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Gender relations in shea nut production in Ghana

'Helping' or 'appropriating'? Gender relations in shea nut production in northern Ghana

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Abstract

The potential for the development of shea industries to increase women's incomes is the focus of a number of development interventions in rural West Africa. However, concerns have been voiced over the potential effects of increased commercialisation on women's rights over this resource. This study examines women's participation in and rights over shea production in a context of increasing commercialisation in northern Ghana through a survey of 90 producers and eight oral histories.

Whilst shea incomes are frequently described in the literature as falling under women's control, joint spending decisions for shea income were reported by half of the married women surveyed. This does not appear to be an outcome of growing assertion of men's rights over shea trees themselves but rather is explained, by women, largely in relation to their husbands' involvement in nut production.

Keywords: commercialisation, decision-making, gender, Ghana, shea, *Vitellaria paradoxa*

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Introduction

The shea tree (*Vitellaria paradoxa*) is a prominent feature of the savanna belt of West Africa and plays a valuable role in the household economies of rural communities across the region. The nuts of the shea tree are collected and processed primarily by women for whom they provide an important source of fat in cooking and income.

The commercial trade in shea nuts and the derived fat or 'butter' in West Africa goes back centuries (Chalfin 2004a; Wardell and Fold 2013). However, in recent decades, deregulation of trade, combined with increased global demand for shea, both as a cocoa butter substitute and an ingredient in 'natural' cosmetics, has led to a rapid increase in demand (Bella-Bravo et al. 2015). This changing market has focused attention on the development of shea industries as an economic activity that offers particular benefits to women due to their traditional role in shea collection and processing. As a result, shea marketing activities have been promoted by international and national NGOs alike with the objective of increasing women's income and empowerment (Greig 2006; Elias and Saussey 2013). The increased value of shea as a result of integration of producers into export supply chains has led to concerns over the impact on women's traditional control of shea processing and sale (Elias and Carney 2007; Wardell and Fold 2013; Boffa 2015) and the effects on household labour and nutrition (Fold and Reenborg 1999).

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This paper considers the potential impacts of increased commercialisation on women's control over shea through an analysis of data from a mixed-methods study undertaken to examine the impact of an organic certification scheme on women's participation in and incomes from shea kernel production. Multiple logistic regression and bivariate analysis are used to investigate the determinants of autonomy in spending decision and the effect this has on women's spending choices. The findings are discussed in relation to the literature on household bargaining.

Shea and Gendered Livelihoods

Shea trees are a distinctive feature of farmland and uncultivated bush in the Sudanian and Sudano-Sahelian belt of West Africa (Hall et al. 1996; Naughton et al. 2015). Rural women derive income from shea in two ways: as pickers of shea nuts, marketing prepared kernels to local users, middle men, and direct to export buyers; and by processing nuts into shea butter for sale to consumers on local markets, or to butter traders and exporters. This paper is focused on the collection and preparation of shea kernels.

Nut collection is firmly and consistently reported to be the work of women and children (eg. Maranz et al. 2004; Teklehaimanot 2004) and this gendered division of labour is widely considered to be rigid. For example, in a discussion of gender construction among the Bamanan in Mali, Grosz-Ngate (1989, p.172) writes "[o]nly women collect shea nuts ... For men to carry out the tasks of women would mean lowering themselves to their level ... productive activity here is bound up with identity and differentiation". Similarly in Burkina Faso, it has been noted: "It would be difficult if not impossible to persuade men to take part in collection and gathering of nuts. Some farmers believe that to do so would be against the natural order of things." (Ftaïta et al. 2007, p.27, translated from the original). Shea butter

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production is also considered a wholly female activity, with women viewed as the guardians of knowledge, from selection of fruit to the production process (Chalfin 2004b; Carney and Elias 2006).

The gendered division of labour in West African farm households reflects culturally defined roles which place men as the primary producers and owners of the production system. Women, whilst also important to household provisioning, are placed in a subordinate position and secure access to productive resources through men (Apusigah 2009). Household members' productive activities also correspond to their provisioning obligations. In much of Sudano-Sahelian West Africa it is the household head (males) responsibility to provide the food staple, in the past this would be through the compound farm. Women's traditional obligations are to provide the accompanying 'soup' ingredients and when compound granaries are empty, the grain for daily meals. Women's individual farm plots, non-cultivated resources, and income from other activities (such as beer brewing, charcoal making and trading) allow women to meet these obligations. Tree products, and shea in particular, play an important role here (Pouliot 2012; Poole et al. 2016; Koffi et al. 2017).

Within households these gendered responsibilities are reflected in separate allocative spending priorities (O'Laughlin 1995; Duflo and Udry 2004). However, the existence of separate spheres of production does not confer autonomy to female producers. Men have priority use of women's labour and the livelihood activities women pursue are subject to men's endorsements (Apusigah 2009).

Nonetheless, the ability of a woman to undertake and control the proceeds of her productive activities is subject to negotiation. The outcome of this intra-household bargaining (the allocation of a woman's labour and income) depends on the relative power between men and

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women in the household. Hence, the level of autonomy women experience as producers varies between societies and from one woman to another, as well as over the life course (Saul 1989). Development projects seeking to increase the status and wellbeing of women, such as many of those centred on shea production, are based on the idea that increased incomes for women will strengthen their bargaining power within households (Kevane 2000). However, extra-household social norms concerning the moral obligations of men and women shape household bargaining outcomes. If increased income accruing to women creates additional obligations for women this may not result in improved living standards or a strategic change in women's condition (Naylor 1999).

Gender and Commercialisation

The social norm that shea-related activity is women's work has so far limited men's direct engagement in shea production. However, men as landholders and primary holders of the right to trees can potentially increase their stake in shea industries by exercising their claim to the shea resource itself. It has been suggested that this is occurring as a response to growing global demand (Elias and Carney 2005). Men's assertion of rights over shea is manifested by: men claiming shares of income from their wives (Boffa et al. 1996) and reducing women's access to trees (Boffa 1999), increased involvement of rural men in the 'primary handling' of shea fruit (Perakis 2009) and in some cases by nut collection itself (Boffa 1999; Elias and Carney 2007; Carette et al. 2009). This follows a pattern of appropriation predicted by Rocheleau and Edmunds (1997, p.1359) whereby "as the status of these [female] resources and places change and they become more commercialized and more valuable they may be redefined as men's places, plants and products."

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This scenario underlies the concern raised by some researchers (Elias and Carney 2005, 2007; Wardell and Fold 2013) that increased commercialisation of shea risks increasing men's control of the proceeds at the expense of women and thereby has the potential to undermine important sources of independence and autonomy for rural women.

Another impact of the growing market for kernels is that value can be realised from shea without the skill that is required for butter making. Yaro (2006) notes that increased activity from export buyers has increased competition for nuts at the expense of local butter processors, and therefore "[w]omen who pick nuts gain, while those who process them lose out" (2006, p.147). Taking into account time, labour and energy requirements, Adams (2015) calculates that kernel processing is more profitable than butter making. Thus, the growing market for kernels may simultaneously raise men's interest in shea and weaken its position within women's domain as shea becomes primarily a product of the land rather than women's specialist knowledge and labour.

Customary Rights Over Shea in West Africa

Most accounts of tree tenure in West Africa, as it relates to shea, report that trees on bush land are open to all members of the community, but rights to trees on cultivated land are restricted to those of the landholder (Panin 1987; Boffa 1999; Kevane and Gray 1999; Ftaïta et al. 2007). This means that rights to shea also vary according to migrant or autochthone status. The landholder (usually male) will normally grant rights to gather fruits to the women of his household. Hence, women secure access to shea on farmland through their male relatives. These usufruct rights to trees also vary depending on the stage of cultivation of the land. Access is usually less controlled in bush or fallow fields, becoming more restricted on cultivated fields (see for example Grigsby, 1996).

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Variation in rights to collect tree products and claims over any resulting income vary between regions and studies. Chalfin (2004b) describes access arrangements in Ghana's Upper East which are considered typical for Northern Ghana). Here where land is allocated for farming, even if it is in fallow, rights to trees products are held by the landholder and it is "assumed that whoever holds [these rights] will automatically cede control to his wife or wives" ((Boffa 2015, p. 48). Harvested nuts are considered the property of those who pick them and wives are under "no obligations to share incomes with their husbands". This pattern of rights and obligations is reported for other studies in Ghana including Poudyal (2011) who reports that Dagaamba women in the Northern Region retain the income from collecting nuts on farms held by husbands.

In Burkina Faso (close to the Ghanaian border) Elias (2010) also reports that among Gurunsi landholders, only the wives and female relatives of landholders are permitted to collect shea fruits on farmland, and that they retain all the proceeds. This differs to the findings of Boffa et al. (1996), also in southern Burkino Faso, who report that approximately one quarter of women surveyed compensated their head of household for the use of shea from household land. Both these studies contrast with the findings of Gausset et al. (2005, p. 71) in southwestern Burkina Faso who describe a greater level of male control over nut sales:

"Men ... customarily claim the rights to trees found on their own land. When the harvest is poor, the men keep the different tree produce for themselves and sell the harvest on the market. When the harvest is good, the men still keep most of the harvest, although they give part of it to their wives."

Among the Bamana in Mali, Naughton (2016) observes that women are free to collect shea anywhere, whether on their own household's fields or that of others. However, she notes

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that the women in her study commented that this situation does not prevail elsewhere in Mali. Indeed, both Becker (2000) and Grigsby's (1996) studies among the Bamana report that only where land is not cultivated (bush or communal lands), access is open; but trees on farmland are considered the property of the lineage or landholder who will grant rights to pick nuts (normally to his wives). Both authors suggest that the proceeds of these 'own account' activities are controlled by the women.

The accounts described above suggest a variety of practice exists across the region in relation to access to shea trees and control over income from shea sales. Interacting with these local norms are larger scale processes which impact on land use and livelihood decisions. In particular, rural population growth and the intensification of land use experienced over the past four decades is predicted to continue over the Sudanian and Sudano-Sahelian zones of West Africa (CILSS, 2016). This may impact on women's access to trees as a consequence of the reduction in area under bush and the enforcement of tree rights where previously these may have been relaxed during the fallow cycle. In addition, other factors assumed to drive a trend of declining access (such as competition for shea at harvesting and the market demand for nuts) can also vary over short distances for both environmental and economic (market) reasons (see for example Fold and Reenberg 1999).

Variability in local practices and uneven drivers of change mean that documenting and understanding regional patterns of change in women's rights over shea is a challenge. Nonetheless, expert observers continue to regard it as an important issue (Boffa, 2015). This paper seeks to add to our understanding of the factors influencing women's rights over shea at the household level.

Methods

Data Collection

This paper uses data collected as part of a study to assess the impact of an organic certification scheme on women's participation in shea markets. The certification scheme is located in the Upper West Region of Ghana, within the Wechiau Community Hippo Sanctuary. The scheme aims to increase returns to shea nut collection for women and thereby benefit households within the sanctuary. Certified pickers are organized into community groups by the buying company, they receive training and kernels are collected from pickup points in each community. Certified pickers are paid a premium of 15 percent after the close of the shea buying season in January. At the time of the study the certification scheme was in its third year of operation and 726 women had been registered for 3 years. Certification is open to all women resident within the sanctuary where the bush is protected and assumed free of artificial fertilisers and pesticides.

The study area comprises villages within the organic certification zone and those immediately adjacent to it. Two ethnic groups dominate, the Wala and the Birifor, the latter are considered incomers having migrated from Burkina Faso in the 1920s. The Birifor are the majority group in the sanctuary zone but it is the Wala that are considered the original settlers and have customary rights to the land (Sheppard et al. 2010).

A mixed methods study was employed to investigate the impact of the certification scheme. The principal method was a questionnaire survey to collect quantitative data on shea activity and facilitate comparison between participating and non-participating women. To assist the interpretation of these data, qualitative methods were employed in the form of individual oral history interviews to gather data on people's perception of contemporary change in shea

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production. The importance of contextual information for understanding survey data has been stressed in research on natural resource use in rural livelihoods (Cundill et al. 2011).

Ninety women were sampled from 9 villages within and two outside the sanctuary zone. The sample was stratified to capture approximately equal number of women who were certified; eligible but not certified; and not eligible (as per the original aims of the study). In the sanctuary the number of women selected was proportional to the total number of certified pickers in that village (1-7). Outside the sanctuary 15-16 women per village were selected at random from village lists obtained from NGOs operating in villages next to the sanctuary.

The questionnaire survey was administered during March and April 2010. The survey comprised items on the time taken in nut picking and kernel production; the quantities of kernels produced and sold in the previous season; respondents' assessment of change in their picking activity and incomes in the past 5 years; household decision-making over shea incomes; and the previous year's use of shea income. The characteristics of the survey sample are shown in table 1.

Eight oral history interviews were carried out with elderly Wala men and women (4 inside and 4 outside the certification zone). These interviews asked respondents to talk about the key events in their lives and discuss their experiences of shea nut production over time. Interviews were transcribed and coded for themes relating to access and use of shea. Finally, the study also benefited from discussions with shea buyers and NGO actors in the shea sector.

Analysis

Survey data were analysed in SPSS version 23. Bivariate analyses were conducted to test for relationships between variables. A logistic regression model was developed with variables which could be expected to have a relationship with women's autonomy in shea spending

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decisions in order to better understand the factors influencing joint decision-making (measured as a binary variable: 0 = sole decision maker, 1= joint decision-making). The explanatory variables listed below were entered into the model simultaneously (forced entry).

Age: In West African rural households women's autonomy is observed to increase with age (Saul, 1989).

Certification (certified = 1, not certified= 0): Certified women are expected to collect shea from the bush rather than farmland in order to meet the requirements for organic certification. These nuts are less likely to be subject to claims from husbands than nuts collected from farmlands.

Ethnicity (Birifor = 1, Wala = 0): Ethnic group potentially affects social norms and expectations regarding women's autonomy (Kevane, 2000).

Household type (monogamous = 1, polygamous = 0): This is included following suggestion from research assistants that husbands were more likely to be involved with shea production where they had only one wife, on the basis that a man was less able to assist multiple wives).

Production (number of 90 kg bags produced in previous season): Levels of production, and hence the time allocated by women to shea and the level of income earned, may influence household bargaining. The number of bags produced is used as the measure here rather than the number of hours. This is because estimates of time allocation are likely to be less reliable than production volumes.

Results

Shea Kernel Production

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The nut-picking season commences when the shea fruits ripen in April/May. Ripe shea fruits fall to the base of trees where they are gathered by women. This is a season when demands on women's labour in agriculture are high, therefore women and children rise early to go and collect nuts ahead of their other daily tasks. Nuts are carried back to the compound and boiled when sufficient quantities have been amassed. After boiling, nuts are spread out to dry, after a few days the nuts are cracked and the kernels removed. Time spent on these activities can vary considerably, firstly, the distance travelled to collect nuts and the yield of individual trees will affect the time taken to gather a fixed quantity of nuts. Secondly, the time taken for nuts to dry is weather dependent. For one bag (90kg) of dried shea kernels women report spending an average of 75 hours over 25 days (3 hours per day). The average number of 90 kg bags produced over the season was 3.36. These findings are consistent with recent quantitative studies which have calculated labour requirements for shea kernel production at 72 hours (Naughton 2016) and 92 hrs (Adams 2015) per 90 kg bag. Other surveys of pickers in Ghana have reported typical production of 180-240kg (2-3 bags) in one season (Carette et al. 2009).

Two-thirds of the women surveyed report that they now spend more time on shea nuts than they did five years ago. For 21 percent of women surveyed this increase was explained as a response to improved prices and marketing, however 40 percent of women explained that they had increased the time spent on nut picking in the past five years for reasons primarily related to increased competition for nuts such as more restrictions on picking and the need to travel further into the bush. Changing access to trees through widowhood, reduced activity due to ageing, and lower yields were also given as reasons for reduction in nut collection. These results are discussed in more detail in Kent et al. 2014.

Rights Over Shea

In Birifor households, women's rights over the shea nuts they pick on bush and farm land differ; this is illustrated by their separate treatment. When bush nuts are gathered, they are brought back to the compound, where each woman heaps her nuts individually until she has a sufficient quantity for boiling. Women boil and process their nuts separately and bag them to store in their rooms to be sold when needed. In contrast, farm nuts are mostly picked and heaped at the farm where they are boiled and processed. They are then carried home for the husband to decide on what to do with them. If they are sold women carry out the marketing but return the proceeds to their husbands. This understanding of the patterns of use and control was confirmed by women during an organic inspection visit carried in April 2010. During this inspection women explained that farm nuts are for their husbands. A consequence of this is that 'bush' nuts are prioritized: they are collected early and given more attention in processing than farm nuts. Staff from the buying company reported that their own surveys have found that most women only collect nuts in the bush and very few collect on farms. Those that do are mostly elderly women or senior wives in polygamous households.

In contrast, in the Wala communities rights to nuts collected on farmland are not retained by the male landholder. Hence, during processing, the bush and farm nuts are combined since both remain the property of the woman who gathered them. This follows the same pattern as described above for other regions of northern Ghana. Again as with the Birifor, it was reported that in polygamous households the more elderly among the wives pick on the farm while the younger women go to pick in the bush. Where nuts are collected on farmland it was reported that women are increasingly restricted to picking on their own household land in contrast to the past where there was less restriction:

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We, the women, all picked shea and we picked it anywhere. Shea now you cannot pick it in someone's farm – when you go to your own farm and see someone there you say: “why do you leave your farming place and are picking on mine” - you do not agree at all. Shea is mostly picked now on individual farms. (Elderly Wala woman).

This point was also made in another interview where it was suggested that this change is linked to men's increased interest in shea.

When you look at it now you cannot go into someone's sowing place to get shea. But in those days you can go to pick anywhere because it is a woman's job – no man has anything to do with shea. (Elderly Wala woman).

Income and Spending

Mean annual income from nut sales was 75 Ghana cedis (USD 53, exchange rate May 2010). This is low but significant in an area of very low household incomes (the Ghana living standards survey estimates average household incomes in the Upper West as 660 US\$ in 2005/6). A high proportion of respondents reported an increase in shea incomes (84%) over the past 5 years, a change which was largely attributed to an improved market and better prices. The growing importance of income from nut sales also emerged as a theme in interviews:

When we picked shea we did not know where to sell it but now people come here to buy. That is good for us. When we used to make butter we put it in big calabashes and we used to send to the Kumasi road to sell. These days you sell the nut and when you want to make butter you make it small for eating. This was not

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the case in our time because we were not selling the shea apart from the butter.

(Elderly Wala woman).

Contrary to the prevailing view from the literature that shea monies represent income under women's control, less than half (46 percent) of women surveyed who had a husband present (68/90) reported that they alone decided how shea income was spent. Following this question on decision-making, women were asked an open question on how their husbands were involved in their shea business. Forty-one women (60 percent) reported that their husbands were involved, of these 34 women (83percent) described their husband's 'help' in shea production. Women described receiving help from their husbands mainly when extracting nut kernels, but also in transport of nuts from the field and (more rarely) picking 'wet' nuts. One woman reported that her husband assists by taking care of the children when she is engaged in shea activities. In five of these cases it was added that the husband allowed picking on his farm.

Table 2 presents the results of the logistic regression model to predict joint decision-making. Significant correlation was found between the variables age and production and women's autonomy in spending decisions. Production was negatively correlated to autonomy, the odds-ratio suggest that for each additional bag produced the likelihood that a woman makes spending decisions alone is halved. Ethnicity, household type and certification were not found to be correlated to sole decision-making.

Use of Shea Income

Women were asked to list their uses of income from nut sales in the previous season and then rank the top three items. Spending priorities for nut incomes were food provision, school fees and uniforms, health, and household goods (Table 3). The importance of shea nut sales for

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meeting household food needs was confirmed in the oral history interviews in which both men and women recalled that shea nuts were used by women to buy grain when food from the farm was finished.

Anytime our food is finished she sells her nuts in the market to buy more grain.

This is what she does, and soup ingredients to feed myself and our children. The nuts are what buys salt and other soup ingredient and my farm grain is what we use as our food. (Elderly Wala man).

One third of women invested some of their shea income in an additional productive activity (petty trading, food vending, farming, butter- or beer-making) but clearly most prioritise their responsibilities to meet household food and other immediate needs such as schooling and healthcare. This is most apparent for women without a husband present who are least likely to invest their earnings (Table 4.). This likely reflects the increased responsibilities (and poverty) faced by women in female-headed households.

Differences in reported use of shea incomes were also found between women who made joint decisions and those who took decisions alone (Table 4). Among married women with a husband present, respondents who reported joint decision making were more likely to rank school expenses (fees and/or uniforms) in their top three uses of shea money ($\chi^2 (2, N=68) = 14.876, p<.001$)

The younger average age of joint-decision making women could explain this outcome since younger women might be expected to have more school-aged children. However, no significant difference is found between the mean ages of women in the 'school spend' (46.0) and 'no school spend' (45.4) groups. The broad age range of women in the 'school spending

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group' (30 – 67 years) suggest that women do not only meet school expenses for their immediate children.

Discussion

Increased Competition

The growing global demand for shea coupled with local interventions to improve shea marketing means that the value of shea to rural households in the study area has increased. This is supported by the high proportion of respondents reporting an increase in shea incomes and in the time they devote to shea. The latter is in part individuals' response to improved markets and prices but it is also evidence of increased competition for shea. This is reflected in women's need to travel further, new restrictions on entering others' farmland for nuts and reports of increased competition between women. These effects of increased competition have been noted by other authors who describe women being forced to rise earlier and collect shea in the dark to ensure supply (Naughton, 2015) or increase their range (Elias, 2010). In this context elderly women are at risk of being out- competed for nuts (Elias 2010; Elias and Arora-Jonsson 2016). In this study, it was reported that elderly women and senior wives had priority for access to nuts on their husband's farmland, a convention which may safeguard older women's access to the resource.

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The levels of male involvement in spending decisions with regard to shea nut incomes are higher than were expected from a review of the literature. In this case, men's claims over shea's value cannot be explained by their assertion of land rights. Instead, it may be useful to return to the framework of intra-household bargaining. We recall that men in rural West

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Africa have priority use of women's labour whether on- or off-farm (Apisugah, 2009) and shea production takes place at a time of peak farming activity. Higher levels of joint decision-making in households with higher shea output could be interpreted as the negotiated outcome of wives increased time allocation to shea. Women may accept some loss of autonomy in spending in exchange for husbands' agreement to, facilitation of, or even cooperation in, increased shea nut production. Put the other way – men may accept wives increased time allocated to shea in exchange for an increased say in spending decisions. Unfortunately as an unexpected finding from the survey we are not able to test this hypothesis. Future studies on shea kernel production may benefit from exploring intra-household bargaining when examining the impacts of sector development.

Joint decision-making in the spending of shea incomes is associated with spending on schooling, an area traditionally considered a male responsibility. This finding has implications for projects which regard increased income from shea as a tool for women's empowerment if additional income is diverted to formerly 'male' responsibilities. This issue leads Elias (2010) to ask whether it is men who ultimately benefit most from their wives' involvement in shea projects. Other research has suggested a trend towards growing expectations on women to meet household food needs. For example, in North East Ghana Yaro (2006) reports an increased burden on women as men disassociate themselves from food provisioning in the lean season. Elsewhere in West Africa studies have also reported the use of women's new cash income for grain purchases where these were traditionally a head of household responsibility (Mackintosh, 1989; Becker 2001, 239). Although the importance of women's food provisioning is clear from this study, we do not have evidence that this represents an

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increased or changing responsibility as the detail of women's food provisioning was not documented.

Conclusions

From a review of the literature it is clear that various factors have the potential to influence access to and control over shea products. In particular the location of the tree (bush, farm or fallow) and the relationship between the picker and the landholder are central to issues around rights of access and control over income. Growing competition for nuts in the face of increased land use intensity and market demand is anticipated to affect the enactment of rights to shea with gendered impacts (Boffa 2015). However, evidence of trends in women's rights to shea as a consequence of commercialisation, whether at the local (village) level or regionally, is difficult ascertain from the literature due to the absence of longitudinal data and because cross sectional comparisons between villages or regions is rendered problematic by the wide variety of practice in relation to land and tree tenure.

There has been a tendency in the literature to consider shea as a women's crop in isolation from the wider household economy. The findings of this study support appeals for greater consideration of the negotiation and compromises which occur between men and women within households, and importantly the recognition of joint interests in household productive activities even where they fall under the domain of men or women (Whitehead and Kabeer 2001; Jackson 2007). In the case of shea, it has previously been recognised the retention of shea trees on men's fields involves a trade-off with crop productivity that is tolerated in part due to the importance of these trees to the household (Grigsby 1996; Schrekenberg 2004). The data from this survey confirm the importance of shea monies for the household both in meeting food needs, schooling and health expenditures: men clearly have a stake in shea

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livelihoods. This has also been demonstrated recently by Elias (2015) in her analysis of intra-household cooperation in shea resource management.

Finally, the issue of women's 'time poverty' has long been a prominent theme of gender analyses (Moser 1989); expectations for women to increase their engagement in economic activities has the potential to increase women's workload further (Meagre 2010). Although it is often implied that because shea is not cultivated it is a 'bonus' with limited opportunity costs, the labour demands of shea kernel production are significant. Our calculations suggest women spend on average three hours a day during the shea season collecting, shelling and sorting nuts. Of course this is addition to women's domestic and farm duties. In this case women's access to cash income from shea potentially risks increasing their burden of household responsibilities. Interventions that seek to improve women's wellbeing and empowerment need to consider the mechanisms by which raised incomes contribute to these outcomes.

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Table 1. Summary statistics for survey respondents (n=90)

Variable	N (percentage)
<i>Ethnic group -</i>	
<i>Wala</i>	62 (69%)
<i>Birifor</i>	28 (31%)
<i>Marital status -</i>	
<i>Married</i>	74 (82%)
<i>Widowed</i>	14 (16%)
<i>Divorced</i>	2 (2%)
<i>Household type*</i>	
<i>Polygamous</i>	38 (57%)
<i>monogamous</i>	29 (43%)
	Mean (Range, Std dev)
<i>Age</i>	45.7 (52, 11.42)
<i>Nut production</i> <i>(90kg bags)</i>	3.36 (9, 1.75)

*where husband is present

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Table 2. Results of logistic regression on outcome variable: decision making on spending of shea income (0 = woman makes decisions alone; 1 = joint decision-making with husband)

<i>Variable</i>	Coefficient	S.E	Sig.	Odds ratio (95% CI)
Constant	-1.06	1.55	.495	
Age	0.07	0.03	.016	
Certification	-1.60	1.19	.178	0.20 (0.02-2.07)
Ethnicity	0.70	1.24	.573	2.00 (0.18-22.78)
Household type	0.51	0.67	.443	1.67 (0.49-6.23)
Production	-0.72	0.27	.008	0.45 (0.29-0.83)
<i>Model summary</i>				
-2LL	63.95 ($\chi^2 = 25.78$, $df=5$, $p < .001$)			
Nagelkerke R ²	43.7%			
Hosmer & Lemeshow test	p=.448			
Classification accuracy	80%			

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Table 3. Spending of shea income in previous season

Item	Rank			Total
	1 st	2 nd	3 rd	
Food items	49	17	1	67
School fees	17	15	7	39
School uniforms	5	13	14	32
Health	5	6	17	28
Household goods	0	12	11	23
Other clothes	1	8	4	13
Retail investment	8	1	0	9
Butter making	2	0	3	5
Labour	1	1	1	3
Other	1	1	2	4
Not given	1	16	30	
total	90	90	90	

Table 4. Shea income priorities and household decision-making

Decision making	<i>n</i>	Item ranked in top three			Investment in productive activities*
		Food	Schooling	Health	
Woman	31	23 (74%)	10 (32%)	10 (31%)	14 (45%)
Joint	37	23 (62%)	29 (78%)	8 (21%)	12 (32%)
Woman where widowed or husband absent	22	21 (96%)	11 (50%)	10 (45%)	3 (14%)

* this includes any spending on other productive activities, included petty trading, agriculture and butter making