

# Challenging Gender Orders? Small Ruminant Husbandry Interventions in Ghana's Upper West Region

Patricia A.T. Aboe, Akua O. Britwum, and Ernest Okorley

## Abstract

This paper undertakes an institutional analysis to determine how rules, regulations, and norms guiding gender relations in four institutions - the state, market, community, and households - were affected by an intervention designed to increase women's ownership of small ruminants in Ghana's Upper West Region. Drawing on information from case farmers and key persons through structured individual interviews and focus group discussions, the paper notes that some existing norms and rules were challenged at the household and community levels. First was the norm of household heads being the automatic target of interventions. Women's involvement in the intervention increased their livestock asset base, challenging the rule that set men as dominant owners. The intervention drew more women to seek solutions to livestock health problems and even encouraged females to deliver health care to small ruminants. The changes in rules and norms, however, did not extend to all small ruminant production activities. Males retained the hold over animal sales and critical spaces in decision-making in all the critical stages of the intervention; they set the rules and ensured enforcement. Women still needed their husbands' permission to offer services to other farmers, especially men. Targeting women in agriculture production can initiate some alterations in gender relations, particularly in the area of resource ownership. The extent to which these can alter crucial markers of women's subordinate positions however requires the systematic engagement of institutional rules and norms that support unequal gender relations.

**Keywords:** small ruminants; sheep and goats; gender relations; technology adoption; gender division of labour; rural women.

## Introduction

Small ruminants (SR) such as sheep (*Ovis aries*) and goats (*Capra hircus*) serve as a source of income and wealth accumulation and are considered a pathway out of rural poverty (Amankwah *et al.*, 2012; Adams and Ohene-Yankyera, 2014). They are described as ‘quick cash’, ‘bank on hooves’, or ‘walking banks’, because of their easy conversion into cash to provide financial security in times of crop failure. They allow rural households to purchase food items and farm inputs as well as pay school fees and hospital bills (Dossa *et al.*, 2008; Quaye 2008). Due to their small size, SR are considered suitable for home consumption, for meeting the animal protein requirements of poor households (Adams and Ohene-Yankyera, 2014; Davendra, 2002; Rahman, 2007). Their use for performing rites during festivals, funerals and settling bride wealth also highlights their cultural importance (Adam and Boateng, 2012).

Women’s ownership and management of SR is considered even more critical for sustenance since they often fall on proceeds from their sale to take care of household needs like payment of medical bills and school fees (Aboe *et al.*, 2011; Duku *et al.*, 2011). Yet globally, livestock ownership and production are highly gendered with men inclined to own and manage large animals and women predisposed towards small species (Jin and Iannotti, 2014; Oladeji and Oyesola, 2008). This situation was confirmed in Ghana by a 2011 FAO study which reported that men owned three times as much cattle as women. Research in Ghana’s Upper East Region, the country’s hub of livestock production, has found that male household heads dominate SR ownership (Adams and Ohene-Yankyera, 2014; Turkson and Naandam, 2006). Women are not expected to publicly claim ownership of livestock; at marriage, they are expected to hand over all their animals to their husbands while unmarried women usually leave their animals in their brothers’ care (Aboe *et al.*, 2013b). Husbandry tasks are also gendered.

Ghana's failure to realise the full potential that livestock holds for household income security and domestic meat consumption has been attributed largely to weak husbandry practices such as poor housing and feeding, especially during the dry season (Adam and Boateng, 2012; Dossa *et al.*, 2008; Quaye 2008). Additionally, the livestock breed has also been identified as contributing to low yields (Mwangi and Kariuki, 2015). Generally, SR production is undertaken by smallholder subsistence farmers in extensive mixed crop livestock systems and seldom develops into commercial levels of production (Amankwah *et al.*, 2012; Turkson and Brownie, 1999). Many point to this situation as an additional factor accounting for the failure of several initiatives geared at enhancing livestock production in Ghana's northern regions to yield desired outcomes (Adams and Ohene-Yankyera, 2014; Amankwah *et al.*, 2012).

Over the years, the government of Ghana has tended to target women in a bid to increase agricultural production. This has been a response to studies that show that dealing with women's gendered access to production resources could improve farm household income and welfare (Ayalew *et al.*, 2013; Doss and Morris, 2001; FAO, 2012). One such initiative was that of the Ministry of Local Government and Rural Development (MLGRD), with Canadian Government funding from the Food Security and Environment Facility, seeking to increase women's income for household provisioning through small livestock ownership. The NGO, Tumu Deanery Rural Integrated Development Programme (TUDRIDEP), responded to the call. The TUDRIDEP project aimed to enhance women's knowledge, management, and environmental practices for sustainable husbandry technologies using improved breeds. It also focused on increasing women's ownership of livestock as assets that could be converted into income for household provisioning. An appraisal of the TUDRIDEP project reported high adoption levels of the SR husbandry technologies introduced.

There is the long-held assumption that institutional rules and norms underlying gender orders guide women and men in SR production and marketing. Considering the male dominance in SR ownership, mentioned earlier, clarity about how gender relations play out in SR husbandry technology adoption is critical for shaping the content of subsequent development interventions. We present in this paper the outcome of an investigation into the gender dynamics among farmers who participated in the SR husbandry technology adoption

introduced by TUDRIDEP in the Wa East District of the Upper West Region of Ghana. Our interest was in how institutional rules and norms operating within the household, community, market, and the state influenced the highly gendered practices around SR ownership and production which affect the adoption of SR husbandry technology in an intervention that targeted women as livestock owners.

The first part of this paper gives a general introduction to the issues under contention, which is gendered SR production and management. The second section, which covers the analytical framework, outlines the tools we utilised to understand how institutions produce and reproduce social relations underlying gender inequality expressed around SR ownership and production. We dwelt on Kabeer's definition of institutions as quoted by March *et al.* as the "... framework of rules and regulations for achieving certain social or economic goals" (March, et al., 1999:103). The third section discusses the outcome of our investigation using the tools to capture changes in institutional rules and norms around SR production and marketing that can be attributed to the TUDRIDEP intervention. We first present the norms or rules in the existing institutions and then later describe changes introduced or triggered in other institutions. We conclude the paper by drawing attention to the fact that an increase in women's livestock ownership, though significant for household provision, did not alter rules on decision-making and control over women's rights to determine whom they supply health support to, outside their households.

### **Analysing the gendered institutional context of small ruminant husbandry**

Laying the blame of low livestock productivity on problems of breed type and husbandry practices, new technologies are proffered as the solution. The introduction of new technologies is associated with reduced production costs, rising outputs, increased farm income, and reduced poverty as well as improved nutritional status (Jain *et al.*, 2015; Udimal *et al.*, 2017). The process of developing and passing on innovation for carrying out productive activities, we are told, involves handing over to the receiving community a package of technical devices, ideas, organisational arrangements, and social relationships

(Leeuwis and van den Ban, 2004). Innovations then embody the concurrent operation of devices and the new knowledge required to run them, as well as the social institutions in which they are located. It is this observation that has led some to conclude that the adoption of new technology extends beyond individual free will decisions and is shaped by institutional rules and norms in which people operate (Leeuwis and van den Ban, 2004).

Authors such as Kabeer (1994), Moser (1993), and Oakley (1972), criticising liberal feminist women in development interventions, call for a shift away from the women-only approach to focus on gender relations underlying women's subordination. This observation has currency since women's gendered situation is relational and located in social systems and structures. The tools they evolved to assist in this effort include Naila Kabeer's Gender Analysis Framework, Caroline Moser's Gender Needs Assessment as well as Sarah Longwe's Empowerment Framework. They have been useful analytical framing for ensuring that development planning and research focus on social structures and not on individual capacities.

In our bid to understand how gender relations influenced the highly sex-segregated practices around SR ownership and production to impact the adoption of husbandry technology, we chose the third of Kabeer's five concepts of the social relations framework: institutional analysis. Developed for community-level assessment, it is composed of tools for examining how gender inequalities between people, resources, and activities are reworked through institutional rules, authority, and control structures (March *et al.*, 1999). For Kabeer, institutions ensure the production, reinforcement, and reproduction of gendered social relations and thereby create and perpetuate social inequality. She concludes that, far from being ideologically neutral, institutions work in tandem to legitimise and reproduce existing gendered inequalities.

According to Kabeer's social relations approach, all social institutions, irrespective of the culture in which they are located, embody five distinct and interrelated dimensions: rules, activities, resources, people, and power. These five dimensions of social relationships, when used to unearth the gender dynamics at play within institutions, are referred to as institutional analysis. Rules – either officially documented or expressed through norms, values, laws,

traditions, and customs – are the accepted principles regulating what is to be done, how it is to be done, who does it, and who benefits. Rules allow everyday decisions to be made with minimum effort and as a result, entrench ways of doing things to the extent that they seem natural or unchangeable. Activities, be they productive, distributive, or regulative, are undertaken by people within institutions that are governed by rules. Existing rules determine who is expected to carry out certain tasks, leading to groups becoming associated with certain activities over time that seem to be their ‘natural’ work. Gender differences created in societies usually determine how tasks are assigned and rewarded. Such distinctions attached to women’s and men’s activities reinforce gender inequalities.

The mobilisation and distribution of resources are governed by institutional rules. Institutions tend to be selective about who is included and excluded, who is assigned various resources, tasks, and responsibilities, and their position within the existing social hierarchy. Power, another aspect of institutions, is concerned with who decides and whose interests are served. The official and unofficial rules which promote and legitimise unequal resource distribution and responsibilities, ensure that some institutional actors have authority and control over others (March *et al.*, 1999). Such privileged individuals tend to promote practices that end up entrenching their position and may resist change that undermine their interests.

Our interest in undertaking the institutional analysis was to uncover the roles that the institutions involved in the delivery of the TUDRIDEP project played in challenging or perpetuating existing gender orders around SR production. The institutions we identified were the household (SR farmer households), the community (traditional authorities, elders, networks, associations, TUDRIDEP and Community Livestock Workers), the state (the Ministry of Local Government and Rural Development [MLGRD]) as well as the Ministry of Food and Agriculture (MoFA), through its extension agents), and the market (SR traders). It is with this lens that we sought to gain an understanding of whether the TUDRIDEP project altered the rules, practices, people, distribution of resources, and power in terms of how women and men performed SR husbandry tasks (TUDRIDEP, 2012).

The TUDRIDEP programme in the Wa East District of the Upper West Region of Ghana, as mentioned earlier, was a response to a call offering to fund Ghanaian organisations seeking to increase the use of environmentally sound agricultural technologies and practices to support food security and sustainable agriculture in Ghana's northern regions. One of the goals of the programme was to enhance women's income for household provisioning through increased goat and sheep ownership; it required up to 80% female participation in funded projects. To meet this requirement, TUDRIDEP targeted 70% women participation in their project (TUDRIDEP, 2012).

This study derived information from all the 161 TUDRIDEP farmers, 113 of whom were females and 48 males. Quantitative data, which was drawn by a census covering all project participants, was facilitated by a structured interview schedule and qualitative data was derived from focus group discussions (FGDs) with an unstructured FGD guide. The selection criteria for the FGD participants, in addition to owning and keeping SR, was age. 'Age' enabled data collection across generations, while 'ownership' and 'involvement' in SR-keeping were criteria used to help understand the 'with and without gendered experiences' of farmers who had participated in the intervention. Key persons covered were women and men with knowledge about the rules and norms of the communities, and who were experienced in SR production and marketing (SRPM). Secondary sources used were the project proposal, organisational profile, gender policy, operational guidelines, as well as quarterly and annual project reports of TUDRIDEP.

## **Gender and small ruminant husbandry**

In rural Ghana, SR husbandry is undertaken by household members with minimal involvement of hired labour (Ayalew *et al.*, 2013; Duku *et al.*, 2011). Tasks are divided along gender lines, guided by informal household rules and norms regarding SRPM activities. Studies show that men tend to handle activities such as the building of pens, SR health care, identification, and marketing (Aboe *et al.*, 2013b; Adams and Ohene-Yankyera, 2014; Bacho, 2004). Housing SR is uncommon in most Ghanaian rural communities; animals sleep in the compound at night. When used, housing usually stops at sheep since they are

perceived as more delicate and less hardy than goats (Aboe *et al.*, 2013b). Lack of pens has been noted to be a recipe for animal loss from theft and road kills (Aboe and Ameleke, 2008; Aboe *et al.*, 2013b). When women want to house their sheep and goats, they request for land from men, usually their husbands. However, it is men who build pens (Amankwah *et al.*, 2012).

Cleaning waste generated by SR is a husbandry practice undertaken by household members with no clear gender segregation in task allocation. Aboe *et al.* (2013a) reported instances in some districts in the Upper West Region where men sweep SR pens, while in others women carried out this task. It appears that where the animals are housed sometimes determines who undertakes this task. A study by Adams and Yankyera, (2014) found situations in the three northern regions (at the time Northern, Upper East and Upper West Regions) where women were responsible for cleaning SR waste. Men and children cleaned pens when they were provided, while women carted dung to the family farms. Where they were unhoused and slept in the compound and cooking areas, the women did the cleaning as part of their daily cleaning chores (Aboe *et al.*, 2013a).

Feeding and providing water was another husbandry task that escaped strict gender segregation. Adams and Ohene-Yankyera (2014) found in their study that the provision of water was almost evenly shared across the sexes and ages. Thus, the youth (31.7%), men (30.5%) and women (29.3%) were reported as undertaking such tasks in households. Feeding SR, especially providing supplementary feed during the dry season, was reported by nearly 40% of research participants as the task of males, followed by 30% who cited children (aged between 11 and 18), and about one quarter who cited females as carrying out this responsibility. However, where the small ruminant flocks were more than 80 sheep, older men above 60 years herded the ruminants during the rainy season, while children attended school, and younger men engaged in crop farming (Amankwah *et al.*, 2012; Aboe *et al.*, 2013a).

Rules affect the roles of women and men both in the household and community around SRPM. In the household for instance, selling and purchasing of animals was not only the role of men but also a rule. Since men traditionally handle purchasing and selling of animals, a woman who wishes to sell an animal must seek the permission of her husband, who does the bargaining and selling



(Bacho, 2004). The practice of women seeking the consent of their husbands before selling their SR, and the same husbands selling the animals, was a norm upheld in other parts of northern Ghana (Aboe *et al.*, 2013a and Bacho, 2004). The same applied to the health care of the animals, where the women would look out for sick animals and report to the men who then sought veterinary care. Generally, men were said to be supervisors of the rules and were responsible for ensuring that household members performed their assigned tasks.

### **TUDRIDEP rules and activities**

The strategies set out by TUDRIDEP to implement the project were a combination of practices and rules that participating communities and households were expected to follow. The programme commenced with a sensitisation exercise about the content and rationale of the project. The participating farmers had to form mixed sex groups of ten with 70% women and 30% men and were enjoined to attend group meetings for training. A key informant at TUDRIDEP explained that the rationale for using the mixed group method was to develop farmer-based organisations (FBOs) and build their capacities to advocate and lobby the government and other duty bearers for the improvement of their lives and livelihoods. The expectation was that the members of the FBOs would speak with one voice through their executives. The FBOs were also expected to facilitate extension education and implement projects and programmes.

All participating farmers were enjoined to build standardised housing for the SR and they received a ‘starter-pack’ of five sheep or goats, at no cost to them. Farmers in the first group of ten were each obliged to give five animals back to the project when their flock reached a certain number. Animals given back by the first group were consigned to members of farmers’ groups in different communities to avoid inbreeding and prevent weaned animals from returning to their original owners. This ‘pass on’ strategy introduced by TUDRIDEP created a new avenue for households to acquire SR.

Participating farmers were under obligation to adhere to husbandry practices such as routine cleaning of pens, provision of drinking water, and feeding SR with prescribed supplementary feeds. In addition, they were to adhere to set health practices such as annual vaccination against *Peste des Petits*

*Ruminants*, using the services of the community livestock worker (CLW) for minor ailments and MoFA's veterinary officer for injections. They were also expected to dispose of their SR through TUDRIDEP's prescribed marketing channels.

The TUDRIDEP intervention gave prominence to the state, which in this instance was represented by MLGRD in collaboration with MoFA, to gain access to the expertise of the district veterinary officers in animal husbandry and health. It must be noted that before the TUDRIDEP intervention, the state was virtually absent in SRPM. Market agents had occasional interaction with SR owners. The main institutions directing SR husbandry practices and their associated rules and norms were households, with some amount of community level engagement. Under the project, however, the state was visible, even though its intervention stopped at providing the vehicle for accessing funding and expertise during the project rollout.

In the TUDRIDEP project, a woman and a man in each group of ten were trained by MoFA personnel to operate as the CLW to offer minor health care to the SR within the community. The CLW was introduced by the government of Ghana after structural adjustment reforms to make up for the shortage of veterinary officers and technicians (Amankwah *et al.*, 2012). The CLW were often members of the same ethnic groups as their clients and resided in the communities where the livestock were found. They were able to handle 80-90% of the veterinary interventions in the extensive production systems (Amankwah *et al.*, 2012). The project provided each CLW with a free package of drugs to offer veterinary services to participating farmers. They charged a token fee for their services and used it as a revolving fund for restocking drugs. Thus, the CLW formed a bridge between the state and the community.

The project had an impact on community level practices and rule-setting. Organisations that constituted community level institutions were the CLW and traditional leaders, the chief, elders, and the spiritual head, the *Tendana*, as well as the elected representative of the local government – the assembly-person. Before the start of the project, unhoused SR sometimes strayed into compounds and farms in search of supplementary feed and in the process destroyed household items as well as crops on farms and in home gardens. The

new rules and norms set out by the project to guide community level SRPM practices, forbade SR from roaming free range to prevent damage. Another rule enacted by the community was in connection with how SR was to be identified. The traditional practice of identifying SR with distinctive patterns using blade cuts to the ear lobe of SR was reinforced under the TUDRIDEP intervention, with the supply of ear tags to be attached to SR. Men still retained control over the performance of this activity. Other rules barred sick animals from the community, prohibited theft or condoning the act. Spraying weedicide around the homesteads to control weeds in the rainy season was also forbidden since SR have often died as a result of poisoning from the chemicals used.

When asked who set the rules in the community, the response was unanimous: the chiefs, community members, elders, and the *Tendana*. Enforcement of the laws was the responsibility of the assemblyperson in association with the chief, elders, and the *Tendana*. Often, the assemblyperson, the chief, and the elders were positions held by men thus further reinforcing male status in the community. The market in this study was represented by interactions between SR owners and traders. The project assigned two itinerant traders to each group to facilitate the sale of SR. Buying and selling SR in the study communities was the preserve of men, a fact which falls in line with existing gender orders. Itinerant SR traders bought from men at the farm gate. The case farmers hardly sold in the marketplace, citing lower prices since such sales would be driven by distress. One male case farmer explained:

It is better to call the small ruminant trader to come home, because you can name your price. If he does not like the price, he will go away. If you carry the animal to the market, especially after planting, you will get a lower price because other people would have brought their animals and you cannot carry the animal back home, so you sell at a low price. It is better to sell at home unless there is an emergency (MF).

The TUDRIDEP intervention started a process of change in the husbandry practices of SRPM in the case households, since the animals were housed and required close attention. Before joining the project, most of the participating farmers did not house their animals and the few that did, did not use the prototype TUDRIDEP design. In the households, husbandry tasks remained gendered: females in our study communities were responsible for cleaning SR

pens, feeding, and preparation of supplementary feed. Cutting leaves from shrubs and trees to feed SR was a shared role, in that women cut the shrubs and men the tree leaves, while young girls and boys helped the women and men, respectively. The farmers included in our study indicated some benefits derived from keeping their animals in pens. The pens brought farmers closer to their SRs, especially women, who had to observe animals for symptoms of sickness twice daily. Women reported signs of ill-health to the men for them to take action where necessary. The provision of pens ensured that SR drank water at least twice daily. It also kept animals safe at night and reduced theft; farmers could tell when SR were missing since they counted them every morning and evening.

### **Alterations in household, community, and market-based gender rules**

The introduction of the project clearly had gender implications due to the focus on women in an area that was male dominated. Rules, activities, and power relations were affected. The extent to which they affected existing gender relations is what we present in this section. First is the mode of introducing the project to the community to facilitate its acceptance. The objectives of the intervention, the strategies, the components of the technology package, and the benefits, were explained to community members during the sensitisation exercise. Its acceptance was facilitated by men. One male key informant in Tuassa commented:

If we the men had not agreed, this project would not have come to this community. The people who brought the project called all of us and told us [men] about the benefits of allowing the women to also receive the animals and be trained. We realised that we are one family. If the animals increase, we will all benefit. If we did not agree, we would not have built the pens for the women. Over here, it is the men who build pens not the women (MKI<sub>3</sub>).

The free 'starter pack' of sheep and goats given to women farmers as well as the later distribution through the 'pass on' strategy affected the household gender orders around SRPM. The SR resource base of the targeted women farmers

increased, challenging the gender order of men as the main owners of SR in the household and community. The SR husbandry intervention was introduced to the case farmers in mixed sex groups. The group method of training and information dissemination to the case farmers was to increase women's access to extension information. The key informant explained that they encouraged mixed groups to empower women by breaking down cultural barriers that discouraged women from speaking in public in the presence of men. He noted that "there is faster adoption and projects are more sustainable because the farmers own the projects and programmes" (TUDRIDEP key informant).

New rules on animal health care were introduced by TUDRIDEP. The norm was for women to observe the animals closely and report ill health to men who would seek either orthodox veterinary or ethno-veterinary care. Involving women as a policy in animal health care as CLW, which was contrary to the existing norm, facilitated building women's capacity in that area. During the period of data collection, the female CLW we interacted with in Chaggu was very much involved with the provision of health care. When asked how she operated, she explained that she worked by herself without her male counterpart.

Both women and men in the group come and ask me to treat their sick animals. All they need to do is to tell my husband that they need my services. If the farmer is male, it is important they seek my husband's permission...You understand what I mean... (smiling). Farmers who are not in the group also call me and I charge them double what I charge my group members. Some also come for advice, and I show them what to do (CLW<sub>3</sub>).

Breaking the existing norm of attending to SR health however, was still under male authority as the statement above from the female CLW shows. She brings attention to the rule that she needed the permission of her husband before she could attend to her clients, especially male clients.

The introduction of the two itinerant traders assigned to the case farmers resulted in a more regular and assured market for both farmers and traders. The gendered market norms about negotiating the price and actual sale of SR changed only slightly. Even though women could decide when to sell their animals without their having to ask permission, they still needed to inform their male household heads, usually their husbands, about their intention to sell

their SR. It is the men who would call the traders, bargain and sell the animal. During the intervention, both women and men called the traders but their male household head, usually their husbands, were responsible for bargaining and selling. Both traders confirmed this in the case communities. Trader 2 noted, “Over here it is the men who sell the animals, not the women. The women call me, but it is the men who do the bargaining and selling” (Trader 2 Bulenga area). However, both traders noted that after the project was initiated more women were calling them than before. Trader 1 stated, “Because of the project I now have more customers calling me. Even now, more women are calling me than before the project. I am now very busy buying and selling” (Trader 1 Funsi area).

The traders’ comments attested to the fact that although more women were disposing of their animals due to an increase in animal numbers – sheep and goats – the intervention did not affect the norm. Sale and purchasing of animals were still the preserve of men in the case communities. However, linking the case farmers with the itinerant traders guaranteed regular and reliable marketing outlets for the case farmers. They did not have to carry their animals to the market to sell and engage in ‘distress’ selling in the lean season. The arrangement also resulted in the traders securing more clients. The rule-setting structures that evolved around the TUDRIDEP project did not alter male power in the household or the community decision-making.

### **Conclusion: institutional interrelatedness and gender orders**

The gender sensitivity and gender ideology of the organisation influences the kind of gender policy intervention it implements. A gender aware organisation may implement a gender aware intervention that may improve the livelihood of the target group and their families, but may not change the subordinate position of women in the household. The preceding discussions have revealed the interrelatedness of the four institutions – state, household, community, and market – in this study. The state was represented by the MLGRD which put out a call with a policy to target 80% female farmers and TUDRIDEP, representing the community, set rules for 70% female participation. The patriarchal norms that privileged men as owners of livestock had to give way due to the rule of high female participation demanded by TUDRIDEP. Since TUDRIDEP did not

have expertise in animal husbandry and veterinary care, they collaborated with MoFA and this brought about a direct connection between the two institutions, state and community. TUDRIDEP linked the case farmers to traders, ensuring a regular market for the farmers and customers for the traders. The market was therefore affected positively.

The CLW introduced by the intervention made health care accessible to case and non-case households. Health care of SR improved, income increased, and livelihoods improved. Although the action initiated by the state resulted in some changes in the main institutions, norms such as men seeking health care and men selling and buying animals remained unchanged. What changed was the acceptance of females giving health care because of the CLW concept. The initial rule set by the state sparked changes in the other institutions. However, the rule change was insufficient to spur alterations in existing gender orders to upset patriarchal relations around women's rights.

The extent to which interventions can challenge gender orders is, amongst other things, influenced by the criteria, strategies, and methods used in transferring technologies. The study showed that gendered rules and norms in institutions – households, market, communities and the state – were subject to change. At the same time, whilst rules, norms, and practices that perpetuate gender relations in institutions like the household and community are amenable to change, this does not come easily. Market norms and practices such as men selling and purchasing SR remained unchanged. Although not every norm changed, however, the study confirmed that institutions are not independent or separate entities but are interrelated. Hence, interventions introduced in, or by, one institution are able to set off changes in others.

## Endnote

- 1 “*Peste des Petits Ruminants* (PPR), also known as sheep and goat plague, is a highly contagious animal disease affecting small ruminants. Once introduced, the virus can infect up to 90 percent of an animal herd, and the disease kills anywhere from 30 to 70 percent of infected animals.” FAO. <https://www.fao.org/ppr/en/>

## References

- Aboe, Patricia and Ameleke, Godwin. 2008. "The impact of interventions introduced to improve productivity of small ruminants in some communities in the Dangme West District of Ghana". *Proceedings of the 29<sup>th</sup> Biennial Symposium of Ghana Animal Science Association (G.A.S.A) held at the University of Education, Winneba, College of Agricultural Education, Mampong Ashanti, 6<sup>th</sup>-9<sup>th</sup> August, 2008.*
- Aboe, Patricia, Botchway, Vincent, Domozoro, Charles, Sam, Kingsley., Hagan, Benard., Lamptey, Vida., Panyan, Emmanuel. 2011. *Baseline study of the small ruminant industry in the Northern, Upper East and Upper West Regions of Ghana.* Frafraha: CSIR-Animal Research Institute.
- Aboe, Patricia., Botchway, Vincent., Domozoro, Charles., Sam, Kingsley., Hagan, Bernard., Lamptey, Vida., Asafo –Adjei, Achiamaa., Munkaila, Lantana and Panyan, Emmanuel. 2013a. "Baseline study of the Small Ruminant Industry in the Northern, Upper East and Upper West Regions of Ghana". Report (Preliminary) Submitted to Project Co-ordinator. CSIR-Animal Research Institute, Fafraha, Ghana. 15<sup>th</sup> September 2013.
- Aboe, Patricia, Botchway, Vincent, Sam, Kingsley, Munkaila, Lantana, Wallace, Paul, Lamptey, Vida, Asuming-Bediako, Nikki, Karbo, Naaminong and Sakyi-Dawson, Owuraku. 2013b. "Experiences and Lessons towards Institutionalization of CoS-SIS approach in CSIR-Animal Research Institute (ARI)". Paper Submitted by CSIR-Animal Research Institute (ARI) to National CoS-SIS Co-ordinator 2<sup>nd</sup> October, 2013.
- Adam, Hamza and Boateng, Seth. 2012. "Adoption of innovations by small ruminant farmers in Northern Ghana: the case of Tolon-Kunbungu districts", *Journal of Biology, Agriculture and Healthcare* 2(11): 10-20.
- Adams, Faizal and Ohene-Yankyera, Kwasi. 2014. "Socio-economic Characteristics of Subsistent Small Ruminant Farmers in Three Regions of Northern Ghana", *Asian Journal of Applied Science and Engineering* 3(3): 351-364. Available at <http://journals.abc.us.org/index.php/ajase/article/view/351-364>
- Amankwah, Kwadwo, Klerkx, Laurens., Oosting, Simon, Sakyi-Dawson, Owuraku., van der Zijpp, Akke and Millar, David. 2012. "Diagnosing constraints to market participation of small ruminant producers in northern Ghana: An innovation Systems Analysis", *NJAS-Wageningen Journal of Life Sciences* 60(63): 37-47.



- Ayalew, Teshager, Duguma, Belay and Tolemariam, Taye. 2013. "Socio-economic and farm characteristics of smallholder cattle producers in Ilu Aba zone of Oromia regional state, South Western Ethiopia", *Global Veterinaria* 10(5): 607-613.
- Bacho, Francis. 2004. "Can I sell one of my cows? Institutions, assets and gender-based poverty", *Journal of Development Studies* 1(1): 25-48. doi: 10.4314/gjds.v1i1.34998
- Doss, Cheryl, and Morris, Michael. 2001. "How does gender affect the adoption of agricultural innovations? The case of improved maize technology in Ghana", *Agricultural Economics* 25, 27-39.
- Dossa, Hippolyte Luc., Rischkowsky, Barbara., Birner, Regina and Wollny, Clemens. 2008. "Socio-economic determinants of keeping goats and sheep by rural people in Southern Benin", *Agricultural Human Values* 25, 581-592.
- Duku, Stephanie., Price, Lisa., van der Zijpp, Akke and Tobi, Hilde. 2011." Influence of male or female headship on the keeping and care of small ruminants: the case of the transitional zone of Ghana". *Livestock Research for Rural Development* 23:11. Available at <http://www.lrrd.org/lrrd23/1/duku23009.htm>
- FAO, 2011. *The Role of Women in Agriculture*. The Food and Agriculture Organization of the United Nations. <https://www.fao.org/3/am307e/am307e00.pdf>
- FAO. 2012. *Invisible guardians- Women manage livestock diversity*. Rome: Food and Agricultural Organisation. doi:<http://www.fao.org/docrep/016/i3018e/i3018e00.pdf>
- Jain, Rajni, Arora, Alka and Raju, S. S. 2009. "A novel adoption index of selected agricultural technologies: Linkages with infrastructure and productivity", *Agricultural Economics Research Review* 22, 109-120.
- Jin, Minchao and Lannotti, Larry. 2014. "Livestock production, animal source food intake and child growth: the role of gender for ensuring nutrition impacts", *Social Science & Medicine* 105, 16-21.
- Kabeer, Naila. 1994. *Reversed Realities: Gender Hierarchies in Development Thought*. London: Verso.
- Leeuwis, Cees and van den Ban, Anne Willem. 2004. *Communication for rural innovation: rethinking agricultural extension*. London: Blackwell Publishing.

- March, Candida, Smyth, Ines and Mukhopadhyay, Maitrayee. 1999. *A guide to gender analysis frameworks*. Oxford: Oxfam Great Britain.
- Moser, Caroline. 1993. *Gender planning and development: Theory, practice and training*. London: Routledge.
- Mwangi, Margaret and Kariuki, Shawn. 2015. "Factors determining adoption of new agricultural technology by smallholder farmers in developing countries", *Journal of Economics and Sustainable Development* 6(5): 20710.
- Oakley, Ann. 1972. *Sex, gender and society*. London: Temple Smith.
- Oladeji, John Oladokun and Oyesola, Olutokunbo Birdies. 2008. "Small ruminant production among farmers in Iseyin Local Government Area of Oyo State, Nigeria", *Journal of Agricultural and Food Information* 9(3): 256-265.
- Quaye, Wilhemina. 2008. "Food security situation in northern Ghana, coping strategies and related constraints", *African Journal of Agricultural Research* 3(5): 334-342.
- Rahman, Saidur. 2007. *Adoption of improved technologies by pig farmers of Aizawl district of Mizoran, India*. Selesih, Aizawal: Department of Veterinary and Animal Husbandry Extension, Central Agriculture University.
- TUDRIDEP. 2012. *Small Ruminant Improvement Project Proposal*. Tumu: Tumu Deanery Rural Integrated Development Programme.
- Turkson, Paa Kobina and Brownie, Cecil. 1999. "Financing the delivery of animal health services in Developing Countries: A case study of Ghana", *Tropical Animal Health and Production* 31(1): 33-44.
- Turkson, Paa Kobina and Naandam, Jakper. 2006. "Constraints to ruminant production in East Mamprusi Districts of Ghana", *Ghana Journal of Agriculture Science* 39(2): 155-164.
- Udimal, Thomas Bilaliib., Jincai, Zhuang., Mensah, Owusu and Caesar, Ayamba Emmanuel. 2017. "Factors Influencing the Agricultural Technology Adoption: The Case of Improved Rice Varieties (Nerica) in the Northern Region", *Ghana Journal of Economics and Sustainable Development* 8:8. Available at [www.iiste.org](http://www.iiste.org).