects with many other resources.

Gendered labour relations and the uptake of CSC

In agrarian communities in Ghana, tasks in the productive and reproductive spheres are segmented and segregated by gender. In cocoa cultivation, the gender division of labour is stark. Evidence from our study shows that men perform tasks such as land preparation, pruning and pesticide application, whereas women take care of seedling nurseries, fetch water for pesticide application and cook for labourers. Both women and men perform tasks such as weeding, harvesting, gathering, breaking pods and drying cocoa beans. However, agricultural production in the household unit is based on unequal gender and conjugal relations. Women often provide labour on their husbands' and/or family's farms whereas the opposite is not usually the case (see also Barrientos and Bobie 2016). In the reproductive sphere, house chores and childcare are women's tasks,

although some men occasionally support women when they have the time. Due to the multiple productive and reproductive roles that women play in the agrarian household, they have less time to work on their own cocoa farms (Kumase et al. 2010). Gender segregation of cocoa-related activities and unequal conjugal relations have implications on women's access to labour, especially for farm labour activities, which men predominantly perform.

Male cocoa farmers significantly use their own labour for tasks on their farms, while female cocoa farmers rely on the labour of males either hired or in their household even for activities that are considered gender-neutral. Our survey shows female cocoa farmers used 93 per cent of male labour (both household and hired) for pruning tasks on the farm, 92 per cent for pesticide application and 83 per cent for fertilizer application. Even for weeding, which is considered a gender-neutral task, women cocoa farmers relied more on hired-male (36 per cent) and household-male (25 per cent) labour than their own labour (22 per cent). Women indicated that it is challenging for them to expend their labour on their farms even for activities that women perform due to the labour they expend on farms belonging to their husbands and other male relations and their household reproductive roles.

Women bemoaned the labour requirements of cocoa production, the difficulty in accessing labour and the cost implications for them especially because they rely heavily on others. One woman reiterated this by saying, "Cocoa production requires so much labour and we must hire labour all the time … hiring labour is financially draining and sometimes labour is not easily available". Farm management practices, especially weeding, pruning and pesticide application, are core activities whose frequency and timeliness are crucial for a successful CSC.

Whereas female cocoa farmers heavily depend on male labour for their cocoa production, the labour of women in cocoa production households heavily subsidizes men's labour in the productive and reproductive spheres. In the productive sphere, women are the main labour source for fetching water for pesticide application, an activity that is labour-intensive and time-consuming. Women highlighted the enormous labour requirement in fetching water for pesticide application especially because water access points are few and far away from communities and farms. Women are also primarily responsible for cooking for labourers, an activity that relates to their reproductive roles in the household. Food provision for farm workers is a key part of labour practices in agrarian Ghana, and in cocoa-producing households this is an essential part of women's work. We found in a qualitative classification of the gendered nature of tasks in cocoa production in the communities that many of the tasks carried out by women are unmechanized whereas those of men are mechanized. For example, fetching water and cooking for labourers are manual tasks and therefore tedious, but pesticide application and pruning are carried out with the aid of equipment such as mechanized sprayers and pruners. This shows that the frequency of these activities as required by CSC doubles women's labour burden without adequate provision of labour-saving technology.

In addition to women's activities in the productive sphere, they are primarily responsible for domestic chores. Social provisioning, including domestic chores, is crucial for the organization of cocoa production. The duration and intensity of these chores take both energy and time away from women's productive activities. Women emphasized the time burden of reproductive activities such as cleaning, childcare, caring for sick

and elderly household members, washing and cooking, which shrink the time available to work on their farms. They also highlighted water fetching as an intensive time-consuming activity because of the weight of the water, the long queues they must join to fetch the water and the distance to and from water sources. In terms of labour, we have shown thus far that for both cocoa labour and household labour, men and women are positioned differently and therefore CSC labour needs on women entail much more work. The labour questions that CSC raises produce two outcomes. First, due to the tedious nature of the demands of CSC and women's time poverty, they will opt out of CSC practices. The second outcome is that adoption of CSC will increase women's time burden and poverty. Both have consequences for women's agricultural production, their health and well-being. It also means that many women must pay for more labour services with the intensity of labour in the wake of CSC, which will also engender competition for the available labour.

Although CSC does not shift existing labour roles or introduce new labour activities into cocoa production, it is labour-intensive. While men argued that pruning, pesticides and fertilizer application are "arduous work that is not suitable for women" because of their health implications, household male labour for women's work is mainly "gendered sympathy" (Figure 2). Gendered sympathy is framed to describe roles that men play at

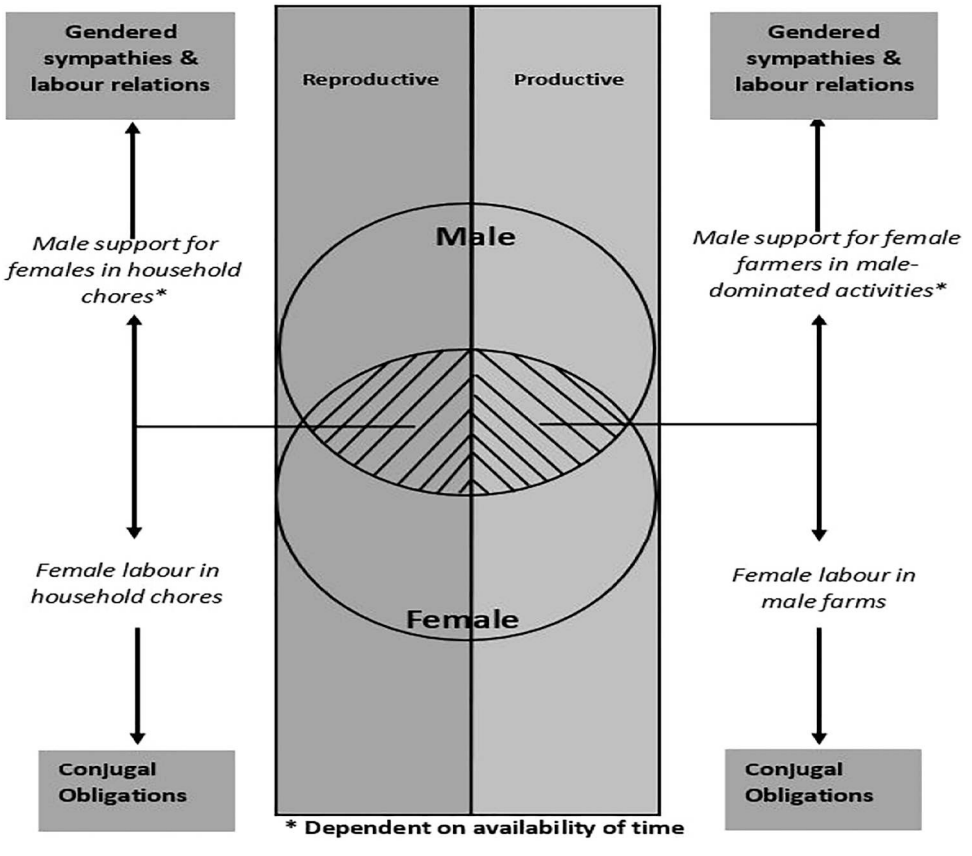

Figure 2. Household gender and labour relations.

Source: Authors, based on data analysis.

home which are not culturally sanctioned and therefore are considered "help". Usually, this pertains to gendered roles. This is because female farmers sometimes receive support from men after the latter complete work on their own farms. Social norms impose little obligation on men to work on women's farms. Men highlighted instances where they support women in their households with childcare when they are "free". This also is a gendered sympathy. With increased labour requirements emanating from CSC practices, male labour would be spent more on male farms, with consequences on its availability for use on women's cocoa farms and even less for household support. This also means that women will spend more time working on farms owned by husbands and other male relations as the general labour requirements increase.

Sociocultural norms impose different obligations on women and men as has been discussed in various sections. The labour burdens imposed by CSC without labour-saving technology has multiple implications for labour relations. First, men will limit their work on their wives' farms and concentrate on theirs. Second, the few hours men spend on reproductive work will be affected because these are not customarily sanctioned. While conjugal norms require women to work on their husbands' cocoa farms as a matter of conjugal duty because the man's farm is deemed the de-facto household farm, there is often unequal labour exchange between husbands and wives. The husband's availability to work on his wife's farm is again based on gendered sympathy and not a matter of sociocultural obligation. The promotion and implementation of CSC without due recourse to existing gendered labour relations thus makes CSC less inclusive and less beneficial for women.

Gendered access to inputs and extension

From our study, it emerged that extension support, input access and capital access are also gendered. With a high extension officer to cocoa farmer ratio, officers tend to attend to larger and relatively well-to-do farmers and these are rarely women (Barrientos and Bobie 2016; Arhin 2022). The reach of extension support and input delivery schemes to women remains lower compared to men. In our study areas, we found a gendered pattern in input use. In general, 75 per cent of respondents rated themselves as having used input to a high extent, out of whom only 25 per cent were female. There were reports of inadequate access to productive resources and these included a lack of access to finances to purchase agrochemicals (pesticides), fertilizers and farm tools. The situation is no different in terms of access to cocoa extension services. Women reported lacking knowledge in fertilizer application due to a lack of access to such information. Men have an advantage in accessing agricultural extension services because such services prioritize visits to larger farms, which are mostly owned by men. Responses on farmers' access to extension services and information on cocoa production showed that 73 per cent of farmers had access to cocoa production information; however, only 29 per cent of these were women.

Application of CSC practices, which include weeding, pruning, cultural management, fungicide application, insecticide application, organic manure application, composting, mulching and fertilizer application, need continuous assistance from extension officers. Manfre et al. (2013) confirms that extension services usually have structural biases in their local selection criteria for service delivery on technology transfer, which tends to exclude women, as is also evident in our study. Over the years, traditional extension

services in Ghana have been undertaken by the Ministry of Food and Agriculture and Cocoa Health and Extension Division of Ghana Cocoa Board for food crops and cocoa, respectively. However, in recent times, development organizations, licensed buying companies and input suppliers have been offering extension services to farmers in various ways. It is estimated that only about 20–30 per cent of women take part in such training and extension services, mainly because most of the training programmes are organized outside the community, making it difficult for women to participate (World Cocoa Foundation 2014). Increased production and productivity have been the aim of many extension services without much consideration of the sociopolitical factors that affect participation and uptake of introduced technologies (Cook et al. 2021) including CSC.

Towards a gender-transformative approach to inclusive CSC

The evidence from the study which argues for a GTA to CSC (Figure 3) recognizes the nested and layered relations in which male and female cocoa farmers are embedded. Also, it takes recognition of the norms and rules that govern relations and engender inequalities in these layers. Land and labour access and use for CSC, for instance, are governed by gendered rules and norms that structure who has access to what land or implements and at what time. A recognition and critical appraisal of this approach is thus a necessary first step to unravel the potential gendered implications and to foster deliberate efforts towards achieving equitable outcomes. The CSC approaches require the practical application of knowledge in farm management practices. However, the study found a major structural concern regarding the disparity between men and women's access to cocoa extension services, which technical approaches have yet to address. Women's access to extension services is also linked to the customary norms that dictate how women can interact with male extension officers. The majority of the extension officers in Ghana are males, which has important implications for how women can access extension information autonomously. Reflecting on our findings, we propose a gender-transformative framework for CSC interventions. The framework approaches

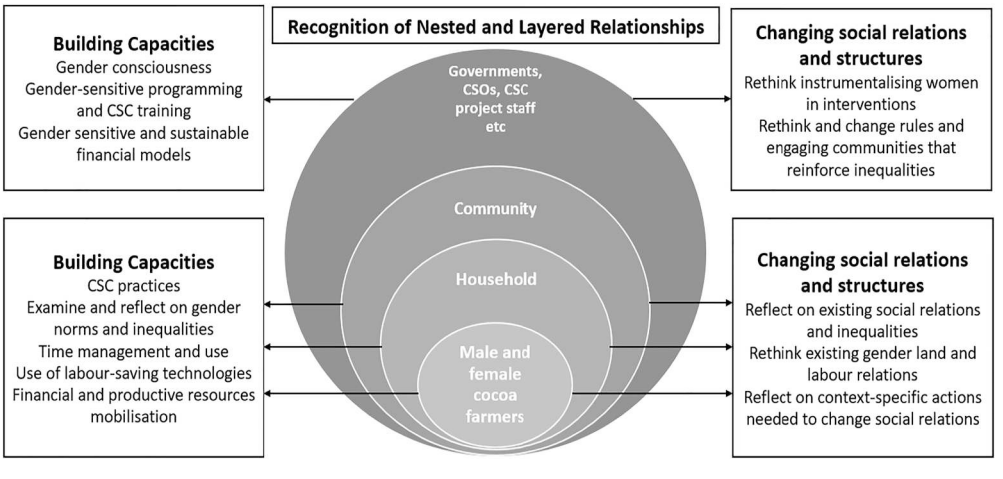

Figure 3. Gender-transformative CSC framework.

CSC and CSA from a nested and integrated perspective, which takes into account structural conditions that they should consider. As many of the interventions do not tackle land issues in the frame of radical land reforms, a consideration requires interventions aimed at changing gender-based discrimination on land access and distribution. In addition, labour dynamics and requirements in the CSC intervention approaches need to also consider the gender dynamics in household labour practices. Labour-saving technologies for both production and reproduction are equally important to reduce women's labour burdens. One will also require tools that raise consciousness on gender issues broadly with a particular focus on agricultural production, which can transform the structural basis of the gender inequality in agricultural households and communities.

While capacity building is necessary, its sustenance and lasting impacts require a change in social relations and structures that create gender inequality. Thus, in addition to building capacities, a gender-transformative CSC should consciously make efforts towards changing social relations and social structures that engender inequalities. These should include an engagement with community members, that is, men, women, boys and gatekeepers of norms to unearth, discuss and reflect on existing cultural norms that perpetuate and shape gender, labour and land relations as well as access to inputs and extension services. These constituents should further reflect on and discuss concrete steps to change such cultural norms focusing on community-/context-specific solutions. It should engage extension officers and CSC project staff to reflect on changing existing ways of engaging with community members that reinforce existing cultural norms. A gender-transformative CSC not only creates lasting impacts at scale for sustainable cocoa production, but also works towards inclusiveness, social justice, and humanizes agricultural interventions.

Conclusion

CSC is a policy imperative in Ghana where climate change and variability are affecting agricultural production and livelihoods. Over the years, CSA practices have been adopted and tailored for cocoa production. Situated at the junction between technical fixes and sociocultural realities in agrarian Ghana, and in communities that have seen production-related changes, current CSC activities reflect ahistorical and apolitical conceptualisation of programme activities. The study that emanates from field experiences and research in intervention communities exposes the gaps left in the technical approaches to improving cocoa production. Our activities within the cocoa production community focused on women's roles, positions and gender relations, analysing resource access dynamics using GTA. By looking at the differential resource access through a gender lens, we have proposed a nested relationship framework through which CSC can be designed. This approach encompasses a comprehensive approach that strengthens the capacities of project implementers, beneficiaries and wider communities on issues of gender equality and inclusion and changing social relations.

Changing social structures encompass engaging with institutional rules and practices that (re)produce gender inequalities. This includes rules entrenched in the cultural norms of communities as well as rules in the organizational settings of project implementers. Changing social structures requires building the capacities of communities as well as project staff to be conscious of institutional rules that entrench gender norms while

engaging with communities and fostering organizational learning (Wong et al. 2019; FAO, IFAD and WFP 2020). It also includes changing extra-village relations such as the relations between the project's technical workers and community members, especially women (Morgan et al. 2015). CSA and CSC technical approaches have provided us with a lens to re-examine gender perspectives on development approaches. In this study, we demonstrated that CSC intervention approaches, which include farm management and agroecological practices, need to account for the structural inequalities between men and women. We proposed a framework that is integrated in a way that reflects the structural conditions embedded in climate-smart agricultural approaches.

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References

Amanor, Kojo Sebastian. 2010. "Family Values, Land Sales and Agricultural Commodification in South-Eastern Ghana." *Africa* 80 (1): 104–125. doi:10.3366/E0001972009001284

Arhin, Albert A. 2022. *Tackling Gender Inequality in the Cocoa Supply Cain: Are Big Chocolate Companies Delivering on Their Global Commitments in Ghana?* Nairobi, Kenya: Oxfam Research Reports.

Asare, Richard, Bo Markussen, Rebecca Ashley Asare, Gilbert Anim-Kwapong, and Anders Ræbild. 2019. "On-farm Cocoa Yields Increase with Canopy Cover of Shade Trees in Two Agroecological Zones in Ghana." *Climate and Development* 11 (5): 435–445. doi:10.1080/17565529.2018.1442805.

Asare, Richard, and Anders Ræbild. 2016. "Tree Diversity and Canopy Cover in Cocoa Systems in Ghana." *New Forests* 47: 287–302. doi:10.1007/s11056-015-9515-3.

Ashby, Jacqueline, Patricia Kristjanson, Philip Thornton, Bruce Campbel, Sonja Vermeulen, and Eva Karoline Wollenberg. 2012. *CCAFS Gender Strategy*. Copenhagen: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). https://hdl.handle.net/10568/27830.

Barrientos, Stephanie, and Adwoa Owusua Bobie. 2016. "Promoting Gender Equality in the Cocoa-Chocolate Value Chain: Opportunities and Challenges in Ghana." Global Development Institute Working Paper Series 2016-006, October 2016. University of Manchester. Global Development Institute.

Bugri, John Tia, and Eric Yeboah. 2017. *Understanding Changing Land Access and Use by the Rural Poor in Ghana*. London, UK: International Institute for Environment and Development. http://pubs.iied.org/pdfs/17595IIED.pdf.

Bunn, Christian, Pablo Fernandez-Kolb, and Richard Asareand Mark Lundy. 2019. "Climate Smart Cocoa in Ghana: Towards Climate Resilient Production at Scale." CGIAR Info Notes. September 2019. https://hdl.handle.net/10568/103770.

Bunn, Christian, Peter Läderach, Amos Quaye, Sander Muilerman, Martin R. A. Noponen, and Mark Lundy. 2019. "Recommendation Domains to Scale out Climate Change Adaptation in Cocoa Production in Ghana." *Climate Services*. 16:100123. https://doi.org/10.1016/j.cliser.2019.100123

Bymolt, Roger, Anna Laven, and Marcelo Tyszler. 2018. *Demystifying the Cocoa Sector in Ghana and Côte D'Ivoire*. The Royal Tropical Institute (KIT). https://www.kit.nl/wp-content/uploads/2020/05/Demystifying-complete-file.pdf.

Chandra, Alvin, Karen E. McNamara, and Paul Dargusch. 2018. "Climate-smart Agriculture: Perspectives and Framings." *Climate Policy* 18 (4): 526–541. doi:10.1080/14693062.2017.1316968.

Chiputwa, B., F. Obeng Adomaa, J. H. Ihli, and L. Rusinamhodzi. 2021. "Gender Equality as a Pathway to Sustainable Development of Cocoa and Coffee Value Chains in East and West Africa." In *Tree Commodities and Resilient Green Economies in Africa*, edited by Peter A. Minang and Meine van Noordwijk, Chapter 16. Nairobi, Kenya: World Agroforestry (ICRAF). http://pubs.iied.org/pdfs/17595IIED.pdf.

Clapp, Jennifer, Peter Newell, and Zoe Brent. 2018. "The Global Political Economy of Climate Change, Agriculture and Food Systems." *The Journal of Peasant Studies* 45 (1): 80–88. doi:10.1080/03066150.2017.1381602.

Cole, Steven M., Alexander M. Kaminski, Cynthia McDougall, Alexander S. Kefi, Pamela A. Marinda, Modern Maliko, and Johans Mtonga. 2020. "Gender Accommodative Versus Transformative Approaches: A Comparative Assessment Within a Post-Harvest Fish Loss Reduction Intervention." *Gender, Technology and Development* 24 (1): 48–65. doi:10.1080/09718524.2020.1729480.

Collins, Andrea. 2018. "Saying all the Right Things? Gendered Discourse in Climate-Smart Agriculture." *The Journal of Peasant Studies* 45: 175–191. doi:10.1080/03066150.2017.1377187.

Cook, Brian, Paula Satizabal, and Jayne Curnow. 2021. "Humanising Agricultural Extension: A Review." *World Development* 140: 105337. doi:10.1016/j.worlddev.2020.105337.

Dalaa, Mustapha Alasan, Rich Kofi Kofituo, and Richard Asare. 2019. *Climate Smart Stepwise Investment Pathway for Cocoa Farmers in Ghana*. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). https://hdl.handle.net/10568/105808.

Dalaa, Mustapha Alasan, Gertrude Dzifa Torvikey, Alvin Amoah, A., Abdul-Razak Saeed, Faustina Obeng, Rich Kofi Kofituo and Richard Asare. 2020. *Climate Smart Cocoa: A Gender Transformative Approach*. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). https://hdl.handle.net/10568/111474

Dalberg Global Development Advisors. 2012. Analysis of IFPRI (2002) "Empowering Women and Fighting Poverty: Cocoa and Land Rights in West Africa." Dalberg Global Development Advisors Internal Document.

Farnworth, Cathy Rozel, and Kathleen Earl Colverson. 2015. "Building a Gender-Transformative Extension and Advisory Facilitation System in Sub-Saharan Africa." *Journal of Gender Agriculture and Food Security* 1 (1): 20–39. DOI: 10.22004/ag.econ.246040.

Food and Agriculture Organization, World Food Programme and International Fund for Agricultural Development. 2020. *Gender Transformative Approaches for Food Security, Improved Nutrition, and Sustainable Agriculture – A Compendium of Fifteen Good Practices*. Rome: FAO, WFP and IFAD. doi:10.4060/cb1331en

Hill, P. 1963. *The Migrant Cocoa-Farmers of Southern Ghana: A Study in Rural Capitalism*. Cambridge: Cambridge University Press.

Interagency Gender Working Group (IGWG). 2017. *The Gender Integration Continuum: Training Session User's Guide*. Washington, D.C.: Population Reference Bureau, United States Agency for International Development (USAID).

Kantor, Paula, Miranda Morgan, and Afrina Choudhury 2015. "Amplifying Outcomes by Addressing Inequality: The Role of Gender-Transformative Approaches in Agricultural Research for Development" *Gender, Technology and Development*. 19 (3): 292–319. doi:10.1177/0971852415596863

Kumase, Wokia-azi N., Herve Bisseleua, and Stephan Klasen. 2010. "Opportunities and Constraints in Agriculture: A Gendered Analysis of Cocoa Production in Southern Cameroon." Göttingen: Courant Research Centre – Poverty, Equity and Growth (CRC-PEG). Discussion Paper No. 27, 2010. http://hdl.handle.net/10419/90510.

Manfre, Cristina, Deborah Rubin, Andrea Allen, Gale Summerfield, Kathleen Colverson, and Mercy Akeredolu. 2013. "Reducing the gender gap in agricultural extension and advisory services." USAID-Modernizing Extension and Advisory Services Discussion Paper, April 2012.

Marston, Ama. 2016. "Women's Rights in the Cocoa Sector: Examples of Emerging Good Practice." Oxfam Discussion Paper, March 2016. https://oxfamilibrary.openrepository.com/bitstream/

handle/10546/600528/dp-womens-rights-cocoa-sector-good-practice-100316-en.pdf;jsessionid=417D351E209EDCD71F49AAFE91BCD266?sequence=4.

Morgan, Miranda, Afrina Choudhury, Melody Braun, Douglas Beare, Jason Jon Benedict, and Paula Kantor. 2015. "Understanding the Gender Dimensions of Adopting Climate-Smart Smallholder Aquaculture Innovations." PeCnang, Malaysia: CGIAR Research Program on Aquatic Agricultural Systems. Working Paper: AAS-2015-08. https://core.ac.uk/download/pdf/78049007.pdf.

Nara, Baslyd B., Monica Lengoiboni, and Jaap Zevenbergen. 2021. "Assessing Customary Land Rights and Tenure Security Variations of Smallholder Farmers in Northwest Ghana." *Land Use Policy* 104: 105352. doi:10.1016/j.landusepol.2021.105352.

Nguyen-Perperidis, E., F. Obeng Adomaa, P. M. Nguye, and B. N. S. Kyeretwie. 2023. "Advancing a Gender-Responsive Delivery Model for Mitigating Climate Impacts in Ghana's Cocoa Landscape." *FARA Research Reports* 7 (19): 196–213.

Otsuka, Keijiro, Agnes R. Quisumbing, Ellen Payongayong, and J. B. Aidoo. 2003. "Land Tenure and the Management of Land and Trees: The Case of Customary Land Tenure Areas of Ghana." *Environment and Development Economics* 8 (1): 77–104. doi:10.1017/S1355770X03000056.

Pulerwitz, Julie, Wang Hui, Jennifer Arney, and Lisa Mueller Scott. 2015. "Changing Gender Norms and Reducing HIV and Violence Risk among Workers and Students in China." *Journal of Health Communication* 20 (8): 869–878. doi:10.1080/10810730.2015.1018573.

Quisumbing, Agnes R., Ellen Payongayong, J. B. Aidoo, and Keikiro Otsuka. 2001. Women's Land Rights in the Transition to Individualized Ownership: Implications for Tree-Resource Management in Western Ghana. *Economic Development and Cultural Change*, 50 (1), 157–182. doi:10.1086/340011

Sain, Gustavo, Ana Maria Loboguerrero, Caitlin Corner-Dolloff, Miguel Lizarazo, Andreea Nowak, Deissy Martínez-Barón, and Nadine Andrieu. 2017. "Costs and Benefits of Climate-Smart Agriculture: The Case of the Dry Corridor in Guatemala." *Agricultural Systems* 151: 163–173. doi:10.1016/j.agsy.2016.05.004.

Sarapura, Escobar Sylvia, and Ranjitha Puskur. 2014. *Gender Capacity Development and Organizational Culture Change in the CGIAR Research Program on Aquatic Agricultural Systems: A Conceptual Framework*. CGIAR Research Program on Aquatic Agricultural Systems: Penang, Malaysia. Working Paper, 2014. https://digitalarchive.worldfishcenter.org/bitstream/handle/20.500.12348/229/3823_AAS-2014-45.pdf?sequence=1&isAllowed=y.

Tsikata, D., and P. Eweh. 2018. "Land and Agricultural Commercialisation and Gendered Livelihoods: A Synthesis of Qualitative Study of 4 Districts in Ghana."

Van den Berg, Wessel, Lynn Hendricks, Abigail Hatcher, Dean Peacock, Patrick Godana, and Shari Dworkin. 2013. "'One Man Can': Shifts in Fatherhood Beliefs and Parenting Practices Following a Gender-Transformative Programme in Eastern Cape, South Africa." *Gender & Development* 21 (1): 111–125. doi:10.1080/13552074.2013.769775

Wong, Franz, Andrea Vos, Rhiannon Pyburn, and Julie Newton. 2019. "Implementing Gender Transformative Approaches in Agriculture." A Discussion Paper for the European Commission, May 2019. https://www.kit.nl/wp-content/uploads/2020/08/Gender-Transformative-Approaches-in-Agriculture_Platform-Discussion-Paper-final-1.pdf.