
Electronic Thesis and Dissertation Repository

11-30-2018 10:30 AM

The Differentiation of Smallholder Farming and Household Food Responsibilities in Northern Ghana

Siera Vercillo, *The University of Western Ontario*

Supervisor: Luginaah, Isaac, *The University of Western Ontario*

Joint Supervisor: Weis, Tony, *The University of Western Ontario*

A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Geography

© Siera Vercillo 2018

Follow this and additional works at: <https://ir.lib.uwo.ca/etd>



Part of the [African Studies Commons](#), [Food Security Commons](#), [Human Geography Commons](#), [Other Feminist, Gender, and Sexuality Studies Commons](#), and the [Women's Studies Commons](#)

Recommended Citation

Vercillo, Siera, "The Differentiation of Smallholder Farming and Household Food Responsibilities in Northern Ghana" (2018). *Electronic Thesis and Dissertation Repository*. 5942.
<https://ir.lib.uwo.ca/etd/5942>

This Dissertation/Thesis is brought to you for free and open access by Scholarship@Western. It has been accepted for inclusion in Electronic Thesis and Dissertation Repository by an authorized administrator of Scholarship@Western. For more information, please contact wlsadmin@uwo.ca.

Abstract

One of the most urgent problems facing sub-Saharan Africa is that many people lack access to safe, nutritious, and culturally appropriate food, particularly in semi-arid regions such as northern Ghana. An important indication of this problem within Ghana is that stunting rates due to prolonged undernourishment are significantly higher in the northern regions than in other parts of the country, despite claims of an overall increase in the availability of food. Broadly, this dissertation employs qualitative case study research in the Northern Region (interviews $N=109$ and 12 focus groups) to describe the changes in access to resources, roles and responsibilities in food production and consumption within households and explains how these changes are shaped by the culture, politics and ecologies of the region. It is informed by a range of literatures, theories and conceptual approaches, but predominantly from agrarian change and feminist political ecology. This research finds that the majority of farmers are adopting the development supported high-yielding seed varieties, tractors, fertilizer and agrochemicals in order to respond to erratic rainfall, shortened growing seasons, and drier soil with diminished fertility. However, there are clear socioeconomic differences affecting who can access the technology, credit and land used to cope with these environmental changes. Meanwhile, those farmers who adopted the intensification technology commonly described this decision as a short-term trade-off to meet subsistence needs at the expense of degrading soil health and increasing debt. This research also finds that environmental change, the commodification of food production more generally, and development support for women's food provisions are causing confusion, tension and conflict in the typical intra-household gender division of food production and provisioning responsibilities. Consequently, farmers defy development efforts, and this research finds that this resistance is based on their historical experiences of decades of development projects that have failed to

meaningfully include them and consider their diverse needs, alongside elite corruption and mismanagement, degrading ecologies and donor hegemony. Ultimately, this dissertation makes important contributions to understanding different types of smallholders' perceptions of changing agrarian political ecologies in an African context, which is needed to inform development policy and practice.

Keywords: smallholder, development, food security, gender, feminist political ecology, agrarian change, qualitative methods, Ghana, sub-Saharan Africa

Co-Authorship Statement

This thesis is comprised of a collection of papers that have been accepted and/or submitted for publication and are currently under peer review. While all of the papers are co-authored with my doctoral supervisors and others, I conducted the research, literature reviews, data analysis and the majority of the writing.

The papers are as follows:

Chapter 4: Vercillo, S., Luginaah, I. and Weis, T. A bitter pill: Smallholders perceptions of Green Revolution prescriptions and climate change adaptation in northern Ghana. Under Review in *Review of African Political Economy*

Chapter 5: Vercillo, S. and Hird-Younger, M. Farmer resistance to agriculture commercialization in northern Ghana. Accepted in *Third World Quarterly*

Chapter 6: Vercillo, S. The complicated gendering of farming and household food responsibilities in northern Ghana. Under Review in *Gender Place and Culture*

Acknowledgments

This dissertation is dedicated to all of the smallholder farmers across the world who produce food for us. Most of all, to the original peasant farmers in my life - my Nonni. Not only did you instill in me a deep appreciation for good quality food, community and hard work, but also encouraged my education. The risk you took migrating to the place I call home, and your commitment to building a better life for our family will forever be remembered, and I am deeply grateful and proud of the land where we once came from and lived off of.

I am also forever grateful to Geoffrey Penhorwood whose confidence in my abilities gave me the courage to pursue this work and to persevere when others doubted me. Without your patience, sacrifice and keen eye for grammar, it is unlikely I would have been able to produce such a dissertation, which I feel is as much yours as it is mine.

Acknowledgement also needs to be given to my parents Michele and Lydia Vercillo, who from a young age, nurtured my curiosity, courage, honesty and thick skin. You have also always financially supported my education and encouraged me to do more. Thank you for making my path in life easier and for teaching me to never give up or take no for an answer.

I would also like to thank my Doctoral Supervisors and mentors, Dr. Isaac Luginaah and Dr. Tony Weis for taking the risk in admitting me to the doctoral programme; for guiding my different funding applications and for writing references; and most of all, for providing extensive feedback on this dissertation. Your expertise, skill and sense of ethics have been invaluable and is something that I aspire to achieve. I am a proud member of your academic family.

It also goes without saying that I am deeply appreciative to everyone who took the time and energy to help with this dissertation throughout its various stages. Specifically, I am indebted to those at the Ministry of Food and Agriculture district level office in Ghana who assisted with

this research that I hope to continue to work with. Your dedication to smallholder farmers and commitment to my work and research gave me the energy to keep moving forward even when the research was difficult. Also, I am extremely grateful for all of the translators and friends in Ghana who spent hours explaining things to me and who ensured my movement around a foreign place was safe and secure. I hope I can one day reciprocate. Thank you specifically to Miles, Tuna, Ibrahim, Joe, Latif, Fatahiya, Hardi, Rashid, Michael, Matienu, Francis, Peace, Ahmedsalim, Abdul Haqq, Salam, Atule, Zuwera, Malik, Samuel, Hanan, Jacob, Muniru, Baba, Broghen, Jack, Clarissa, Claire and Miriam. Also, to my lab mates and academic family at Western University, thank you for your advice and for supporting my academic future. I hope to continue to collaborate and develop innovative ideas with you. Thank you specifically to Lori, Yuji, Roger, Kilian, Vincent, Frederick, Sarah, Moses, Joseph, Carrie, Jemima, Rosalind, Merlin, Evan, Emmanuel, and Wes.

I am also thankful for the detailed comments provided by those on my doctoral committees, Dr. Godwin Arku, Dr. Thembela Kepe, Dr. Erica Lawson, Dr. Adriana Premat, and most notably to Dr. Carol Hunsberger who I have had the privilege to work with throughout my four years at Western University and who has been a real source of mentorship. I would also like to acknowledge Dr. Tom Tieku for his continual encouragement and support throughout my academic career, as well as to Dr. Christine Okali who provided me with opportunities to develop a background and direction to pursue this specific doctoral study. Thank you all for supporting my teaching and research, and for your continued career mentorship and support.

My academic study and fieldwork for this dissertation was financially supported by the Doctoral Research Award from the International Development Research Centre, Canada; the

Joseph-Armand Bombardier Canada Graduate Scholarship and Ontario Graduate Scholarship from the Social Science Research Council of Canada; the Queen Elizabeth II Diamond Jubilee Scholars fund from The Africa Institute at Western University; and the Doctoral Excellence Research Fund and the Graduate Research Scholarship from the School of Graduate and Postdoctoral Studies, Faculty of Social Science and the Geography Department at Western University.

Lastly, the most significant acknowledgement and recognition goes to the participants in this research who often took not only their time to talk to me, but also welcomed me to their world that I now feel forever a part of. Thank you for teaching me what it means to care for a stranger. I am humbled by how innovative and resilient you are. M payiya pom! Naawuni cheli ti ti taba.

Table of Contents

Abstract	i
Co-Authorship Statement	iii
Acknowledgements	iv
Table of Contents	vii
List of Figures	x
List of Tables	xi
List of Appendices	xii
Chapter 1	1
Introduction	1
1.1 Research Problem	1
1.2 Sociocultural and Feminist Geography	5
1.2.1 <i>Feminist Political Ecology</i>	9
1.3 Research Goals and Objectives	12
1.4 Research Questions	13
1.5 Dissertation Outline	14
Chapter 2	18
Research Context	18
2.1 Background	18
2.2 Early History and Colonialism	22
2.3 Historical and Contemporary Agri-Food Policy and Practice.....	24
2.4 Land Use Transitions	30
2.5 Gender Divisions of Labour	33
2.6 Gender and Agricultural Development	34
2.7 Geographical Research Sites	37
Chapter 3	43
Methodology	43
3.1 Qualitative Methods	43
3.2 Data Collection Timing and Duration	43
3.3 Interviews	44

3.4 Focus Groups	48
3.5 Translation	50
3.6 Positionality and Ethical Concerns	51
Chapter 4	59
A Bitter Pill: Smallholders Perceptions of Green Revolution Prescriptions and Climate Change Adaptation in Northern Ghana	60
Abstract	60
4.1 Introduction	61
4.2 Agriculture Policy and Official Development Assistance in Northern Ghana	65
4.3 Research Methods	69
4.4 Farmers' Perceptions of Environmental Change	71
4.5 Smallholders Perceptions of the Green Revolution	74
4.5.1 <i>Faster Growing Seeds and Declining Crop Diversity</i>	74
4.5.2 <i>Access to Tractors Disparities</i>	77
4.5.3 <i>Agrochemical and Fertilizer Addiction</i>	79
4.5.4 <i>Fears of Increasing Polarization and Land Dispossession</i>	81
4.6 The Uneven Impacts of the Green Revolution in Northern Ghana	84
Chapter 5	92
Farmer Resistance to Agriculture Commercialization in Northern Ghana	92
Abstract	93
5.1 Introduction	94
5.2 Postcolonial Theory and Farmer Resistance Literature	95
5.3 History of Agricultural Development in Northern Ghana	97
5.3.1 <i>Current Development Context</i>	99
5.4 Case Study Context	100
5.5 Methods	101
5.6 Results	103
5.6.1 <i>Mitigating Risk and Vulnerability</i>	104
5.6.2 <i>Corruption and Mismanagement</i>	106
5.6.3 <i>Historical and Ongoing Power Imbalance</i>	108

5.7 Discussion	110
5.7.1 <i>Recommendations</i>	114
5.8 Conclusion	114
Chapter 6	117
The Complicated Gendering of Farming and Household Food Responsibilities in Northern Ghana.....	117
Abstract	118
6.1 Introduction	119
6.2 Agri-Food Policy in Northern Ghana	124
6.3 Qualitative Methods	127
6.4 Differences in Women and Men’s Farming and Food Responsibilities	129
6.5 The De-Stabilization of Gendered Food Responsibilities	136
6.6 Conclusion.....	141
Chapter 7	146
Conclusion	146
7.1 Introduction	146
7.2 Empirical Contributions	147
7.3 Political Ecological Conceptualizations of Food Insecurity	153
7.4 Postcolonial Perspectives of Development	157
7.5 Feminist Critique of Development	159
7.6 Study Limitations and Future Research	161
References	165
Appendices	182
Appendix A: Research Ethics Approval	182
Appendix B: Smallholder Farmer Interview Guide and Forms	185
Appendix C: Smallholder Farmer Focus Group Guide and Forms	191
Appendix D: Key Informant in Agriculture Development Interview Guide	196
Appendix E: Confidentiality Agreement	197
Appendix F: Curriculum Vita	198

List of Figures

Figure 1: Map of countries globally that have achieved the Millennium Development Goal of halving rates of poverty and hunger	19
Figure 2: Maps of Ghana’s agroecological zones and poverty rates	20
Figure 3: Development actors involvement in agriculture in Ghana	30
Figure 4: Map of Ghana, specifically locating Tamale, Northern Region	39

List of Tables

Table 1: Months of household food insecurity in the three northern regions by crop	20
Table 2: Female landholding distribution across Ghana	33
Tables 3 and 4: Summary of qualitative data collected with smallholders	71 & 129
Table 5: Summary of dissertation objectives and study findings	152

List of Appendices

Appendix A: Research Ethics Approval	182
Appendix B: Smallholder Farmer Interview Guide and Forms	185
Appendix C: Smallholder Farmer Focus Group Guide and Forms	191
Appendix D: Key Informant in Agriculture Development Interview Guide	196
Appendix E: Confidentiality Agreement	197
Appendix F: Curriculum Vita	198

Chapter 1

Introduction

1.1 Research Problem

There is more than enough food in the world to feed everyone, but the number of people affected by hunger and malnutrition is still distressingly high, particularly in sub-Saharan Africa (SSA). The most recent analysis by the Food and Agriculture Organization (FAO) of the United Nations notes that although food availability on the African continent has increased by 12% and poverty has decreased by 23% since the early 1990s, rural areas remain disproportionately food insecure (FAO, 2015). A central feature of spatially differentiated hunger is the uneven vulnerability of smallholder farmers to both chronic and episodic food shortages. This becomes especially stark in the context of famine; as Watts (2013, p. xliv) asks in his seminal study of agrarian change in northern Nigeria: “Why were those who perished typically always those who grow food?”¹ Differentiated hunger also relates to food entitlements, which can be understood as the legal, political, economic and social arrangements that determine a person’s access to food beyond the quantity of food available (Sen, 1981). There is evidence that disparities in food entitlements based on gender, access to capital and land are deteriorating (Razavi, 2009). Socioeconomic disparities are in large measure owing to the increasing globalization of African agriculture and related development policy and practice that have widely encouraged smallholders to specialize and intensify their production in order to compete in global markets. The result is that some farmers with the capital to invest in agro-inputs (e.g. irrigation and agrochemicals) needed

¹ For decades, the absolute number of people who suffer from hunger has remained unchanged, between 800 and 900 million, though it has declined in relative terms. These levels did, however, grow significantly with global food price volatility between 2006 and 2009, particularly in SSA (Watts, 2013).

to meet the quality and safety requirements for global markets are encouraged to grow in scale, while many others face increasingly difficult conditions (Challinor et al., 2007).

On a world scale, agricultural production is becoming larger, more specialized, input-intensive, costly, and integrated within faraway marketplaces. The net result is that smallholders are struggling to compete in local food markets as they are increasingly affected by industrial foods. The inability to compete amidst intensifying market pressures is contributing to land dispossession among many smallholders. This inability is also connected to the fact that commercial production aimed at export markets is widely privileged by various development actors (Bryceson, 1995; 1997; 2000; Weis, 2007; Bernstein, 2010; Akram-Lodhi and Kay, 2012; McMichael, 2013). Agricultural development typically involves a complex set of actors, including national actors, Official Development Assistance (ODA) or bilateral and multilateral donors, and non-governmental and philanthropic organizations. These actors together tend to shape agriculture sectors by funding a set of prescriptions. The G7s New Alliance for Food Security and Nutrition in Africa, the African Union's Comprehensive African Agricultural Development Program, and the Alliance for a Green Revolution in Africa (the latter which is funded predominantly by the Rockefeller and the Bill and Melinda Gates Foundations), represent agricultural development interventions that focus on technology-centered intensification programs. These programs frequently include the provision of nitrogen, phosphorous, and potassium (NPK) fertilizer, agrochemicals, mechanization and high-yielding varieties (HYV) of seed, geared towards increasing yields and total productivity. According to a number of researchers (e.g. Bezner Kerr 2012; Moseley et al. 2015; Vercillo et al. 2015) there is a trend across SSA where agricultural development actors are increasingly facilitating the reorganization of the state to incentivize the private sector to invest in smallholder intensification, including by subsidizing the establishment

of processing and marketing regulations, guidelines and facilities for intensification technology and inputs, such as fertilizer and certified seed, as well as tax breaks, loan insurance and formalizing land databases.

Although this dissertation focuses narrowly on understanding the types of development actors' funded agriculture prescriptions and interventions, and the effect that they have on smallholder farming families' household food security, it cannot be entirely separated from the ideologies that underlie this support, which include a deepening of capitalist relations based on principles of profit, growth and entrepreneurship. According to Patel (2013), the trend in donor assistance that focuses heavily on subsidizing private sector investment is based on the ideological conviction that farmers should rely less on the state and more on markets. Wright (2005) and Escobar (2011) argue that the ideologies associated with capitalist development reinforce the myth that this business-led, globalized growth-oriented prescription is the superior, universal 'modern' model of what progress should look like. These notions of universal best practices guide the types of interventions supported, which often include technical and managerial solutions to poverty and food insecurity mandated from the top down to farmers directly or through government programs and business contracts (Ferguson, 1990; Scott, 1998; Li, 2009). This dissertation critiques the specific technical, managerial, and financial prescriptions supported by development actors that strive to increase farmers' yields and integrate them into market-based activity, drawing heavily on farmers' perceptions and experiences of these prescriptions. This critique has particular relevance for intensification in other dry regions of Sahelian Africa, such as northern Ghana, where increasing aridity, erratic rainfall and heat stress are worsening agricultural capacity (Luginaah et al., 2009).

Ghana has historically been a donor darling country, particularly with regards to agriculture. As a former British colony, and the first and most stable democracy in SSA, Ghana is often considered more risk averse than other African countries that have endured famines and civil wars. Ghana has also enjoyed steady growth, recently moving in 2010 to the rank of a lower middle-income status country (Laird, 2007). In northern Ghana, ODA agencies have committed funding and influenced policy to leverage private sector agricultural growth. These development actors are focused mainly on supporting the intensification of maize, rice and soy production by encouraging farmer adoption of a technology package of HYV, NPK, agrochemicals and tractors through private input dealers and aggregator farm contracts. Much of donor funding has been focused on Ghana's northern food sector due to a large percentage of the government budget being allocated to southern cocoa production for export, leaving a gap in funding for food production, particularly in the northern regions. Growing the scale of the agri-food sector in the north through providing productive technology is understood to have the potential to reduce poverty and food insecurity, particularly in the drier north, by closing the 'yield gap' (that is lower average yields than are possible) (e.g. Breisinger et al., 2011) because the rural areas of the northern regions are disproportionately poor and food insecure compared to the rest of the country (GLSS, 2014). The main contributing factors to these geographic disparities are the acute effects of climate change in the northern areas on the fringe of the Sahel, where erratic rainfall and increasing aridity are disproportionately affecting the majority of the population who rely on rain-fed smallholder farming (Codjoe et al., 2012). There has also been the historical neglect in infrastructure and social services in the north of the country, as well as persistent out migration of farmers from the north to the south who work as cheap labour for cocoa, palm and other export-oriented production. Ghana is a useful case study because of its relative political stability, economic growth and persistent

geographic disparities, particularly in agriculture and food security, which is a worthwhile representation of market development more broadly across SSA.

Despite the push for the commercialization and growth of farming by development actors in Ghana, as in much of SSA, the broad trajectory of agrarian and environmental change is shedding smallholder livelihoods and farm labour on a very large scale, which is a population that cannot be easily absorbed into different livelihoods (Friedmann, 2004). Moreover, seeking different livelihood opportunities poses difficult questions about who is responsible for providing food for the family (Bryceson, 1995). One widespread implication of agrarian change is that the women, children and the elderly have to engage in food security efforts at the household level in new ways (Whitehead and Kabeer, 2001). SSA has the highest percentage of women farming in the world (Sachs, 2015; Doss et al., 2017; Palacios-Lopez, et al., 2017), however there are increasing disparities in resource access and control based on gender, including of the land and credit needed to purchase farm technology and agro-inputs (Doss and Morris, 2001; Whitehead and Tsikata, 2003; Quisumbing and Pandolfelli, 2010; Huyer, 2016; Ragsdale et al., 2018). These gendered disparities in farming are related to the predominant form of agrarian change, whereby production is becoming increasingly more competitive, larger-scale, and input-intensive (Weis, 2007; Razavi, 2009; Bernstein, 2010). Differential capabilities, as well disparities in resource access between men and women are contributing to new or worse forms of inequality, as men tend to move into paid work while serving to increase women's unpaid work within the home (Mies, 1998). These evolving challenges are at the heart of this dissertation, which is grounded in feminist political ecology and seeks to assess socioeconomic disparities in food entitlements amidst the wider, interrelated processes of agrarian accumulation and impoverishment in northern Ghana.

1.2 Sociocultural and Feminist Geography

This dissertation is based in sociocultural and feminist geography, which is part of a broader critical paradigmatic trend in human geography that is primarily concerned with the ways in which space constructs social relations, identities and inequalities. Feminist geography is classified as part of critical human geography because it seeks to understand the uneven resource access and day-to-day struggles between classes and groups of people (Cloke et al. 2004). The shift towards feminist research in geography, as well as across other disciplines was in response to patriarchal and imperialist biases in the ways that research questions were asked, methods pursued, as well as what was considered valid and credible (Letherby, 2003). In the 1980s, scholars began committing themselves to putting women and other marginalized groups into scholarship by focusing on understanding how oppression and exclusion operate and are reinforced by different spatial norms and institutions. Spaces and places were no longer considered neutral, but as structures that shape people's everyday lives, which tend to promote different power dynamics, including the marginalization of some people (McDowell and Sharp, 1999).

The understanding of power within a context of critical sociocultural geography tends to go beyond the simple visible forms of power expressed in formal decision-making institutions (Gaventa, 1980). Critical theory more generally has broadened the definition of power to also include hidden and invisible forms of power. These forms of power underpin the tactics that those in power use to prevent participation by others, such as by excluding key issues that are important to marginalized groups. Another form of invisible power stems from the 'internalization of powerlessness', which is when a group of people's rights may be infringed upon based on their lack of awareness of their rights, including through certain forms of domination placed upon them, such as values and ideologies that are often perceived as natural, unchangeable, or unquestionable

(Gaventa, 1980). Invisible power also takes the form of decision making carried out in closed spaces, where experts, bureaucrats, managers and leaders make decisions without the proper levels of transparency that often deal with key issues related to policy. Sometimes the relatively powerless or excluded groups create spaces to participate for themselves through social mobilization and activism.

Sociocultural geographers tend to understand knowledge as it is situated and derived from the lives and experiences of different places, recognizing that it is subjective, rather than being interested in testing a theory for the sake of abstraction and generalizability (Harding, 1992; Massey, 2013). Although there are multiple ways of interpreting the concept of space, there are also definitions that are generally agreed upon by sociocultural and feminist geographers. Although varied, feminist geography tends to not simply catalogue information about individual lives but is instead a research approach focused on understanding gendered phenomena, including social norms and relations between women and men in different spaces and places (McDowell, 1993). One major contribution that feminist geographers have made to analyzing women and men in different spaces and places was to consider private spaces, particularly reproductive labour or what is often understood as labour performed within households. This recognition and value of reproductive labour differed from simply focusing on productive, income generating activities performed in public spaces, which was the focus previously in much of the existing scholarship (Kabeer, 1994; Elmhirst, 2011). Another major aspect of feminist geography that many ascribe to is the examination of how gendered values and norms intersect with spaces at multiple scales. This requires the study of both the everyday lives of women and men, as well as building theoretical arguments to understand how global forces, such as climate change or food prices, reshape gendered spaces (Rocheleau et al., 2007; Rocheleau, 2008). In other words, understanding how

women and men's experiences of being out of place when they enter certain spaces or of their marginalization are related to local, regional and global contexts of other's experiences.

This dissertation is also informed by a 'gender and development' approach, which seeks to focus attention on the complex gendered relations and power dynamics across multiple kinds of spaces and both formal and informal institutions, such as government services, markets (e.g. credit schemes, tractor services etc.) and within communities and households (e.g. division of labour, land tenure arrangements etc.) as it relates to interventions supported by development actors. Development studies has been concerned with understanding how non-governmental, multilateral and bilateral aid agencies advance capitalism globally. A 'women in development' approach has been instrumental in drawing attention to the need to consider the marginalization of women in development policy and planning, which has led to increased support for women's activities in the formal productive sector (Razavi and Miller, 1995). For example, support for microloans and savings groups has been a popular development intervention since the 1990s, encouraging women to increase their access to capital. In agricultural development, a 'women in development' approach is reflected in development policy narratives and project interventions (e.g. FAO, 2011; 2013) and scholarly literature (e.g. Quisumbing and Pandolfelli, 2010; Huyer, 2016; Palacios-Lopez and Lopez, 2017) that focus on 'closing the gender gap' in women's access to land, market participation, financial services, and technology compared to men's in order to produce more food and reduce poverty.

In contrast to the 'women in development' approach, the 'gender and development' approach focuses not simply on building women's productive capacities and potential for entrepreneurship (for example, in food production). Instead it focuses on reducing the systematic marginalization of certain groups of people and the broader context of social relations and poverty

related to the process and outcomes of strengthening of capitalist relations that is promoted by development assistance. The 'women in development' approach has been critiqued as a Eurocentric ideology that sets in motion a set of interventions supported by development actors that serves to deepen capitalist social relations and with it, gender inequality (e.g. Sachs, 1992; Wright, 2005; Razavi, 2005; O'Laughlin, 2007; Cornwall et al., 2007; Chant and Sweetman, 2012). This critique of development assistance of supporting individual women to increase their production points to the fact that this would not change the underlying social, economic and political causes that make women disproportionately vulnerable to food insecurity. It does not transform the socioeconomic constraints that women face in accessing resources related to agricultural production and participating in markets, such as disproportionate care work burdens, and the fact they tend to have far less entitlement to land and labour than men. Gender inequality and women's disproportionate vulnerability is instead understood in relation to agricultural development initiatives geared to encourage farmers to increasingly compete in markets, which is making it more difficult for resource-poor farmers to continue. For example, microloans and self-help savings groups have been famously critiqued by Banerjee et al. (2015a,b) as offering too little capital to boost viable businesses capable of competing in increasingly global markets, while the challenge of repaying interest risks putting them into debt, and deepening their poverty, risk of dispossession and food insecurity. Conversely, gender and development approaches do not focus on providing resources for women to be autonomous producers, but redress inequality within gender relations and socio-political and economic institutions by reconstructing the division of labour and other inequitable rules, such as land tenure arrangements across households and communities.

1.2.1 Feminist political ecology

This research also takes a feminist political ecology conceptual approach, drawing on a cross-disciplinary literature that has evolved since the 1980s. Political ecology emerged, in part, from cultural ecology, which was critiqued for giving insufficient attention to social inequalities, political economy, and history. Rather than isolated or local events, famine, land degradation and deforestation were considered to be politically and socially produced, and not inevitable repercussions of neo-Malthusian determinism, droughts, over-population and poor land management (Watts, 1983; Bryant and Bailey, 1997; Robbins, 2004).

Feminist political ecology emerged in the 1990s as a response to what some saw as a male bias in political ecology research (including what was considered valid knowledge and what was not), and to draw attention to the highly gendered nature of social inequality and power dynamics (Rocheleau, 1995; 2013). Feminist political ecologists strove to open up the household 'black box', recognizing that rights and resource access and control differ amongst household members and that not all members necessarily have access to a joint family or conjugal fund (Carney and Watts, 1990). The household was also recognized as shaping and being shaped by wider political economic forces and environmental conditions in which the rural poor are imbedded with differentiated outcomes for different household members (Peet and Watts, 2004; Rocheleau, 2007). There has also been some debate about how to conceptualize scale within political ecology, critiquing the 'chains of explanation' approach offered by Blakie and Brookfield (1987) that sought to move from the individual and household, then outwards to community, regional, national and global contexts. Some saw this as too hierarchical, and Rocheleau (2008) argues for more of a web of explanations and relations than a 'chain'.

Drawing on these conceptual and ideological foundations, the goal of this research is to generate knowledge and evidence about the unequal distribution of economic and ecological decision-making and assets within smallholder households in northern Ghana. Also, recognizing the importance of social norms and culture in household power dynamics and in mediating differential food entitlements (Watts, 2000). Critical scholarship is needed in this realm because dimensions of socioeconomic inequality within intra-household spaces continue to be underappreciated within dominant thinking across rural development studies, policy and political practice (Borras, 2009; Scoones, 2015).

There are several other conceptual frameworks for analyzing gender in relation to agricultural development. Kabeer (1994) suggests that research which focuses only on women often leads to a homogenous category, in which women are placed in a position of victimization, and, therefore in need of standardized packages of development assistance. The strength of a feminist political ecology approach is that it draws attention to a more complex set of relations that conventional gendered roles-based approaches tend to neglect, such as access to land and resources, labour power, skills, contacts, and knowledge. It also recognizes that social relations underpinning household food security must be situated in the context of broader political economic and biophysical changes affecting agricultural development (Moss, 2002; Harding, 2004; Rocheleau, 2008).

A basic methodological implication of feminist political ecology is that researchers should seek to understand land use, agriculture and food decision-making from the perspective of local people, as well as situating these within wider processes of environmental and political-economic change. Political ecology problematizes the social construction of landscapes and the artificial divide between what is social and what is natural, “which in turn opens up the political implications

hidden in the purely objective scientific oriented views of nature” (Hvalkof and Escobar, 1998, p. 431). This helps to recognize smallholder farmers as participants in the process of adaptation, resistance and innovation in managing their own food security. It seeks to learn from people about how they are interpreting and responding to environmental degradation and social vulnerability (Forsyth, 2008). Central to this is attention to gendered knowledge, rights and responsibilities, and community and household politics (Rocheleau et al., 1996). Also, it involves rejecting the notion that science is neutral and objective (Letherby, 2003), which tends to be the dominant way of understanding food security, agriculture livelihoods and rural development.

1.3 Research Goals and Objectives

There is a need for more empirical research into the changing gender and other social relations, such as access to resources associated with access to food for smallholder farming households in African contexts undergoing rapid political economic and biophysical transformations. Among other things, this can help us to better understand ways of potentially improving food security for those in rural areas who are negatively affected by the dynamics associated with increasing commercialization, and who are struggling to provide sufficient food for their households. Detailed, qualitative case studies of farming communities are integral because agricultural policy and programs have often been based on evidence that does not involve communities and their farm realities (Shipton, 1990). Grounded research can also help to assess how ‘global’ dynamics, such as increasing market integration or climate change, are playing out within communities. Much of feminist research is intended to destabilize and problematize gendered assumptions by pointing to biases in knowledge and how it has led to discrimination in policy and practice for social change (Mohanty, 2003; Ackerley and True, 2008). Feminist

research should ultimately be about doing research for women and other vulnerable groups of people, rather than on them (Kirsch, 2005).

A central objective of this doctoral research was to examine primarily gender and access to resource disparities in food entitlements, and how disparities have been shaped by the market-led policy approaches that have prevailed in Ghana since the 1990s. These development policies have encouraged smallholders to specialize and intensify their production in order to compete in export markets, all of which is occurring in the context of climate change and worsening land degradation. More specific research objectives include efforts:

- To assess the provision of farming technologies and the encouragement of practices (e.g. specialization) geared towards commercialization or intensification, and their implications for food security within smallholder households.
- To identify the ways smallholder farmers are benefiting from or resisting the provision of new agro-inputs and the encouragement of new approaches to farming to understand how they envision food security and agricultural development.
- To analyze the shifts in gendered intra-household roles, responsibilities and access to resources related to food security associated with the increasing commercial orientation of farming and biophysical changes occurring in the region.

1.4 Research Questions

According to Watts and Bohle (1993), to explain the uneven distribution of food there is a need to examine how differential entitlements are rooted in both the cultural and social relations of production and reproduction, as “the totality of these processes define the space, a sort of social map, of vulnerability”. Robbins (2004) suggests that a core aim of political ecology research is to examine the uneven distribution of entitlements, asking questions such as who profits from

changes in control of resources and who takes what from whom? Razavi (2009) and Bernstein (2010) advocate for asking similar questions to understand the power dynamics and politics of ecological and economic systems, which include: who owns what, who does what, who gets what, what do they do with it? They also draw attention to considering how social and political relations can be affected by ecologies (e.g. the extreme seasonality of semi-arid regions) and ecological change (e.g. increasing aridity with climate change). Similarly, working in a Ghanaian context, Carr (2008) points to the importance of analyzing the gendered differences that are laden in asking who are the producers for subsistence and who are the producers for markets? These questions all help to frame this doctoral research into the power dynamics of food security in smallholder households, in the context of political economic and biophysical change. More specific questions include:

- How is the commercialization of agriculture being encouraged in northern Ghana, and who are the key stakeholders promoting this?
- How are biophysical factors, such as increasingly erratic rainfall, heightened aridity, and drier soils affecting both the efforts to commercialize production and continuing subsistence production?
- Which farmers are adopting these technologies and practices, which are rejecting them, and why?
- How do the historic gendered entitlement relations differ from the relations fostered by new policy strategies or interventions?
- How are food roles and responsibilities met within a household and how might they be also changing?

1.5 Dissertation Outline

This dissertation has seven chapters that are arranged along the primary research objectives to examine intra-household and community social relations and power dynamics associated with farming and food in a northern Ghanaian context. It adopts an integrated manuscript format with three unique papers that each have a particular focus and set of questions. All of the manuscripts are empirical case studies based within the set of communities studied. However, they are linked to the wider political economic and ecological context, including by providing illustrations of agricultural development policy and practice. One issue with this format is that there is a redundancy across each chapter, particularly in the three manuscripts where the historical backgrounds and methodologies are all similar. The reason for this redundancy is because each manuscript is required to be capable of standing alone as a complete manuscript.

The following two chapters include more background information about Ghana and the methods deployed. The next chapter particularly includes a literature review of existing empirical evidence of the history and contemporary state of food and agriculture in Ghana, including reference to social relations and disparities in labour and land. This also includes more detailed descriptions of the case studies and is followed by a more thorough explanation of the qualitative research methodology than what exists in each manuscript.

Chapter four includes the first manuscript, which focuses more on agricultural development and social vulnerability to environmental change entitled, 'A bitter pill: Smallholders perceptions of Green Revolution prescriptions and climate change adaptation in northern Ghana.' This manuscript examines smallholders' responses to the urgent threats associated with climate change which we find is by increasing their use of NPK, agrochemicals, tractors, and faster growing seed varieties, which is a technology-centered intensification approach associated with a Green Revolution. This research reveals how development is actively widening the socioeconomic

inequality of farmers in the case study communities in ways that have marked socioeconomic disparities. Even those farmers who have adopted these technologies are not uncritical of its impacts and they commonly described this decision as a short-term trade-off to meet subsistence needs at the expense of worsening soil health, declining diversity of crops and varieties and increasing debt. Ultimately, this paper demonstrates how farmers' perceptions of environmental change are shaping their decision-making, and the way they approach development support. This attention to farmers' resource access and environmental decision-making reflects the political ecology approach to understanding agricultural land use, including pointing out women's weaker entitlement rights to certain resources and the greater challenges they face in coping with environmental change compared to men.

Chapter five presents the second manuscript, which is focused on understanding the ways that farmers defy development entitled, 'Farmer resistance to agriculture commercialization in northern Ghana'. This manuscript takes a postcolonial approach to understand the ways that farmers in the northern Ghanaian context confront commercial agricultural investment, state support and non-governmental project interventions aimed at intensification associated with the Green Revolution model described in the earlier Chapter. This contributes to the literature on peasant resistance by interpreting farmers' acts of defiance as insights into 'everyday acts' of resistance, which are much subtler and less organized than the political mobilization of peasants in other contexts. We also explain that farmers defy development efforts in some ways, while also adhering to them in other ways, because they have few options to cope with environmental changes, and which is based on their historical experiences of decades of failed development projects that have not meaningfully included them or considered the variety of their farming goals and challenges, elite corruption and mismanagement, degrading ecologies and donor hegemony.

We recommend for development policy and practice to reposition farmers' as the main actors in their own development as opposed to as simply the beneficiaries.

Chapter six includes the third and final manuscript, which is focused on examining the intra-household gendered food roles and responsibilities entitled, 'The complicated gendering of farming and household food responsibilities in northern Ghana.' Although this manuscript does not explicitly discuss political ecology, it is motivated by some of its fundamental concerns – in particular in attempting to understand how the gendered negotiations (particularly between husbands and wives) around household food provisioning, purchase, preparation and storage play out, especially as it relates to how food production is shifting as a result of development interventions, environmental change and the wider commodification of food production. It examines the gendered division of labour in the specific context to raise new questions about how gender norms around the purposes of food production are generally understood in policy narratives that underlie practice. I argue that gender norms in the case study site do not neatly align with the prevailing conceptions that have shaped interventions in the region, which can have negative consequences on households, especially women. I find that focusing support exclusively to women's individual production for household food security when men are the main food providers can risk alienating men and cause conflict around the use of and benefits from the project support, including through a withdrawal of male support in ways that can add to women's household responsibilities.

Chapter seven is the concluding chapter of the dissertation, which summarizes and discusses the findings thematically based on the main research objectives by drawing comparisons across the three manuscripts. The chapter focuses on explaining the specific lessons learned for theory and methods related to agriculture and food research, the discipline of human geography

and development practice more broadly. It also outlines the limitations of research and suggests topics for further research needed.

Chapter 2

Research Context

2.1 Background

Ghana was the first country in sub-Saharan Africa (SSA) that the Food and Agriculture Organization of the United Nations (FAO) celebrated for progress in meeting the Millennium Development Goal of halving rates of hunger and poverty since the 1990s (see Figure 1) with the poverty rate moving from 51.7% in 1992 to 24.2% in 2014 (GLSS, 2014). The FAO attributes this achievement in large measure to Ghana's market-based agri-food policies. However, improvements in food security have been highly uneven and the rural areas of the northern regions on the Sahelian fringe have 40% of the country's population living in poverty, despite less than 17% of the population overall (GLSS, 2014)² (see Figure 2). These geographic food disparities within Ghana are a result of acute erratic rainfall and increased aridity due to climate change (Luginaah, et al., 2009; Armah et al., 2011), as well as a range of political economic factors, such as market liberalization, migration of cheap labour to the south (Whitehead, 2002), and a neglect in infrastructure investment in the north (Songsore, 2003; Pellow, 2011). Taken together, food access is extremely difficult for many northern households in Ghana who rely on rain fed food production to meet their subsistence needs (see Table 1).

² About a quarter of people in Ghana are considered poor and 8.4% are considered extremely poor (GLSS, 2014).

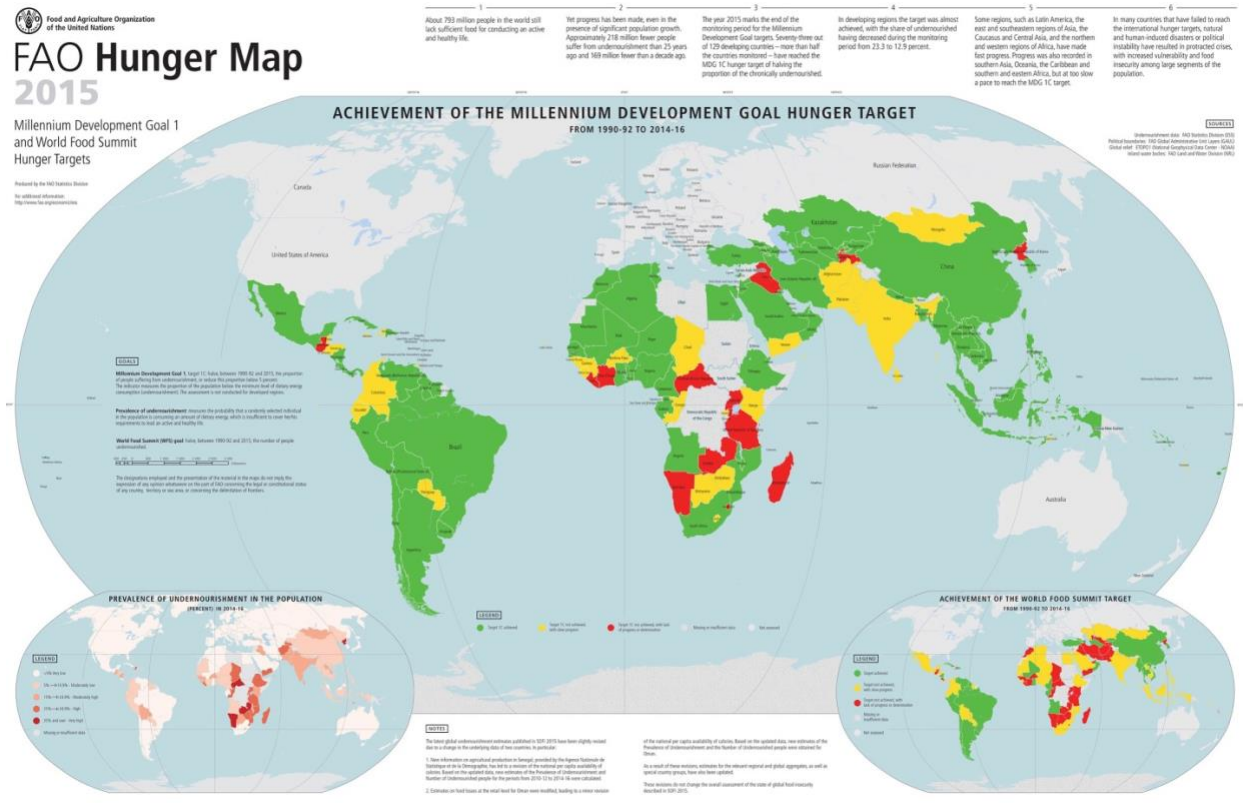
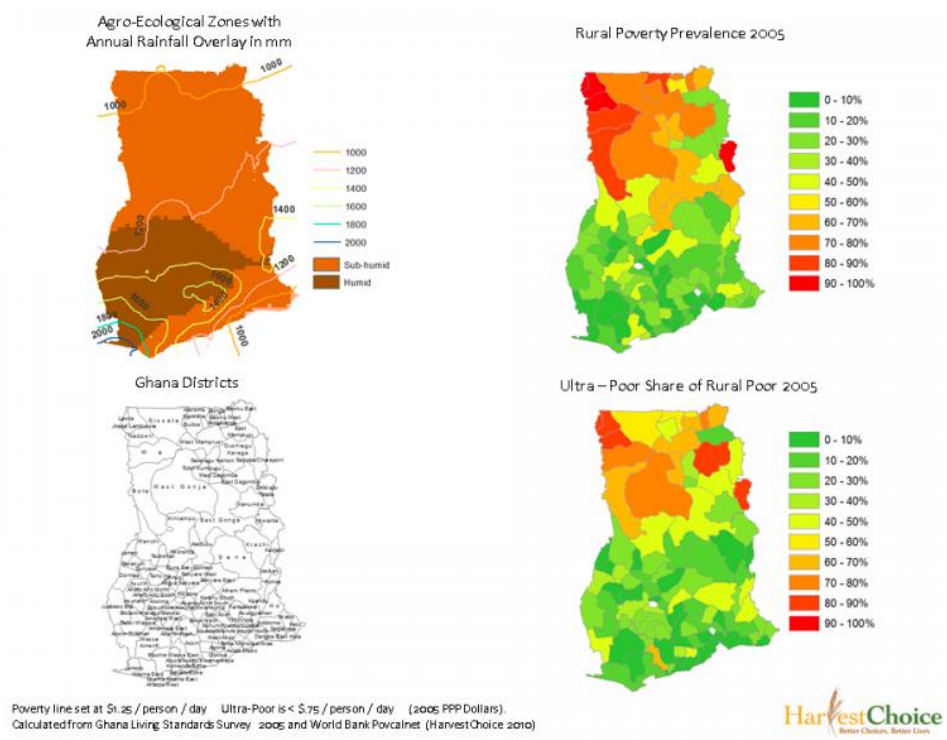


Figure 1 – Map of countries (those in green) that have achieved the Millennium Development Goal of halving hunger. Source: FAO, 2015



Interplay between agro-ecology and poverty prevalence amongst rural households

Figure 2 – Maps of Ghana’s agroecological zones and poverty rates. The case study district is in the 60-70% rural poverty prevalence category, falling in the sub-humid zone with annual rainfall closer to 1000mm. Source: HarvestChoice, 2010.

Table 1: Months of household food insecurity in the three northern regions by crop

Crop	Upper West			Upper East			Northern		
	Months of Harvest	Months of Stock Depletion	Months of food insecurity	Months of Harvest	Months of Stock Depletion	Months of food insecurity	Months of Harvest	Months of Stock Depletion	Months of food insecurity
Sorghum	October	June	4	August	February	6	November	June	5
Maize	October	June	5	October	April	6	September	June	3
Millet	September	April	4	July/Nov	January	6	November	June	5
Rice	October	June	5	November	April	7	October	May	5
Yam	October	May	6	NA	NA	NA	September	June	4
Groundnut	-	-	4	October	April	6	September	April	5
Cowpea	October	June	5	October	March	7	October	May	5
Soybean	September	April	-	NA	NA	NA	November	April	7

Source: Quaye, 2008

Ghana is located in West Africa with a southern border along the Gulf of Guinea near the Atlantic Ocean (5°N of the equator) and its northern border on the edge of the Sahelian desert (11°N). Ghana is also an English-speaking country surrounded by the French speaking countries of Cote d’Ivoire, Togo and Burkina Faso. There are three general ecological zones: sandy coastlines and plains, forested central and western areas, and the more arid savanna areas to the north (ICF Marco, 2009). Ghana’s closeness to the equator and lower altitudes translates to high temperatures, with the mean annual temperatures being high at 27°C, with maximums of 40°C and minimums 15°C. Rainfall generally decreases moving further north in the country and rain is heaviest from May to October with average annual precipitation of 1187 mm. According to Ghana’s government-led climate change report developed by the Ghanaian Environmental Protection Agency (EPA, 2008), there will be a steady rise in temperatures and increased variability of rainfall over the next few decades. The EPA estimates that an average temperature rise of 0.6°C, 2.0°C and 3.9°C take place by 2020, 2050 and 2080 respectively, and a rainfall decrease of 2.8%, 10.9% and 18.6% by 2020, 2050 and 2080 respectively. The World Bank

anticipates that temperatures in the three northern regions may rise by 2.1–2.4 °C by 2050. Stanturf et al. (2011) also estimates that annual precipitation will decline by 32-36%. One of Ghana's major natural hazards is frequent droughts (EM-DAT 2008), which tended to be exacerbated by land degradation and deforestation (MECV & SP/CONEDD, 2006 in Brown and Crawford, 2008). According to the EPA (2008) 35% of the total land mass in Ghana has become desert-like. Desertification is also estimated to be proceeding at a rate of 20,000 hectares per annum (Asante and Amuakwa-Mensah, 2015), and the EPA (2008) estimated that there will be a reduction in all river basins water flow of between 20-30% by 2020 and 30-40% by 2050.

With a total land area of 238,537 km² (just larger than the United Kingdom) and a total population of just over 28 million people (as of 2016), Ghana is one of the most populous countries in West Africa, though the Northern Region, which is where this research takes place, is the most sparsely populated (GLSS, 2014). The dominant religion (73% of the population) is Christianity, however Islam is the predominant religion in the Northern Region at 60% of the population, while traditional religions are more popular in the Upper East Region (28% of the population) compared to the rest of the country (GSS, 2012). There are also different ethnic affiliations with tribes generally divided along geographical areas: the Akan (including Asante, Akyem and Fante, among others) who make up almost half the country's population (49.7%), as well as the Ewe (13.3%) mostly found near Lake Volta, the Ga-Dangme (7.4%) near Accra, and the Mole-Dagbon (14.2%) living mostly in the northern parts of the country (GSS, 2012). Migration is also a common phenomenon in Ghana with 48.6% of the population being migrants, and with 52% of these migrants moving to rural areas, particularly in the south (GLSS, 2014). Just over half of the adult population is literate in English (56%), however the adult literacy rate in the north is substantially lower than the country average at 37% (GLSS, 2014).

2.2 Early History and Colonialism

Farming and raising cattle in northern Ghana dates back to 2000 B.C.E, while centralized kingdoms and states, such as Dagbon, date back to 1450 (Gocking, 2005). Contact with Europeans was made in 1471, with the Portuguese initially focused on trading gold with African kingdoms along the coast. First used to safeguard stockpiles of natural resources, several castles and forts were built by the Europeans along the coast that later functioned as key ports to hold and transport African slaves to the Americas and Caribbean in the trans-Atlantic slave trade. Although exact figures are unknown, it is estimated that 20 million West Africans were forcibly transported between the end of the 15th century and 1870 when slavery was abolished.

The Scramble for Africa was implemented with Britain claiming the Gold Coast as a crown colony in 1874, which was followed by escalating conflict with various African kingdoms. Most notably, the British fought four distinct wars between 1822 and 1900 against the Ashanti kingdom, who had controlled much of this territory. By 1901, all territory in the general area was under British control and rule, including the former Ashanti kingdom (Gocking, 2005).

In 1902, British colonialists divided the area into three administrative units: the Gold Coast Colony, the inland Ashanti region, and the Northern Territories. The Black Volta River was considered a crude demarcation between the north and south (Plange, 1979). Agriculture (particularly cocoa and timber) and mining were considered to be the most lucrative industries and so were most heavily invested in to support Britain's economy. To facilitate the export of these resources, Britain built harbours, road networks, railroads and administrative centers. However,

the Northern Territories received significantly less infrastructure investment and attention as trading zones when compared with the other two regions.

Although northern Ghana was perceived by the colonialists as geographically (location) and ecologically (minerals, soil aridity) relatively less significant than the other regions, it was a historically important trading center for merchants from across West Africa. Towns such as Salaga located in contemporary Northern Region were major centers of exchange. Traders such as the Hausa, Fulani and Moshi came from the north to trade (Sutton, 1989), as well as Dyule and Mande traders who brought goods from North Africa, Southern Europe, Dahomey and Nigerian ports. Ashanti traders came from the south to trade kola and gold, and the Ewes and Ga-Adangmes with salt and fish (Plange, 1979). Although northern Ghana was a major trading center, very little of what was produced there, such as yams, shea butter, *dawa dawa*, leather materials, local cloth, and livestock were actually traded, and trade more generally remained relatively small because it was based on the cowrie currency system (Sutton, 1989). One of the first actions taken by the colonialists was to control and profit from this trade by imposing taxes and fees for some markets, while closing others to redirect trade to British administrative centers, such as the City of Tamale (Sutton, 1989; Plange, 1979).

Notably, the colonialists discouraged the commercialization of cotton, rice, groundnuts and other production in northern Ghana by conscripting male labourers to work in the south (Sutton, 1989)³. This was met with backlash from locals, and in turn resulted in an increased British military presence and expenditure in the north. By the 1940s, such a large percentage of the male population had been forced to migrate south that Plange (1979) claims it was impossible to work on livelihoods back home in the Northern Territories. This migration also led to the spread of a

³ Prior to this period of mandatory conscription, some people from the north did migrate to the south, however this was primarily for trade and not as unskilled laborers.

number of diseases in the north, which was without adequate health facilities. According to Sutton (1989), northern Ghana's historical role as a supplier of food to the rest of the country was significantly disrupted by this conscription.

Most of the land in the Northern Territories was not considered commercially valuable to the colonialists. While there were many land disputes in the north, there were far fewer in number and severity than in the south (Sutton, 1989). During this time, anyone who wanted to expand their land could do so with negotiation and agreement by local chiefs, however access to sufficient capital to establish a larger, commercial farm was a major barrier to accomplishing this (Sutton, 1989). Those who were able to farm commercially were those who had inherited land, as well as those who had larger households with more labour available. By the late 1950s, northern Ghana was markedly substandard in terms of trade, infrastructure, school enrollment and education levels compared to the rest of the country.

2.3 Historical and Contemporary Agri-Food Policy and Practice

Ghana was the first country in sub-Saharan Africa to gain independence in 1957 led by the charismatic Kwame Nkrumah. Differently from the British colonialists who largely ignored the Northern Territories, the post-colonial governments began to invest in larger scale mechanized food production for national consumption through the 1950–60 and 1959–64 Development Plans (Akoto, 1987) spending about 8.4% of the government budget on agriculture (Marston, 2017, p. 281). The Gonja Development Company (GDC) and later the Agriculture Development Corporation (ADC) focused on intensification through the provision of some high-yielding seed varieties, NPK, pesticides, mechanization such as tractors and irrigation, as well as improvements to crop storage and processing. Although the GDC planned to cover an area of 32,000 acres (Frimpong-Ansah, 1991), only 3,209 acres were actually cleared, and only 1,200 acres were

planted (Akoto, 1987, p. 247). The State Farms Corporation (SFC) was also created after the implementation failings of the ADC, which was meant to better control domestic prices. Despite increased state investment, this generally did not lead to the intended levels of intensification and commercial food production for national consumption. This failing is largely due to a lack of consistent objectives, poor management skills, and political interference (Akoto, 1987; Amanor, 2011). Large scale state operations such as the state-run farms and the Food Production Corporation that were operating during this era were considered failures because of their financial underperformance and the corresponding levels of debt incurred. Moreover, while the Development Plans and the Seven Year Plan of 1964 were intended to provide support for smallholder farmers, most funding was allocated to public institutions for larger scale farming (Akoto, 1987).

The 1970s are considered the height or Golden Age of agriculture in Ghana. Particularly under Ignatius Kutu Acheampong's military regime's infamous Operation Feed Yourself (OFY) policy that invested heavily in farmers who could produce profitable food commodities, and spending about 9.1% of government budget on agriculture (Marston, 2017, p.281). OFY was operated almost entirely by the state, and farmers were integrated into large scale government projects which provided land, NPK, agrochemicals, high yielding varieties (HYV) of seed and mechanized services (Amanor, 2011). These provisions were heavily biased in favour of specific crops and regions, such as rice production in the northern regions (Akoto, 1987). Yaro et al., (2012; 2013) also claims that there was an emphasis on a type of Green Revolution through private development and specific food commodities, such as cotton and rice production in Northern Region that received guaranteed prices and greater credit support that could be used to purchase agro-inputs. Between 1972-1975, the import of non-road tractors more than doubled from 1,054

metric tons to 2,638, as did other agriculture machinery from 1,644 to 4,201 tons, and fertilizers from 2,109 to 3,853 tons (Goody, 1980, p. 136). At the same time, fertilizer subsidies also rose from 50% to 81% (with these subsidies never again being higher), particularly targeted in the northern part of the country where most fertilizer was distributed (Amanor, 2011, p. 50). Subsidies for seed also increased by 75% as did the distribution of improved rice seed from 3,200 tons in 1970 to 750,000 tons five years later (Yaro, 2013). Due to these efforts, the country became less dependent on importing food between 1972-1974 and had some trade surplus.

Goody's (1980) and Wiemers' (2015) study of this era found that the urban business elite and members of the military government in northern Ghana disproportionately benefitted from OFY state investment by gaining more access to credit on larger tracts of land, 100 acres on average (with some cultivating as high as 1000 acres), in comparison to the five acres smallholder farmers had (Goody, 1980). Public-private partnerships were also established during this era, for example, with state sponsored seed breeding programs developed alongside the World Bank and other private multinational research institutes (Amanor, 2011). Despite this joint financing with multinational agribusinesses and a focus on larger scale intensification and growth, it was ultimately unprofitable and made worse by the droughts in 1976 and 1977, which hurt production and ultimately repayment of farmer's credit.

During Jerry John Rawlings' military regime rule of the 1980s and into the 1990s, Ghana's agriculture policies firmly shifted from state driven to market liberalization (Akoto, 1987) dramatically reducing government expenditure in agriculture to 4.7% between 1983-1991 and 1.3% between 1992-1996 (Marston, 2017, p.281). Instead, funding was heavily reliant on donors, who provided, for example 91% of the total budget for agriculture in 1996 (Marston, 2017, p.282). Ghana was one of the first countries in SSA to adhere to the conditions set forth by the World

Bank and International Monetary Fund under the Structural Adjustment Programs (SAPs), which promoted trade liberalization. Trade liberalization involved a widespread reduction in tariffs, which depressed food prices and led to significant increases in the volume of imported food. State enterprises were also privatized, and any subsidies on fertilizers, agrochemicals and farm equipment were removed, which resulted in a rapid increase of their costs (Amanor, 2011; Gibbon, 2014). Although the government invested in silo storage facilities and mechanical drying through the Ghana Food Distribution Company (GFDC), this was also later privatized (Akoto, 1987). Credit for agriculture production also had very high interest rates of 30-40%, resulting in the rates of fertilizer application and seed to drop. High interest rates, increased agro-input costs, and an amplified volume of imported food reduced the viability of food production for local markets in Ghana, and some farmers responded by switching to crops intended for export that earned higher prices (Awanyo, 2001; Hesselberg and Yaro, 2006; Bello, 2009).

The declining role of the state since the 1980s also paved the way for the increasing influence of donors and multinational NGOs (Hesselberg and Yaro, 2006; Laird, 2007). Most famously related to agriculture was Sasakawa-Global 2000 (SG-2000), an international NGO launched in 1986 that focused on encouraging the cultivation of local produce through providing improved, certified, higher yielding seed varieties to smallholders on low interest loans (Nyantakyi-Frimpong and Bezner-Kerr, 2015). SG-2000 was a joint effort between Ryoichi Sasakawa and Norman Borlaug, the Nobile Peace Prize winner for his research in developing higher yielding maize and wheat varieties associated with the Green Revolution. Ghana was one of the first countries out of 15 African countries overall to receive support from SG-2000. Between 1986 and 2003, SG-2000 spent \$20 million on providing maize and other higher yielding certified varieties of seed, as well as other technology through credit schemes and on-farm demonstrations

led by public sector agriculture extension agents in Ghana, which was targeted to smallholders. However, according to Amanor (2011), many of the smallholders who initially adopted the certified seed and other technologies reverted back to old practices after the SG-2000 concluded. Additionally, the project only realized a 45% recovery of the total amount of credit provided.

More contemporary policy in Ghana has been focused on building public-private partnerships through the Ghana Poverty Reduction Strategy (I and II), the Food and Agriculture Sector Development Policy (I and II), and the Savannah Accelerated Development Authority. Since 2003, Ghana also adhered to the United Nations' Comprehensive Africa Agriculture Development Programme's (CAADP) National Investment Plan for Food and Agriculture, which specifies goals towards building private sector investment opportunities and commitments to 6% growth in the sector, as well as increases in state funding to 10% of the annual national budget. This is all reflected in Ghana's 2009-2017 Medium-Term Agriculture Sector Investment Plan. Public expenditure in agriculture remains at similar levels to the period of structural adjustment, at 0.39% of total expenditure in 2007 (Chambers et al., 2007, p.27) and most of this expenditure has been put into the Fertilizer Subsidy Programme that was re-established in 2008.

Contemporary agriculture policy in Ghana remains heavily shaped by a range of development actors pursuing and supporting a similar set of activities, such as the World Bank, African Development Bank, and FAO, as well as specific countries (e.g. United States⁴, Canada, and Britain), and non-governmental and philanthropic organizations (e.g. AGRA). While donor funding has averaged 61% of the agriculture budget between 1999-2015, it has recently declined

⁴ The United States of America has provided an estimated \$340 million in food aid alone to Ghana between 1965-1994 (USAID, 1997). In 2002, America's Millennium Development Authority spent \$4.7 billion on an estimated 30 projects between 2010-2014 and, later the Feed the Future initiative spent \$400 million between 2012-2017, operating mainly in the northern regions (Marston, 2017).

due to Ghana's economy being listed as a lower middle-income country in 2010. The World Bank and African Development Bank opted to give more loans (with interest rates in single digits) instead of grants (Marston, 2017, p.271). Official development assistance, specifically those members of the New Alliance for Food Security in Africa have focused policy to create a more enabling environment for private sector investment by implementing new seed laws to establish a seed registry, a protocol for testing seed quality, field inspections, seed certification, as well as supporting new involvement by private sector actors. Donors have also influenced the policy that defines the role of government in the marketing of fertilizer and created a database for land investors (DFID, 2013). In addition to these steps, the Agro-Dealer Development Program was launched as part of AGRA, which is supported by the Rockefeller Foundation and the Bill and Melinda Gates Foundation. This program supported 2,400 local agro-dealers to supply HYVs, NPK fertilizer and agrochemicals to farmers, especially to outgrower farm contracts (Flora, 2010).⁵ Outgrower farm contracts are agreements made between a farmer and an outgrower or aggregator prior to the planting season, where the buyer specifies the pricing system, quantity, and delivery time; for aggregators, the marketing contract stops here, but for outgrowers the contract will also specify the supply and use of agri-inputs, support (if any) for land preparation, and the nature of technical assistance, which ODA typically supports. The World Bank, in collaboration with USAID, has also funded one of the largest farm contract schemes, Ghana's Commercial Agricultural Project⁶ focused on maize, rice and soy production in the northern regions. Many

⁵ Since 2006, AGRA has spent over \$59 million in Ghana to improve the supply chain management of rice, maize, cassava and soy in Brong Ahafo and Northern Region, and plans to contribute a further \$31 million in Ghana between 2017-2021 (AGRA, 2017).

⁶ World Bank has provided \$100 million on loan and USAID has provided \$50 million in grants between 2012-2019 (Marston, 2017).

farmers directly supported by this project have been outgrowers who are urban businessmen and highly educated elite who contract smallholders (Marston, 2017, p.323).

Figure 3 points to the complex array of actors involved in funding agriculture initiatives throughout the country, including the specific funding provided to private sector actors operating in the Northern Region. One striking aspect of this is the range of inputs, technologies, processors, and marketing initiatives that are financially supported by foreign assistance, while smallholders and farmers more generally are largely left out. The only way smallholder farmers receive support directly from development assistance actors is if they participate in farming groups or organizations, which is typically how they are organized to join in contract scheme arrangements.

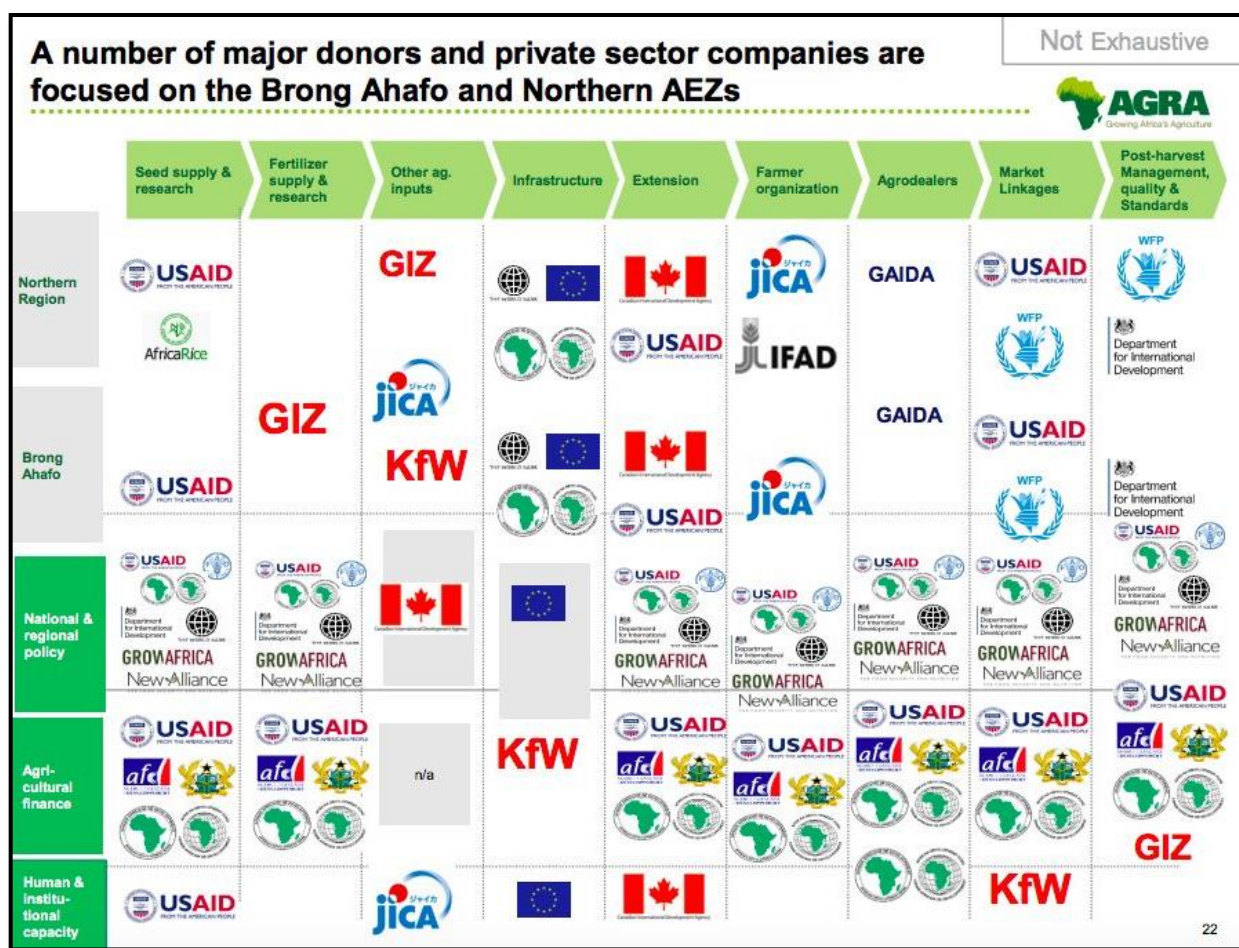


Figure 3 – Development actors involvement in agriculture in Ghana. Source: AGRA, 2017

2.4 Land Use Transitions

Contemporary farm land in Ghana generally involves both family and community types of land, which continues to be governed by customary-based tenure systems. Family lands are generally governed by family Elders and distributed based on patrilineal inheritance rights to a 'landlord' or household head and the farming needs of his particular household, whereas community land is managed by the Chief and Tindana (Earth Priest) that is more freely available to use based on one's needs and ability to farm. The Chief and Earth Priest hold the land in trust for the people by interpreting customs. In most of northern Ghana, women are not entitled to inherit land, but they are entitled to some land allocated to their husbands or 'landlords' depending on the household's farming needs and capacity. The Chiefs and Elders are also responsible for resolving disputes over land and other natural resources within the community and set of families. A basic principle of land tenure here is that everyone in the community who needs land to farm should receive something, including those who are considered migrants and are not part of the original extended families and kin. However, these principles are shaped by ongoing and fluctuating family and community dynamics. According to Yaro (2010), there is also a growing trend of smallholders losing control of their family and community land because it is being captured by more powerful family members and Chiefs, which signals a breakdown in the more communal oriented tenure relations and a shift instead to what Peters (2004) calls the practice of 'customary exclusion' or private claims.

While there is social and economic differentiation among small farmers, it is beyond the realm of discussion here, other than to indicate the broad tendency that land is becoming further concentrated under the control of wealthy individuals. The pressures associated with state austerity and trade liberalization have been augmented by increased foreign investment in mining and

logging, and more recently in bio-fuels and fruits for export. Often, it is the community leaders who capture disproportionate shares of the local benefits of these investments (Yaro, 2010). Moreover, the various pressures that are leading towards larger-scale and more specialized agriculture in SSA are tending to push many smallholder families, who are unable or unwilling to commercialize their production, out of farming, which has important cultural and gendered dimensions (Peters, 2009; Berry, 2009). Moreover, such practices of private claims or customary exclusion are known to disproportionately affect more women in contexts where they are unable to inherit land due to customary norms, such as northern Ghana. According to some researchers, such as Yaro (2000), Tsikata and Yaro (2014) and Yaro et al. (2016) the subsidization of agro-inputs and the commercialization of farming has led to chiefs, family heads and outsiders or urban elites increasingly taking control of higher quality land. When this take-over occurs, women's farm plots tend to be dispossessed first (Nyantakyi-Frimpong and Bezner Kerr, 2017).

Women in the Northern Region have the lowest number of landholdings relative to women across the country, at only 2%, which has implications for their farming capability (Table 2). However, it is important to contextualize the land ownership proportion held by women, as women in the Northern Region may not formally own land, nor they may not have primary informal tenure rights to it, they are still entitled to some of their husband's and family's land (Apusigah, 2009; Tsikata and Yaro, 2014). How much land they are able to access from their husband or household's landholdings, or wider family's land, as well as community land available (typically governed by the Chief and Tindana) depends on their individual circumstance (e.g. amount of capital and time they have available to produce), their production goals, and their relationship with these different family and community members. While classifying land based on a 'male' versus 'female' binary can be misleading because their terms of access is much more complicated than formal or informal

title holdings, women's land access and use for their own production is likely much higher than 2%. Moreover, women are also entitled to access other natural resources available on other people's land that are considered communal, such as tree fruits and nuts, wild vegetables and water. Thus, it is critical to disaggregate land ownership or tenure based on gender as women's land is often dispossessed first, either by their husbands, other family members, or Chiefs. Giving women access to land titles is not necessarily the solution to gender equality as Doss et al., (2014) finds that women across Ghana seem to have fewer rights to use and benefit from land jointly owned or formally tilted by both them and their husbands. Other qualitative case studies from different regions in Ghana, including places with matrilineal inheritance rights have documented how land use is highly determined by women's socioeconomic status and standing within social institutions, such as marriage and kinship (e.g. La Ferrara, 2007; Duncan, 2010; Dery, 2015; Lambrecht, 2016).

Table 2: Female Landholding Distribution Across Ghana

Region	Proportion of Female Landholders
Western	54%
Ashanti	48%
Brong Ahafo	44%
Greater Accra	43%
Central	42%
Volta	32%
Upper East	31%
Eastern	30%
Upper West	4%

Northern 2%

Adapted from Songsore (2011) in Dixon (2014)

2.5 Gender Divisions of Labour

The commercialization of agri-food systems has feminized agrarian labour across the world (Mackintosh, 1989, Bryceson, 2001; Sachs, 2015). However, this is routinely discounted in a lot of research about the agrarian political economy that focuses on macro-structural forces (McMichael, 2013). In particular, more women are becoming either real or de-facto heads of households, responsible for feeding the household, which is seemingly associated with agrarian restructuring. Esther Boserup's (1970) seminal contributions shed light on the distinct contributions that women make to production in many contexts in SSA- they tend to be more responsible for subsistence food crops, while men tend to be responsible for commercial production (e.g. cocoa, cotton). This difference in the purposes of production for men and women engenders disparity with women being less able to grow in scale. Although Doss' (2002) analysis of the 1991–92 Ghana Living Standards Survey indicated that this division in Ghana is not strict with men and women both farming for subsistence and commercial purposes. Concluding that the gendered division of labour in Ghana depended more on the requirements of the crop being produced itself than on an absolute export versus subsistence binary (Doss, 2002). The divide given by Boserup is also problematized by many examples in other parts of SSA where women engage in both subsistence and commercial agriculture (e.g. Richards, 1986; Seur, 1989; Bryceson, 1995; Sorenson, 1996; Schroeder, 1996). Simple narratives of women farming for subsistence and men farming for markets are uniquely doubtful in the context of Ghana where, according to the Mastercard Foundation's Index of Women's Entrepreneurship 2018 report (p.18), there are the highest numbers of women business owners in the world at 46.4%, including in a large share of

agriculture enterprises. Yet, while this gendered division of farm labour in Ghana, and SSA, might be less rigid than men-commercialize and women-subsistence, there are still important gendered differences in agrarian labour that have uneven livelihood outcomes (Whitehead, 2002; 2006). Food crops often entail differing responsibilities and relations in SSA depending on one's position within a household (Ferguson, 2006). In short, food is not just something to be bought and sold in northern Ghana and contains norms and values that are principally associated with family, community and kin, as well as being a key matter of conjugal bargaining (Devereux, 1993; Naylor, 1999; Whitehead, 2002; 2006; Padmanabhan, 2007).

Gendered analyses have found that as households gain more wealth, particularly through the commoditization of a male household head's labour, women's position within the household tends to deteriorate for some time, at least until that household's income reaches high levels⁷ (Whitehead, 1994; Mies, 1998; Razavi, 2009; Rao, 2012). This tendency is central to the feminization of poverty, whereby gender disparities in rights, entitlements and capabilities are regularly redistributed unevenly within households as historic cultures and economies are transformed by capitalist imperatives. As Mies (1998, p. ix) puts it, in many cases this transition involved "women's unpaid caring and nurturing work in the household...subsidizing not only the male wage but also capital accumulation." This relates to agrarian changes, amidst the transformations of smallholder farming associated with structural adjustment and increasing market integration, Carney and Watts (1991, p. 652) note that there was common tendency for "food production [to become] taken care of by women with little help from men". Labour and crop differences linked with the differential ability to generate and accumulate cash earnings contributes

⁷ This lag in women's development is due to accumulation and wealth instilling patriarchal aspirations of newly non-poor, male household heads, such as wanting his wife to not engage in paid work (Mies, 1998; Rao, 2012). Jackson (2012) calls this hegemonic masculinity.

to new or exacerbated forms of inequalities within households as men tend to have greater capacity to move into paid, productive work, while deepening women's unpaid, reproductive work. In their case study of the Upper West Region in northern Ghana, Nyantakyi-Frimpong and Bezner Kerr (2015, p. 27) found that the stricter weeding schedules needed for higher yielding hybrid maize "fell upon the shoulders of women, whose domestic work was already overburdened with cleaning, washing, tending the kitchen garden, and fetching firewood and water," while men tended to control much of the assets. These gendered dynamics, where men dominate paid aspects of the productive sector and women dominate the unpaid aspects of agricultural production (Guyer, 1981), mean that women have less capacity to respond to the broader challenges facing agriculture, such as climate change (Terry, 2009).

In Ghana, there are gender divisions of labour and resources in agriculture, as women and men plan for household needs while managing largely separate farm plots and sources of income (Apusigah, 2009; Dzokoto and Darkwah, 2014). However, as food becomes further commoditized, cultural norms with respect to the roles, purposes, and responsibilities of production are shifting. This has implications for the kinds of food produced as well as the gendered negotiations surrounding food provision within the household. In sum, as rural economies transition towards more commercialized production and subsistence crops are marginalized without substitute livelihoods, it becomes increasingly important to examine how food responsibilities and practices are changing.

2.6 Gender and Agricultural Development

There is a trend in agri-food policy and development practice that tends to focus on supporting the intensification of women's production to solve the problem of hunger for their households. This trend is exemplified in various reports that point out women's disproportionate

barriers to productive resources, such as inputs, credit, land and mechanization, as well as the gaps in ODA support for women's production compared to men's (World Bank/FAO/IFAD 2009; FAO, 2011; FAO, 2013).

Ghana's Ministry of Food and Agriculture (MOFA) national policy also recognizes that gender disparities are pervasive in the country, affecting such things as land tenure for women. The assumption that underpins global and national development policy is that women have inequitable access to productive resources compared to men, and the associated prescription to 'close this gap' in access largely translates to support for agriculture inputs and technology provided to women in order to make them more efficient producers (Okali, 2012). This development prescription is problematic because it misses the ways that women's challenges relate to larger political economic changes that are producing increasing disparity and inequality, such as through land consolidation by successful commercial farmers (Lado, 1992; Razavi, 2009). When this approach occurs in a vacuum, it tends to merely give women 'a bigger piece of a very small pie' or share of resources available to smallholder families (O'Laughlin, 2007). This focus of development support on the unequal access to productive resources between women and men also places some of the blame of the problem of hunger on ostensibly inefficient female farmers rather than focusing attention on power dynamics at multiple scales, including both political-economic and intra-household. It can also have the effect of absolving men from their primary food responsibilities and magnifying women's work burdens. Additionally, where women have successfully increased their scale of production, it has sometimes led to men taking over women's livelihoods when they grow in scale and become more profitable (Schroeder, 1996; Rao, 2006).

In sum, gender equality in agriculture and household food security is generally not just about improving women's autonomy in production by providing them with a few assets to produce

more food because negotiations with men is essential for the daily life (Jackson, 2007). Moving away from a focus on individual women and more towards improving systems that foster the status of their rights would shift the types of development interventions and support beyond the provision of assets to also include attention to such things as strengthening democratic institutions, women's rights within community land tenure arrangements, and the uneven nature of intra-household divisions of labour. If this shift does not occur, the focus on the individual woman in development efforts results in making them work for the development support, such as by reorienting their time and resources for production, rather than making development support work for their equality in institutions that exclude or demean them (Cornwall and Rivas, 2015).

2.7 Geographical Research Sites

This case study is focused in two communities located in one specific district in the Northern Region⁸, which is a semi-arid, Guinea savanna agro-ecological zone characterized by drought-resistant baobab and acacia trees along with thorny bushes and grass landscapes. The study district shares a border with the City of Tamale, which is the largest city in northern Ghana with a primary agri-food market, regional grain reserves and seed storage (Figure 4). The district population density gradually increases closer towards the city. Temperatures tend to be higher compared to the rest of the country, with monthly average temperatures between 18 and 38 degrees Celsius (Yaro, 2013, p.44). According to the MoFA district specific data, soils are generally poor in organic matter and nutrients, with annual rainfall being on average 600mm and generally less than 1000mm (see Figure 2). The Dagombas are the distinct cultural group who predominant in the Northern Region, particularly in districts closer to the city of Tamale. Dagombas make up most households, which are predominantly Muslim, extended, and polygamous. The majority of

⁸ The specific district studied, and location of the communities will remain unidentifiable to maintain confidentiality of participants and staff hired in this study.

households had someone migrate for at least four months of the year and the vast majority of participants described not having any education. The GLSS (2014) also claims that the district has some of the lowest rates of education across the country, including compared to other northern regions.

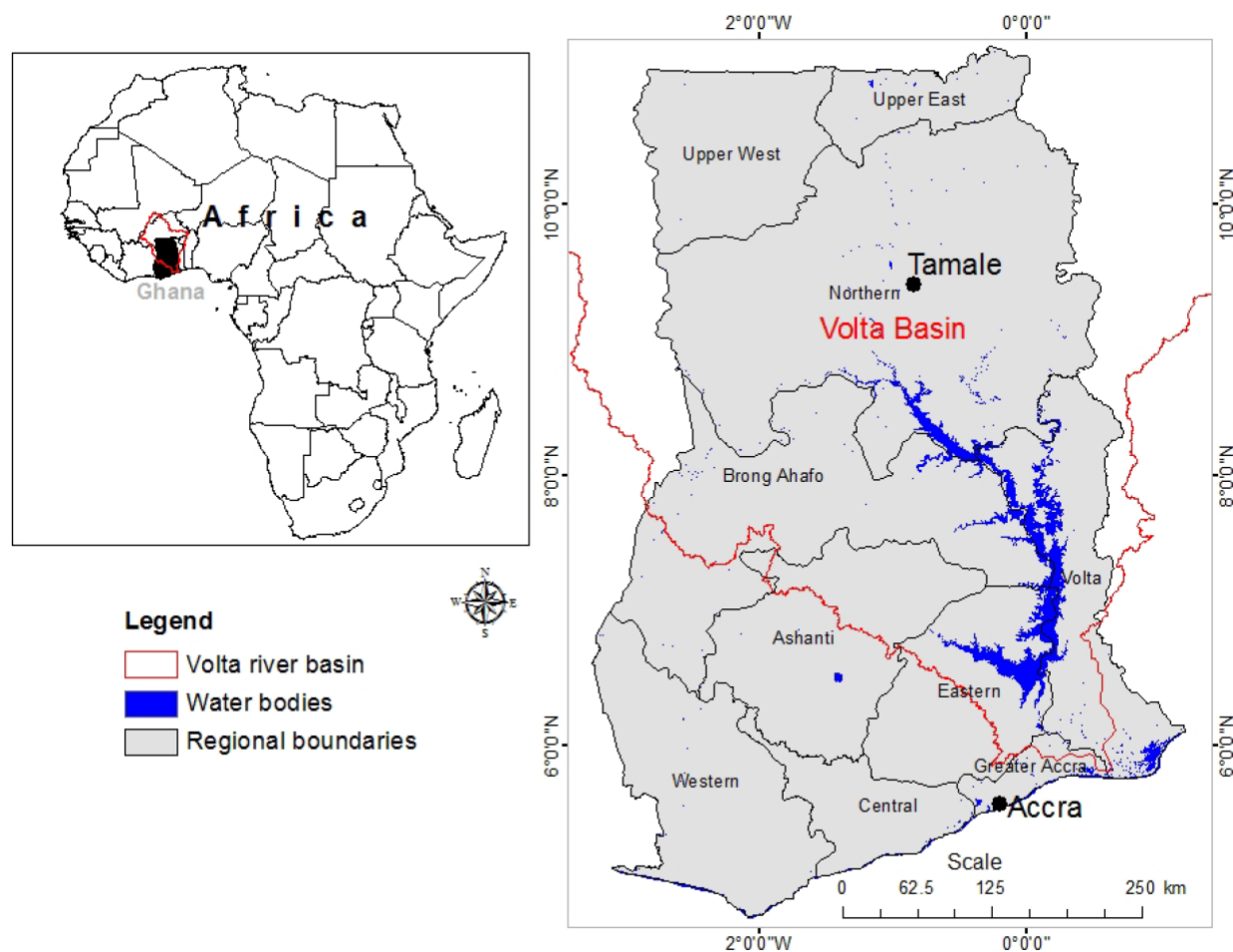


Figure 4 - Map of Ghana, specifically locating Tamale, Northern Region (Gumma et al., 2011)

Most households across the district are engaged in agriculture (GLSS, 2014), relying on food crop production, tree cultivation, animal husbandry, and some irrigated horticulture for subsistence, as well as for sale. The government (MoFA) has specified that this district has a comparative advantage in producing maize, rice and soy because of the availability of flat, arable

land with valleys uniquely suitable for rice production (Akoto, 2017). However, other crops typically grown by farmers also include yam, sorghum, cassava, beans (including bambara), groundnuts, millet, cowpea, okra and other vegetables.

There are several reasons why this district location was selected for a case study. First, the Northern Region has historically faced some of the highest incidences of poverty, food insecurity, and perennial drought and flooding in the country (ICF Macro, 2010). Secondly, there are good sources of secondary data available, including agriculture-related policy documents and various social, economic, and environmental records. This is partly because it is home to one of the largest and better-resourced MoFA district specific offices in the northern part of the country, which is responsible for maintaining records related to agriculture and food in its district. Moreover, commercial agriculture has grown significantly in the Northern Region for several reasons: land availability is greater than in the more densely settled regions of southern Ghana; it has better topography, soil, and moisture conditions for agriculture than in the Upper West and Upper East Regions; and it has improved accessibility to major agri-food markets due to the districts proximity to Tamale and a more developed road network. Consequently, this district also commonly receives more development assistance for agriculture and food security relative to other more northern areas (Goody, 1980). As of 2017, there were eight official development assistance agriculture projects operating in the district run by varying combinations of state, bilateral and multilateral agencies to commercialize and intensify farming. Lastly, I chose this case study site because it contains the sort of community characteristics I sought to examine, including the predominance of smallholder farmers in the population, as well as the commonality of languages, historic land use practices and

food provisioning cultures.

While the district selected in the Northern Region forms a set of broader research criteria, I specifically focus my study in two farming communities located within the district, which are referred to throughout this dissertation as the 'Roadside' and 'Remote' villages. I sample these two communities to compare farmer's resource use and decision-making based on their distance to the City of Tamale where there is located the majority of development and government services. These communities are approximately 20 kilometers apart, with the Roadside village located off a major, paved road that is about 20 km away from Tamale's main agri-food market (or 30 min drive). The Roadside community has an elementary, middle and Islamic school, four boreholes, three different areas with pit latrines, three different places with local shops, one rice mill and two maize mills, three mosques, as well as a gas station and private water sachet filtering company. Whereas the Remote village is around 40km (or a 60-minute drive) away from the city of Tamale's main markets; including off a main paved road, that is only connected by a series of unpaved roads. The Remote village has significantly less infrastructure, with only two boreholes, an elementary school, a health facility with latrines (currently under construction), only one area with shops, one mosque and one maize mill. There are no tractors or other transport that could carry harvests in the Remote village as there are in the Roadside village.

Both communities were selected for theoretical and pragmatic reasons. Firstly, they were both communities I had previously worked in and had familiarity with some farmers and their fields. This in turn served as a useful entry point into the communities. I also had maintained important relationships with key informants, translators and community elders' native to the community, or with more than 15 years' experience working there, which served to facilitate

community entry.⁹ Moreover, each community was fairly representative of other communities in terms of common history, agriculture activities and culture. Additionally, there were similar development projects operating in the two communities. Most notably is a USAID Feed the Future project, which is operating across the Northern Region, and specifically in the two communities studied. However, both communities differ in their degree of remoteness or distance away from agri-food markets and roads, as well as their population density and infrastructure development, with the Roadside community being more connected, better resourced and more densely populated, which provided a useful point of comparison.

⁹ I have experience living and working in rural communities within the district. From 2011 to 2012, I worked with MoFA offices across the Northern Region, and spent most of my time working with this district's specific agriculture extension staff, and the farmers they are responsible for providing services to. This provided me with an intimate understanding of agri-food policy and practice across the area, as well as the context of farming, which greatly facilitated this research.

Chapter 3

Methodology

3.1 Qualitative Methods

The main goal of this dissertation was to examine the changes in roles, responsibilities and resource access related to household food security associated with the increasing commercial orientation of farming and environmental changes. This research relies on qualitative methods, consisting of in-depth interviews and focus group discussions, which revealed the complexity of people's interpretations, motivations, and everyday lives (Rao, 2006; Jackson, 2007; Quisumbing et al., 2014; Shipton, 1990). Qualitative research, however cannot represent an entire range of issues and circumstance, or generalizable cases. It can only illuminate possibilities and depth in ways that are inaccessible in surveys. Additionally, my goal of including a higher degree of marginalized voices (e.g. women farmers from remote communities) that could be amplified and better represented in agri-food policy and practice was also achieved due to purposive sampling strategies. This is supported by McDowell's (1992) claim of a main goal of geography, which should be to include alternative voices.

3.2 Data Collection Timing and Duration

I made two separate visits to Ghana to pursue this research, which were between April-June in 2016 and January-April 2017. The timing for data collection was important in order to account for seasonality which influences people's reliance on different rural livelihoods, particularly rain-fed farming, and consequently, for understanding the context of hunger (Bernstein, 2010). There is only one growing season in northern Ghana, which is found to be reducing in time (Codjoe, et al., 2012; Laube, et al., 2012). Historically the growing season is

reported to have started as early as March or April and went until October or November, but currently starts as early as April or May and goes until October. The period where people tend to be most vulnerable to hunger also tends to be at the end of the dry season and start of the growing season (March-May) because this is generally when families run out of stored food from the previous season. Families also tend to have less money available during this time to purchase food due to the high costs associated with farming at the start of the season, such as preparing land. Although carrying out data collection during this hunger prone period biases results, I decided to conduct research during this period based on suggestions from Gross et al. (1997) who recommends that it is better to understand a situation when it is at its worst, which is from March-May.

There were a number of advantages to conducting multiple research visits. One being that you could compare and contrast seasons. Moreover, this timing permitted me to collect data prior to the growing season and before farmers were preoccupied with planting and, therefore, they were much more willing to spend time participating in the research. I could also include participants who would otherwise be absent due to the migration patterns of when people typically move back to their communities to pursue their own farming, which tends to be at the end of the dry season and before the growing season. Lastly, collecting data during multiple periods also provided the opportunity to analyze and collect data in an ongoing manner, which is encouraged in feminist epistemologies. I had the opportunity to transcribe and analyze some qualitative data and decide on the specific manuscripts I wanted to write (as featured in this dissertation), member check and follow up with additional questions.

3.3 Interviews

I conducted unstructured and semi-structured interviews with women and men smallholders in their household, around their community and on their farms. This was a central part of my inquiry into the divisions of labour, and farm challenges and opportunities. Most interviews focused on farming and food activities, resource access and control, and/or roles and responsibilities. To conduct these interviews, a flexible topic checklist was used to ensure that a number of key themes were covered in discussions including: their interpretations of the agrarian landscape and how they are changing, food security practices, key institutions that are affecting agriculture and food in the region, the degree to which production is oriented towards markets, and the biophysical changes affecting production. When more information was needed about a particular topic, I followed up with additional semi-structured interviews. In these conversations, I strived to remain conscious of gender-based differences and examining decision making. Following Razavi (2009), I specifically focused on core elements of food entitlements, such as the differential: control over assets, especially land and labour; access to employment and other income-generating activities; access to common property resources; access to external social support systems and informal credit and patronage systems; and support from the state, non-governmental organizations and grassroots organizing if applicable. In most interviews, the first two questions asked were, “What farming do you do (which crops, on how many acres), why, and how has this changed over the past 10-20 years”? “What are your main farm challenges and how have you coped with these”? This would be followed by more in-depth conversations about whatever issues they raised (usually 1-3 different issues). Discussions of farm challenges usually led to conversations about development projects and actors or household food security practices.

Purposive sampling of smallholders in the two communities was done to establish similar ratios of occupations, language, ethnic/kin group belonging, and income distributions, and further supported by snowball sampling (Berinacki and Waldorf, 1981). Each community was selected based on their location to the City of Tamale, one further away and one closer to the city where there are regional government, NGO and private company headquarters as well as grain reserves, seed and mechanization storage, as well as markets, which I hoped would allow for a comparison of farmers' perceptions of their livelihoods, environments and household food security based on location to development supported and other agriculture services. I pursued this sampling strategy because I was expecting to find farmers' that are located in the Roadside community, and with better access to the City of Tamale, to have different coping strategies to environmental changes, as well as greater participation in markets based on their access to government and development services. Sampling ended based on my discretion of the point of saturation, when I was confident that certain themes and answers to certain questions were repeated and conversations became redundant. Due to an interest on gender relations, I specifically asked to speak with women smallholders in addition to male smallholders. In total 78 self-identified smallholders were interviewed; 36 interviews were with women smallholders and 19 were with men smallholders, whereas others were with farming couples (men and women or just women).

The interviews with smallholders lasted on average 56 minutes and typically ended with opportunities for the participant to ask questions about me and my own research. Most of these interviews were conducted in the local language Dagbani, translated during the interview into English and audio recorded with the participant's consent. I transcribed each interview from audio to Microsoft Word almost verbatim by turning the translators third person explanation into first person narration; for example, "she said" into "I". I then analyzed the transcribed data by using

NVivo through a process of emic (surfacing from the data) and etic (based on literature) codes and clustering with 66 different categories and sub-categories established. Qualitative sampling and interview rigour were ensured using a reflexive journal. I added to this journal after I conducted a minimum set of five interviews and consulted it to draw immediate patterns and gaps in knowledge based on my understanding of theory, literature and other interviews, which then led to further discussions.

In addition to interviews with smallholders, I also conducted interviews with 31 key informants who were working in some capacity with smallholders. This included conversations with 10 Ministry of Food and Agriculture (MoFA) staff (e.g. extension, records management, directors and administrators); nine NGO project staff (e.g. project implementers and planners); as well as nine commercial farmers, who had more than 50 acres and usually worked as aggregators (outgrowers) or contractors; and three private production and agro-input companies. Three professors at the University of Ghana and the University of Development Studies were also consulted to check some of the contradictions and paradoxes found in interviews. These interviews lasted on average one hour and were conducted in English. The intension of these interviews was to understand development stakeholders' perceptions of farming problems and solutions, as well as about the details of their work, and how it fits or does not fit within their perceived solutions. The themes raised in these conversations about the problems and solutions within the agriculture sector, development services, the biophysical conditions and food insecurity more generally was also used to inform interviews with smallholders and vice versa, acting as a useful point of comparison and contrast of perceptions. For those who had been working in the sector for more than 15 years, we also discussed how farming had changed, including policy and strategy. The sampling strategy for interviewing development stakeholders was mostly purposive. I strived to

interview someone from all the active development interventions in the district studied, until we reached saturation. In most cases, these interviews were recorded and transcribed verbatim and categorized among the other transcriptions. In cases where there were no recordings, and only hand-written notes were taken, these notes were transcribed and categorized.

One limitation to conducting interviews over multiple research visits between January-May is that this did not allow me to collect data during the entirety of the growing season, particularly through the harvesting period, which is between September and November. Another disadvantage included discrepancies in conversations about different growing seasons, which is significant because seasons can differ. For example, the 2015 growing season was described as having particularly long periods of drought, whereas 2016 had less, with periods of flooding. Thus, conversations about different farming challenges and adaptive practices might differ, as well as people's access to and availability of food. To mitigate this issue, I conducted all of the focus groups and most of my interviews (44) with smallholders in the first phase of the research and 11 interviews with new smallholders in the second phase of the research, with time spent in the second phase member checking findings with smallholders from the first phase of the research. I also conducted interviews with 23 key informants working in development in the first phase of the research and eight interviews in the second, with further member checking with participants interviews in the first phase of the research.

3.4 Focus Groups

I conducted 12 focus groups (six men-only and six women-only) between the two communities entirely in the first stage of the research, and each had on average ten participants¹⁰.

¹⁰ Some of the focus groups needed to be carried over multiple periods of time with the same individuals to sufficiently cover the topic due to time constraints and interruptions.

The focus groups were not conducted all at one time and some individuals participated in more than one. Sampling for the focus groups included community leaders as well as with some of the participants interviewed. The only criteria required for participating in the focus group was their gender and that they were a smallholder.

There were different types focus groups conducted depending on the topics focused in discussion. The first was a community resource and use mapping exercise, which provided a visual layout of the resources across the community (Jost et al., 2014). This was conducted at the beginning of the data collection period and upon entrée into the communities to understand the layout of the entire community. The second set of focus groups were specifically about women and men's resource access, use and conflict. These conversations focused on generalities and gender norms, as opposed to individual behaviours; although some participants did share personal experiences. The last set of focus groups was based on specifically social constructions of gender (Jost et al., 2014). Specific conversations about manhood and womanhood were asked, as well as definitions and rankings, which participants defined for women and men in their community and wider society. Focus groups were held in the local language and translated into English on the spot by deploying visual methods, proverbs, storytelling, and the use local materials, such as sticks, stones, bottles and others (Chambers, 1994; Martin and Sherington, 1997). The use of these visual methods (e.g. community mapping) and local materials helped to facilitate participant introspection and self-reflection in a context where most of the participants are illiterate. I specifically used local materials (e.g. bottles, sticks, rocks, prayer mats) and the space around the focus group (within the circle of participants) to map out community resources and infrastructure. While the use of flip chart paper was used mainly to summarize and chart themes discussed in the focus groups for myself and the translator (as they were written in English and participants were

illiterate), this charting was used in combination with local materials (e.g. stones, nuts, seeds) put directly on the flip chart paper and within the circle to symbolize and represent each theme and potential gender and other social differences, such as resource access and control, roles and responsibilities, expenditure and livelihoods. The focus groups were audio recorded but not transcribed verbatim due to the challenge of differentiating between different people (through the use of one translator) and the complexity of group conversations. Instead, data was captured on flip chart paper and summarized, while the audio recordings served to confirm findings.

The focus groups more generally served as useful summaries of trends confirming certain interview findings, as well as by providing new themes to inquire about in individual interviews. The community resource mapping exercise pointed to specific topics related to resource access, control and potential conflicts that were then discussed more specifically within interviews. The focus group discussions focused on general gender norms, roles, responsibilities and social constructions of masculinity and femininity related to food roles and responsibilities, which were also discussed more in depth in interviews by describing further how people's individual behaviours within their households compare or contrast to these norms.

3.5 Translation

All data collection was conducted face to face in the local language Dagbani and translated on the spot for me to understand or conducted in English when possible. Although I intended to hire two full time research assistants as translators (one man and one woman) I was unable to find two people able to dedicate themselves full time to this task. One of the major constraints and challenges to this research included relying on multiple translators, some of whom were better than others at communicating, all of whom were men who required substantial training on issues related to gender. Overcoming gender biases and norms made by translators made it particularly difficult

to understand participants' perspectives beyond assumptions about gender norms. The use of multiple translators could have also led to discrepancies in questions asked and interpretations. One main reason why I think I had trouble finding female translators had to do as much with my community entrée strategy and data collection process, as it did gender norms, which tend to permit men to work and spend more time away from their families and in other communities and households than women. I found translators and research assistants by going through my previously established networks, which was heavily biased towards men. Also, my research would have greatly benefitted from a second translation by one person to demonstrate certain discrepancies, biases, or things that were potentially lost in translation.

3.6 Positionality and Ethical Considerations

Our study was approved by the Non-Medical Research Ethics Board at the University of Western Ontario that follows Tri Council guidelines, as well as given permission by the University for Development Studies in Ghana. This research had minimal risk and all participants were informed that they were free to not participate, could refrain from answering questions, to switch off the recorder if they desired, or to disengage from the research at any point. All participants were informed of the purpose of the study and the affiliations of the researchers were made clear. They also provided written consent to participate, and those that did not feel comfortable signing their name, due to their illiteracy, provided verbal consent instead, which I made note of on their consent form. All enumerators, translators and assistants were trained on the importance of confidentiality, which was safeguarded by using numerical identification and coded language. To maintain confidentiality, I have also kept specific locations of research sites unidentifiable throughout this dissertation (and in any presentations and reports related to it). To provide the location and name of the communities and district studied would reveal the MoFA or other NGO

project offices and potentially the identity of specific staff who provided important critical insights and guidance throughout the research process. My intention with maintaining the anonymity of research sites is to ensure that what is written in this dissertation does not directly or indirectly negatively affect people's reputation and livelihoods. This is especially important because my study critically appraises agriculture development policy and interventions that many participants are directly involved with. Participation in this study was completely voluntary and compensation was made only to those offering translation and transportation assistance.¹¹

An important component of feminist research is the ongoing reflexivity of the researcher's positionality throughout research planning, data collection, interpretation and write-up to understand how ones' position, embedded within a context, effects the research process and produces highly subjective findings (Haraway, 1991; Letherby, 2003). This is what Ackerley and True (2008) explain as the importance of inquiring about how we inquire, including considering how the research process itself reproduces power differences between the researcher and participants (also Harding and Norberg, 2005). My own position as an 'outsider' to the case study context—white, educated, wealthy, urban, foreign, woman- provided a few advantages to pursuing this research, but many more disadvantages that have led to a number of research limitations and further questions about ethics. Though I concur with Miles and Crush's (1993) claim that those researchers who lean on being more of an 'insider' will not necessarily solicit a more authentic truth as outsiders to a research context, as an outsider, I do believe that insiders have an advantage because they can use their knowledge of wider norms and cultural traditions to gain insights (Mullings, 1999). In the beginning stages of this research, I was often called 'Salaminga', which

¹¹ There were also some *kola* nuts offered to community elders, that were broken down and chewed together. This is a customary offering made to gesture towards hospitality and friendship, which was required to gain permission to conduct research.

translates from Dagbani to English to mean white person or foreigner. Only after I built a rapport and familiarity with people did they call me by my name or the local name given to me, Tungteya. This points to the significance of my outsider position in shaping people's interaction with me. Spending time on farms and in communities, learning a bit of conversational Dagbani, wearing clothing with local fabrics, and eating local foods, was my attempt to lessen my strangeness by demonstrating familiarity, and, hopefully a more open and genuine sharing of information.

One advantage as an outsider to the research context that I think influenced data collection, was that people often took more time to help and explain things to me because they assumed that I was naïve and, in some ways, neutral (Mullings, 1999). Best (2003) explains this act as the researcher ascribing the role of a novice, positioning themselves as an outsider. My decision to play novice was a conscious one because I think it permitted me to ask questions and to do things that were less acceptable for people who are insiders-from the community or who are Ghanaian.

As a white, foreign, and professional (educated, wealthy etc.) person, I was also afforded other privileges, including being invited to spaces that community members were not invited to, such as discussions of new policies, development programs and Ministry budget planning. Moreover, drawing upon my previous work experience in agricultural development also gave me some longer-term credibility with development professionals, compared to short term consultants and staff, which I believe facilitated meetings and conversations. In some ways, this provided me with an 'insider' position into agricultural development, highlighting the shifting reality of my position throughout the research process.

For many participants, as well as research assistants, this was also the first time they had spent time thinking more in-depth about gender norms, which made the research process itself potentially empowering in a number of ways (Neilson and Wright, 1995; Kesby, 2007). The focus

groups that visually summarized the disparity between women and men in their control over resources as compared to their farming and food responsibilities, for many men in particular, was expressed as a moment of self-awareness and realization that could potentially translate to fairer practices at home and on the farm. In some moments, where conversations were less like interviews and more like workshop facilitation style of discussions using visual aids and materials, we could push past simply naming gender norms, but also challenge them. This means that the facilitation style of dialogue, alongside the use of certain visual aids and materials instilled a sense of self-reflection about social norms, as well as about individual behaviours and gendered practices within their households. The most obvious examples of this self-reflection were during conversations about men's and women's food responsibilities where several participants in the focus group discussions explicitly pointed out the important contributions that their wives and women made more generally to farming, despite the described association of men with farming and food provisions, with participants concluding that this was a social bias. Some even expressed a lack of fairness with this widespread bias and women's increasing disproportionate work burdens related to it as many men did not realize how much women actually contribute. Since I strived for a two-way exchange wherever possible by sharing my own circumstances, drawing comparisons, I also learnt a lot about the similarities and differences with my own culture.

Despite these important advantages, being an outsider to the communities had many disadvantages that biased the research process and data interpretation, which is reflected throughout this dissertation. Racial and wealth differences were insurmountable, and I was unsure at times of the motives of people's help and participation in this research, and whether they were expecting something in return. This was reflected in the requests for investment and financial help, which occurred throughout the research process. Due to my inability to meet these requests and

reciprocate, I think that my building a rapport and friendship could have paradoxically become objectification for the purpose of research in some instances (Kirsch, 2005). Moreover, my association with MoFA and the development industry more generally, made these power dynamics and expectations of participants more complicated. While I do not think that as an outsider or foreigner, I would have been able to escape the expectation for support made by participants, as foreigners in this context are closely associated with the aid and volunteer industry, in some ways, I believe that my work in the development industry potentially heightened participants' unrealistic expectations.

Most of all, it was difficult to get around participants' 'development speak', which is where they would tell me what they thought I wanted to know, instead of their genuine perspectives because of their perceived potential of receiving assistance (Cornwall et al., 2007). Fortunately, due to my experience working in this context, I was very familiar with this type of disingenuous talk and attempted to get around it as best as possible by asking the same question in several ways and by pointing out people's contradictory statements. Though I was still faced with a lot of contradictions that I found difficult to reconcile and interpret.

One methodological issue that I struggled to overcome was related to the many preconceived notions that I had about the context before going to the field, and to not reproduce my own personal assumptions based on my experiences (Mills, et. al., 2006). Due to the scope of my research, which was focused on intra-household and community social dynamics of agriculture and food, it became apparent that even having a conversation about women's and men's farming within a household, as opposed to household farms more broadly, was in some ways biased and/or asking leading questions. By not including focused conversations about wider family dynamics because of my emphasis on understanding what goes on predominantly at the household level, this

likely missed important extended family system dynamics that shape what goes on within a household. Similarly, focusing narrowly on the topic of farming, I felt was also biased, by potentially not adequately reflecting the wider context of rural livelihoods in shaping food dynamics, especially since people purchased food in addition to producing it. Focusing on gender and resource access might have also taken away from other important intersecting identities, potentially missing certain groups of people and identities (Crenshaw, 1997). I think that I often fell into the habit of what Hillsburg (2013) defines as taking a unitary approach, where one category, such as gender, in research is more important than another. Despite this effort, it points to the challenge of both attending to the dangers of categorization, while also not rejecting them (Hillsburg, 2013).

I was most challenged by interpreting described differences between women and men because differences might not have necessarily implied injustice, per say. I felt that passing judgement on these differences solely on my own values was too much of an imposition on participants' voices. In my interpretation of gender differences, I made the conscious decision to ascribe a lack of fairness only when those were defined or claimed by participants themselves (Watts, 2006). This also resulted in me sometimes going along with sexist remarks or ignoring sexist jokes (Harries, 2016). This is also related in what Sultana (2007) similarly explained as her 'patriarchal bargain', highlighting the complexity of power relations between the researcher and participants that can go both ways. Relatedly, I was also challenged by deciding how much I should "be neutral" in conversations about gender discrimination. In other words, to what extent I should provide my own insights in conversations, or what Watson (2006) calls "interacting", which depended on my relationship with the participant and topic of conversation. Consequently, I think the best way to garner insights about social relations and cultural norms is by fostering an

understanding of it through a process of reflexivity. I found the most fruitful conversations were when I did not remain neutral, discussing my own perspective and providing a type of feminist outreach that encourages participants and the researcher to reflect about gender biases and assumptions, including my own interpretations, biases, which opened a space for debate.

Interpretation and representation of different voices provides a number of ethical and methodological issues. Analysis and interpretation through a process of abstraction, runs the risk of people's voices becoming distorted, lost in translation, taken out of context, and bound by academic language and ways of presenting data. Since this research is not neutral, it is always subject to misinterpretation (Mullings, 1999). I would be disingenuous to claim that I objectively and neutrally 'gave people voice' (Baxter and Eyles, 1997). Importantly, as Alcoff (1991) highlights, one cannot speak for anyone else other than oneself. To do otherwise would be an act of appropriation and oppression (their erasure and disempowerment) by reducing participants in a sort of Orientalist objectification (also Porter, 2010).

However, Alcoff (1991) also critically interrogates researchers who only speak for themselves, which they claim, obstructs accountability, criticism and is a dangerous disavowal of power and/or retreat from ethical responsibility (also Mohanty, 2003). Instead, what Alcoff (1991) and Kulick (2015) recommend for outsiders in research, is to accept that they can never fully understand another person, and that other perspectives are inherently different from and challenge their positions. To do this, research should be approached with humility through listening and privileging the speech of the other (Kulick, 2015). Since I was always aware of this risk of misinterpretation and bias throughout data collection, I did my best to ensure people's voices were accurately represented and distinguishable from my own by, in the least, providing direct quotes (Baxter and Eyles, 1997). Also, by focusing on the issues and injustice that participants themselves

prioritized, I pointed to where they described their values or made claims. This was also challenging to communicate because quotes, taken out of context, risk not completely representing participants' claims. Moreover, where I made claims that I felt were more subject to my own interpretation and bias, I made a point to state more explicitly that the claim may or may not be the case, or *could* be the case, and was supported with evidence from other contexts and literature.

Despite the many methodological disadvantages and ethical dilemmas, I believe that there is an important role for 'outsider' scholars to critically, empathetically and humbly engage and learn from those in the global south (Mohanty, 2003). Especially in a context with Western development aid blurring my 'insider' and 'outsider' positionalities. While I was never perceived by participants as fully an insider and I was continually 'othered' throughout the research process, the knowledge I shared, and time spent in participants' offices, communities and farms assured that I was at least their ally. This was perhaps best reflected by the fact that very few participants had outright rejected our meetings, disregarded our appointments or provided rushed interviews and condescending attitudes towards me and my work. Importantly, I believe that my work in agricultural development gave me a responsibility to be critical of the power dynamics that are too often reinforced in development, and that marginalize and ignore the types of farmers involved in this study. Throughout the research process, I strived to maintain transparency of my positionality by stating up front and openly that I was on the side of the smallholder.

Finally, I have attempted to lessen the degree of the biases in my interpretation by checking general themes in my findings with other Ghanaian scholars who work with these types of farmers from the University of Ghana, University for Development Studies and the University of Western Ontario. These senior scholars have been immensely supportive in ensuring the accuracy and integrity of this work, which I am extremely grateful and appreciative of their insights and advice.

Chapter 4

A bitter pill: Smallholders perceptions of Green Revolution prescriptions and climate change adaptation in northern Ghana

Siera Vercillo, Isaac Luginaah and Tony Weis

Department of Geography, University of Western Ontario

Under Review in *Review of African Political Economy*

A bitter pill: Smallholders perceptions of Green Revolution prescriptions and climate change adaptation in northern Ghana

Abstract

This paper examines smallholders' perceptions of Green Revolution prescriptions promoted by foreign donors, NGOs, and the Ghanaian state, which are aimed at commercializing and intensifying their production through increasing the use of chemical fertilizers, pesticides, tractors, and faster-growing seed varieties. Drawing on six months of qualitative fieldwork in the Northern Region of Ghana, this paper argues that the vast majority of smallholders are adopting this program in response to erratic rainfall, shortened growing seasons, and drier soil with diminished fertility, and that there are pre-existing socioeconomic differences affecting who can access the new technologies used to cope with environmental changes, with female farmers especially disadvantaged. Yet while this package is actively widening disparities, the majority of farmers who have adopted it are not uncritical of its impacts and they commonly described this decision as a short-term trade-off to meet subsistence needs at the expense of worsening soil health and increasing debt.

Keywords: climate change; vulnerability; development; Green Revolution; smallholder agriculture; Ghana; sub-Saharan Africa

4.1 Introduction

Climate change is a profound threat to global food security as higher temperatures, more extreme weather events, water shortages and land degradation are expected to adversely affect global food production over the long-term, as well as bring heightened short-term risks, such as contributing to the volatility of global food prices (FAO, 2016). Another crucial aspect of climate change and food security, which the Intergovernmental Panel on Climate Change (IPCC, 2014) has consistently stressed, is that agricultural production will be most severely affected in many of the poorest and hungriest parts of the world like sub-Saharan Africa (SSA). There are already many indications of worsening conditions, including higher temperatures, more erratic rainfall and shortened growing seasons (IPCC, 2014).

One increasingly prominent narrative is that climate change adaptation and improved food security depend upon the ‘intensification’ of agricultural production, defined primarily in terms of increasing yields per acre. Across SSA, the ideas and policies surrounding agricultural intensification and improved food security have been dominated by a particular vision promoted by a broadly-allied set of development actors involved with the Alliance for a Green Revolution in Africa (AGRA) (funded mainly by the Rockefeller Foundation and the Bill and Melinda Gates Foundation), the G7s New Alliance for Food Security and Nutrition in Africa (NAFSNA), the United States Agency for International Development (USAID) and the African Union’s Comprehensive African Agricultural Development Program (CAADP) (Moseley, 2017). While not aligned on every priority and not uniformly applied across countries, taken together these initiatives can be seen to broadly parallel a Green Revolution development model or set of prescriptions, which focuses largely on providing high yielding varieties (HYV) of seed together with increasing use of agro-inputs (e.g. fertilizers and agrochemicals) and mechanization (e.g.

irrigation, tractors, combine harvesters) as the means to increase yields and catch “up with the higher productivity levels of other regions” (DeSchutter, 2015, p.13).

From 1960 to 2000, the largest yield gains achieved in the Global South resulted from the Green Revolution that encouraged the use of new HYV seeds, developed through hybridization to produce more grains per plant and be more responsive to fertilizer and irrigation (Evenson and Gollin, 2003). This increase in grain production benefitted food security in a general sense by increasing the volume and lowering the cost of food, but the benefits to farmers was famously uneven, both between and within countries of the Global South. One of the glaring aspects of the spatial unevenness is that there was less adoption of new HYV by farmers in SSA because of the relatively poorer ecological suitability (most notably, due to scarcity of irrigation programmes) than in Asia and Latin America (Evenson and Gollin, 2003), though the absence of the Green Revolution in Africa is sometimes exaggerated (Bezner-Kerr, 2012). A major focus of Official Development Assistance (ODA) has been to address this perceived failure.

Although the core logic of the Green Revolution remains consistent, the way the model is promoted has changed. In the past, the Green Revolution was heavily supported by public and quasi-public institutions and geared towards domestic markets, but in the contemporary iteration ODA still provides technical support (e.g. extension services), while encouraging the private sector to take the lead role distributing agro-inputs and aggregating, processing, and marketing food outputs, with an aim to better integrate farmers into global markets (Bezner Kerr, 2012; DeSchutter, 2015). This shift is associated with an ideological conviction that farmers should rely less on the state and more on markets (Patel, 2013). While there is no question that increasing yields in SSA is needed, as per capita production has fallen since the 1960s (Scoones and Thompson, 2011), there are many questions about whether the new Green Revolution can increase

production in a way that will reduce poverty and food insecurity and improve smallholders' capacity to respond to climate change (Vercillo et al., 2015; Moseley et al., 2015).

A critical part of the context of ODA prescriptions is that farmers are not a homogenous group, and their ability to benefit from technical advice, access agro-inputs, and compete in global markets is influenced by a range of socioeconomic factors and problematized further by the challenge of climate change adaptation. For instance, poor, rural women are generally understood to be more vulnerable to climate change than their male counterparts because they tend to have access to far fewer resources (e.g. capital, land, agro-inputs, etc.), as well as having less education, information, and mobility and more demands on their time associated with meeting basic household needs, from food preparation to collecting water and firewood (Jost et al., 2016; Djoudi et al., 2016). The social disparities in agricultural production and access to food must also be understood in relation to neoliberal development prescriptions that have widely encouraged smallholders to specialize and intensify their production to compete in liberalized global markets, as these changes tend to affect households in uneven ways. In particular, farmers with greater capital to invest in agro-inputs, labour and land tend to have greater capacity to grow in scale at the expense of less competitive farmers (Weis, 2007; Akram-Lodhi and Kay, 2009; Bernstein, 2010; McMichael, 2013).

Political ecology is a conceptual approach that informs our effort to understand farmers' decision-making and their adaptation to climate change in particular, and how this relate to various development interventions that are being promoted in the region. It recognizes that farmers, their households and communities are connected to wider political economic dynamics, such as the pressure to commercialize and increase the use of external inputs (Rocheleau, 1995; 2007; 2013; Robbins, 2004). Here, it is important to recognize that not all farmers are the same and they have

different rights and responsibilities based on socioeconomic conditions (Rocheleau et al., 1996). It is also important to situate policy change historically, which is why we analyze agricultural development policy in Ghana since Independence. Political ecology also stresses attention to agency, and we recognize that farmers are participants in the process of adaptation in managing their own food security and sought to learn how they are responding to environmental degradation and changing political economic conditions (Forsyth, 2008). In particular, it is important to consider the policies and interventions promoted by powerful actors shaping the direction of agricultural development, specifically ODA, NGOs and philanthropy that fund a Green Revolution input intensive farming model.

Although the explanations of uneven vulnerability to climate change is well established, it is often articulated in a general way, and it is important to consider its relation to influential development prescriptions and specific gender norms in order to better understand threats and prospects for more socially just and environmentally sustainable adaptation responses (Djoudi, et al., 2016). This paper examines smallholder adaptation in the Northern Region of Ghana, which is both highly susceptible to climate change and heavily influenced by external development prescriptions, drawing upon qualitative research within two communities located in one district.¹² While there is evidence of increasingly erratic rainfall and shortening growing seasons across all of Ghana, the most acute effects are being experienced in the drier north which is almost entirely dependent on rain-fed agriculture and where food insecurity is highest (Laube et al., 2012; Codjoe et al., 2012; Luginaah et al., 2009). In addition to exhibiting marked internal disparities, Ghana is

¹² Northern Region is one of three regions (along with the Upper West and Upper East Regions) that together comprise the northern two-fifths of the country. The case study sites were selected because of their proximity to the biggest northern city, Tamale, where there are major food markets, regional grain and seed storage, transportation, credit institutions and processing facilities, which has made it a prime target for ODA for many decades. The specific district and location of the communities are not identified in order to maintain the confidentiality of both participants and research assistants in this study.

also noteworthy with respect to the Green Revolution because external prescriptions for agricultural development (from a combination of bilateral, multilateral, and philanthropic donors and NGOs) exert a great deal of influence and because Ghana is seen to have a considerable ‘yield gap’ between current and potential productivity (Breisinger et al., 2011). The central objective of this paper is to examine smallholders’ perceptions of Green Revolution prescriptions promoted by foreign donors, NGOs, and the Ghanaian state, which are aimed at commercializing and intensifying their production through increasing use of chemical fertilizers, pesticides, tractors, and faster-growing seed varieties.

4.2 Agricultural Development Policy and ODA in Northern Ghana

To understand how farmers perceive development prescriptions and rationalize climate change adaptation, it is critical to first specify the key dimensions of agri-food policy and ODA prescriptions, and consider how these have created both opportunities and constraints for different types of farmers over time. Northern Ghana was designated as a key food production zone in the decades following Independence in 1957 (Amanor, 2011), with Green Revolution approaches first introduced by the Ghanaian government in the 1960s (Goody, 1980) and supported by bilateral donors. This GR approach included the subsidized provision of agro-inputs such as HYV (including hybrids), fertilizers, pesticides, and irrigation, as well as state support for mechanized ploughing and harvesting (Goody, 1980; Nyantakyi-Frimpong and Bezner Kerr, 2015).

State support for agriculture in Ghana’s northern regions increased in the 1970s via the military government’s Operation Feed Yourself (OFY) campaign, which promoted larger-scale agricultural production by increasing access to agro-inputs and machinery through state-subsidized credit (through the Agricultural Development Bank and the Ghana Commercial Bank) and prices, as well as increasing publicly-managed marketing outlets through MoFA (Amanor, 2011). For

instance, between 1972 and 1975 alone, Ghana's importation of tractors and chemical fertilizers nearly doubled (Goody, 1980). However, critics have stressed that small farmers (most of whom cultivated five acres or less) were not the primary beneficiaries of the subsidized credit, which flowed disproportionately to members of the military government and urban-based businessmen who invested in large commercial farms, a few as large as 1000 acres (Goody, 1980; Wiemers, 2015). The introduction of tractors also impacted land relations, enabling the ploughing and planting of hundreds of acres, much faster than could ever occur with a hoe, though some farmers rejected mechanized tillage in the knowledge that the labour-saving gains came at a cost of reduced soil fertility (Goody, 1980). The adoption of HYV of staples like maize, along with increasing fertilizer and pesticide use, also contributed to heightened social differentiation, as farmers with little or no access to credit generally struggled to cover the costs. This model did succeed in bringing productivity gains at the expense of rising inequality, but eventually the cost of subsidizing it became unaffordable for the Ghanaian government in the context of deteriorating economic conditions in the 1980s and mounting external debt, which ultimately pushed it to appeal to the International Monetary Fund (IMF) and World Bank for financial assistance.

Ghana was at the forefront of structural adjustment in SSA during the 1980s and 1990s, with IMF and World Bank loan conditions greatly scaling back the role of government in the agriculture sector, including: removing subsidies on fertilizers, farm equipment, and credit (Gibbon, 2014), closing state marketing companies that had previously guaranteed prices for staple foods, and liberalizing markets. With trade liberalization, Ghana began to import more food (especially staple grains), which disproportionately hurt farmers in the north where staple food production dominated and where there were little alternative livelihoods (Songsore, 2003). As state support for agriculture declined, it increased the space for both the domestic private sector and

foreign donors and NGOs to provide services in a range of areas, including agriculture (Laird, 2007). But the total level of investment in agriculture still fell with growth in the sector during the early 1990s through the 2000s mainly due to increases in acreage planted rather than yields (Breisinger et al., 2011).

Following the period of structural adjustment programmes in Ghana (as in much of SSA) there was a renewed interest in agri-food policy, increasing ODA oriented towards agriculture, and aggressive approaches to court foreign investment. In 2003, the African Union's CAADP developed a National Investment Plan for Food and Agriculture, with a focus on identifying and fostering private investment opportunities across Africa while also encouraging governments to increase their funding for agriculture. The desire to increase agricultural productivity was further heightened by the 2007-08 world food price crisis when food prices for certain key staples spiked dramatically. Together, this contributed to a renewed interest in the Green Revolution model in Ghana, as well as across much of SSA, though with some new actors and approaches from the past (Patel, 2013). In Ghana, the CAADP's vision was materialized in the *2009-2017 Medium-Term Agriculture Sector Investment Plan*, which identified sustainability – including responding to climate change – as a core objective, alongside a focus on increasing productivity, farmer incomes (through intensification and outgrower contracting schemes), and global market integration. The government instituted a National Fertilizer Subsidy Programme, which covered some proportion of the cost of various fertilizers supplied by multinational corporations, and some state subsidized tractor services were provided. This conflation of priorities reflected the wide range of actors that provided technical assistance and funding, including: AGRA; the World Bank, the FAO; the African Development Fund; and the European Union (MoFA, 2010). Grow Africa (launched in

2011) and the G7's NAFSNA (in 2012) fortified this broad course further, as it used ODA funds to help spur private investment in agriculture across SSA, including Ghana.¹³

In Ghana, various donors have encouraged the implementation of new laws and policies, including those related to seed development and fertilizer, and NAFSNA members established a database for 'suitable' land investors to review and coordinate private investors to do business with 'lead' farmers (DFID, 2013). ODA typically supports creditors, agro-input dealers, 'outgrowers', who are larger-scale commercial farmers who contract smallholders by providing technical advice, agro-inputs and mechanization on credit, and 'aggregators', which are enterprises that also contract smallholders and are involved in processing and/or selling foodstuffs. Notably, AGRA has made considerable investments to: enhance the supply chain management of rice, maize, cassava, and soy, and train village level agro-dealers and supported them with subsidized chemical fertilizer (AGRA, 2017). USAID and the World Bank are also significant supporters of some of the largest contracts with outgrowers and aggregators in the north. Contracts are usually agreed upon between a farmer and outgrower or aggregator prior to the planting season, where the buyer specifies the pricing system, quantity, and delivery time; for aggregators, the marketing contract stops here, but for outgrowers the contract will also specify the supply and use of agro-inputs, support (if any) for land preparation, and the nature of technical assistance.

In 2017, the government of Ghana also established a new agricultural plan entitled 'Planting for Food and Jobs – A Campaign for Rapid Growth' (funded mostly by the Canadian government, which provided US\$120 m), making the state another player in contract farming through the MoFA district units. In this project, the government provides a combination of chemical fertilizer and high-yielding open pollinating varieties of seed (OPVs) of maize, rice, soy,

¹³ Each G7 country involved in NAFSNA committed millions of dollars in Ghana between 2011 and 2015, led by the United States (US\$225 m), France (US\$76.25 m), Canada (US\$71 m), and Germany (US\$69 m) (DFID, 2013).

sorghum and a range of vegetables to farmers willing to dedicate a minimum of three acres to one of these crops. Farmers are also encouraged to sell to the National Food Buffer Stock, a state-run company formed in 2008 to store key food grains at a fixed price (Akoto, 2017).

In sum, agricultural policy in northern Ghana has become increasingly dominated by a combination of bilateral, multilateral, and philanthropic donors and NGOs, which have together exerted a great deal of pressure upon smallholder farmers to become increasingly commercialized, and to intensify production through increasing use of fertilizers, pesticides, improved seeds, and tractor services, oriented heavily towards maize, rice and soy production. Although this intensification strategy is associated with the Green Revolution, it differs from the Green Revolution of the past in that credit subsidies for these inputs are increasingly being targeted at local private outgrowers, aggregators and agro-input dealers, as opposed to state led institutions or smallholders directly.

Within the case study district specifically there were eight externally-financed projects (by varying combinations of bilateral, multilateral, and philanthropic donors and NGOs) operating in 2017, alongside the government supported contract. These projects focus principally on providing subsidized credit for improved open pollinating and hybrid maize, rice, and soy (notably, only one project supports vegetable production), fertilizers, pesticides, and tractor services, either directly to farmers or indirectly through different contracting schemes.¹⁴ There are also two contracting schemes operated by registered non-profits. The larger one is the Masara N'Ariziki Farmers Association, which was registered in 2009 by two multinational agro-input firms (Wienco and Yara Ltd.). In addition, there are also 23 smaller contracting schemes operated by private individuals across the district, which arose generally after 2012 that connect close to 1000

¹⁴ Maize, rice and soy are also the only crops supported by the government led contract in the district studied.

smallholders (over 600 males and over 300 females) (MoFA, 2014). Clearly there are many actors and projects working to shape the course of agrarian change in northern Ghana, and before we turn our attention to how farmers are interpreting them, it is necessary to explain how the research was pursued.

4.3 Research Methods

The empirical research presented in this paper is based largely on six months of qualitative research geared towards understanding how smallholders interpret the array of external prescriptions that have been foisted on them. This research was pursued in two communities from April to June 2016 and January to April 2017 and included 55 interviews with 78 smallholder farmers (as some interviews were conducted with farming couples), 12 focus groups with smallholder farmers, and interviews with 31 key informants in the district. A purposive sample of participants was used in order to cover smallholders working in a range of environmental conditions, remoteness, market orientation, and also if they are working in a donor-supported program. In order to anonymize the case study sites, one is referred to as the ‘Roadside village’ (as it is located on a major, paved road better connected to the main city market) and the other community is referred to as ‘Remote village’ (as it is only connected to a highway by a series of unpaved roads and takes much longer to reach a major center). Table 3 disaggregates the interview participants by age, ethnicity, and whether the household is male- or female-headed. Six focus groups were pursued in each community, split between women and men only groups, and involved a community resource mapping exercise designed to collect data about land use and crops and stimulate discussions about gender-based differences in resource access and decision-making. Key informant interviews were conducted with individuals with specialized expertise in agriculture and food in the region through their work with the government ($n=10$), foreign donor and NGO

agencies ($n=9$), private companies ($n=3$), and outgrowers ($n=9$) who contract smallholders. Interviews and focus groups were conducted by the first author and a team of research assistants and were recorded and either immediately translated live from Dagbani to English or conducted in English.

Table 3 – Summary of qualitative data collected with smallholders

	Roadside Village	Remote Village
Female smallholder interviews	23	13
Male smallholder interviews	7	9
Mixed gender interviews	0	3
Total	30	25
Elder (>60)	1	3
Youth (<35)	6	0
Non-Dagomba Ethnicity	6	1
Female Headed Households	3	4
Focus groups women only	3	3
Focus groups men only	3	3
Total	6	6

NVivo was used to analyze the interview data using etic and emic coding and clustering, and reliability and validity were enhanced through triangulation of different methods, the use of a field journal, and verification of results through member checking. Direct quotations have been selected for representativeness, clarity, and ability to bring key issues to life.

4.4 Farmer's Perceptions of Environmental Change

Before considering how smallholder farmers interpret development prescriptions, and how this is affecting their cultivation practices, it is necessary to first discuss the primary environmental changes that are central to their rationale for adopting new input-intensive practices. One of the most significant findings is that the overwhelming majority of both female (80%) and male farmers (90%) noticed a change in the pattern and duration of the rainy season which then affects the typical start and end of the growing season. In an interview, one male smallholder farmer explained that: “it used to rain [for longer], maybe from March to maybe October there about, but this time it has shortened.” Overall, female and male smallholders frequently explained how it had become more difficult to predict when to start planting because of what was sometimes described as the ‘false’ start of rains, and because some biophysical signals they used to rely on to mark the start of the growing season have changed. For example, a slight minority of farmers pointed out how *dawadawa* trees which bears fruits signaling the start of the growing season are no longer bearing fruit like they once did because of a shortage of rainfall or drought.

Although most female (80%) and male (90%) smallholder participants recognized that total rainfall has declined compared to the past, a majority also explained that sporadic flooding sometimes impeded harvest (especially in low-lying areas). Heightened risk of drought was also a common theme raised in the vast majority of interviews focused on environmental changes, which is widely identified to be delaying planting and reducing germination at the beginning of the season, leading to poor tasseling and pollination, and forcing either premature or delayed harvests.

As one female farmer put it:

The rains now compared to previous years is not sufficient for farming. For instance, the rain will come early, then you farm, and then along the lines drought will set in. Or, along the lines, the rain will just stop... I thought that the soybeans

needed more water and we left it [on the field], and then the drought came in, so the pods burst, and the seeds were all over the field.

Other commonly noted problems related to drought are that crops left on fields longer are seen to face higher risk of rot, pest infestation and/or bush fires. Farmers' perceptions of more erratic rainfall can be corroborated with studies on climate change in Ghana. Owusu et al. (2008), for example, reports a shift in the seasons towards longer dry seasons and diminishing growing or wet seasons. Increased variability of rainfall in Ghana has been demonstrated by Stanturf et al. (2011), which also forecasts changes in precipitation from 36% decreases to 32% increases in growing or wet season rainfall.

Another significant finding identified by an overwhelming majority of male and female smallholders include soil fertility was getting much worse in quality over the past 10 years. This perception is connected to a range of biophysical and human-induced factors including: drought and increasing aridity; excessive cultivation and lack of fallowing, overgrazing, flooding in the rainy season and increased fertilizer and agro-chemical use. The majority of male and female smallholders described how the soil is becoming drier, harder, less fertile and less able to absorb water than in the past, making it more prone to flooding, and many compared the environmental conditions to Burkina Faso, which is in the arid Sahel. Physical and observational studies, such as those by the Environmental Protection Agency of Ghana (2008), estimate that desertification is proceeding at a rate of 20,000 hectares per year, compromising soil and water sources, and it is estimated that 35% of the total land mass in Ghana has become a desert area.

Drier soils and higher temperatures are widely perceived by the majority of smallholders to increase the risk of bushfires, which threaten farms, tree seedlings and surrounding vegetation. One male farmer, reflecting on the rising threat of bushfires, noted that just a few decades ago:

“the grass was always green. Even at the end of the season ... bush fires will not even consume all of the grasses on the farm... [and] there were many more trees ... But if you look at it now...the rain just stops, within two months everything dries up and when there is little fire, everything gets burnt... this time looks very bad as compared to ten to twenty years back.” A handful of farmers even described the problem of soil aridity and bushfires as a reinforcing spiral, in essence: the soil is becoming drier and the vegetation is becoming more prone to bushfires; rising bushfires are inhibiting many tree seedlings and vegetation from growing; and declining vegetation means that the soil is holding less water.

Ultimately, while there is some variation in how smallholder farmers perceive the nature of environmental change and its driving factors, the large majority understand the conditions of farming are worsening and they need to find ways of responding. In the next section, attention turns to smallholder farmers interpretations of development prescriptions, and how they are influenced by these perceptions of environmental change.

4.5 Smallholders Perceptions of the Green Revolution

While the Green Revolution package has been promoted aggressively in northern Ghana for more than a decade, as discussed, we cannot assume that smallholder farmers are simply passive recipients and have no agency. Hence, it is important to consider how they perceive the model of the Green Revolution, and why they are making the decisions to follow or reject it. Our discussion is therefore organized around key elements of the prescription. One of the overriding arguments is that adoption of the Green Revolution is heavily based upon short-term environmental and economic calculations and compromises that are far from hopeful. Rather than pursuing this model in hopes of growing and commercializing, a majority of female and male

smallholders reported pursuing it in hopes of maintaining similar yields compared to the past to survive. This contrasts dramatically with the narratives given by almost all government, donor, NGO representatives and outgrowers, who consistently described the goal of the Green Revolution in terms of generating surpluses and fostering individual and regional growth. Another important finding is that the vast majority of farmers are struggling to afford the whole array of agro-inputs and technology, such as faster growing seed varieties, mechanization, agrochemicals and NPK this model entails.

4.5.1 Faster growing seeds and declining crop diversity

Almost all of the female and male smallholders interviewed use publicly developed, faster growing OPV seeds, a decision they commonly attributed to the fact that these take less time to grow than landrace varieties and therefore present a means of coping with a shortened growing season. The most commonly cited improved OPV seeds planted in the case study sites include: ‘Jenguma’ soy (which takes 90 days to reach harvest); ‘Jasmine’ rice (115 days); ‘Obantanpa’ maize (90 days); and ‘China’ groundnuts (90 days), all of which are faster than non-improved OPVs, or traditional landraces.¹⁵ One male community elder clearly explained his rationale for his choice of seed varieties stating that: “I am now going for shorter varieties that are [able] to cope with the rainfall,” which he gets from MoFA. There are also a range of other sources for accessing these seeds, including from neighbouring smallholders, outgrowers and commercial agro-input dealers. Unlike high-yielding hybrid varieties, improved OPVs are cultivated and the majority of smallholders generally continue to save and select this seed season after season with the hope of

¹⁵ These were the only seed varieties that were commonly named, but there were many smallholder participants who were unable to name the variety they used because the seed was purchased or received more than five years prior to the interview and the name could not be remembered. There was also reported use of hybrid HYV of maize by a few farmers, however this was generally only accessed through participating in the international company operated outgrowing contracts, such as Masara N’Arziki.

achieving further improvements. The fact that improved OPVs are both capable of growing within a shorter season and are typically described as freely shared between farmers (which makes them widely available), that explains why very few smallholders complained about accessing them. Although the vast majority of male and female farmers generally described government-certified high-yielding OPVs as being better able to cope with erratic rainfall, some insist they actually produce lower yields than landraces, in contrast to associated promises. As one male farmer put it: “Because the rains are not very reliable we do short duration crops,” even though this “does not give us good yields and the grain size too is small.” A minority of farmers also pointed out that some of the new crop varieties being introduced also tasted different compared to traditional landraces, such as maize being sweeter and groundnuts less oily, and the maize produced did not store for as long.

The widespread adoption of improved OPVs in the case study communities is clearly reducing the diversity of crops planted and therefore the foods consumed. The perception of a changing climate is central to this shift, as a majority of both female and male smallholders consistently explained how they were no longer growing a range of crops and traditional varieties because they see them as needing too long or lacking resilience to drought, in contrast to agroecological advocacy that assumes landraces tend to be hardier. One male smallholder summarized the changing nature of crop planting patterns in his community: “Those food crops we have stopped cultivating are bambara beans, millet, sesame, pigeon pea because at around that time, the rains used to be enough for this growth period and it could give you [good yields]. But this time, when we do it, some of it, it will not give [good] yields,” because the crop “will not be matured, and the rains will stop.” Crops that have relatively lengthier growing periods, such as yam (which farmers regularly expect to take 120-130 days to harvest), millet (120-150 days), and

sorghum (120 days), were once common, but are now grown by few farmers. In comparison, faster-growing crops such as maize and groundnuts (where recently introduced improved OPVs only take around 90 days), are now grown by the vast majority of male and female farmers. A retired MoFA extension officer summarized the trend of declining landrace varieties he sees: “In Ghana, indigenous seed [or landraces], I doubt whether we have them again for certain crops like maize...Groundnut, the local indigenous is no more”. In sum, new improved OPVs are in large measure being adopted as a means to cope with the shortening growing season and involve a number of important compromises, including reduced diversity of crop varieties and the range of foods produced, and explanations given for these decisions were more about meeting subsistence needs than increasing total production.

4.5.2 Access to tractors disparities

While not exclusively part of the Green Revolution, yet an important part of the wider development prescription in the region, many farmers described their use of tractors to plough land not only in terms of the obvious labour-saving benefits relative to the hoe, but also as a response to a parched landscape, in order to loosen dry soil, enhance water retention, and improve germination. As one female smallholder put it: “Formerly, we used to plough just once and sow and ... the rains were regular, [so] we could be assured of good germination and good harvest. But this time around, because of the lower frequency [of rains,] we plough twice ... just to loosen it. Awaiting the next rain, then we will do a second plough with that, whenever it rains, the soil will be able to retain so much water to help our crops.” However, while more and deeper ploughing was widely deemed to be necessary in the short-term, a minority of these male and female farmers

also recognized that it involves a dangerous longer-term trade-off in reducing soil fertility. Also, since almost all smallholders do not own tractors, they must hire tractor services which a major expense during the beginning of the planting season when families' farming and food expenses tend to be at their highest, with the high demand in the key weeks of planting leading to what most smallholders see as excessive rates charged by operators.

The majority of participants, especially older ones, who discussed the challenges around the cost of tractors, contrasted their frustration with the cost and availability of tractor services today with their sense that it was better in the past, with some pointing out how tractors were once more affordable and accessible when MoFA provided this service directly (in the 1970s). A retired MoFA extension officer also highlighted the fact that land preparation once involved draft animals, but the government abandoned "livestock training [and] animal traction...gradually [from] 1979 up to '89," owing in part to a view of "tractors as modern" that has been carried on by other key actors shaping agricultural policy.

The nature of tractor service provision is contributing to increasing rural differentiation in the case study sites because the vast majority of smallholders are primarily purchasing tractor services from nearby community members and/or large commercial farmers who own their own tractors and/or lease out machines along with operators. In focus groups, smallholders made it clear that the ownership of tractors and ability to command tractor services is an important dynamic exacerbating social disparity in land and capital. Not only are payments for services flowing from some smallholders to larger-scale farmers, but those with tractors are better able to plough on short notice during the crucial and increasingly variable windows for optimal planting as rainfall becomes more erratic. Further, control of tractors is helping was described by a minority of participants to permit larger-scale farmers to grow in scale, by ploughing unused and unallocated

land controlled by the village chiefs, which are often located further-away from the local communities. In this context, community land is customarily governed around the family, Chief and the Earth Priest. The Chief and Earth Priest tend to hold the land in trust for the people by interpreting customs and resolving disputes. Agriculture land is owned collectively by families with specific plots allocated to male descendants only (based on patrilineal inheritance norms) that they are afforded typically for life. A minority of smallholders insist that this trading of tractor services for land access is allowing outsiders to gain access to community land, which was given out by family heads and chiefs at the expense of other land-poor family members. As one smallholder explained it: "... there are areas where ... they [the chiefs] give [unused community land] to those people to farm because [he] might come plough for them If you the [community member] go to access the field, the land, he will never give it to you, he is looking for someone to ...plough for himself." In other words, the capacity to plough land is emerging as a mechanism for simultaneously gaining access to land and make payments that is beyond the means of an overwhelming majority of smallholders.

One of the most common complaints made by female smallholders was to highlight the fact that the disparities in accessing tractor services have stark gender dimensions, as social norms preclude them from seeking tractor services directly. As one female smallholder explained, women must typically depend on their husbands to negotiate on their behalf to hire tractor services: "Mostly it is the men who go to bring the tractor and we follow them. And little by little, when they finish their activities, then they come and plough for [us]... The fact is that we are women, so, we can't go to look for tractors, we have to rely on the men... I [also] cannot just get up and say I am going to look for these things." In spite of the barriers, most female participants did pay for their own tractor services, mediated by men in their family, and many described this both as a

key determinant in their scale and one of their highest costs. A minority of women also explained that they had scaled back their farming in the past 5-10 years (e.g. from five acres to one or two) because of the high costs of preparing the land and/or hiring tractors. The dramatic disparities in average plot sizes between men and women smallholder participants – men have access to roughly seven acres whereas women have access to roughly two – are compounded by the fact that it is relatively more expensive for tractor service providers to plough small plots. This reality is especially stark at the beginning of the growing season when tractors are in high demand and farmers fiercely compete for them in the increasingly variable planting window. Furthermore, an overwhelming majority of women who described the challenge of accessing tractors also typically described not having as much time to supervise or ‘chase’ the operator due to domestic duties, nor do a minority of female smallholders feel as respected by the operators as men, increasing the likelihood they will not be able to have their land ploughed within the key period.

4.5.3 Agrochemical and fertilizer addiction

There is something that resembles a vicious spiral at work with increasing dependence on pesticides (especially herbicides) and NPK, as many smallholders described how they are turning to herbicides to respond to growing weed problems that they attribute to soil degradation, and which also makes access to fertilizers a pressing need in their eyes. As noted earlier, dry compacted soils are seen to be heightening risks of flooding during the rainy season, and herbicides are now being viewed by a minority of farmers as a necessary means to kill off the rampant weed growth after flooding. It is important to note that these conclusions are based on smallholders’ perceptions of the causality of weed problems rather than physical scientific evidence, which is nevertheless important to understanding farmers’ rationale for adopting certain technologies in order to respond to their perceptions of environmental problems such as these. For example, as one smallholder

explained it, “when it rains, ... the weeds will come so much that I will have to buy weedicide, this total weed killer,” and then will “spray the field before the first ploughing.” The vast majority of smallholders in the case study sites who purchase herbicides do so from either private dealers or outgrowers in line with the encouragement of various projects.

Rising input use is occurring in spite of serious reservations; as indicated earlier, the overwhelming majority of farmers believe that pesticides and NPK, while necessary in the short-term, are ultimately contributing to soil degradation. Strikingly, some farmers described themselves as being “addicted to chemicals”, in the sense of being necessary to *maintain* rather than *increase* production levels, and one focus group of male smallholders compared the addiction to pesticides and fertilizers to the problem of alcohol addiction. One man clarified the initial reluctance of those farmers from his community to adopt fertilizer because of the perceived damage it would cause to their soil: ‘For the past ten years over we did not even know it. When they brought [agrochemicals] nobody wanted to use it because we felt it would damage our soil. But it is now that we are compelled to use [chemical inputs] because the soils are now not rich anymore.’ Farmers’ perceptions of the spiral of pesticide and fertilizer dependence is also seen to relate to the problem of soil drying and the growing frequency and intensity of bush fires described earlier, which farmers see as contributing to diminished soil fertility. Moreover, this link between pesticide and fertilizer dependence and declining soil fertility is corroborated with physical scientific studies in other empirical contexts, such as the FiBL’s 21-year study in Central Europe (in Altieri and Nicholls, 2012). A minority of farmers also expressed their fear that continual use of pesticides could give rise to herbicide-resistance, or ‘superweeds’, over time. Meanwhile, the vast majority of farmers also explained that the dependence on fertilizer and agrochemicals had

put them further into debt, which is a major factor in growing social polarization discussed in the following section.

Another concern a minority of farmers expressed about rising pesticide and fertilizer use is that it is hurting the quality of the food being produced. This includes changing the taste of some foods, increasing perishability, and decreasing the grain-flour ratio of maize and yam specifically. As one male farmer explained it: “Those of us who spray the yam and those who don’t use [the spray], when you eat both of the yam, you will see there is a difference in the taste....As for maize, the flour content is not as high as those days, it has reduced...even if you apply with the fertilizer... the weights to are not the same.” A few participants suggested there could be a link between these chemicals and adverse health outcomes they perceived, such as impotence and weakening strength, though such impacts are obviously extremely difficult to definitively correlate. In short, in spite of the widely expressed anxiety about the impacts of rising pesticide and fertilizer use there was a prevailing sense among farmers that they had few alternatives to cope with the environmental changes.

4.5.4 Fears of increasing polarization and land dispossession

In the case study district there is widespread recognition that farming is becoming increasingly polarized between those who are more capable of financing the total Green Revolution package of inputs and technology being promoted and those who are not. One male farmer summarized this tendency of agricultural credit to skew towards the already better-endowed: “farmers who are more informed, farmers who have enough capital, who are already doing something credible” are more likely to receive loans because creditors “will usually ask for your past records, and, so, before you get this support, you should already have a record that shows that you are financially stable.” As discussed earlier, smallholders are expected by development

policy to purchase seeds, fertilizers, pesticides, and tractor services through private suppliers like agro-input dealers and outgrowers, and the overwhelming majority of female and male smallholders view these actors in negative terms, regularly complaining about their struggle to afford mounting costs.

Access to credit is also heavily skewed along gender lines. According to district level Ministry records, twice as many male farmers participated in private contracts than female farmers and few participated in the first year of the government led contract. A minority of women smallholders who are part of contract farming relations explained that they had initially chosen to participate because they were part of women-only farming associations. Women who did not participate in contract farming claimed that they did not have sufficient access to the land (recalling that the average woman in the communities control roughly two acres) or capital to invest in the necessary agro-inputs or assumed that they either could not access credit or pay back the debt if they were to receive any. Further, small land sizes alone were a basic disqualifier from participation in some contract relations that require a minimum acreage of specific crops.

As discussed earlier with reference to tractor services, a majority of smallholders in the district are concerned about the growing presence of newcomers – often described as ‘outsiders’ or ‘strangers’ – to their communities, in that they are not members of the families who had long been settled in the area and who passed their land down inter-generationally under the supervision of Chiefs and Elders. Differences in wealth were also reflected in a minority of smallholder references to newcomers with terms like ‘big’, ‘urban’, ‘educated’, ‘elite’ and ‘entrepreneurs’, as well as explicit or implicit indications of political connections. For instance, one smallholder described his sense of the newcomers: “big people, MPs, educated who are all into farming, and I think it is a way of investment. That is why more of such people are rushing into it.” In a few cases,

extremely negative characterizations of outsiders were given, depicted as not being ‘real’ farmers and more interested in benefitting from handouts and credit to amass wealth, in contrast to smallholders for whom farming is about meeting basic needs. Though we did not find major differences between the majority of farmers’ relationship to development actors, government agencies, or private sector services across the two communities and their farming challenges, the Remote community was described in the community resource mapping focus groups as having a higher number of wealthier outsiders to the community who come from the city and acquire larger acreages of usually unoccupied land. The higher number of outsiders in the Remote community was attributed to the availability of fallow land in comparison to the Roadside community where population densities were higher. In the Roadside community, outsiders were described by a majority of farmers as taking over smaller plots of land closer to where community members lived to build commercial enterprises (e.g. input dealer businesses, a water filtration company), whereas in the Remote community, outsiders were often described as taking over larger acreages of land to farm commercial food crops, located usually further away from where community members lived and on virgin land where they tended to not farm.

The recognition by a large proportion of smallholders of outsiders to the community accessing credit and direct payments from development projects also translates to a perception that these are stoking a competition for land. Land was regularly described as being in short supply as more people move into farming in response to new incentives on one hand, and by environmental changes on the other as some are trying to increase their acreage planted to compensate for lower yields stemming from erratic rainfall and heightened aridity. One implication of the growing competition for land is that a majority of farmers expressed their sense of having to continuously cultivate all of their fields in order to minimize the risk of dispossession, even though the vast

majority recognize lack of fallowing as a major contributing factor to soil degradation and the increasing reliance on chemical inputs. As one smallholder put it: “We know of the benefit of fallowing, [but] the moment you even leave it, somebody is hungry for land, he will even come and say, ‘you are satisfied and left some,’ so he will be begging to farm on it.” Rather than leaving land fallow, some perceived the purchase of fertilizers – including taking credit to buy them – as the safer response to soil degradation.

4.6 The Uneven Impacts of the Green Revolution in Northern Ghana

This paper investigates how smallholders in a case from the Northern Region of Ghana perceive Green Revolution development prescriptions, which are geared to intensify and commercialize their production. These prescriptions are being propelled through a series of projects supported by an array of powerful development actors such as NAFSNA, AGRA, the African Union, USAID, the World Bank, FAO, Grow Africa, and the European Union that ascribe to a broad conception that agriculture in SSA must be transformed to use land more efficiently in order to catch up with the productivity levels of other regions (Rockefeller Foundation, 2006; Toennissen et al., 2008; DeSchutter, 2015). The Green Revolution is an agricultural development strategy that seeks, above all, to increase total agricultural productivity through the use of fertilizers, agrochemicals, improved seed varieties and mechanization, which is assumed to translate directly to improved food security. The contemporary form of the Green Revolution strategy propelled by development actors is heavily focused on disseminating technology through private sector actors, such as agro-input dealers and outgrowers. With vast majority smallholders relying more on private sector actors and less on the state, the expectation is that markets will provide a powerful discipline for improved efficiency. Yet while the Green Revolution has brought momentous gains in yields, labour productivity, and total food output, for decades critics have

railed against the fact that this does not inherently translate to improvements in poverty reduction and food security for the poor, while also being implicated in widespread polarization along what Peters (2004) calls ‘struggles within classes’ or between social groups. In this case, there is social differentiation particularly amongst smallholders, including between women and men who have unequal access to credit and are not capable of participating in development led or private sector contract schemes on the same terms.

This paper argues that smallholders in northern Ghana are extremely critical of this intensification and commercialization development prescription at the same time as many feel compelled to pursue it. Farmers view this prescription less with the hope of increasing their productivity and much more as a means to cope with environmental change needed to survive, especially the increasingly erratic rainfall and heightened aridity they are facing. In fact, smallholders regularly articulated that while these prescriptions might be necessary to help them cope with the shortening growing season, they are working against the long-term sustainability of agriculture in the region, due to the negative impacts of tillage, herbicides, and fertilizers on soils and the narrowing crops and varieties planted.

A major consequence of adhering to the improved OPVs is that some landrace varieties, such as of maize and groundnuts are rapidly disappearing, while staple crops such as sorghum, millet and yam are grown significantly less due to their perceived inability to cope with shortening growing seasons. Mono-cropping and/or specializing in a limited set of crops counters the benefits of mixed farming systems which have been historically proven to contribute to a wider diversity of foods and to a higher quality of nutrition, as well as being better able to cope with environmental and economic shocks, such as droughts, floods, and price hikes (Altieri, 2009). This narrowing of the varieties of crops produced also has negative implications for the cultural desirability of food

and nutrition, which is an important aspect of maintaining household food security, especially since farmers had concerns about the quality of and types of foods produced and changes to the taste of some of the newer varieties. The varieties of seed individuals choose to grow, and the types of foods desired to be consumed need to be considered in agri-food policy and practice (Brahmah et al., 2017), especially for maintaining certain cultural traditions and aspects of social life in Ghana (Kasanga et al., 2018).

The consequences of the use of herbicides and tractors are that they contribute to soil degradation and mounting farm costs, despite their usefulness in reducing the manual labour needed to weed and prepare soil by hand to enhance water retention and germination. At the same time, the degradation of soil is also leading to an increased reliance on NPK to deal with short term soil fertility issues. However, this is also perceived to degrade the overall soil quality when viewed over an extended period of time, as well as compromise the storability. Alongside changes to soil and food quality, we find that farmers were taking on increasingly higher levels of debt to purchase NPK (Campbell, 2004), herbicides and tractor services. Reliance on synthetic agrochemicals, particularly fertilizer is generally considered prohibitively expensive in drought stressed environments across Africa because erratic rainfall prevents fertilizer from absorption and, thus negatively affects the expected increased yield outcomes needed to recoup costs (Scoones and Thompson, 2011), which runs counter to the logic put forth by advocates of the Green Revolution in Ghana (e.g. Bresinger et al., 2009). Consistent with Ragasa et al. (2018), what is clear in this study is that technical prescriptions do not necessarily generate large enough yields to off-set the costs of such inputs. Increasing debt resulting from relying on expensive agro-inputs that do not generate expected high yields could also facilitate a wider worrying trend in Ghana of mounting polarization where people exchange their casual labour for basic necessities, such as land, food or

to pay off debts (Whitehead, 2006; Yaro et al., 2016). The need to generate enough cash to afford the total cost of these inputs is likely pushing smallholders to grow market-oriented crops, which could also be having major implications on local food systems and nutrition as people shift their diets to consume less nutritious crops (Bernstein, 2010), such as maize instead of other staples like sorghum or millet (Bezner Kerr, 2012).

This affirms key insights from political ecology that food security is not just about yields and total production, but also centrally about power and uneven control over resources needed to respond to environmental changes that are dramatically affecting production and the environment. Particularly, this paper demonstrates the specific and narrow set of resources available (e.g. certain kinds of seed, fertilizers, and land preparation technologies) supported and subsidized by powerful donors and government, which is indicated by farmers and some key informants as reducing the options available to farmers (e.g. seed varieties, food, land preparation). It also suggests some of the ways that environmental change shapes decision-making about resource use, as well as how this resource use in turn affects the environment (Vayda and Walters, 1999).

The negative view of the private sector, particularly of farm contracts and agro-input dealers, and the mounting costs of inputs is being resisted by farmers who do not fully pay back credit received, side-sell harvests, burn their fields and/or destroy infrastructure in the case study context (Vercillo and Hird-Younger, forthcoming). It would seem contradictory that farmers' both adhere to the Green Revolution set of prescriptions and resist it at the same time (as explained in the following Chapter). Yet the fact that smallholders are resisting in 'every day' ways as opposed to outright mobilization and protest, demonstrates the limited number of choices farmers can make in order to cope with their changing environments. As Scott (2008) points out, outright resistance is often too risky a strategy and potentially fatal to farmers because of the few alternatives available

for their survival and because of the uneven power of what they are resisting. Everyday forms of resistance are the ways that farmers navigate, contest and negotiate complex agriculture systems because they are often in positions with little power, voice, recognition or control (Scott, 2008). This paper suggests that though many smallholders are adhering to the Green Revolution prescriptions, they are doing so reluctantly, and their acts of resistance (developed in the ensuing chapter) are further representations of this dissatisfaction. It is important to remember that a major reason why the dominant Green Revolution was so successful in other places in the past is mainly because inputs were highly subsidized by development support and largely provided by the state and/or quasi state institutions and not the private sector (Fischer, 2016). This is particularly true for high-yielding OPVs, which were recyclable and freely available (Scoones and Thompson, 2011), and mechanization, such as tractor services, which runs counter to what is being promoted in the contemporary version of the Green Revolution. Yet, this privatization of agro-inputs and technology, especially seed is what is being largely protested in Ghana and across SSA (Vercillo et al., 2015; Braimah et al., 2017).

The intensification of farming has been historically dominated by the business elite in northern Ghana, who have taken over larger areas of land at the expense of smallholders (Goody, 1980; Wiemers, 2015). Increasing land scarcity, as well as the heightened risk of land dispossession are examples of repercussions that an intensification and commercialization strategy promoted by ODA and the state bring with it and which are representative of a general fear of rising polarization among those farmers who can afford the agro-inputs and technology needed to intensify and compete in markets (who also tend to be those financially supported by ODA) and those who cannot. The risk of dispossession also translates to preventing farmers from practicing more environmentally sustainable techniques, such as leaving land fallow and further narrows the

farming techniques available to cope with environmental changes, which is likely also pushing many towards adhering to Green Revolution development prescription. The development prescription that have encouraged smallholders to intensify and commercialize their production to compete in liberalized global markets also affects households in uneven ways, particularly for women who tend to have a multitude of restrictions (e.g. cultural, financial, time) placed on their access to land and credit needed for purchasing farm technology and agro-inputs (Whitehead and Tsikata, 2003).

For decades, one of the strongest criticisms of the Green Revolution is that the success or failure of its implementation has been highly gendered (Agarwal, 1992; Shiva, 2016.) A major conclusion of this paper is that women are often excluded from intensification strategies, most notably from participating in state, NGO and ODA supported farm contracts due to their smaller plots, restricted access to capital and constraints on their mobility compared to men. Thus, gender dynamics that shape access to capital, including support from ODA is critical to explaining farmers' land use and adherence to intensification technology in Ghana. Affirming important insights from feminist political ecology that when these elements are taken together, women with fewer entitlement rights to resources, specifically little capital and more precarious access to land and tractors in Ghana typically face greater challenges in adapting to competitive pressures and climatic shocks. While the essence of the critique is that Green Revolution methods damage soils, widen inequalities, increase indebtedness, make food taste worse and reduce the diversity of crops planted, there is still a complaint that women cannot participate equally in the development supported schemes because they have a harder time accessing land, credit and tractors. Although this seems like a contradiction, it actually highlights the complexity of smallholders' choice to participate in the opportunities available to adhere to the Green Revolution prescriptions. While

on the one hand it may seem that most women may not face the same repercussions as men for adhering to the Green Revolution (e.g. indebtedness), both women and men expressed a need to adhere to it in order to respond to environmental changes, such as erratic rainfall, shortening growing seasons and soil infertility in order to maintain their farming because there are few alternatives available. While women may not be challenged by the same sort of repercussions of adhering to the Green Revolution model, they ultimately face even fewer options in adapting to climatic shocks and maintaining yields, which would likely push them out of farming further compared to men.

Ultimately, this case study affirms key insights from existing political ecology theoretical insights and contemporary literature that critiques the Green Revolution's set of development prescriptions and development actor's support for the provision of inputs and technology through the private sector (e.g. Shiva, 2016; Patel 2013; Moseley et al., 2015; Vercillo et al., 2015; Moseley, 2017), concluding that it does not necessarily foster longer term security. Competition for land associated with the commodification of farming that is supported by development actors is constraining smallholders' farming options, including the types of crops they grow and practices they pursue, which is magnified by stressors associated with climate change. Many farmers in the case study sites are following development prescriptions with a highly contradictory rationale: on one hand, viewing increasing input use as a means to respond to environmental changes in the short-term, but on the other hand, recognizing that this model is working against their longer-term economic interests and sustainable farming in the region. This is described by Yaro (2006) as 'negative climate adaptation' because many smallholders described having to make compromises that were essentially irreversible, including damaging their soil, leading to the disappearance of certain seed varieties and crops and increased levels of debt (Altieri, 2009). Although some farmers

did describe varying degrees of success adhering to development prescriptions, there are clear differences amongst farmers evident in who can access and benefit from new technologies based on their access to capital and gender. Female farmers are especially disadvantaged because of social norms that discourage them from participating in contracting and credit schemes, and that reduce their access to tractor services compared to men. What is needed for agri-food policy and practice is to situate local knowledge and values in approaches to development that are appropriate for the biophysical and social environment. Low cost, sustainable enhancements such as low till farming, intercropping, agroforestry and composting could be more useful approaches to enhance soil fertility and control pests without the need for expensive agrochemicals and mechanization.

Chapter 5

Farmer Resistance to Agriculture Commercialisation in Northern Ghana

Siera Vercillo¹ and Miriam Hird-Younger²

¹ Department of Geography, University of Western Ontario

² Department of Anthropology and Women and Gender Studies, University of Toronto

Accepted in *Third World Quarterly*

Farmer Resistance to Agriculture Commercialisation in Northern Ghana

Abstract

Drawing on postcolonial literature and theories of farmer resistance, this article provides an empirically based alternative explanation of African farmer behaviours to narratives that blame them for their lack of technology adoption. Based on six-months of qualitative fieldwork in one district in the Northern Region of Ghana, we identify the ways that farmers defy commercial agriculture investment, government services and NGO project interventions aimed at intensification, and describe their reasons for doing so. This study interprets farmers' acts of defiance, such as side-selling or falsely weighting their products, as insights into everyday acts of resistance. We find that throughout Ghana's postcolonial period, agriculture intensification policy and practice have produced an environment where various development actors and farmers have both a sense of entitlement and mistrust of each other. Farmers' acts of sabotage may be spaces where they make rational choices based on experiences of historical antecedence, including decades of failed development projects, elite corruption and mismanagement, degrading ecologies and donor hegemony.

Keywords: resistance; agriculture; development; neo/postcolonial; Ghana; sub-Saharan Africa

5.1 Introduction

Current development actors within African agriculture, such as the Alliance for a Green Revolution in Africa and the G7's New Alliance for Food Security and Nutrition in Africa, present a picture of a continent that is unproductive and inefficient (Moseley et al., 2015; Vercillo et al., 2015). To make African agriculture more productive and efficient, these development actors support a business development approach and intensification prescription, namely high-yielding varieties of seed, mechanization and agrochemicals that are provided to farmers through public and private actors. However, farmers do not unreservedly adopt technologies and cooperate with project activities, or the input-dealers, outgrowers, aggregators, and agro-processors that are supported by various development actors.

Drawing on postcolonial theories and farmer resistance literature, this study examines farmers' lack of cooperation with various types of agricultural development actors and the initiatives that they support to reshape farming livelihoods. Based on six-months of qualitative fieldwork in one district in the Northern Region of Ghana, this article examines the perceptions and meaning behind the actions of farmers when they do not coincide with projects' production or marketing expectations. Northern Ghana is an ideal case study as it is the focus of millions of dollars of targeted agricultural development investment and aid annually due to the high proportion of people who rely on farming and the associated hunger rates (Luginaah et al., 2009). We explain how farmers' behaviours can be understood through their mistrust of development actors' and government promises based on their experiences of failed interventions throughout the last several decades and the lack of meaningful farmer consultation or engagement. This article concludes that there is a need to eschew ahistorical and apolitical development prescriptions that do not actively and carefully engage farmers as rational actors and experts in their farm practices and livelihoods.

5.2 Postcolonial Theory and Farmer Resistance Literature

Post colonialism is a critical research and theoretical tradition that seeks to understand the historical and ongoing legacy of colonialism and imperialism (Radcliffe, 2005; Kapoor, 2008; McEwan, 2008). Postcolonial critiques highlight the practices, institutions and ideologies that continue to result in uneven power relations and construct generalizable notions of poverty and underdevelopment. The article specifically draws on the work of Gupta (1998, p.6) in examining the postcolonial condition of farmers in northern India in order to “pay close attention to the interconnections between divergent discourses and structural forces.” Postcolonial framings avoid positioning rural farmers as a periphery and enable an analysis to understand how the experiences of farmers are intimately entwined within global systems. Recognising that there is no singular or homogenous postcolonial condition, Gupta’s work highlights the ways that global structures and discourses are not only significant on a theoretical level but have real implications for the experiences of farmers in their everyday and practices. Following Gupta, this article attends to the specific context, links farmers’ experiences with global and national policies and practices and identifies the specific historical context of the case study, interlinking farmers’ experiences with global and national policies and practice, and we identify the divergent and contradictory political and power processes at play.

More specifically, this study draws on the literature that explores farmer resistance, such as those looking at socioeconomic struggles, social movements and ‘every day acts’ of resistance (Scott, 2008; Akram-Lodhi and Kay, 2012; Patel, 2013; Colburn, 2016). Most examinations of farmer resistance focus on events of political organizing and class struggles over technology, agri-inputs, land, market prices and labour (Scott, 2008). The context of contemporary resistance is the

neoliberal development prescriptions that have widely encouraged farmers to specialize and intensify their production to compete in liberalized global markets (Akram-Lodhi and Kay, 2012). Large corporations and multinational organizations are often the unseen forces because they do not have direct contact with locals and are usually mediated by government or development projects and ODA (Vercillo et al., 2015). Farmers in Africa are often perceived by development actors as ‘standard takers’ of innovations because they usually have little choice in alternative technology (Hatanaka et al., 2006). When projects do not go according to plan, farmers are individually blamed for not properly adhering to the project logic or using the technology because standard packages of technology and innovation are understood as scalable best practices (Rogers, 2010).

This article fills a gap in literature by providing empirical evidence of ‘everyday acts’ of resistance, in contrast to more organized forms of resistance discussed in much of the literature. The article follows James Scott's (2008) often-cited theorization around oppression and resistance, which he understands as in a constant flux, and not always as visible as organized rebellions. Scott explains that everyday acts of resistance are often much subtler, including false compliance, sabotage, feigned ignorance, arson, and deliberately delaying activities. According to Borras (2009, p.10), this resistance often embodies ‘quiet, mundane, and subtle expressions and acts that are rarely organised.’ He describes ways in which people embrace, adjust, and contest authority in production processes or the allocation of resources that gives them partial autonomy, while also accommodating other market and development forces (Bello, 2009). Colburn (2016) seeks to understand how peasants work to maximize their advantage by testing the limits of what is possible to enhance their welfare, and erode unpopular customs, laws and policies. Yaro (2002), Goody (1980) and Awanyo (2001) have each provided examples of resistance by farmers in rural

communities of Ghana based on dissatisfaction with their position in the broader agriculture system, such as cutting trees on the property of wealthy elite, refusing to adopt hybrid seed and burning their harvests. Interpreting farmers' behaviours through the lens of everyday acts of resistance requires acknowledging farmers' agency and understanding their actions as intentional and rational. This study builds on this literature to explore the meanings farmers give to their behaviours that do not align with project expectations and agriculture intensification logic.

While much of the literature focuses on peasants, there are different types of farmers to consider in an African context where there are increasing commodity relations, yet very few farmers with the capital to compete in regional or global markets (Peters, 2004). Most farmers in Ghana produce for both consumption and sale, relying mostly on family labour and land. Thus, the term 'peasant' as defined by Akram-Lodhi and Kay (2012), as well as Bernstein (2010) applies. However, there is still an 'absence of neat packages of classes' as rural families use their family land and labour (even if small) to produce for commodity markets (Peters, 2004). In Africa, farming is often a joint endeavor among different family members, which go beyond the scope of one household, to a wider family network (Bryescon, 1995). Individuals frequently have productive roles that are both for independent gain and family contributions (Whitehead, 1983; Apusigah, 2009). Thus, the process of social differentiation is not as straightforward as land owners having power over farm workers. Rather than ascribe to one conceptualisation of farmer, this article tries to understand how farmers' behaviours in relation with other actors in the agriculture sector.

5.3 History of Agricultural Development in Ghana

To examine resistance between farmers, development and other actors in northern Ghana, it is critical to understand the historical context of the sector. The post-colonial government in

Ghana continued the colonial project of developing large scale, input intensive, commercial agriculture through the 1950–60 and 1959–64 Development Plans (Akoto, 1987). Differently from British imperialism that largely ignored the northern agrarian sector, however, investment into the northern part of the country took the form of mechanised food production for national consumption (Amanor, 2011).

In the 1970's, major investment was made in northern food production via the military government's Operation Feed Yourself (OFY) campaign. This public strategy focused on developing larger scale, food production by importing and providing agro-inputs, like HYV, agrochemicals and mechanization (tractors, combine harvesters, transport) on low interest loans, as well as public marketing outlets through the Ministry of Food and Agriculture (MoFA). OFY was facilitated most of all by the Green Revolution strategy supported by the United Nations under the Focus and Concentrate Programme and developed through private-public joint financing schemes, including with foreign multinationals. For example, state driven seed breeding was developed alongside the World Bank (Amanor, 2011). Despite this investment, it is reported that some farmers were either unable to access the credit needed or refused to adopt the new technologies, claiming quality, skilled operators were lacking and poor environmental suitability (Nyantakyi-Frimpong and Bezner Kerr, 2015). According to Goody, it was often members of the military government and urban businessmen who benefited most from the loans provided by the government Agricultural Development Bank and the Ghana Commercial Bank, as well as private banks, such as Standard Chartered Bank and Barclays. These commercial farmers worked 100 acres on average, with some cultivating 300-1000 acres, which fostered social differentiation for the first time in the region because most farmers who were peasants based in rural areas only had enough finance to cultivate five acres on average (Goody, 1980). Due to a lack of repayment, and

alongside the climatic and financial crises of the time, this pushed the government to appeal for International Monetary Fund (IMF) assistance.

Under the oversight of Jerry John Rawlings' military regime, Ghana's agriculture policies firmly shifted to economic liberalisation by adopting the Structural Adjustment Programs (SAP) and the conditions of IMF assistance (Akoto, 1987). Under this period, donor lending, particularly from the IMF and World Bank sought to privatise state enterprises and remove any subsidies on agrochemicals and farm equipment, which resulted in a rapid increase of their costs (Gibbon, 1992). As state support declined, it provided a space for foreign, non-state actors to take up the provision of services, especially in agriculture. Generally, these reform programs have not had the intended results of poverty reduction for most farmers, especially those who are peasants (Gibbon, 1992).

5.3.1 Current development context

The SAPs liberalisation of Ghana's agriculture sector facilitated the global integration of local input markets, a process which continues in contemporary northern Ghana. Major multilateral and bilateral donors, as well as NGOs, philanthropic organizations and multinational agro-dealers and research institutes collaborate to intensify agriculture by focusing on identifying and fostering private investment opportunities. Each G7 country involved in the New Alliance for Food Security in Africa has spent millions of dollars in Ghana, with the highest contributing country being the United States. AGRA is another major donor (funded by the Rockefeller Foundation and the Bill and Melinda Gates Foundation) in Ghana. These actors have influenced new seed laws to develop HYV and co-financed private agro-dealers. Donors have also influenced the policy that defines the role of government in the marketing of fertiliser and created a database for suitable land investors. USAID, AGRA and the World Bank are major funders of contract

farming through outgrower schemes in northern Ghana, which has become increasingly popular for development actors to support the distribution of HYV, agrochemicals and mechanization co-financing to larger commercial farmers and/or aggregators, as opposed to directly to smallholders themselves (Ragasa et al., 2018).

The 2017 budget put forward by the recently elected government supports a new agriculture policy and plan entitled, Planting for Food and Jobs Campaign for Rapid Growth. Reminiscent of OFY, this new plan focuses on increasing the production of maize, rice, soybean, sorghum and vegetable crops for national markets through the provision of HYV, chemical fertiliser, marketing and extension services. Notably different from other project strategies and farm contracts, the new policy and budget plans to provide HYV, fertiliser and extension services to farmers with a minimum of three acres of one of the targeted crops on credit (Akoto, 2017). This publicly-led strategy indicates a predominant commercial agriculture development model.

5.4 Case Study Context

This case study is focused in one district located in the Northern Region of Ghana, which is a semi-arid, Guinea savanna agro-ecological zone dedicated to growing different kinds of food crops. Northern Ghana has historically had higher rates of unemployment, malnutrition, and infant mortality, lower levels of school enrollment, a disadvantaged youth population and lower overall development indicators (Aning and Abdallah, 2013; Mine et al., 2013). The main sources of income in the area are rain-fed food production, cultivation of tree crops, rearing of livestock and some irrigated horticulture (Yaro, 2013). The agriculture sector is predominantly rain-fed with 45.8 per cent of households relying on farming, most of which are subsistence based and small in scale (GSS, 2010). There is one rainy season lasting for approximately five to six months, from May to October, with increasingly erratic rainfall patterns (Codjoe et al., 2012; Laube et al., 2012).

The case study district was selected because of the high proportion of households' relying on farming and its geographic location, which is close to the main northern city of Tamale, making it a prime target for agricultural development interventions and markets. The current MoFA district unit Director has stated that the district has an advantage in growing maize, rice and soybean, which is targeted by government for development in the area. However, the crops typically grown by farmers sampled in this study are maize, yam, rice, sorghum, cassava, beans, groundnuts, millet, cowpea, okra and other vegetables which are for both household consumption and for sale. The average size of farming plots for smallholder participants is 4.87 acres (of self-reported landholding) where they tended to grow a diverse set of crops, relying primarily on family labour, whereas larger farmer participants had between 55-510 acres and tended to own their own mechanization, such as tractors, combine harvesters, and small transport. All farmers in this study either owned or hired tractor services to plough their fields, and most use saved, open pollinated varieties of seed, much of which originated from improved, certified varieties. The major ecological barriers include erratic rainfall and lack of water more generally, heat stress, super weeds and acidic or poor soil quality.

5.5 Methodology

This study is primarily based on six-months of qualitative field work with smallholders, commercial farmers and development actors operating in the specific district in the Northern Region of Ghana.¹⁶ Qualitative data in this study compares farmers' perceptions with development actors regarding the socio-cultural, political, ecological, and economic processes and power dynamics that limit the access to, and use of resources (Ferguson, 1990; Awanyo, 2001).

¹⁶ The name of the specific district sampled will remain confidential to protect participants involved in this study.

The first author conducted in-depth interviews and focus groups with farmers, and in-depth interviews with agricultural development actors in the specific district. Data collection occurred from April to June 2016 and January to May 2017. Fifty-five interviews were conducted with the 78 smallholders in the local language Dagbani, translated on the spot into English, recorded, and transcribed verbatim in English. Twelve focus groups were also conducted with smallholders, which were split between women and men only groups and also recorded and translated on the spot in English. In addition, 26 in-depth interviews with 31 agricultural development actors were conducted to compare their agriculture sector perceptions with those of the smallholders. Five of these interviews were with NGOs, 13 with the Ministry of Food and Agriculture district level staff; and two multinational production companies. In addition, in-depth interviews were conducted with six commercial, larger scale farmers who also work as outgrowers (input dealers) or aggregators.

Purposive sampling of farmers was done to establish similar ratios of occupations, language, ethnic/kin group belonging, location, age, and income distributions, as recommended by Watts (2013). Qualitative sampling rigour was ensured using a reflexive journal, which was consulted after conducting a set of five interviews to draw immediate patterns and gaps in knowledge based on theory, literature and participants' responses. Purposive sampling of development actors included only those individuals working within the case study location and directly with farmers or indirectly as planners for agricultural development initiatives. The sample size for interviews was dependent on the point of data saturation (Baxter and Eyles, 1997).

The first author used NVivo to perform textual analysis, including transcribing data from field notes and in-depth interviews using (etic and emic) coding and thematic clustering. Reliability and validity were ensured by verifying results with research participants as there was the opportunity to member check after the completion of the data collection and analysis. The

methodology was approved by the Non-Medical Research Ethics Board at Western University and given permission by the University for Development Studies, Ghana. In the following results section, direct quotations which are typical and clearly articulate farmer's and development actor's views are included.

5.6 Results

This research asks why farmers do not sustainably adopt technologies or cooperate with agriculture projects and farming contracts aimed at intensification, placing emphasis on the meanings that farmers give for their actions. A reoccurring theme expressed by the majority of development actors was frustration with farmers' uncooperative participation in their interventions. The majority of farmers both large and small who participated in the project interventions also expressed dissatisfaction with them, in particular, contract terms (e.g. prices, quantity and quality of yields) and technology and agri-inputs provided. Various development actors detailed the ways that farmers defy their agriculture projects, actions that farmers themselves also describe. These actions are at times as mundane as critiquing the monitoring and evaluation practices of projects or calling attention to corruption and the ways that the urban elite, business men and government employees benefit from project support and co-financing instead of 'real' farmers. 'Real' farmers were described by a minority of farmer participants as those based in rural areas who rely on farming as their main livelihood, as opposed to those simply pursuing investment opportunities. Interviews with the majority of development actors who also tend to be larger scale (than smallholders), and/or close relatives of the 'elite' commercial farmers and business people, highlight the power relations between them and other farmers, who are usually

based in rural areas and are not as connected to external actors and aid. While we noticed differences in trust and negotiations between a minority of urban agriculture entrepreneurs and development relations with farmers, we did not hear of any described differences between women and men farmers' critiques and defiance of projects, likely because women generally were much less likely to participate in project interventions or farming contracts directly.

Through thematic analysis, we paid particular attention to the subversive actions by farmers, such as refusing to pay back loans, side-selling crops, burning crops and weighting down produce with stones and the reasons given by farmers for these actions. What we found was that the majority of farmers who perform these acts carefully analyze the potential impact and sustainability of projects for their future survival and livelihoods, with strong concerns for the risks that they take in losing a harvest, indebting themselves and becoming dependent on expensive inputs. The vast majority of farmers described being skeptical of projects that they critique for being top-down and benefiting the elite at their expense. This mistrust also stems from these farmers' sense that they do not have control, power or recognition within projects, which do not consider the priorities, needs and desires of the farmers themselves.

5.6.1 Mitigating risk and vulnerability

One of the most compelling themes that was identified in this research were the strategies used by farmers to mitigate their risk and vulnerability in their agriculture livelihoods, sometimes with damaging effects on projects and production systems. One issue raised by both farmers and development actors was that farmers' actions not only diverge from expectations but defy and subvert projects and contracts. For instance, a minority of extension staff would explain that they felt powerless when farmers defy their efforts to provide inputs on credit and refuse to pay back that credit. An extension staff of a large, private aggregator, agro-dealer and production company

gave an example: ‘I can remember one company, some poultry farm, they bought our [company’s] maize and they complained ... [the farmer] kept stones under and kept the maize on top, BIG STONES, so it would weigh more ... they shell the maize. So, when they kept the stones it spoiled the grinding machines.’ This extension staff recounted typical examples of farmers filling bags with things beyond the product promised, including stones and maize chaff, to add weight and volume to gain more income from the processors for the products. In this particular example, this action resulted in destroying an expensive processing machine, for which the production and aggregating company was ultimately blamed.

Farmers were also forthcoming about their own acts of subversion or those from their peers, as one farmer explained: ‘[Farmers] collect these [inputs] and when it is due for recovery, some will... harvest earlier, and either tell you they didn’t get [any harvest] or harvest earlier and tell you [the harvest] was burnt ... when they see that they don’t have enough to pay back.’ Throughout the research, a small majority of participants described how many farmers are actively, deliberately trying to bypass their contracts with private companies and development projects by lying, despite agreeing to the terms, even when threats of fines, potential criminal charges and jail time are used.

Taken at face value, these acts of sabotage and disobedience against development projects whose intentions are to support farmers may seem irrational. However, the intention of this fieldwork was to understand the explanations given by farmers for their behaviours. The vast majority of farmers who explained that they tended to cheat a project or investment was because of their production is insufficient to meet their needs, despite using the provided technology that was promised to have greater yields. Some of these farmers also explained that these companies will put them in debt or take all of their harvests even if the technology provided did not meet their expectations, leaving them with nothing to consume. Thus, most farmers articulate their acts as

those of survival, mitigating the risks of low yields, technologies that do not meet expected yields and cycles of debt from inputs given on credit. Whereas it might seem that the agro-companies hold the risk in these contracts (for unpaid loans or broken machinery), the majority of farmers seek out strategies to mitigate their own vulnerabilities, with livelihoods and food security at stake. The results of this study show that the majority of farmers do perform acts of sabotage and subversion, but as a way to mitigate their vulnerabilities and risks and to exercise power over other more powerful actors when they feel they can.

5.6.2 Corruption and mismanagement

Another prominent theme in the research was the majority of farmers' concern with corruption and the mismanagement of project resources and investment, which has significant implications for how and whether these farmers choose to participate in projects. These farmers perceive that politicians, business elites, and project staff at the regional, national and international levels benefit more from development projects and investments than they themselves, as the so-called beneficiaries. For instance, a smallholder farmer commented on the ways that politicians and planners benefit from agricultural projects at their expense: 'When you go to the bush you will see Minister of Agric farm, you will not like it. So, all of what they are bringing, they are taking it. So, [farm inputs] we the small, small farmers, we are not getting it.' A MoFA extension agent also commented on the ways that those in power sometimes benefit first, or most, from government projects, arguing that they claimed project-committed land for themselves:

[Project Name] are supposed to help ... but what do we see? When it comes to the district office, you see big cars, this district executive wants fifty acres, the party head wants a

hundred acres, the youth in the politics want this money. So, in the end they take most of the inputs, the support, meanwhile the few farmers who have benefitted are meant to pay. Here we see a clear example of how both farmers' and development actors' experiences of corruption and mismanagement of project resources and investments break the trust between actors, making it extremely challenging to do business. It would also heighten farmers' sense of entitlement of these resources, justifying their acts of sabotage and defiance.

Moreover, a small minority of farmers themselves expressed how they have been positioned within unethical monitoring and evaluation practices to ensure future investments, such as in “cooking” (i.e. falsifying) data or hand picking only specific successful examples. A few farmers complained of the presentation of projects and successful farmers in the media, which many claimed to differ from their ‘on the ground’ realities. One farmer complained that he is often called upon to talk to the media or to a project donor, because he is seen as being more successful and more productive: ‘But [they] want your name, so they can say [Project Name], they are doing well and it is in the media. Then they sit in Accra and the media men will carry it, that’s all. But if you really come down here, all these programs, what are they doing?’ In this instance, this participant expresses frustration at often being asked to speak positively about a project on record but does not attribute his success to the project. He feels like he has to lie on record in order to continue to potentially benefit in the future. These farmers recognise the political motives that underpin the stories and numbers that use them in monitoring and evaluation project reports to receive more support and see it as a form of corruption, potentially justifying their own acts of sabotage and defiance.

The vast majority of farmers understand and are hyper-aware that each agriculture project does not exist in a vacuum, but is situated within a web of political, financial and influential

relationships. Although farmers are positioned as the beneficiaries of projects, the overwhelming majority are skeptical of this role and perceive those in power as benefitting at their expense. Moreover, they see mismanagement of development funds, whether public or private through direct corruption and nepotism, but also poor planning and timing of technology provision that often hurts production because of the critical need to cater to the rainfall patterns. The result of these perceptions of corruption, whether real or not, is that most farmers hold deep-seated skepticism, doubt, suspicion and uncertainty about the intentions and impact of projects. There is a sentiment of mistrust, which has implications for how farmers choose to participate in projects and their actions of subversion.

5.6.3 Historical and ongoing power imbalances

The third theme in the research that contributes to understanding why farmers do not sustainably adopt technologies and cooperate with projects relates to the majority of farmers' sense that they lack control, power and recognition within the projects that target them. The evidence shows that most farmers are highly concerned with uneven power relations in the development apparatus and critique the ways that development projects and policies are determined from the top-down without meaningful consultation and participation of farmers. For instance, even a public extension staff critiqued the way that IMF loans continue to influence policy. The use of the phrase 'international rulers' is particularly poignant: 'One thing, I also blame [the] international rulers, I mean [the] World Bank and IMF... the government will talk because they cannot do certain things or else IMF will not lend us money, World Bank will not lend us money ...'. This quote

demonstrates that even service providers are skeptical of the power held by high level development institutions.

Power imbalances and their impact on farmers' behaviours need to also be understood in relation to issues of temporality and historicity. For instance, a few farmers themselves trace power structures of development to the colonial era. For instance, one farmer directly associated the current provision of internationally imported agrochemicals and the use of land for commercial purposes by projects with selling and taking land during colonisation: 'Kenyatta said, "when the white man arrives on the African continent with the Bible", he said "we should close our eyes and pray, and when we open they have taken our lands" ... so we are always skeptical.' Moreover, the historicity of development interventions over the last sixty years since Independence has an impact on farmers' perception of the sustainability and impact of projects. Decades of failed, short-term and unsustainable projects affects relations with farmers by generating mistrust and lack of credibility. As one extension agent described: 'Yah, most NGOs they came and left, so if you don't implement something like [a threat mechanism], the farmers will not pay.'

Moreover, the temporality of these projects has an impact on soil quality and farmers' dependence on agro-chemical inputs, decisions that the majority of farmers themselves felt they did not have control over. For instance, a peasant farmer explains his previous experience with agrochemicals and he did not trust or use chemical inputs, but now uses them: 'For the past ten years over we did not even know it. When they brought [agrochemicals] nobody wanted to use it because we felt it would damage our soil. But it is now that we are compelled to use [chemical inputs] because the soils are now not rich anymore.' The majority of farmers perceive that agriculture priorities and projects are determined at global and national levels, which means that

they do not always reflect the vision or desires of them, but farmers then do not always have a choice about whether and how to adopt a technology or not.

Power imbalances and the historical context of colonialism have important implications for how some farmers' feel positioned within development. Significantly, in this research, the majority farmers expressed feeling belittled and ignored by projects and they did not trust that their interests are taken seriously. This results in a backlash, resistance or clever work-arounds. A minority of farmers recount experiences of disrespect explicitly, as one farmer explains: '... they treat farmers like they are so stupid, they don't know anything ... before they go into that meeting don't think they are stupid, you can only compliment, if we like it.' These farmers' feel that they have a lack of recognition and power over and within development projects and are not taken seriously by policy makers. This lack of recognition has implications, in that these farmers do not always see their priorities reflected in the projects and may perceive projects to be unpredictable and unsustainable. By not involving farmers in the planning, projects miss important values in their project plans that farmers prioritise beyond the economic viability of their livelihoods, such as ecological sustainability and quality food products. Thus, although mantras of participation and decentralisation abound in the development sector in Ghana, the majority of farmers perceive projects to be top-down and have decades of experiences with failed projects, which colour their experiences in the contemporary moment.

5.7 Discussion

When farmers do not adopt technology provided for efficient production and intensification, they are termed as 'laggards' and are personally blamed by development actors, the government and other private sector partners supported by development for not cooperating with project interventions (Vercillo et al., 2015). Recently, farmer relations with development

actors and government have become politicised with the Deputy Minister of Food and Agriculture, William Qaitoo, resigning after backlash for an interview where he called Northern Ghanaian farmers ‘very difficult people’ who are ‘taking money from the government’ (Citi FM Online 2017). This quote exemplifies a negative perception of northern Ghanaian farmers voiced at a high political level, constructing farmers as irrational and uncooperative. This construction has critical implications for current development strategies creating the view that farmers simply need better incentives to adopt technologies and cooperate with projects and interventions. This approach, we suggest, omits important reasons why farmers defy projects and disallows a rethinking of approaches, strategies and structures of development that consider issues that farmers identified in this research, such as mismanagement, power imbalances and recognition.

We make this claim because even if the farmer is perceived as irrational or as a laggard, projects still require their cooperation to be successful, thus giving some authority and control of development efforts to farmers. Acts of sabotage of projects by farmers, we argue, do not point to farmer irrationality, but rather show their agency in response to mistrust, skewed incentives, perceived corruption and historical experiences with development prescriptions, projects and political structures.

The previous Chapter and paper by Vercillo, Weis and Luginaah demonstrates that farmers adopt shorter duration seed varieties, tractors, fertilizer and other agrochemicals provided by private, public and NGO contract schemes that have been supported or subsidized by ODA to cope with the immediate consequences of a shortening growing season, as well as harder and dryer soil with diminished fertility. However, the farmers adopt this technology and participate in contracts reluctantly because of the negative longer-term effects of these technologies on their soil and the indebtedness it is creating. In other words, these technical prescriptions are used to simply maintain

yields needed to survive, while compromising their ability to adapt to environmental change and continue farming in the future. With little alternative or choice in technology provided or the terms of a contract, we argue that 'everyday acts of resistance' give farmers some autonomy and some level of control in a system that is difficult for farmers to mediate, predict or control to mitigate their vulnerabilities to environmental change, and unpredictable yields and market prices (Bello, 2009). Outright resistance or refusal to adhere to development prescriptions could be ultimately fatal to farmers' survival (Scott, 2008).

The presence of mistrust between farmers as well as project and policy implementers help to explain why farmers' resort to acts of resistance. This article illustrates how framings of trust and mistrust provide a useful means to interpret the implications of everyday acts of farmer resistance. Trust informs the rational choices that farmers make based on the effects of the historical and contemporary socio-political, economic and biophysical environment of farming and development supported projects in northern Ghana (Hardin, 2006; Hoffman, 2006; Kohn, 2009; Hosking, 2014). Broadly speaking, trust is generally taken as the expectations for the actions of others in the presence of risk (Giddens, 1990; Sztompka 1999; Fukuyuma, 2001). In a unique study of trust in agriculture markets in Ghana, Lyon (2000) argues that trust in this context is understood as, 'confidence, knowledge of a person's ability, belief and faith' and that long-standing relationships are the greatest factors for trust. In other words, for Lyon (2000), trust in Ghana relies on others acting as they are expected to act in that system over long periods of time. This research and the articulations of sabotage and defiance highlight that both farmers and development actors do not always act in the ways that they 'ought' within an idealised system, resulting in an unpredictable sector.

Farmers defy commercial agriculture investment and aid because of decades of experiences with these actors failing to include them or take their interests seriously (Lyon, 2009). Ferguson's (1990) well-known and often-cited critique of development as an 'anti-politics machine' highlights the tendencies with development actors to de-politicise context and social change and focus on manageable, legible and technical 'solutions'. Kapoor (2008, p.xv) highlights how a postcolonial lens can 'interrogate [development's] belief in disinterested knowledge and "pure" gestures,' bringing attention to the ways that behaviours are shaped by historical experiences with interventions, political concerns for the discursive success of projects and inequality between elites and peasant farmers. The postcolonial framework highlights how current agricultural development policies and practices do not happen in a vacuum but are mediated through the legacy of decades of challenging conditions for farmers. Farmers' resistance, we argue, illustrates the ways that mistrust in agricultural interventions characterises the postcolonial condition in northern Ghana, fostered over decades of mismanagement and failed projects and stagnant development.

Returning to Gupta's (1998) framing of the postcolonial condition underlines the ways that farmers' experiences are not peripheral to global systems of trade, markets and development, but closely entangled in them. Our analysis is not about "traditional" farmers that prefer "indigenous" technologies to "modern" ones. Instead, by foregrounding the ways that farmers navigate, contest and negotiate complex agriculture systems, we bring attention to how farmers, especially those based in rural areas with less strong relations to development actors or supported actors, are intricately entwined in those systems, but often in positions with little power, voice, recognition or control. We take seriously the accounts provided by farmers of their actions that are otherwise classified as "backward" or "irrational" as central analytical insights into the positioning of rural northern farmers in national and global development actor prescriptions. Our analysis shows the

importance of projects to take up technologies as “technical” or “apolitical” issues, but to recognize systemic issues of access, marketing, commoditization, control and politics of agriculture technologies. Farmers are not either “traditional” and using “Indigenous” technologies or “modern” because these categories themselves embody problematic dichotomies and because farmers strategically draw on various resources and approaches based on their analyses of their positioning, needs and desires.

In summary, narratives of farmers ‘not cooperating’ point to moments of disjuncture between idealised visions of what project outcomes *ought to be* and the political relationships that mediate what they *are* at field level. Projects, policies and politicians that might characterise farmers’ acts of resistance as irrational, laggard, or in need of better education, reveal an ongoing neo-colonial stereotypical framing of the ‘dark continent’ with ‘corrupt’ and ‘uneducated’ people that need Western intervention and help. Farmers’ behaviours do not reflect “unintended consequences” of development, a frame often used in the literature, but strategic and rational decisions based on the structures, patterns and systems of development that farmers have experienced for decades. Such discourses assume that farmers do not understand the systems in which they operate and negates their agency. Rather, we interpret the results of this research as demonstrating that farmers are making rational choices as a response to the failures of development projects to provide positive outcomes for farmers and in response to the perceived inequality and unjust structures of projects in which the project or company benefits while the farmer remains the most vulnerable.

5.7.1 Recommendations

In line with theories that argue for a re-politicisation of development prescriptions that eschews technical and managerial approaches to projects, this analysis calls for an approach to

international development, and agricultural development in particular, that recognises the politicised and rational choices that farmers, extension staff and project staff make in relation to each other within a climate of mistrust (Ferguson, 1990). This would require an acknowledgement by development actors and government that projects, the wider agricultural sector and farmers are all co-constituted through their interactions with each other. An approach aligned with this re-politicisation needs to avoid top-down structures to projects that mandate technologies or contracts on farmers. The cooperation that is needed with farmers requires participation and grassroots development by actors' and service providers involving the farmers and providing opportunities in their favour to build trust that benefits farmers. Importantly, this suggested approach is not only about being farmer-centred and bottom-up, as these approaches have been tested throughout the global South for decades and critiqued for simply reproducing uneven power structures (Cooke and Kothari, 2001; Cornwall, 2006; Kapoor, 2008). Rather, this approach encourages development actors and the state to recognize the existing agency and capacity of farmers to know their environments, livelihoods and respect their understandings of problems and solutions even if they differ from the commercial agriculture development model or set of intensification prescriptions.

5.8 Conclusion

Drawing on postcolonial theories and farmer resistance literature, this article has provided an empirical alternative to narratives and assumptions often underlying literature and policy that blame farmers for their lack of technology adoption or for being uncooperative within development projects (e.g. Hatanaka et al., 2006; Rogers, 2010). Rather, this new case study affirms insights from existing theoretical framings and studies (e.g. Scott, 2008; Bello, 2009; Colburn, 2016) that understands this defiance as moments of development project failure demonstrates the ways that farmers attempt to cope with neo and postcolonial relations and cycles of mistrust with

development actors and those they support, such as the state and private sector. Focusing on these moments of disjunction between the ideals of a project and its reality on the ground reveal the ways that farmers make rational choices resulting from their sense of mistrust, eroded through historical colonisation, decades of failed development projects, elite corruption and mismanagement and the hegemony of bilateral donors. Acts of defiance and sabotage illustrate farmers' attempt to gain power over a development context in which they have had experiences of unsustainable and unpredictable projects, economically unviable farm inputs, and ecologically harmful technologies and practices.

The frame of everyday farmer resistance developed by Scott (2008) is useful to get beyond discourses that perceive farmers to be irrational or ignorant. Instead, farmer resistance locates agency and rationality in the actions, behaviours and choices of farmers, even if they may seem irrational, such as burning their part of their crop to avoid revealing the extent of their harvests to project staff. This everyday resistance highlights the failures of development project structures that take a technical approach that emphasises successful outputs and outcomes, while not considering political and historical contexts that might create contradictions with realities on the ground as pointed out in other studies (e.g. Ferguson 1990; Gupta, 1998). There is an opportunity to rethink development actors' prescriptions by rejecting top-down approaches that position the key problem as convincing farmers of the merits of particular technologies or production systems. Recognising farmers' agency, the strength of their own analysis about the entire agriculture system, and their inherent position to know what they need best, allows for a generative rethinking of development approaches.

Theories of resistance are often critiqued for an uncritical over-emphasis of the subversive potentiality of acts of resistance (Abu-Lughod, 2016). Rather than romanticise or exaggerate the

subversion of farmers in northern Ghana, our intention in this paper has been to show that development discourses and prescriptions are not totalising and that farmers find creative ways to act within these frames. This article locates these acts of resistance not in a vacuum but grounded in historical analytics of colonisation and six decades of development policy and project interventions in the agriculture sector. Ultimately, colonial and neo-colonial histories of interventions, of decades of development have not significantly improved the livelihoods and ecologies of farmers. Development actors might be tempted to write-off moments of subversion or non-cooperation as just ‘project failures’, but this article suggests that looking closely at these moments reveal the challenges, contradictions and fissures in the processes and structures of development support, and agriculture markets in northern Ghana.

Chapter 6

The Complicated Gendering of Farming and Household Food Responsibilities in Northern Ghana

Siera Vercillo

Department of Geography, University of Western Ontario

Under Review in *Gender, Place and Culture*

The Complicated Gendering of Farming and Household Food Responsibilities in Northern Ghana

Abstract

Development policy narratives about gender in African agriculture have often emphasized that women tend to farm more for subsistence while men tend to farm more for cash, and that this division of labour is an important aspect of social inequality and food insecurity in rural areas. However, gender divisions of labour are neither fixed nor universal. Drawing upon qualitative research conducted in northern Ghana, this paper critically examines assumptions underlying development policy and practice about the gender relations of farming and food provisioning. This paper argues that gender norms in the case study do not neatly align with the prevailing conceptions that have shaped interventions about the gendered character of market versus subsistence farming. Rather than focusing on markets, male smallholders consistently described their central objective as being to produce enough food to feed their family, while women smallholders tended to describe their approach to farming much more in terms of cash generation. This paper also considers some of the negative consequences of this misalignment between projects and gender norms, in particular projects geared towards female farmers to support their subsistence production. These projects can risk alienating men, causing conflict around the use of the project support and add to women's household responsibilities. Agricultural development policy and programs need to start from contextually-specific understandings of intra-household gendered divisions of labour, recognizing that men may be making key decisions about subsistence-oriented production, and that differentiating support based on misconceptions of gender relations can have unintended negative consequences.

Keywords: gender roles; division of labour; smallholder; food security; development; Ghana; Sub-Saharan Africa

6.1 Introduction

The fact that women make an immense contribution to smallholder production and household food security across sub-Saharan Africa (SSA) has long been recognized, as has the fact that eliminating gender inequalities is central to the struggle to eradicate hunger and chronic malnutrition (Boserup, 1970; Quisumbing et al., 2014). Feminist scholarship has demonstrated that there are nearly universal disparities in women's access to farm resources compared to men's (though its forms may vary), such as the multitude of restrictions placed on women's ability to access the land and credit needed for purchasing farm technology and agro-inputs (Doss and Morris, 2001; Whitehead and Tsikata, 2003; Quisumbing and Pandolfelli, 2010; Huyer, 2016). Feminist scholarship has also demonstrated the global propensity for women to be excluded from critical decision making about what crops are produced, which has often resulted in them growing crops that are more sensitive to erratic climate than men (Padmanabhan, 2007; Carr, 2008). Another major theme in feminist literature is that women's disproportionate roles in social reproduction (such as child rearing, meal preparation, and elder care), alongside social norms and rules that tend to constrain their mobility, have discouraged many from participating in markets to the same extent as men (Kabeer, 1994; Carr and Thompson, 2014). Related to this disproportionate responsibility for household work, feminist research has long identified how the significant contributions that women make to crop production tend to focus on subsistence needs (Leach, 2007; Jost et al., 2016).

This research focus considers the enduring legacy of Esther Boserup's (1970) famous argument about 'female farming systems' in SSA, which identified a widespread intra-household divide between women and men's farm and food responsibilities. In Boserup's depiction, women were seen to primarily farm to meet subsistence needs, as well as having a disproportionate

responsibility for food preparation and other aspects of household reproduction, while men were seen to primarily farm for markets in order generate cash (Bryceson, 1995; Sorenson, 1996). This archetypical gender division of food and farm responsibilities, whereby women tend to dominate unpaid farm and household work and men dominate market-oriented farming, has been widely recognized as a significant aspect of gender inequalities which can lead to further disparities in resource access over time, as well as contributing to inequalities in decision-making power and work burdens within households.

Research on agriculture and food systems has often focused on households as an analytical category, and feminist research has had a crucial role disaggregating this, firmly establishing that there are frequently both joint and competing interests within households (Agarwal, 1997; Wright, 1997; O’Laughlin, 2007) that determine choices about the types of crops produced and the purposes that they serve, whether for subsistence or cash generation. In West African households, across a range of cultures, women and men frequently have distinct roles that are either for independent gain or to meet household needs, as the resources of husbands and wives tend not to be combined in a joint household fund (Dzokoto and Darkwah, 2014) and the responsibilities for both agriculture and food provisioning are divided based on social and cultural norms (Whitehead, 1990; Apusigah, 2009). Thus, intra-household negotiations over resources and responsibilities related to both subsistence and cash-oriented production can be seen to reflect what Sen (1999) calls bargaining over intra-household divisions of labour, resources and income. In other words, gender is central to understanding how various members contribute to household needs (Moser, 2012), including the different values ascribed to various tasks (Kabeer, 1994). One of the great strengths of examining intra-household gendered roles and responsibilities related to farming and food is that this better represents the full extent of people’s labour, including the additional time

spent in food preparation, as opposed to economic analyses that tend to focus on productive, cash-generating roles. The research demands made by feminist scholars to consider household divisions of labour have also served to highlight how Official Development Assistance (ODA) has historically excluded women, including in agriculture, which has mainly catered to those farmers – disproportionately men – with the capacities (e.g. more land, time, capital, credit, etc.) to compete in markets (Kabeer, 1994; Razavi and Miller, 1995; Palacios-Lopez and Lopez, 2017).

Since the 1970s, feminist critiques of agricultural development practice have focused on the failure of initiatives to address gender imbalances in property, power, and household labour and decision-making. One important watershed in this was the 1975 United Nations' International Year for Women, which firmly put gender inequality on the development agenda and contributed to a proliferation of women focused-development projects (Razavi and Miller, 1995). The policy attention and development assistance directed specifically at women was commonly referred to as a 'women in development' approach and was strongly influenced by research from SSA (Okali, 2012). However, Razavi and Miller (1995) highlight that this was not all positive, and on the contrary tended to oversimplify matters along the lines of what Boserup (1970) and subsequent research had too often implied: that the status of 'women' was a more-or-less fixed, uniform and isolated category associated with subordination and oppression. Whitehead (2000) also argues that research and policymaking during these periods perpetuated historically racist and sexist ideas about African women being more altruistic in their household contributions compared to men, who were then characterized as being selfish, irresponsible and lazy compared to women. The United Nations' 1995 Beijing Platform for Action famously recognized a need to shift the focus of development support towards a greater focus on context-specific relations between women and men, as well as on varied socioeconomic structures, a shift that was commonly referred to as a

‘gender and development’ approach. Instead of simply focusing on women’s activities, the ensuing focus on ‘gender mainstreaming’ sought to draw attention to gender relations and inequality at a range of scales, from the household to the state, and this awareness came to be increasingly embedded in how multilateral aid and NGO programs were conceived. The implementation of gender mainstreaming within institutions responsible for development policy and planning typically included an insistence that gender-specific demographic data be integrated into all decision-making, and that any projects should involve both women and men and be assessed for how they potentially affect them differently.

Yet despite the expressed focus on varying gender relations, Okali (2012) argues that much of the development policy and practice geared towards agriculture in SSA has largely continued to treat gender roles as distinct, with some initiatives focused more on men and others more on women. For instance, the FAO’s *State of Food and Agriculture 2010-2011* insists that there is a need to increase the scale of women’s production and ‘close the gender gap’ in terms of their access to land, market participation, financial services, and technology compared to men (FAO, 2011). Closing this gap between women and men’s production is typically assumed to have both economic and social benefits, with the potential to improve household earnings, food security, and overall nutrition. In this narrative, women continue to be seen to have disproportionate responsibilities in food selection and preparation and for the care and feeding of children.

In contrast to the claims about paying heed to gender relations, from the 2000s onwards there has been a general resurgence in development policy and planning that focuses on gender-specific roles, and that sees interventions targeted at women as having a distinctive ability to reduce poverty and improve economic efficiency (Cornwall et al., 2007; Chant and Sweetman, 2012) and problems of food insecurity (O’Laughlin, 2007; Okali, 2012). This development narrative tends to

depict food security as the responsibility and obligation of individuals and households more than states, in line with the focus on entrepreneurship and free market principles in neoliberal planning. Yet at the same time, as households are a key object of development planning, the broader context in which they operate is changing quickly, as agricultural production is becoming larger-scale, more resource intensive and integrated into faraway markets. This trajectory is widely recognized to be extending socioeconomic inequality, as smallholders struggle to compete against more commercialized operations (Razavi, 2009). As agriculture and food systems become increasingly commoditized, cultural norms, roles and responsibilities related to production tend to shift, affecting the gendered negotiations that surround the production, provisioning and preparation of food for the household. Maria Mies and other feminist scholars have stressed that as households become more deeply tied to markets, “women’s unpaid work in the household becomes invisible, unrecorded in GDP and ‘naturalized’ that is, treated as a ‘free good’ – but also her waged work [is] considered to be only supplementary to that of her husband, the so-called breadwinner, and thus devalued” (Mies, 1998, ix).

This study was motivated by the idea that development interventions relating to farming and food have the power to influence intra-household divisions of labour in negative ways, especially if they are based on a misunderstanding of gender roles. In order to explore this, I pursued qualitative research and six months of fieldwork with smallholder farmers in the Northern Region of Ghana, a context where a range of ODA, NGO, and state-level (the Ministry of Food and Agriculture) initiatives have focused significant attention on intensifying food production in highly gendered ways. These initiatives include involving mostly men in market-oriented production schemes and training women how to grow and process specific food crops and prepare more nutritious meals for their households. Another reason why Northern Ghana is a valuable case

study site is because the region (along with the Upper West and Upper East regions) has a higher share of its population engaged in agriculture than the rest of the country, as well as being disproportionately food insecure (GLSS, 2014).

The paper begins by reviewing the development policy pertaining to farming and food in northern Ghana in general, before focusing on how it plays out in the case study sites more specifically, with attention to the assumptions about the gender relations that are embedded in development prescriptions. After discussing my qualitative case study approach, I present the key findings from the research, which focus on the tensions between the gender norms of farming and food and the prevailing assumptions underlying interventions in the area, such as directing specific agro-inputs, technology and training to women with the expectation they will increase household-oriented food production. The core argument of the paper is that agricultural development policy and programs need to start from contextually-specific understandings of intra-household gendered divisions of labour, recognizing that men may be making key decisions about subsistence-oriented production. Moreover, differentiating support based on misconceptions of gender relations can have unintended negative consequences, such as by increasing women's household responsibilities and intra-household conflict around the use of the project support.

6.2 Agri-Food Policy in Northern Ghana

To understand how development interventions bear on intra-household divisions of labour, it is important to first specify the major shifts that have occurred in development policy affecting northern Ghana. Following independence, Ghana's government initially provided some support for mechanization and agro-inputs to increase food production in the Northern, Upper West, and Upper East Regions, but it was not until the 1970s when the state began to invest in northern agricultural development in a more significant way, under the Operation Feed Yourself (OFY)

programme. The OFY was geared towards intensifying food production by providing a range of subsidies including: public sector-led marketing outlets; agrochemicals; nitrogen, phosphorous and potassium fertilizers (NPK); high-yielding seeds (including both hybrid and open-pollinating varieties); and the mechanization of ploughing (Nyantakyi-Frimpong and Bezner Kerr, 2015). However, this approach was short-lived as state-funding for agriculture was decimated in the 1980s after the government received loans from the International Monetary Fund (IMF) and World Bank in response to its debt crisis. The IMF and World Bank's ensuing Structural Adjustment Programs (SAPs) removed fertilizer and other subsidies and closed public marketing companies, which had guaranteed prices for staple food production. Following the decline of the state's role in agriculture, ODA became increasingly influential in determining priorities and providing services (Laird, 2007).

By the 2000s, agri-food policies had begun to re-focus attention on agricultural intensification in the north, with influential ODA donors, NGOs, and big philanthropy (e.g. the Bill and Melinda Gates and Rockefeller Foundations) having a prominent role designing new policies and providing subsidies for credit, agro-inputs, and mechanization. The goals of increasing productivity, private and state investment, farmer incomes, and global market integration were inscribed in a series of policies and programmes, including the 2002 Food and Agricultural Sector Development Policy, the 2009-2017 Medium-Term Agriculture Sector Investment Plan, and the African Union's Comprehensive Africa Agriculture Development Programme (CAADP) (MoFA, 2010). The Bill and Melinda Gates and Rockefeller Foundations had an important role supporting the Alliance for a Green Revolution (AGRA), while the World Bank and the United States Agency for International Development (USAID) set up large credit schemes in the north, which encouraged thousands of farmers to intensify maize, rice and soy production by increasing their

access to extension, higher yielding seeds (including both hybrid and open pollinating varieties), agrochemicals, NPK fertilizers, and mechanization (e.g. tractor leasing). The Ghanaian government also operates a National Fertilizer Subsidy Programme, which covers 50% of the cost of various types of fertilizers, and in 2017 it set up a state-run credit scheme through an agriculture programme entitled ‘Planting for Food and Jobs, a Campaign for Rapid Growth’, that is focused on intensifying maize, rice, soy, sorghum and vegetable production (Akoto, 2017). In addition to fertilizers, the state also provides subsidies for: credit; HYV seeds; agrochemicals; mechanization (i.e. tractor rental); extension; and selected marketing initiatives (mainly for maize, rice and soy) (MoFA, 2014).

While many of the agricultural development initiatives promoted by the state, ODA, NGOs, and big philanthropic donors do not explicitly identify gender equity goals, the MoFA does have one of its seven divisions dedicated to gender mainstreaming, called the Women in Agricultural Development Directorate (WIAD). WIAD focuses on providing technical support using gender sensitive data and analysis about the production and processing of nutritious food to MoFA regional and district units, other government units, ODA and NGO actors, as well as providing some new storage products, processing technology, and subsidized credit and agro-inputs to women. These initiatives are intended to build women’s capacity to produce, consume and sell nutrition-rich foods, such as multigrain bread made with maize, soy and wheat mixes, as well as soups made out of butternut squash and sweet potato (MoFA, Northern Region Agricultural Development Unit; WAAP, 2018). Most of the funding for WIAD has come from ODA (e.g. the German International Agency, USAID, Canadian International Development Agency) donors, as well as the United Nations agencies (e.g. UNICEF and the FAO), African Union and the African

intergovernmental research association Africa Rice Centre, which is supported by the CGIAR among others.¹⁷

In addition to the range of government supports noted above, there were seven agriculture-related projects run by multilateral ODA donors and NGOs operating in the case study district at the time of the research, some of which are interconnected with growing investments and partnerships involving multinational corporations (MoFA, 2014). MoFA district records confirmed that men are prioritized within the agricultural development projects geared to intensify market-oriented production, a gender imbalance that is amplified by the fact that twice as many men participated in the privately-led credit schemes than did women (MoFA, 2014). However, it is extremely notable that the two development projects operating in the district (supported by USAID and Urban-Net, an NGO) explicitly geared towards improving household food production rather than commercialization do explicitly target women. This objective is pursued by investments that increase women's access to mechanization, improved OPV soybean and vegetable seeds (e.g. tomatoes, lettuce, eggplant, etc.), and NPK fertilizers, and extension and training to enhance the processing and preparation of these crops into nutritious meals (MOFA, 2014). Although these projects are externally-funded, WIAD staff provide capacity building, data analysis, and strategic advice, as they do with other projects targeting women across the country. In sum, the development projects playing out in the case study district are premised on clear gendered assumptions. However, this research aims to show that gender relations are more complex than these projects assume, which is contributing to a number of problematic outcomes.

6.3 Qualitative Methods

¹⁷ In 2011, WIAD received a mere 0.4% of MoFA's budget allocation (SEND, 2014).

This paper is based on six months of field work that sought to understand how women and men rationalize their farming and food roles and responsibilities, and how development interventions can affect this for better and worse. This research was pursued in two communities from April to June 2016 and January to April 2017 and included: 55 interviews with 78 women and men smallholders (as some were conducted with farming couples); 12 focus groups (6 in each community, split between women and men only groups); and in-depth interviews with 31 key informants with specialized expertise on the regional agriculture and food system from their position in MoFA ($n=10$), ODA and NGOs ($n=9$), agro-input companies ($n=3$), and outgrowers operating more than 50 acres engaged in contract relations with smallholders ($n=9$).

Purposive sampling of smallholders was employed in order to ensure data collection encompassed people with a range of conditions present in these communities, including land size and quality, remoteness, market orientation, and relation to donor supported programs (the primary exclusion was for people who only reared animals and did not engage in crop production, as this entails a very different set of tasks and relationship to land). The two communities were selected to understand potential significant differences of smallholders' interaction with donor supported and government programs and markets based on their location, with one community being less remote than the other, and potentially more connected to programs, markets and other services. In order to anonymize the case study sites, one is referred to as the 'Roadside Village' because it is located along a main, paved road within a 30-minute drive to Tamale's farm input and food markets, and the other community is referred to as the 'Remote Village' because it is located more than a 60-minute drive to the main markets in Tamale, and a 30-minute drive off the main, paved road. However, there were no differences found between the communities of farmers' interaction with ODA, government, NGO and private sector services. Table 4 disaggregates the farmer

interviews based on location, gender, ethnicity, and age. The focus groups were divided by gender with the goal of enhancing open discussions about gendered roles and responsibilities in the household and on the farm; descriptions of masculinity and femininity in relation to the role and responsibilities surrounding food and farming; and community resource availability, accessibility and conflict.

I conducted every interview and focus group discussion with the help of a team of research assistants, conducting them in English where possible and otherwise having immediate translation from Dagbani to English. In either case, the interviews and discussions were recorded with the permission of participants, and I used NVivo to analyze the data, deploying both etic and emic coding and clustering. Reliability and validity were enhanced through triangulation of different methods, the use of a field journal, and verification of results through member checking. Throughout the ensuing discussion, direct quotations have been selected for representativeness, clarity, and the ability to bring key issues to life.

Table 4 – Summary of qualitative data collected with smallholders

	Roadside Village	Remote Village
Women smallholder interviews	23	13
Men smallholder interviews	7	9
Mixed gender interviews	0	3
Total	30	25
Elder (>60)	1	3
Youth (<35)	6	0
Non-Dagomba Ethnicity	6	1
Focus groups women only	3	3
Focus groups men only	3	3
Total	6	6

6.4 Differences in Women and Men’s Farming and Food Responsibilities

The gender division of farming and food roles and responsibilities within any household in any culture involves a range of complexities, though some generalizations are possible. Among the most important generalization in the case study sites was the strong separation of farming amongst household members, as most participants expressed a clear understanding of what belongs to a woman when she cultivates a plot of land versus what belongs to her husband. While I recognize that the 'male' vs. 'female' land binary is more complicated as women and men produce for household (more communal) and individual (more profit oriented) needs that is beyond the realm of discussion here, a major finding of this research is that the vast majority of participants reported having control over their own farm plots within what is regarded as family land, which were described as separate from that of other household members. Though women often described how they also intercrop vegetables and legumes throughout or around the plot of the household head and consider the ensuing product to be their own. The majority of women participants also indicated that they must pay for the costs of ploughing and other agro-inputs like fertilizer on their own plots, while most also indicated that their husbands cover at least a share of these costs. About a quarter of women also reported renting their own (non-family) land and/or hiring their own (non-family) labour in addition to their access to family land, whereas the others utilized only what was available through the household.

In these communities, land is customarily governed by a combination of the extended family, Chief and *Tindana* [Spiritual Landholder]. The Chief and *Tindana* tend to hold the land in trust for the people by interpreting customs and resolving disputes. Agricultural land is held collectively by families with use rights (typically for life) that are based on patrilineal inheritance norms, reserved for male descendants only. Within a household, the distribution of agricultural land is typically organized by the male heir to the inheritance rights, usually the household head,

who then allocates specific plots within it to individual household members to use. Though the vast majority of women may not formally or informally have title ownership rights to the land they use to farm, they still described a degree of control over the decisions made on their farms, including what crops to produce, how to produce them (e.g. specific inputs and technology used), and how to use the harvests and/or spend any income generated. Moreover, these harvests were often stored separately from their husband's harvests within the household, or at least earmarked for her, which points to a further degree of separation between women and men's farming activities, decision making and benefits within a household.

Although there is always some degree of separation between the use of farm plots and crops within households, complete separation is rare, and the vast majority of participants described working together on various plots during times when farming required more labour, such as at the beginning and ending of the growing season. Surprisingly, even if a woman's husband spent more time working on the farm plots she is responsible for using than she did throughout the growing season, oftentimes she still considered it hers; in other words, the amount of time a man spent on his wife's plot working did not necessarily change her control over that plot of land or the crops produced on it. There was an overwhelming consensus among both women and men that men spent more time farming in these communities than did women, including on the plots women were using, because of the constraints on women's time associated with their other household responsibilities, such as cooking, cleaning, child rearing and other tasks. Further, a small minority of men slept on farms during busy times in the season or if the farm plots were far away from their household, in order to ensure farming tasks were accomplished, which was not something any women reported doing, and it is common and customary for women to bring prepared food to their husbands while they are working.

An overwhelming number of the participants who are household heads claimed that a significant share of their farm production is primarily designated for subsistence, especially staple crops like maize and yam, while other crops like rice and groundnuts tended to be sold for cash in order to meet other household and individual needs. The ability to provide food staples for the household, especially maize, was strongly linked with men's sense of masculinity and of being a responsible husband. This was a strong theme in every focus group discussion, with both men and women agreeing that providing enough food for the whole household was a central part of being a 'good husband' or a 'good man'. This sense of responsibility was so strongly connected with masculine identities that a small minority of men would not readily admit that they did not always have enough staples to feed their family even when it was clear through other conversations that they did not, as their wives discussed having food shortages within their households, particularly between the months of March and June. In these cases, the women explained that men sometimes lie about the reality of their household food shortages due to their 'ego' and 'pride', as they do not want to be perceived by other community members as a 'bad husband'. As one woman from the roadside village explained, "When you hear somebody say, this house, they did not prepare fire [or food] today – it is a disgrace to the husband." Another indication of how men in these communities see themselves as the primary food providers was evident when several male participants initially and passionately dismissed the suggestion that women also provided food, until the conversation probed further to explore who typically provided the other ingredients beyond staples needed in a meal, at which point they acknowledged the role of their wives. While some of this initial response may have resulted from some confusion with the translation, in particular relating to a bias to interpret 'food' to mean staples, it nevertheless reflects the sense that men were in charge of the most important things pertaining to food security. The majority of

men would defer to their wives to explain the other ingredients needed beyond staples, providing another reflection of the gendered division of household food responsibilities. The fact that the majority of men are striving to primarily feed their families through their farming obviously contrasts with development projects that do not include them in efforts that support food production for household consumption, as one key informant stated that it would “be better if men could stay away” from these project activities and leave the intended goal of improving household nutrition to women.

The majority of participants explained that the household head tends to prioritize those farm plots geared to growing staples on land he directly uses in order to ensure that sufficient land and labour are devoted to feeding the household. One woman from the remote village justified this logic noting that: “If his [farm] is not a priority, then he won’t have the resources to take care of me.” This prioritization of the household head’s plots that he is responsible for using also typically means that household members work together there before moving onto their own plots. While women and men both worked on farms, sometimes together and sometimes alone, there was little consensus reported about the differences between their specific labour tasks and activities. The focus groups discussions confirmed that both men and women pursued planting, weeding, agrochemical and fertilizer application, and harvesting tasks either on their plots that they are responsible for using or those of others¹⁸. The key distinctions reported were that men are much more responsible for negotiating and finding land and tractors for ploughing (including for the plots that women use), while women perform many more post-harvest activities, including most of the threshing, winnowing and processing, even for the plots that men use. Thus, while women

¹⁸ There were reported specific patterns of some farm labour tasks being conducted more so by men than women and vice versa when they were working together on fields (e.g. men apply agrochemicals), however these tasks were not exclusively done by either women or men and depended on the specific needs of the fields and who was working on them.

and men reported performing similar tasks on the farm, both pre-planting and post-harvesting activities are significantly gendered.

This complex household division of labour means that the development projects that focus on strengthening women's capacities for production and meal preparation by enhancing access to agro-inputs, mechanization, and training are missing out on the fact that key resources, such as land and labour, still lie beyond their ultimate control, especially if they are in scarce supply as she has secondary or deprioritized access. One woman explained why she could not produce soy and participate in a project despite having a desire to: "I wish I could cultivate soybean, but I can't" because "it is labour intensive." One key informant confirmed that the projects targeting only women's production were ignoring the intra-household gender relations and power dynamics around farm resource access and control, such as land and labour that shape their production capacity: "You are not going to empower women without them having control" of things like land and labour, noting that "if you are saying one of the biggest factors of disempowerment is them not owning assets and you don't want to work on this, then how are you going to help? Like, to promote equality in the long term?" Because of the responsibility of the household head for staple provisions, there is good reason to expect that he may be unwilling to reallocate these resources away from plots that he uses to those of others in order to maintain household food security, especially when the household has limited land and labour in supply.

In contrast to male research participants, an overwhelming number of the women interviewed who described their central farming objective, described it as intended to generate cash as opposed to producing food for direct household consumption. One reason why most women described the need to generate cash was to pay for other ingredients used in meals beyond staples. Both the women and men-only focus group discussions confirmed a more general

sentiment that wives tended to be more responsible than men for providing fish, oils/fats, beans, vegetables and spices, though not exclusively so. Some of these ingredients can be produced and stored for long periods throughout the year, but others need to be purchased depending on the season and its perishability. The fact that the majority of women are striving to earn cash through their farming obviously contrasts with development projects targeting them to produce more nutrient-rich foods for household consumption. The majority of participants involved with this project stated that although members of their household enjoyed the taste of the new foods produced, such as soy kebab, they would likely either sell the raw soy produced or process it for sale rather than saving it for subsistence. A few women stated that they only agreed to produce certain new crops like soy because of the support they received from the project and because the prices for soy were high and indicated that they would likely stop growing it when market prices dropped (as witnessed in the past) and instead opt to grow other more profitable crops.

Despite the strong sense that men dominate the production of food staples to meet household needs, the vast majority of women also described growing staples like maize both to earn money and to supplement potential shortcomings in household staple production. One woman from the remote village described a typical process in which she negotiates staple provisions with her husband to ensure all household food needs are met: “When I pick the harvest, both of us store, but we will start using the man’s first. Should it finish, and we still need...then we will enter into mine,” going on to note that “the two of us will sit and then discuss, and that is where, if you the woman has, then you will now sell something to support the man.” In other words, while men view themselves as providing the staples for household consumption, this is also tempered by an expectation that women contributed their harvests or cash to make up for where male provisions fell short.

Most participants conveyed the fact that the management of harvests is strictly controlled and separated, though the level of rigidity in this control varies. The majority of women participants explained that they are not allowed go to the room in the house where their husband stored the staples harvested from his plots to collect what they need for a meal, and that usually their husbands could not go to storage to take any of their harvests without their consent. In general, household heads tend to allocate a portion of the stored staples to his wife for her meal preparation, typically giving her enough for a few days or one week at a time. However, in contexts where the harvests were insufficient, women face pressure to ‘top up’ or supplement the portion allocated by the head with their own staples, or else pay for some with their own cash. In polygamous households, this allocation of staples typically rotates amongst the wives, generally on a weekly basis. One man from the roadside village explained why food staple provisions to women were strictly monitored: “If the woman wants to measure and cook on her own without the man’s supervision, [the food] will not keep long. Some of [the women] will sell it out and the food will finish early,” and “sometimes it can even result in the man pouncing on the woman to beat her because the food has ...not been able to be used for the family for the number of days as expected.” The fear that women will divert and mismanage staples was a common justification for why household heads have to tightly control the distribution of stored staples. Strict management is deemed to be even more necessary in polygamous households where multiple women with potentially divergent interests could put the household at a greater risk of inefficient food rationing.

In short, this research indicated marked discrepancies between the ideas of how to enhance women’s roles in agricultural development and household food security through development projects, and women’s own perceptions of their roles and responsibilities within households. Further, in light of these dynamics, it is not surprising that a few participants (both men and

women) described the tight control of staples by household heads as a major source of familial conflict and tension.

6.5 The De-Stabilization of Gendered Food Responsibilities

A large majority of participants discussed their sense of how the typical gender division of food responsibilities is being disrupted not only by policies and projects, but also by the intensifying environmental challenges to production, such as erratic rainfall and increasing aridity. Related to this, several women described a degree of uncertainty about their husbands' ability to provide sufficient staple provisions or the cash needed to purchase them, which they indicated by calling their husbands 'hard' and their husband's hands 'stiff'. In response to insufficient staple provisions and men's tight control over stored food supplies, a small minority of women participants explained that they were opting to grow more of their own staples, such as maize, in the hope of gaining more control and flexibility over meal preparation. The typical gender division of food responsibilities, and its disruption by projects and environmental challenges to production did not seem to significantly differ between the Remote and Roadside communities as both were experiencing similar pressures to commercialize and challenges to cope with environmental change. This is likely due to the fact that the communities had similar socioeconomic conditions, vegetation, climate variables, development and government interventions, including the two that specifically targeted women. Focusing on an area much further away and without as much inclusion of smallholders in development and government supported programming would have perhaps demonstrated a more significant difference between any shifts in the gender division of labour in each community.

A breakdown in well-established gender divisions of responsibilities can produce confusion, unfair work burdens and potential conflict around how individuals should spend their

cash and time in order to meet the household's needs. One man from the roadside village claimed that women are now spending more of their time farming than occurred in the past, as well as using more of their individual cash to provide staples for households; in his words: "Traditionally women are not supposed to do [the providing of staples] it is the men, but because of suffering... [women] cook and they also go to labour on their fields." In most cases where women participants lamented that their husbands were not providing sufficient staples for meal preparation it was seen to be because they were rationing the little in storage due to poor yields associated with erratic rainfall and aridity. However, a small minority of women participants described the strict control and withholding of provisions as one way their husbands manipulated them in order to provide more staples to the household while saving less of their earnings for themselves.

A minority of women participants described the withholding of staples as a way for men to maintain authority and control over the allocation of total household farm labour and over the contributions made by their wives. As noted, this control has the potential to increase tensions within the household. According to one older woman from the remote village, household life was much more peaceful when there was one main focal person providing staples compared to both the household head and his wife: "Those days, during our parent's time... the husband farms and the woman doesn't farm, and we all respected [him]. When he brings the food, he takes care of everybody. But, now [she] will bring the food, [she] doesn't go to the landlord's [husband's] farm...that is where the conflict comes." In a few cases where women described feeling dissatisfied with their husband's provisions, they also indicated that this made them less willing to work on the plots he is responsible for and using, which risked a backlash from men who feel entitled to their wife's farm labour. One woman also explained how her husband would punish her for not working on his fields by withholding staple provisions: "If the husband gets to know that

the woman is not coming to the farm to help, when they get the [staples], he will just [store] it outside, he won't bring it to the house for all of us to enjoy." A slight minority of women felt that their growing need to supplement the provision of food staples was unfair because they thought that their husbands were intentionally diverting their household provisions for individual gain.

Another reason why there is growing mistrust between women and men over the management of food relates to the increasing commodification of agriculture. Although this was only identified by less than half of farmers, it is notable that some pointed out their belief that subsidized credit and the fixed market prices provided by NGOs and the state for staples are contributing to a breakdown in household organization of responsibilities. One man from the roadside village explained how there has been a shift in peoples' values towards maximizing profits from sales and away from meeting household needs: "People attach so much...value to money and amassing wealth, splitting off and being on their own and all of that," such that the historical "kind of bond or unity or togetherness is no longer there," using himself as an example, noting that "when they harvest their farming produce, I had to hide a bag [of Bambara beans]." It is also possible that the increasing selling and purchasing of crops like maize could partially explain why some women expressed resentment over their husband's insufficient provisioning, especially if they thought they were using these harvests to generate individual wealth and keeping it from the household. This could also factor into why nearly half of all male participants claimed to be reducing the risk of women and other household members diverting these staples for individual income generation or gain in the course of justifying their strict control over stored food supplies.

The organization of intra-household responsibilities in meeting the food needs of the household is even more complicated in polygamous households because this entails much more

coordination of cooking and food provisioning responsibilities. The majority of women in polygamous households expressed an appreciation for the equitable sharing of food responsibilities that goes on amongst co-wives, including providing ingredients and preparing meals. This sharing was also described by these women as increasing their space to dedicate more of their individual resources and time to farming, compared to if they were solely responsible for meal preparation and providing ingredients. However, a few participants in polygamous households did express a degree of mistrust and some frustration over their sense that the amount of time and money invested in shared household food responsibilities was unfairly distributed amongst co-wives and stifled their individual income generating activities. Some further complained about differences in the taste and richness of meals prepared by different co-wives, based on the uneven quality (e.g. diversity and freshness) of ingredients included in soups and stews. In the most extreme cases, the break down in cooperation around sharing food responsibilities was so severe (including mistrust about the uneven quality of meals prepared by co-wives) that there was little sharing of meal preparation activities and ingredients amongst the wives, and each wife prepared meals only for their own children as opposed to for the entire household.

A small minority of participants reported that the development support given to an individual woman (in hopes of improving food and nutrition in her household) led to gendered struggles around the control over the resources. One key informant explained how a USAID project was deliberately ignoring men, and consciously failing to provide sufficient information to them regarding the associated benefits in order to ensure there was no backlash against women: “So, you are not telling [providing information to] the men how they should react [to the project]; you are not giving them channels for how they can support [women involved in the project]. Like, you have to be more specific because the family does not work in a vacuum, right?” Another key

informant effectively described a tension that is present in the communities, between some women who feel entitled to control their own production and household heads who want to ensure the harvests resulting from the receipt of project support went to the household:

...we [name of project] supported them with cowpea and soya bean production and when it was time for harvesting the [husband] farmer called me saying, “this soybean I am going to seize it from the woman, you gave it to her, she does not respect me”, you see. So, I went to the community, not only the [husband], other men and other woman, and I told them right now the thing belongs to the household.

In this case, the woman who received the assistance viewed it as part of her own farming activities and decided that she wanted to sell the harvest for cash, which ran against what her husband and the project implementer expected. To mitigate backlash, as well as other potential similar incidents across the community, the key informant reinforced the idea of the harvests ensuing from the project support were for the benefit of the household rather than for the individual benefit of women recipients. Thus, by supporting women in this way, without considering the gender divisions of labour through which production designated primarily for the household is controlled by men, there is a risk that women can lose control over the harvests from the land she uses and labours on. The initiatives that build women’s capacity to produce, process and prepare foods are often motivated by concerns about gender equality, however they reinforce and are based on underlying assumptions of a highly-gendered household division of labour.

Development projects that focus on increasing women’s production for household consumption in contexts where men are the primary subsistence producers risk leading to men withholding their household provisions and inadvertently increasing the farm-work of women without increasing what they control. One man from the roadside village illustrated the

contradiction of supporting only women to produce for the family when it is typically prioritized by the household head: “If a household has 10 acres total, and they give one acre to the woman for soya production, that’s putting more work on [the] woman, which was supposed to be man’s responsibility.” Although women tend to provide ingredients beyond staple foods, as noted, a key informant also expressed concerns about expecting women to increase their production of labour-intensive crops like vegetables and soy without considering their other responsibilities: “What about women’s time burden? The thing is, you have to create a more equal environment in the household for her to be more successful.” Providing support exclusively to women can increase the expectations they face to provide more of their harvests or income generated to the household, yet without the accompanying land and labour reallocations or a redistribution of other household responsibilities, such as child rearing or cooking, this can make conditions worse not better for women.

6.6 Conclusions

This paper contributes empirical evidence of a case study to feminist research on intra-household gender roles and responsibilities with respect to agricultural development and food provisioning (Rao, 2006; Padmanabhan, 2007; Apusigah, 2009; Kiewisch, 2015; Hanrahan, 2015; Bikketi et al., 2016). The gendered household relations in the case study context, where men are the primary producers and providers of food for the household, and where the majority of women reported farming primarily for cash, runs counter to widely-held notions from Boserup’s (1970) famous study on African female farming systems underlying many agriculture policies and development prescriptions (e.g. FAO, 2011; MoFA, Northern Region Agricultural Development Unit; Quisumbing et al., 2014) that women tend to farm more for subsistence while men tend to be more market-oriented and that this is one underlying cause of food insecurity. This supports a well-

established claim by feminist scholars that intra-household gender relations are not fixed and universal and should not be assumed in development policy and practice broadly (e.g. Kabeer, 1994; Razavi and Miller 1995; Whitehead, 2000; Wright, 2005).

A major finding of this paper is that women and men rely on each other's labour, harvests and family landholdings to ensure the food needs of the household are met, even if their plots, crops, harvests and cash generated are physically separated. Thus, this case study affirms theoretical insights from Sen (1999) and Agarwal (1997) that women's and men's production should be understood as organized and negotiated based on different household food and farm needs. Within this structure in the case study context, men typically provide food staples, whereas women typically provide other ingredients needed in meals, and supplement staples where there might be shortages. Achieving gender equality in agriculture and household food security should, therefore, not be simply about increasing women's individual capacity in household-oriented food production because, as argued by Jackson (2007), for the vast majority of women, negotiation and cooperation with their husbands and other household members is essential to daily life. This is critical to recognize because agricultural development actors who involve only women in their interventions miss the complex reasoning underlying individual's behaviours that are based on gender norms, divisions of responsibilities and expectations of others to fulfill certain needs that complement their actions. As this case study research emphasizes, household heads' farm plots are primarily geared towards providing for the collective needs of the household and, therefore can demand more household resources like land and labour. While this demonstrates a difference between women and men's access to farming resources, these disparities are justified by disproportionate food responsibilities that men have and that women expect will be met.

A central argument of this paper is that there are potentially negative consequences from orienting agricultural development programs around misconceived assumptions about gender relations, such as assuming that women will benefit from subsistence production-oriented support. Evidence from this case study points out how simply providing women with support to produce and provide food to their families as recommended in current studies calling for ‘closing the gender gap in agriculture’ would not necessarily reduce poverty and, therefore improve household food security (e.g. Quisumbing and Pandolfelli, 2010; Huyer, 2016; Palacios-Lopez and Lopez, 2017). This is what Cornwall and Rivas (2015) call ‘postfeminist logic’ and Chant and Sweetman (2012) call an ‘add women and stir’ development prescription that focuses on supporting individual women’s production to solve the problems related to poverty for their households. Alternatively, problems related to poverty should be approached with sufficient attention to the structural and cultural constraints that women face, such as tenure arrangements and unbalanced household divisions of labour. Supporting an individual woman’s production simply gives them ‘a bigger piece of a very small pie’ or share of resources available to smallholder families (O’Laughlin, 2007). By providing support to women to increase their food production in order to feed the family, this case study finds that this can actually add to their household responsibilities, lead to a withdrawal of male contributions, and adversely complicate existing gender relations, norms and divisions of labour while men retain primary decision-making power and control over both farm resources and household food supplies as found in other case studies in similar contexts (e.g. Wrigley-Asante, 2012; Kiewisch, 2015). In other words, development projects that focus on the individual woman can result in adding to their work burdens, rather than these efforts supporting their equality and empowerment (Cornwall and Rivas, 2015); for example through supporting the transformation of institutions that largely exclude and demean women, such as patrilineal land

tenure arrangements, intra-household divisions of labour, and in this case study context, food storage access and control. This case study also finds that giving resources to women-only without involving men also risks alienating men, causing tension, conflict and potential backlash around the use and benefits of development project support. Sometimes receiving support can indirectly magnify coercion tactics, as men perceive increasing women's contributions as challenges to their power within the home as found in other case studies (e.g. Rao, 2006).

Another related finding affirms important insights from feminism and political ecology more generally, that gender is an important category for analysis to understanding the cultural and political forces that influence farming, food and environmental decision-making processes, as well as access to and control over resources, in this case food, land and labour. It also points to how environmental issues can affect gender roles (Rocheleau et al., 1996) as ecological issues must be understood and analyzed in relation to political economy (and vice versa). This paper affirms the importance of understanding how gender roles and identities shape responses to political economic and ecological change, and how these responses are in turn shaped by these broad-scale processes. It also reinforces the significance of analyzing human-environment relations within the farm household, which is a politicized arena, including reproductive labour or what is often understood as labour performed within households. This recognition and value of reproductive labour differs from simply focusing on productive, income generating activities performed in public spaces, which was the focus previously in much of the existing scholarship (Kabeer, 1994; Elmhirst, 2011). Conceptions of individual and collective food provisioning responsibilities are being destabilized by a combination of climate change (erratic rainfall and increasing aridity) and development initiatives that have increased the market orientation of farmers and made them more intent on individualized income generation than in the past (also found in Yaro, 2013). One

example of this is that some of the men in the study area expressed a need to tightly control stored food out of fear of their wives diverting it for individual gain, while some women expressed resentment towards their husbands' tight control over food produced and feeling coerced into contributing more of their own individual earnings to the household than what they thought was fair.

Ultimately, these tensions reflect the fact that development policy and projects need to start from a detailed understanding of intra-household power dynamics and divisions of labour before they plan their activities. This starting point is critical to ensure that interventions targeted at enhancing agricultural production and food provisioning do not unintentionally destabilize household responsibilities in ways that produce conflict and uneven work burdens between men and women.

Chapter 7

Conclusion

7.1 Introduction

This research was motivated by a desire to explore the contradictions that I have experienced studying and working in agricultural development across sub-Saharan Africa (SSA). Every year millions of dollars are spent in African agriculture to improve household food security, yet there are persistent disparities in access to food for many smallholder farmers who also produce food to feed their families. A central goal of this dissertation is to explain how disparities in access to food have been shaped by the market-led agricultural development approaches that have prevailed in Ghana since the 1990s, which encourage smallholders to specialize and intensify their production within a context that is acutely affected by climate change. This dissertation questions the value of this market-oriented approach based on smallholders' knowledge and experiences.

The present chapter summarizes the major empirical findings of the dissertation, which explores smallholders' perceptions of agro-inputs, technologies, credit schemes and farm contracts supported by Official Development Assistance (ODA) and provided by government, NGOs and the private sector to intensify and commercialize food crop production within an unpredictable environment. It also examines the effects that these types of development led, and supported interventions have on intra-household and community social relations, including gender. Moreover, I highlight the implications of these findings for the future of agricultural development prescriptions and practice in Ghana and SSA more broadly and make recommendations to improve access to food for smallholder families. Next, I discuss the key theoretical and conceptual feminist and political ecology insights that this dissertation affirms in a new case study, including

components from existing agrarian change and development literature. Lastly, I outline the relevant issues for further research and limitations.

7.2 Empirical Contributions

Each of the three manuscripts that form part of this dissertation fulfill the core objectives summarized in Table 5 below. The first core objective, which is to assess the provision of farming technologies and the encouragement of practices geared towards commercialization and intensification implications for food security within smallholder households, is primarily addressed by Chapter 4, or the first manuscript of this dissertation. Chapter 4 describes smallholders' perceptions and experiences of ODA funded government, NGOs and other private sector actors' provision of shorter duration seed varieties, tractors, NPK fertilizer and agrochemicals that are widely adopted by farmers and explain their rationale for doing so. Smallholders adhere to these technical prescriptions because they are required to cope with erratic rainfall, shortening growing seasons, soil infertility and aridity. However, they adopt these technologies reluctantly because they often do not result in the expected increased crop yields, and they also have a dramatically damaging effect on soil fertility. At the same time, the adoption of shorter duration seed varieties is translating to certain staple crops and landrace varieties disappearing from the landscape. Smallholders described how alongside the rising cost of these agro-inputs and technologies, the growing dependence on their use to cope with environmental changes, and the unpredictable yields they generate are indebting many to private agro-input dealers and other credit providers who are supported by official development assistance. Being pushed into debt, alongside the narrowing of the types of crop varieties grown and consumed, is putting many families at greater risk of food insecurity. Lastly, this manuscript demonstrates that

access to and the use of the technology needed to cope with environmental changes is also highly uneven based on gender. Significantly fewer women than men directly participate in the private sector or government contract schemes that provide intensification technology and are supported by official development assistance.

Although it seems that there is a contradiction within the findings, that the Green Revolution prescriptions damage soil, put farmers into increased debt and reduces the diversity of crops planted, and a complaint that women cannot participate equally in these development supported schemes, it is important to remember that farmers' adhere to these contracts and adopt these technologies reluctantly because there are few alternative options available. While women are less likely to participate and adhere to the Green Revolution set of prescriptions and may not suffer from repercussions to the same extent as men, this also likely translates to women's inability to cope with the immediate environmental challenges, which could disproportionately push them out of farming and food production altogether.

The second major objective of this dissertation is to identify the ways in which smallholders are benefiting from or resisting new market-oriented farming approaches as supported by ODA, NGOs and philanthropic organizations. Additionally, the second objective seeks to understand how smallholders envision food security and agricultural development, which is primarily addressed in Chapter 5 or the second manuscript of this dissertation. While all of the manuscripts point to the different ways smallholders envision food security and agricultural development, Chapter 5 explicitly identifies the ways that farmers are resisting market-oriented development efforts through 'everyday acts', such as by diverting inputs, side selling harvests, falsely weighing their products and burning parts of their fields to avoid paying back credit owed. It also outlines smallholders' experiences and rationale for resisting development efforts, which

run counter to the opinions articulated by those participants working in development who blame smallholders for their lack of technology adoption and poor cooperation with farm contractors by highlighting the unequal power dynamics and mistrust between the state, NGOs and farmers throughout the country's history. This study finds that farmers resist in these ways because of historical experiences of development, which they report to have largely failed to provide more stable income generating opportunities or to address the multitude of ecological challenges they face. Moreover, smallholders have witnessed the generation of wealth (e.g. land and tractor acquisition), corruption and mismanagement of donor and government funding and other resources by those responsible for planning, implementing and participating within projects. In particular, subsidies and credit provided by development assistance to outgrowers, input dealers, processors and other actors along the supply chain and not smallholders were described as a form of neo-imperialism because this was reported to be leading to extreme wealth generation for those with access to capital and the seizing of community land by outsiders or those working across the supply chain.

As explained in Chapter 4 of the dissertation, smallholders use technology supported by development and adhere to contract schemes in order to maintain yields and cope with environmental changes. However, this is translating to them being pushed further into debt, alongside compromising the sustainability of the quality of their soil, which is putting many families at greater risk of food insecurity. Mitigating the negative repercussions of adhering to the Green Revolution set of prescriptions, this paper demonstrates why farmers resist in everyday kinds of ways, which is because they have few alternative options. Outright resistance or refusal to adopt is likely too risky and potentially a fatal option for farmers because of the constraints on their choices (Scott, 2008).

Farmers also complained about agricultural development projects that are typically mandated from the ‘top down’, as opposed to ‘the bottom up’. In this context, the ‘top’ was in reference not only to the national level government policy and project intervention planners, but also bilateral and multilateral donor funding. The funding support was described as a form of neocolonialism because of the imposition of foreign goals oriented towards profit seeking development interventions as opposed to involving and centring local, community driven values and needs. Despite smallholders feeling that they are in a vulnerable position to both market fluctuations, exogenous development interventions and environmental change, they ultimately still exercise their agency and defy development efforts, even if this is not expressed via political mobilization.

Finally, the third manuscript or Chapter 6 of this dissertation primarily meets the third main objective, which is to analyze the shifts in gendered intra-household food roles, responsibilities and access to resources associated with the increasing commercial orientation of farming and biophysical changes occurring in the region. It finds that a range of ODA, NGO, and government initiatives have focused significant attention on intensifying food production in highly gendered ways, such as by involving mostly men in market-oriented production schemes and training women how to grow and process specific food crops and prepare more nutritious meals for their households. The notions underlying many of these interventions, that women tend to farm more for subsistence while men tend to be more market-oriented, differ from the described gender relations within households, as participants reported that men are the primary producers and providers of food for the household, and where the majority of women reported farming primarily for cash. There is a potential for negative consequences stemming from orienting agricultural development programs around misconceived assumptions about intra-household gender relations. For example,

we found that giving farming resources only to women, without involving men, also risks alienating men, causing tension, conflict and potential backlash that stems from general disagreement of how project support should be used. Development practice that focuses on women to solve the problem of hunger for their households through production can also have the effect of absolving men from their primary food responsibilities, magnifying women's work burdens. Another related finding is that food provisioning responsibilities are being destabilized by a combination of climate change (erratic rainfall and increasing aridity) and the wider commodification of production that has made farming more expensive. Consequently, farmers more intent on individualized income generation than in the past is leading to mistrust about their communal household food provisions.

The unifying threads of these three papers are that many smallholders are facing multidimensional pressures, including the need to cope with climate change, generate income and feed their families. Across both communities that were studied, development supported efforts are reshaping social relations around farming and food in negative ways, including intra-household roles, responsibilities and access to farming resources, such as by indebting families, worsening mistrust amongst household members and enabling unbalanced work burdens. Since both communities were located in a district neighboring the City of Tamale, where there are regional government, NGO and private company headquarters, as well as grain reserves, seed and mechanization storage, smallholders in both communities were highly connected and involved with these actors and their services, despite one being more remote than the other. One might need to go much further away to see contrasting differences in smallholders' relations with these actors based on location. Ultimately, smallholders should have a more central role in the design of development prescriptions to address the multidimensional pressures that they face, and these

options should be based on different types of smallholders' priorities and knowledge of their biophysical and social environments. To do this, development policy and projects need to start from detailed understandings of intra-household power dynamics and divisions of labour so they do not unintentionally destabilize household responsibilities in ways that produce conflict and uneven work burdens between men and women. There also needs to be a re-politicization of development that eschews technical and managerial approaches to projects by avoiding top-down structures and processes that mandate technologies or contracts on farmers and their families. This is fundamentally about recognizing the existing agency and capacity of farmers to know their environments, livelihoods and to respect their understandings of problems and solutions even if they differ from the hegemonic commercial agricultural development model or ideology.

Table 5 – Summary of Dissertation Objectives and Study Findings

Dissertation Objectives	Key Arguments
To assess the provision of farming technologies and the encouragement of practices geared towards commercialization or intensification, and their implications for food security within smallholder households.	<p>Paper 1 – ‘Smallholder Perceptions of Green Revolution’</p> <p><u>Key argument:</u> Those smallholders who have adopted higher yielding seed varieties, tractors, NPK fertilizer and agrochemicals commonly described this decision as a short-term trade-off to respond to erratic rainfall, shortened growing seasons, and drier soil with diminished fertility in order to meet immediate subsistence needs at the expense of worsening soil health and increased debt, putting them at greater risk of food insecurity.</p>
To identify the ways smallholder farmers are benefiting from or resisting the provision of new agro-inputs and the encouragement of new approaches to farming to understand how	<p>Paper 3 – ‘Gendering of Farming and Food Responsibilities’</p> <p><u>Key argument:</u> Providing only women with agro-inputs and technology to intensify their food production for household consumption can lead to a withdrawal of men’s support, adding to women’s household responsibilities. It can also cause confusion, tension, and backlash by men who may be making key decisions about subsistence-oriented production.</p> <p>Paper 2 – ‘Farmer Resistance to Commercialization’</p> <p><u>Key arguments:</u></p> <ul style="list-style-type: none"> - Farmers’ acts of noncooperation with development projects

they envision food security and agricultural development.

and contracts, such as by side-selling or falsely weighing their products are insights into everyday acts of resistance.
 - Farmers described resisting because of their historical experiences of development projects that have failed to improve their livelihoods, elite corruption and mismanagement, environmental degradation and donor hegemony.
 - Need a re-politicization of development that strives to eliminate top-down structures to projects that mandate technologies and farm contracts, and instead position farmers at the center of policymaking and project interventions through grassroots development.

Paper 1 – ‘Smallholder Perceptions of Green Revolution’

Key argument: Need more environmentally sustainable farming techniques and technologies that are cheaper, less dependent on external agencies and are more appropriate for the biophysical and social environments.

Paper 3 – ‘Gendering of Farming and Food Responsibilities’

Key argument: Need gender mainstreaming in agricultural development by involving both women and men in all interventions, and consider the particular ways that their households divide farm and food roles and responsibilities to minimize negative repercussions.

To analyze the shifts in gendered intra-household roles & responsibilities and access to resources related to food security associated with the increasing commercial orientation of farming and biophysical changes occurring in the region.

Paper 3 – ‘Gendering of Farming and Food Responsibilities’

Key argument: The commodification of food was described as being associated with a shift in values toward maximizing profits and away from the household, which creates tension and confusion around how food responsibilities are met.
 - Environmental changes are making it more challenging for male smallholders to provide food staples to their household, increasing the demands on women’s household provisions.

Paper 1 – ‘Smallholder Perceptions of Green Revolution’

Key argument: There are pre-existing socioeconomic differences affecting who can access the new Green Revolution technologies needed to cope with environmental changes with female farmers being especially disadvantaged.

7.3 Political Ecological Conceptualizations of Food Insecurity

Development policy and practice tends to be based on framings of food insecurity and hunger that are in line with neo-Malthusian definitions of these problems as largely stemming from

rising populations and inadequate food production. However, this misses the historical and political factors that cause hunger (Codjoe and Bilsborrow, 2011). Conversely, differentiated hunger relates to food entitlements, which can be understood as the legal, political, economic and social arrangements that determine a person's access to food beyond the quantity of food available (Sen, 1981). This dissertation validates the significance of thinking about the power and politics operating in relation to agri-food policymaking and practice. It reinforces the importance of needing to ground those who have or do not have the power to access productive resources, land, labour, development support and natural resources in a specific place set within a broader historical and political economic context.

This dissertation, particularly Chapter 4 (Paper 1) and Chapter 6 (Paper 3) affirm important components of feminist political ecology by revealing the ways in which environmental change and power relations intersect with food security and agricultural development in the particular context. It does so by analyzing the micro politics of resource access at the community and intra-household scale, alongside political influences stemming from processes of globalization, government and donor assistance (e.g. Peet and Watts, 2004; Schroeder, 1996). Examining community micro-politics includes an analysis of the contestation over natural resources, such as land and soil, as well as productive technology needed to respond to erratic rainfall and soil degradation. It also includes an analysis of the effects of these coping strategies and use of technology on land use and soil quality, which tends to be left out in political ecology approaches to studies that focus exclusively on issues of access as argued by Vayda and Walters (1999).

This dissertation contributes to ongoing and established debates on the agrarian question and feminist political ecology by highlighting the specific socioeconomic relations and differences in who can access the intensification technology, participate in markets and cope with

environmental changes in the specific context (Rocheleau, 1995; 2013; Bryant and Bailey, 1997; Robbins, 2004). A major finding of this dissertations has been that farmers with the capital to invest in agro-inputs and technology (e.g. high-yielding seed varieties, agrochemicals, mechanization etc.), labour and land are encouraged to grow in scale, which is in line with contemporary forms of agrarian change globally (Wright, 2005; Challinor et al., 2007; Weis, 2007; Razavi, 2009; Bernstein, 2010). It outlines how businesses and urban elites who are not originally from the communities where they farm take advantage of credit opportunities and subsidies provided by various development actors and government, such as by ploughing larger acreages of higher quality land within communities. In the Remote community studied, most of the community members' complaints about land acquisitions were of outsiders to the community who plough larger acreages on unused community land that are located further away from where households are located, which was given out by the Chief. Smallholders complained of having lost farming opportunities on land that was given to outsiders, as well as receiving few benefits or compensation for having their community land occupied. Alongside commercial farming, in the Roadside community, land acquisition by outsiders also included investing in land previously used to farm and transition it to more non-farm commercial enterprises and shops, which were often located closer to where people lived within the community. This was typically given out by family members, including Elders, which created tension within families. Meanwhile, women's smaller farming plots often translated to their overall exclusion from credit schemes that have minimum size requirements (e.g. government-led scheme), and from directly competing in tractor service markets.

Although the socioeconomic dynamics within the communities is complicated because most community members are part of the same extended family and kin, which governs land

tenure, and is beyond the realm of discussion here, there is still a degree of social and economic differentiation among smallholders. Despite the sharing of resources being common (e.g. land, labour and food), especially in times of shortage amongst households, there were still differences in the control and access to these resources, as well as to smallholder participation in development and government projects and farm contracts across and within households. Some community members did have more land due to their position within the family and/or access to capital to farm; others with more reliable and direct access to tractors; and larger households often had more family labour available. The consequence of agrarian change and rising polarization is that many smallholders across the world have been forced to diversify their livelihoods or abandon farming altogether and this trend could translate to the context of northern Ghana. Abandoning farming is a problem because smallholders are a large share of the population that cannot be easily absorbed in other areas of the economy. Moreover, this dissertation affirms the importance of gender as a marker of difference in African contexts as pointed out by Peters (2004), as ‘struggles within classes’ and between social groups (e.g. between women and men) is central to class formation.

Another main focus of this dissertation has been to explain how the gender relations within households in the study context are shaped by the wider political economic and biophysical environments in which smallholder farmers are imbedded, which attests to the importance of gender relations as framed by feminist political ecological approaches to understanding food entitlements (Rocheleau, 2007). Examining gender relations and negotiations within the household is under appreciated within dominant thinking in political ecology and across development studies (Watts, 2000; Borras, 2009; Scoones, 2015). This dissertation reinforces the importance of thinking about different gendered spaces within the household as they relate to food production and consumption roles and responsibilities. It specifically highlights how the consequences of food

production intensification and market-oriented development strategies are leading to a breakdown in household and family cooperation, including confusion over what is normally considered a woman's domain compared to a man's, which is typical of patterns of agrarian change found globally (McMichael, 2006). The orientation of farming towards profit maximization is a disruption of typical food provisioning in the specific northern Ghanaian contexts because food security and production are not just the obligation of individuals, but are linked with community and kin relations, as well as being a key matter of conjugal bargaining as also argued by Devereux (1999) Naylor (1999), Whitehead (2002; 2006) and Padmanabhan (2007). When people shift their priorities away from directly feeding the household to more individualized profit generation, with resources and labour redistributed to more commercial enterprises, this devalues the significant household contributions and unpaid work. The cumulative effect of this within a society has major implications for intra-household gender divisions of labour and decision making, which could quickly lead to unbalanced work burdens and resource access especially for women, which feminists have long argued for and about (e.g. Mies, 1998).

7.4 Decolonial Perspectives of Development

This dissertation also affirms the significance of critical decolonial approaches to development studies by contesting top down approaches to development practice that extend capitalism, globalization and imperialism and are associated with uneven wealth generation in a specific context (e.g. Ferguson, 1994; Gupta, 1998; Bryant 1998; Scott, 1998). Smallholders defiance to development prescriptions that commercialize their production are based on their experiences of unfair farm contracts in terms of the types of productive technology provided, the amounts and quality of harvests expected, and the compensation provided in return. These findings support the understanding of contemporary forms of development by demonstrating how limited

the approaches to development are (e.g. market driven) in Ghana, including in the types of technologies and agro-inputs provided, despite the multitude and diversity of actors from the state, ODA, NGOs and philanthropic funders involved. It also shows how increasingly difficult it is to separate these development efforts from that of the private sector, which is a wider development trend in the globalization and liberalization of African agriculture. Moreover, farmers from rural communities in northern Ghana feel that they have been taken advantage of by government, NGOs and philanthropy for decades as they have seen urban and government elite supported by these actors, generating wealth and amassing land that previously belonged to community members.

Although this dissertation focuses mainly on providing evidence of the types of agricultural development actors and interventions or prescriptions pursued in a specific context, it cannot be entirely separated from the ideologies that tend to underlie them, which include a deepening of capitalist relations or commercialization of food production across a sector and within communities and households. The ideology or model to make agriculture a more formal business is based on principles of profit, efficiency, growth and entrepreneurship. According to the well-established critiques of these development ideologies put forth by Wright (2005) and Escobar (2011), this largely tends to focus on enhancing capitalism by reinforcing the myth that this business led approach is the superior, universal and standard 'modern' model. These notions guide the types of support provided and interventions undertaken by development actors, which largely include technical and managerial solutions to poverty and food insecurity mandated from the top (often by development actors) down to farmers (Ferguson, 1990; Scott, 1998; Li, 2009). This dissertation critiques the specific technical and managerial prescriptions led and financially supported by different development actors in order to capitalize or intensify farmers' yields and

integrate them into global markets by pointing to the historical power dynamics and politics that differentiate farmers ability to compete.

This research also reinforces the importance for thinking about the ways farmers exercise their agency (or power to act) and shape wider political-economic agri-food systems and development assistance. This power to act is often left out in studies that focus only on the visible and invisible forms of power that development actors (and those they support) have over farmers by excluding key issues that are important to smallholders and making decisions in open and closed spaces (Gaventa, 1980). Despite all of the socioeconomic and biophysical constraints on their farming and food behaviours, smallholders test the limits of what is possible within development supported efforts to maximize their advantage, enhance their welfare and mitigate risk and vulnerabilities by both using the technology and inputs provided and adhering to contracts, while also resisting them. They test the limits by participating in farm contracts and projects while undermining them in subtle and 'every day' ways, which could be misinterpreted as ignorance or irrationality. Overtly rebelling, mobilizing or refusing outright to participate in agricultural development projects are considered to be forms of protest too risky to farmers' survival in volatile and changing environmental contexts, especially since there are few alternatives available to respond to environmental and market shocks (Scott, 1998). Thus, the explanations provided by those key informants working in development that blame farmers for not cooperating with development efforts because they think farmers are ignorant about their own livelihoods and environments and in need of education and business training to change their farming behaviours is demeaning, and an example of how they can impose of their values for how farming should take place. This goes back to colonial notions of poverty and under development that generalize the African continent as being uneducated and in need of Western assistance (Wright, 2005; Kapoor,

2009; Escobar 2011), despite the fact that the accumulation of finance, land and other resources are reportedly happening at the expense of smallholders. A few smallholder participants claimed outright that contemporary development is a form of neocolonialism and imperialism by multilateral, bilateral and philanthropic donors.

7.5 Feminist Critique of Development

This dissertation specifically demonstrates the agricultural development prescriptions that tend to focus on a need to ‘close yield gaps in agriculture’, which are yields that are seen to be lower than average yields. It also specifically examines the development policy prescriptions that focus on closing the *gender* yield gaps in agriculture (e.g. World Bank/FAO/IFAD, 2009; FAO, 2012), which tend to assume that gender disparities in hunger are largely a problem of socio-cultural discrimination, rather than also in relation to how capitalist systems are shifting production relations in changing biophysical environments. These policy narratives often reverberate into practice by providing women with the same tangible productive resources as men, such as agro-inputs, extension and finance to make them more efficient producers (Okali, 2012). This is also evident of a wider trend in the approaches to development more broadly that focus on supporting women’s productive capacity, commonly referred to as a ‘women in development’ approach. However, this misses the ways that commodification actually increases disparities and social inequality (Lado, 1992; Kabeer, 2010; Chant and Sweetman, 2012; Cornwall and Rivas, 2015). As argued by Kabeer (1994), research, policy and practice that focuses only on women can often lead to a homogenous categorization in which women are placed in need of standardized packages of development assistance.

Policymakers and ODA should not assume that there are fixed and universal gender divisions of labour. Some global policymakers and researchers that have strived to make women’s

work a priority in development support have tended to exaggerate the differences between women and men's labour, as argued by Whitehead (1990) and Razavi and Miller (1995). At the same time, researchers and policymakers have tended to romanticize indigenous knowledge, particularly women's presumed 'natural attributes' that celebrates women's care work to the extreme (Wright, 1997; Leach, 2007). As argued by Whitehead (2000), this can perpetuate historically racist and sexist ideas stemming from the colonialism about African women being more altruistic in their household contributions compared to men, who were then characterized as being selfish, irresponsible and lazy compared to women. While redirecting funding to address gender disparities in agriculture is necessary, this dissertation affirms these feminist critiques through a specific case study and urges policymakers to resist relying on simple narratives and exaggerations about gender relations. Simple narratives can reverberate into development programs and support, and have negative consequences on people's lives, such as by causing intra-household conflict and unfair work burdens as found by Rao (2006).

This dissertation also supports critiques of development prescriptions that equate women's rights with their autonomy in marriage or the household (e.g. Jackson, 2007) by demonstrating the significance of dependence within households for people's wellbeing. There is a detailing of how women and men rely on each other's labour, harvests and family landholdings to ensure the food needs of the household are achieved, even if their plots, crops, harvests and cash generated tend to be physically separated, as is the case in much of Ghana (also validated by Apusigah, 2009; Dzokoto and Darkwah, 2014). Thus, women's and men's production should be viewed as organized based on different household food and farm needs and gender norms (Sen, 1999; Kabeer, 1994). This is critical to recognize because agriculture policymaking and practice that focuses only on women misses the complex reasoning underlying individual's behaviours that are

based on gender norms, division of responsibilities and expectations of others to fulfill certain needs and compliment their actions. Ultimately, policymakers need to recognize relations between people and across institutions. Any funding or services provided should mainstream gender by at least involving both women and men and assessing how men and women are potentially affected differently from support provided in the specific context.

7.6 Study Limitations and Future Research

Despite the empirical contributions made by this dissertation, there are also a number of limitations to the case studies conducted that need to be recognized. Firstly, though this dissertation disaggregates farmers based on socioeconomic differences, gender dynamics are often discussed in broad statements, which can be incoherent categories due to the influence of ethnicity, generational differences, and other identities. Although I decided to pursue feminist standpoint methods to balance certain commonalities in experiences of women in a patriarchal society, I could have done more to recognize a more complex diversity of social positions (Hesse-Biber and Leavy, 2004). One way to consider a more complex set of intersecting identities would have been to focus on a limited set of households within communities, conducting research systematically on every household member and comparing and contrasting their perspectives and relations. Though this research was focused on relations between women and men within the same household, research on female headed households (defacto and dejure) and their relations with those in their community and wider family networks is needed to understand food security strategies, especially in contexts with high rates of out male migration.

Secondly, it was also difficult to distinguish between specific managers, users, and beneficiaries of *all* of the land located within a community and to understand how these individuals are related to one another. One way to unpack this would have been to map all of the plots of land

across a community and categorize according to how it belongs to households and wider family networks, further distinguishing between who controls the land, who uses it, who profits from it, and what that land is designated for as opposed to asking individuals about their land use, control and benefits. Questions around how those specific plots have changed in control over time, including by those from within communities and families would prove useful in understanding more specific land use changes and to reveal more information about potential processes of land dispossession.

Thirdly, a major challenge of this research has been to balance analysis across a diverse set of actors, institutions and processes at multiple geographical and socioeconomic, spatial and temporal scales. Multi-scalar research is generally challenging because it requires reconciling often differing and conflicting interpretations, including among different types of people and perspectives, with development intervention goals and outputs, the dynamics of global markets, and environmental change. While I have attempted to reference more of the ‘web of explanations’ by focusing on different processes and actors in each manuscript, it was difficult to scope each manuscript depending on the purpose and set of questions asked in each, while also referring to the wider web of explanations. It was also challenging to reconcile how much to attribute farmers’ behaviours and challenges to political economic and social structures versus their agency (Rocheleau, 2007).

Finally, inherent in such community focused qualitative research, findings are limited in their generalizability. This critique is grounded in context specific findings of the case study and, therefore findings are more difficult to generalize across contexts (Baxter and Eyles, 1997). The problem with case study evidence is when it becomes reinforced in dominant policy narratives as something that is definitive and predictable for achieving food security (Sabatier, 1987). Further

research about the extent that the dynamics highlighted in this dissertation apply to northern Ghanaian agriculture and food more generally is needed, especially to inform policymaking.

Further empirical research on context specific technical and political approaches to improving farmers' production that is in line with farmers' own values is needed. Knowledge, evidence and development strategies need to be democratized by making policymaking and research based on local dialogue with all citizens, not just local elites or global actors. Principles associated with food sovereignty, such as producing good quality and culturally appropriate food primarily for local markets and communities by using ecologically sustainable methods (Patel, 2009), seems appropriate in the northern Ghanaian context since farmers complained of having to rely on international aid and exogenous actors to produce, and in ways that have irreversible effects on their soil. Therefore, more research also needs to specifically explore why smallholders in this context are not politically mobilizing around principles of food sovereignty and related social movements as they are in other regions to shift agri-food systems. Moreover, further research on farmers' perception of specific agroecological and agroforestry farming techniques are also needed in specific microclimates, as using lower forms of tillage, organic compost and manure, and water saving practices could mitigate soil degradation and build water retention (Altieri, 2009). Research on why these agroecological techniques are not being promoted or supported by official development assistance in Ghana, and within donor circles more broadly would also be beneficial for unpacking ulterior motives to smallholder livelihood development and food security efforts. Lastly, though qualitative research in this dissertation is useful to providing more accurate context specific data that exposes hidden power dynamics, further research about the extent that these dynamics can apply to other northern Ghanaian agriculture contexts more generally is also needed, perhaps through other case studies or other methods which permit larger sample sizes. Particularly,

further research about the gender dynamics and micro-politics found among ethnic and religious groups other than the Muslim Dagombas in northern Ghana, including those living within Dagbon would also prove useful to understanding the multitude of food insecurity strategies.

References

- Agarwal, B. (1992). The gender and environment debate: lessons from India. *Feminist Studies*, 18(1): 119-158.
- Agarwal, B. (1997). "Bargaining" and gender relations: Within and beyond the household. *Feminist economics*, 3(1), 1-51.
- Abu-Lughod, L. (2016). *Veiled sentiments: Honor and poetry in a Bedouin society*. Berkley: University of California Press.
- Ackerly, B., and True, J. (2008). Reflexivity in practice: Power and ethics in feminist research on international relations. *International Studies Review*, 10(4), 693-707.
- AGRA. (2017). AGRA Ghana Operational Plan. Available online: <https://agra.org/wp-content/uploads/2018/01/AGRA-Ghana-Operational-Plans-03.11.2017.pdf> (Accessed September 20, 2018).
- Akoto, O. A. (1987). Agricultural development policy in Ghana. *Food Policy*, 12(3) (1987): 243-254.
- Akoto, O. A. (2017). 'Planting for Food and Jobs, Campaign for Rapid Growth'. Ministry of Food and Agriculture presentation for districts units. Accessed January, 2017.
- Akram-Lodhi, A. H., and Kay, C. (2012). *Peasants and globalization: Political economy, agrarian transformation and development*. London: Routledge.
- Alcoff, L. (1991). The problem of speaking for others. *Cultural Critique*, (20): 5-32.
- Altieri, M. A. (2009). Agroecology, small farms, and food sovereignty. *Monthly review*, 61(3), 102-113.
- Altieri, M. A., & Nicholls, C. I. (2012). Agroecology scaling up for food sovereignty and resiliency. In *Sustainable Agriculture Reviews* (pp. 1-29). Springer, Dordrecht.
- Amanor, K. S. (2011). From Farmer Participation to Pro-poor Seed Markets: The Political Economy of Commercial Cereal Seed Networks in Ghana. *IDS Bulletin* 42(4): 48-58.
- Aning, K., and Abdallah, M. (2013). Islamic radicalisation and violence in Ghana. *Conflict, Security & Development*, 13(2): 149-167.
- Apusigah, A. (2009). The gendered politics of farm household production and the shaping of women's livelihoods in Northern Ghana. *Feminist Africa*, 12(2009): 51-67.
- Asante, F., & Amuakwa-Mensah, F. (2015). Climate change and variability in Ghana: Stocktaking. *Climate*, 3(1), 78-99.

- Awanyo, L. (2001). Labor, ecology, and a failed agenda of market incentives: The political ecology of agrarian reforms in Ghana. *Annals of the Association of American Geographers*, 91(1): 92-121.
- Banerjee, A., Karlan, D., & Zinman, J. (2015a). Six randomized evaluations of microcredit: Introduction and further steps. *American Economic Journal: Applied Economics*, 7(1), 1-21.
- Banerjee, A., Duflo, E., Glennerster, R., & Kinnan, C. (2015b). The miracle of microfinance? Evidence from a randomized evaluation. *American Economic Journal: Applied Economics*, 7(1), 22-53.
- Baxter, J., and Eyles, J. (1997). Evaluating qualitative research in social geography: establishing 'rigour' in interview analysis. *Transactions of the Institute of British Geographers*, 22(4): 505-525.
- Blaikie, P.M., & Brookfield, H.C. (Eds.) (1987). *Land Degradation and Society*. London: Methuen.
- Bello, W. (2009). *The Food Wars*. London: Verso.
- Bernstein, H. (2010). *Class dynamics of agrarian change*. Sterling: Kumarian Press.
- Berry, S. (2009). Property, authority and citizenship: land claims, politics and the dynamics of social division in West Africa. *Development and Change*, 40(1): 23-45.
- Best, A. L. (2003). Doing race in the context of feminist interviewing: Constructing whiteness through talk. *Qualitative Inquiry*, 9(6): 895-914.
- Bezner-Kerr, R. (2012). Lessons from the old Green Revolution for the new: Social, environmental and nutritional issues for agricultural change in Africa. *Progress in Development Studies*, 12(2-3): 213-229.
- Biernacki, P., and Waldorf, D. (1981). Snowball sampling: Problems and techniques of chain referral sampling. *Sociological Methods & Research*, 10(2): 141-163.
- Bikketi, E., Ifejika Speranza, C., Bieri, S., Haller, T., & Wiesmann, U. (2016). Gendered division of labour and feminisation of responsibilities in Kenya; implications for development interventions. *Gender, Place & Culture*, 23(10), 1432-1449.
- Borras S. M. Jr. (2009). Agrarian change and peasant studies: changes, continuities and challenges—an introduction. *The Journal of Peasant Studies*, 36(1): 5-31.
- Boserup, E. (1970). *Woman's Role in Economic Development*. London: Earthscan.

- Braimah, J. A., Atuoye, K. N., Vercillo, S., Warring, C., & Luginaah, I. (2017). Debated agronomy: public discourse and the future of biotechnology policy in Ghana. *Global Bioethics*, 28(1): 3-18.
- Breisinger, C., Diao, X., Thurlow, J., and Hassan, R. M. A. (2011). Potential impacts of a green revolution in Africa—the case of Ghana. *Journal of International Development*, 23(1): 82-102.
- Brown, O., & Crawford, A. (2008). Climate change: A new threat to stability in West Africa? Evidence from Ghana and Burkina Faso. *African Security Studies*, 17(3), 39-57.
- Bryant, R. L., and S. Bailey (1997). *Third World Political Ecology*. New York: Routledge.
- Bryceson, D. F. (2001). Countryside and city: Balancing or blurring differences. *Urban Development in a Transnational Context. Aalborg: Aalborg University Development Research Series, Occasional Paper, 2*.
- Bryceson, D. F. (2000). *Sustaining rural livelihoods in sub-saharan Africa: Sustaining what and for how long*. Institute for Development Policy and Management, University of Manchester.
- Bryceson D. F. (1995). *Women Wielding the Hoe: Lessons from Rural Africa for Feminist Theory and Development Practice*. Oxford: Berg Publishers.
- Bryceson, D. F., and Jamal, V. (1997). *Farewell to farms: de-agrarianisation and employment in Africa*. Farnham: Ashgate Publishing Ltd.
- Bryman, A. (2006). Integrating quantitative and qualitative research: How is it done? *Qualitative Research*, 6(1), 97-113.
- Citi FM Online. (2017). Minority to Deputy Agric Minister: ‘Resign for Insulting Northerners’. Available Online: <http://citifmonline.com/2017/08/28/minority-to-deputy-agric-minister-resign-for-insulting-northerners/> Accessed September 9, 2017.
- Campbell, M. O. N. (2004). The role of socio-environmental networking in the sustainability of rain-fed agriculture in the coastal savanna of Ghana. *GeoJournal*, 61(2): 79-88.
- Carney, J., and Watts, M. (1991). Disciplining women? Rice, mechanization, and the evolution of Mandinka gender relations in Senegambia. *Signs*, 16(4): 651-681.
- Carr, E. R. (2008). Men’s crops and women’s crops: The importance of gender to the understanding of agricultural and development outcomes in Ghana’s Central Region. *World Development*, 36(5): 900-915.

- Carr, E. R., & Thompson, M. C. (2014). Gender and climate change adaptation in agrarian settings: Current thinking, new directions, and research frontiers. *Geography Compass*, 8(3), 182-197.
- Challinor, A., Wheeler, T., Garforth, C., Craufurd, P., and Kassam, A. (2007). Assessing the vulnerability of food crop systems in Africa to climate change. *Climatic Change*, 83(3): 381-399.
- Chambers, R. (1994). The origins and practice of participatory rural appraisal. *World Development*, 22(7): 953-969.
- Chant, S., and Sweetman, C. (2012). Fixing women or fixing the world? 'Smart economics', efficiency approaches, and gender equality in development. *Gender & Development*, 20(3): 517-529.
- Cloke, P., Cook, I., Crang, P., Goodwin, M., Painter, J., and Philo, C. (2004). *Practising Human Geography*. Thousand Oaks: Sage.
- Codjoe, S. N. A., Atidoh, L. K., and Burkett., V. (2012). Gender and occupational perspectives on adaptation to climate extremes in the Afram Plains of Ghana. *Climatic Change*, 110(1-2): 431-454.
- Codjoe, S. N. A., & Bilsborrow, R. E. (2012). Are migrants exceptional resource degraders? A study of agricultural households in Ghana. *GeoJournal*, 77(5): 681-694.
- Cooke, B., and Kothari, U. (2001). *Participation: The new tyranny?*. London: Zed Books.
- Cornwall, A. (2006). Historical perspectives on participation in development. *Commonwealth & Comparative Politics*, 44(1): 62-83.
- Cornwall, A. and Whitehead, A. (Eds.). (2007). *Feminisms in development: contradictions, contestations and challenges*. London: Zed Books.
- Cornwall, A., Harrison, E., & Whitehead, A. (2007). Gender myths and feminist fables: The struggle for interpretive power in gender and development. *Development and Change*, 38(1), 1-20.
- Cornwall, A., and Rivas, A. M. (2015). From 'gender equality and 'women's empowerment' to global justice: reclaiming a transformative agenda for gender and development. *Third World Quarterly*, 36(2): 396-415.
- Crenshaw, C. (1997). Women in the Gulf War: Toward an intersectional feminist rhetorical criticism. *Howard Journal of Communications*, 8(3): 219-235.
- Department for International Development (DFID). (2013). *The New Alliance for Food Security*

- and Nutrition- Ghana Cooperation Framework. Policy Paper Available online: <https://www.gov.uk/government/publications/the-new-alliance-for-food-security-and-nutrition-ghana-cooperation-framework> (accessed, 1 June 2018).
- Dery, I. (2015). Access to and control over land as gendered: contextualising women's access and ownership rights of land in rural Ghana. *Africanus*, 45(2): 28-48.
- De Schutter, O. (2015). The New alliance for food security and nutrition in Africa. *Brüssel: European Parliament Committee on Development*. Available online: [http://www.europarl.europa.eu/RegData/etudes/STUD/2015/535010/EXPO_STU\(2015\)535010_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2015/535010/EXPO_STU(2015)535010_EN.pdf) (accessed September 20, 2018).
- Devereux, S. (1993). *Household responses to food insecurity in northeastern Ghana* (Doctoral dissertation, University of Oxford).
- Department for International Development (DFID). (2013). The New Alliance for Food Security and Nutrition- Ghana Cooperation Framework. Policy Paper Available online: <https://www.gov.uk/government/publications/the-new-alliance-for-food-security-and-nutrition-ghana-cooperation-framework> (Accessed, June 1 2018).
- Doss, C. R. (2002). Men's crops? Women's crops? The gender patterns of cropping in Ghana. *World Development*, 30(11): 1987-2000.
- Doss, C., Kim, S. M., Njuki, J., Hillenbrand, E., and Miruka, M. (2014). *Women's individual and joint property ownership: Effects on household decision-making* (1347). International Food Policy Research Institute.
- Doss, C., Meinzen-Dick, R., Quisumbing, A., and Theis, S. (2017). Women in agriculture: Four myths. *Global Food Security*, 16:69-74.
- Doss, C. R., and Morris, M. L. (2000). How does gender affect the adoption of agricultural innovations? The case of improved maize technology in Ghana. *Agricultural Economics*, 25(1): 27-39.
- Djoudi, H., Locatelli, B., Vaast, C., Asher, K., Brockhaus, M., & Sijapati, B. B. (2016). Beyond dichotomies: Gender and intersecting inequalities in climate change studies. *Ambio*, 45(3): 248-262.
- Duncan, B. A. (2010). Cocoa, marriage, labour and land in Ghana: Some matrilineal and patrilineal perspectives. *Africa*, 80(2): 301-321.
- Dunn, W. N. (1994). *Public Policy Analysis: An Introduction*. Englewood Cliffs: Prentice-Hall.
- Dzokoto, V. A., and Darkwah, A. K. (2014). If times change, should we throw away the hearthstone? Exploring (Dis) continuities in autonomy and decision-making in the lives of Ghanaian women. *Frontiers in Psychology*, 5:1371.

- Eakin, H. C. (2006). *Weathering risk in rural Mexico: climatic, institutional, and economic change*. Tucson: University of Arizona Press.
- Elmhirst, R. (2011). Introducing new feminist political ecologies. *Geoforum*, 42(2): 129-132.
- EM-DAT Emergency Disasters Database (2008). Ghana Country Profile: Natural Disasters.
Available at <http://www.em-dat.net/disasters/Visualisation/profiles/countryprofile.php> [accessed 7 December 2018].
- EPA (2008). *Ghana Climate Change Impacts, Vulnerability and Adaptation Assessments*;
Environmental Protection Agency: Accra, Ghana.
- Escobar, A. (2011). *Encountering development: The making and unmaking of the Third World*. Princeton University Press.
- Evenson, R. E., & Gollin, D. (2003). Assessing the impact of the Green Revolution, 1960 to 2000. *Science*, 300(5620): 758-762.
- FAO. (2016). 2016 The State of Food and Agriculture – Climate Change, Agriculture and Food Security. Rome: FAO.
Available online: <http://www.fao.org/3/a-i6030e.pdf> (accessed 24, March 2018).
- FAO. (2015). *Regional overview of food insecurity: African food insecurity prospects brighter than ever*. Accra, FAO.
- FAO. (2013). *Gender and Equity Policy*. Rome: FAO.
- FAO. (2011). The State of Food and Agriculture 2010-2011- Women in Agriculture. FAO: Rome. Available: <http://www.fao.org/docrep/013/i2050e/i2050e00.htm>
- Ferguson, J. (1990). *The anti-politics machine: 'development', depoliticization and bureaucratic power in Lesotho*. Cambridge: Cambridge University Press.
- Ferguson, J. (2006). *Global shadows: Africa in the neoliberal world order*. Duke University Press.
- Fischer, K. (2016). Why new crop technology is not scale-neutral—A critique of the expectations for a crop-based African Green Revolution. *Research Policy*, 45(6): 1185-1194.

- Flora, C. B. (2010). Food security in the context of energy and resource depletion: Sustainable agriculture in developing countries. *Renewable agriculture and food systems*, 25(2): 118-128.
- Forsyth, T. (2008). Political ecology and the epistemology of social justice. *Geoforum*, 39(2):756-764.
- Friedmann, H. (2004). Feeding the Empire: The Pathologies of Globalized Agriculture. in: Panitch, L. and C. Leys (eds.): *The Empire Reloaded: Socialist Register*, New York: Monthly Review Press, pp. 124-43.
- Frimpong-Ansah, J. H. (1991). *The vampire state in Africa: The political economy of decline in Ghana*. Africa World Press.
- Fukuyama, F. (2001). Social capital, civil society and development. *Third World Quarterly*, 22(1): 7-20.
- Gaventa, J. (1980). *Power and powerlessness*. Urbana: University of Illinois Press.
- Ghana Statistical Service. (2010). 2010 Population and Housing Census Summary Report of Final Result. Available online: http://www.statsghana.gov.gh/docfiles/2010phc/Census2010_Summary_report_of_final_results.pdf Accessed September 9, 2017.
- Ghana Statistical Service. (2014). Ghana Living Standards Survey Round 6 (GLSS 6). "Labour Force Report (2005-2013)". Available online: http://www.statsghana.gov.gh/docfiles/glss6/GLSS6_Labour%20Force%20Report.pdf Accessed September 9, 2017
- Gibbon, P. (1992). A failed agenda? African agriculture under structural adjustment with special reference to Kenya and Ghana. *The Journal of Peasant Studies*, 20(1): 50-96.
- Giddens, A. The Consequences of Modernity. *Polity*, 53(83): 245-260.
- Girdner, J., Olorunsola, V., Froning, M., & Hansen, E. (1980). Ghana's agricultural food policy: Operation Feed Yourself. *Food Policy*, 5(1), 14-25.
- Gocking, R. (2005). *The history of Ghana*. Westport: Greenwood Publishing Group.
- Goody, J. (1980). Rice-burning and the green revolution in northern Ghana. *The Journal of Development Studies*, 16(2): 136-155.
- Gross, R., Keilmann, A., Schoeneberger, H., & Schultink, W. (1997). *Guidelines for Nutrition Baseline Surveys in Communities* (Version 1.2 ed.). Jakarta: The Southeast Asian Ministers of Education Organization (SEAMEO); Regional Tropical Medicine and Public

- Health Network (TROPMED); TROPMED Central Office; Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH Federal Republic of Germany.
- Gumma, M. K., Thenkabail, P. S., Hideto, F., Nelson, A., Dheeravath, V., Busia, D., & Rala, A. (2011). Mapping irrigated areas of Ghana using fusion of 30 m and 250 m resolution remote-sensing data. *Remote Sensing*, 3(4), 816-835.
- Gupta, A. (1998). *Postcolonial developments: Agriculture in the making of modern India*. Durham: Duke University Press.
- Guyer, J. I. (1981). Household and community in African studies. *African Studies Review*, 24(2-3): 87-138.
- Hanrahan, K. B. (2015). 'Mɔn' (to marry/to cook): negotiating becoming a wife and woman in the kitchens of a northern Ghanaian Konkomba community. *Gender, Place & Culture*, 22(9), 1323-1339.
- Hatanaka, M., Bain, C., and Busch, L. (2006). Differentiated standardization, standardized differentiation: The complexity of the global agrifood system. In *Between the Local and the Global*. Bingley: Emerald Group Publishing Limited, pp. 39-68.
- Hardin, R. (2006). *Trust*. Cambridge: Polity Press.
- Harding, S. (1992). Rethinking standpoint epistemology: What is "strong objectivity?". *The Centennial Review*, 36(3): 437-470.
- Harding, S. G. (Ed.). (2004). *The feminist standpoint theory reader: Intellectual and political controversies*. Psychology Press.
- Harding, S., & Norberg, K. (2005). New feminist approaches to social science methodologies: An introduction. *Signs: Journal of Women in Culture and Society*, 30(4): 2009-2015.
- Harries, B. (2016). What's sex got to do with it? When a woman asks questions. *Women's Studies International Forum*, 59: 48-57.
- HarvestChoice (2010). 'Poverty Prevalence and Agro-Ecology: Investigations.' International Food Policy Research Institute, Washington, DC., and University of Minnesota, St. Paul, MN. Available online at <http://harvestchoice.org/node/1436>. (Accessed September 20 2018).
- Hesse-Biber, S. and P. Leavy. 2004. *Approaches to Qualitative Research: A reader on Theory and Practice*. New York: Oxford University Press.
- Hesselberg, J., and Yaro, J. A. (2006). An assessment of the extent and causes of food insecurity in northern Ghana using a livelihood vulnerability framework. *GeoJournal*, 67(1): 41-55.

- Hillsburg, H. (2013). Towards a methodology of intersectionality: An axiom-based approach. *Atlantis: Critical Studies in Gender, Culture & Social Justice*, 36(1): 3-11.
- Hoffman, A. M. (2006). *Building trust: Overcoming suspicion in international conflict*. Albany: Suny Press.
- Hosking, G. (2014). *Trust: A history*. Oxford: Oxford University Press.
- Huyer, S. (2016). Closing the gender gap in agriculture. *Gender, Technology and Development*, 20(2): 105-116.
- Hvalkof, S., & Escobar, A. (1998). Nature, political ecology, and social practice: toward an academic and political agenda. *Building a new biocultural synthesis: political-economic perspectives on human biology*, 425-450.
- ICF Macro. (2010). Nutrition of Children and Women in Ghana: A new look at data from the 2008 Ghana Demographic and Health Survey. Calverton, Maryland, USA: ICF Macro. <http://dhsprogram.com/pubs/pdf/DM17/DM17.pdf> (Accessed September 20, 2018).
- International Fund for Agricultural Development. (2009). *Gender in agriculture sourcebook*. Washington DC: World Bank Publications.
- Intergovernmental Panel on Climate Change. (2014). *Climate Change 2014–Impacts, Adaptation and Vulnerability: Regional Aspects*. Cambridge University Press.
- Jackson, C. (2012). Introduction: marriage, gender relations and social Change. *Journal of Development Studies*, 48(1): 1-9.
- Jackson, C. (2007). Resolving risk? Marriage and creative conjugality. *Development and Change*, 38(1): 107-129.
- Jost, C., Ferdous, N., and Spicer, T. D. (2014). Gender and Inclusion Toolbox: Participatory Research in Climate Change and Agriculture. CGIAR Research Program in Climate Change, Agriculture and Food Security, CARE International and the World Agroforestry Centre. Available online: https://cgspace.cgiar.org/bitstream/handle/10568/45955/CCAFS_Gender_Toolbox.pdf (Accessed September 20, 2018).
- Jost, C., Kyazze, F., Naab, J., Neelormi, S., Kinyangi, J., Zougmore, R., ... & Nelson, S. (2016). Understanding gender dimensions of agriculture and climate change in smallholder farming communities. *Climate and Development*, 8(2), 133-144.
- Kabeer, N. (1994) *Reversed Realities: Gender Hierarchies in Development Thought*. London: Verso.
- Kabeer, N. (2010). Women's empowerment, development interventions and the management of information flows. *IDS Bulletin*, 41(6): 105-113.

- Kapoor, I. (2008). *The postcolonial politics of development*. London: Routledge.
- Kansanga, M., Andersen, P., Kpienbaareh, D., Mason-Renton, S., Atuoye, K., Sano, Y., ... & Luginaah, I. (2018). Traditional agriculture in transition: examining the impacts of agricultural modernization on smallholder farming in Ghana under the new Green Revolution. *International Journal of Sustainable Development & World Ecology*, 1-14.
- Kesby, M. (2007). Spatialising participatory approaches: the contribution of geography to a mature debate. *Environment and Planning A*, 39(12): 2813-2831.
- Kiewisch, E. (2015). Looking within the household: A study on gender, food security, and resilience in cocoa-growing communities. *Gender & Development*, 23(3), 497-513.
- Kirsch, G. E. (2005). Friendship, friendliness, and feminist fieldwork. *Signs: Journal of Women in Culture and Society*, 30(4), 2163-2172.
- Kohn, M. (2009). *Trust: Self-interest and the common good*. Oxford: Oxford University Press.
- Lado, C. (1992). Female labour participation in agricultural production and the implications for nutrition and health in rural Africa. *Social Science and Medicine*, 34(7), 789-807.
- Laird, S. E. (2007). Rolling back the African state: Implications for social development in Ghana. *Social Policy & Administration*, 41(5): 465-486.
- Lambrecht, I. B. (2016). "As a husband I will love, lead, and provide." Gendered access to land in Ghana. *World Development*, 88: 188-200.
- Laube, W., Schraven, B., and Awo, M. (2012). Smallholder adaptation to climate change: dynamics and limits in Northern Ghana. *Climatic Change*, 111(3-4): 753-774.
- La Ferrara, E. (2007). Descent rules and strategic transfers. Evidence from matrilineal groups in Ghana. *Journal of Development Economics*, 83(2): 280-301.
- Leach, M. (2007). Earth mother myths and other ecofeminist fables: How a strategic notion rose and fell. *Development and Change*, 38(1): 67-85.
- Li, T.M. (2009). Exit from agriculture: A step forward or a step backward for the rural poor? *Journal of Peasant Studies*, 36(3): 629-636.
- Letherby, G. (2003) *Feminist Research in Theory and Practice*. Buckingham: Open University Press.
- Luginaah, I., Weis, T., Galaa, S., Nkrumah, M. K., Benzer-Kerr, R., and

- Bagah, D. (2009). Environment, migration and food security in the Upper West Region of Ghana. In *Environment and health in Sub-Saharan Africa: Managing an emerging crisis*, pp. 25-38. Springer Netherlands.
- Lyon, F. (2000). Trust, networks and norms: the creation of social capital in agricultural economies in Ghana. *World Development*, 28(4): 663-681.
- Mackintosh, M. (1989) *Gender, Class and Rural Transition – Agribusiness and Food Crisis in Senegal*. London: Zed Books.
- Marston, J. (2017). Aid and Agriculture: A constructivist approach to a political economy analysis of sustainable agriculture in Ghana. Doctoral thesis. Freiburg: University of Freiburg.
- Martin, A., and Sherington, J. (1997). Participatory research methods—implementation, effectiveness and institutional context. *Agricultural Systems*, 55(2): 195-216.
- Massey, D. (2013). *Space, place and gender*. John Wiley & Sons.
- Mastercard Foundation. (2018). Mastercard Index of Women Entrepreneurs. Available online: https://newsroom.mastercard.com/wp-content/uploads/2018/03/MIWE_2018_Final_Report.pdf (accessed September 20, 2018).
- McDowell, L. (1993). Space, place and gender relations: Part I. Feminist empiricism and the geography of social relations. *Progress in Human Geography*, 17(2): 157-179.
- McDowell, L., and Sharpe, J. (1999). *A feminist glossary of human geography*. London: Edward Arnold.
- McEwan, C. (2008). *Postcolonialism and development*. London: Routledge.
- McMichael, P. (2013). *Food regimes and agrarian questions*. Halifax: Fernwood Publishing.
- McMichael, P. (2006). Peasant prospects in the neoliberal age. *New Political Economy*, 11(3), 407-18.
- Mies, M. (1998). *Patriarchy and accumulation on a world scale: Women in the international division of labour*. Basingstoke: Palgrave MacMillan.
- Miles, M., and Crush, J. (1993). Personal narratives as interactive texts: Collecting and interpreting migrant life-histories. *The Professional Geographer*, 45(1): 84-94.
- Mills, J., Bonner, A., and Francis, K. (2006). The development of constructivist grounded theory. *International journal of qualitative methods*, 5(1): 25-35.

- Mine, Y., Stewart, F., Fukuda-Parr, S., and Mkandawire, T. (2013). *Preventing violent conflict in Africa: Inequalities, perceptions and institutions*. Springer.
- MoFA Northern Region Agricultural Development Unit. About WIAD. Available online: <https://mofafoodsecurity.wordpress.com/women-in-agricultural-development/women-in-agriculture-development/> (accessed September 3, 2018).
- MoFA (2014). [District Name] Municipal Assembly Department of Agriculture – MADU Profile.
- Mohanty, C. T. (2003). “Under western eyes” revisited: Feminist solidarity through anticapitalist struggles. *Signs: Journal of Women in culture and Society*, 28(2): 499-535.
- Moseley, W. (2017). The limits of the New Green Revolution for Africa: A Political Ecology Critique. *Brown Journal of World Affairs*, XXIII(II): 177-190. Available online: https://works.bepress.com/william_moseley/155/ (24, March 2018).
- Moseley, W., Schnurr, M., and Bezner Kerr, R. (2015). Interrogating the technocratic (neoliberal) agenda for agricultural development and hunger alleviation in Africa. *African Geographical Review*, 34(1): 1-7.
- Moser, C. (2012). *Gender planning and development: Theory, practice and training*. Routledge.
- Moss, P. (2002). *Feminist geography in practice: research and methods*. Oxford: Blackwell
- Mosse, D. (2005). *Cultivating Development: An Ethnography of Aid Policy and Practice (Anthropology, Culture and Society)*. London, UK: Pluto Press.
- Mullings, B. (1999). Insider or outsider, both or neither: some dilemmas of interviewing in a cross-cultural setting. *Geoforum*, 30(4): 337-350.
- Naylor, R. (1999). Women farmers and economic change in northern Ghana. *Gender & Development*, 7(3): 39-48.
- Nelson, N and Wright, S. (1995). *Power and Participatory Development: theory and practice*, London: Intermediate Technology Publications.
- Nyantakyi-Frimpong, H., and Bezner Kerr, R. (2015). A political ecology of high-input agriculture in northern Ghana. *African Geographical Review*, 34(1): 13-35.
- Nyantakyi-Frimpong, H., & Bezner Kerr, R. (2017). Land grabbing, social differentiation, intensified migration and food security in northern Ghana. *The Journal of Peasant Studies*, 44(2): 421-444.
- Okali, C. (2012). Gender analysis: engaging with rural development and agricultural policy processes. IDS Working Paper 26.

- O'Laughlin, B. (2007). A bigger piece of a very small pie: Intrahousehold resource allocation and poverty reduction in Africa. *Development and Change*, 38(1), 21-44.
- Owusu, K., Waylen, P., Qiu, Y. (2008). Changing rainfall inputs in the Volta basin: implications for water sharing in Ghana. *GeoJournal*, 71, 201–210.
- Padmanabhan, M. A. (2007). The making and unmaking of gendered crops in Northern Ghana. *Singapore Journal of Tropical Geography*, 28(1): 57-70.
- Palacios-López, A., and López, R. (2015). The gender gap in agricultural productivity: the role of market imperfections. *The Journal of Development Studies*, 51(9): 1175-1192.
- Patel, R. (2009). Food sovereignty. *The Journal of Peasant Studies*, 36(3): 663-706.
- Patel, R. (2013). The long green revolution. *The Journal of Peasant Studies*, 40(1): 1-63.
- Peet, R., & Watts, M. (2004). *Liberation ecologies: environment, development and social movements*. Routledge.
- Pellow, D. (2011). Politics by other greens: the importance of transnational environmental justice movement networks. *Environmental inequalities beyond borders: Local perspectives on global injustices*, pp. 247-266.
- Peters, P. E. (2009). Challenges in land tenure and land reform in Africa: Anthropological contributions. *World Development*, 37(8): 1317-1325.
- Peters, P. E. (2004). Inequality and social conflict over land in Africa. *Journal of Agrarian Change*, 4(3): 269-314.
- Peters, P. E. (2002). The limits of negotiability: Security, equity and class formation in Africa's land systems. *Negotiating property in Africa*, 45-66.
- Plange, N. K. (1979). Underdevelopment in northern Ghana: natural causes or colonial capitalism?. *Review of African Political Economy*, 6(15-16): 4-14.
- Porter, M. (2010, September). The Lombok process: Challenging power in a transnational comparative research project. In *Women's Studies International Forum*, 33(5): 492-500.
- Quaye, W. (2008). Food security situation in northern Ghana, coping strategies and related constraints. *African Journal of Agricultural Research*, 3(5): 334-342.
- Quisumbing, A. R., Brown, L. R., Feldstein, H. S., Haddad, L., and Peña, C. (1995). Women: The key to food security. Food Policy Statement, 21. International Food Policy Research

- Institute. Available Online: <https://core.ac.uk/download/pdf/6289051.pdf> (Accessed September 20, 2018).
- Quisumbing, A. R., Meinzen-Dick, R., Raney, T. L., Croppenstedt, A., Behrman, J. A., and Peterman, A. (Eds.). (2014). *Gender in agriculture: closing the knowledge gap*. Springer Science & Business.
- Quisumbing, A. R., and Pandolfelli, L. (2010). Promising approaches to address the needs of poor female farmers: Resources, constraints, and interventions. *World Development*, 38(4): 581-592.
- Radcliffe, S. A. (2005). Development and geography: towards a postcolonial development geography?. *Progress in Human Geography*, 29(3): 291-298.
- Ragasa, C., Lambrecht, I and Kufoalor, D. S (2018). Limitations of contract farming as a pro poor strategy: The case of maize outgrower schemes in Upper West Ghana. *World Development*, 102: 30-56.
- Rao, A. (2012). Global Agricultural Policies, Institutional Interventions, and Women's Livelihoods. (eds) *Women Reclaiming Sustainable Livelihoods: Spaces Lost, Spaces Gained*, pp.83-100.
- Rao, N. (2006). Land rights, gender equality and household food security: Exploring the conceptual links in the case of India. *Food Policy*, 31(2): 180-193.
- Rao, E. K. (2006). Role of women in agriculture: A micro level study. *Journal of Global Economy*, 2(2), 107-118.
- Razavi, S., and Miller, C. (1995). *From WID to GAD: Conceptual shifts in the women and development discourse* (Vol. 1). Geneva: United Nations Research Institute for Social Development.
- Razavi, S. (2009). Engendering the political economy of agrarian change. *The Journal of Peasant Studies*, 36(1): 197-226.
- Richards, P. (1986). *Coping with Hunger: Hazard and Experiment in an African Rice Farming System*, London: Allen and Unwin Press.
- Robbins, P. (2004). *Political Ecology: Critical Introductions to Geography*. Oxford: Blackwell.
- Rockefeller Foundation. (2006). Africa's Turn: A New Green Revolution for the 21st Century. Available online <https://www.rockefellerfoundation.org/report/africas-turn-a-new-green-revolution-for-the-21st-century/> (accessed April 27, 2018).
- Roe, E. (1994). *Narrative Policy Analysis: Theory and Practice* (Chapter 2). Durham: Duke UP.
- Rogers, E. M. (2010). *Diffusion of innovations*. New York: Simon and Schuster.

- Rocheleau, D. (1995). Maps, Numbers, Text, and Context: Mixing Methods in Feminist Political Ecology. *The Professional Geographer*, 47(4): 458-466.
- Rocheleau, D. (2008). Political Ecology in the key of policy: From webs of explanation to webs of relations” Conversations across the divide: the time and place for political ecology. *Geoforum*, 39(2):716-727.
- Rocheleau D. and R. Roth. (2007). Rooted networks, relational webs and powers of connection: Rethinking human and political ecologies. *Geoforum*, 38(3):433-437.
- Rocheleau, D. B. Thomas-Slayter and E. Wangari. (1996). *Feminist Political Ecology*. Oxon: Routledge.
- Sabatier, P. A. (1987). Knowledge, policy-oriented learning, and policy change: An advocacy coalition framework. *Knowledge*, 8(4), 649-692.
- Sachs, C. (2015). Gender and the international political economy of agri-food. (eds) *Handbook of the International Political Economy of Agriculture and Food*, pp. 344-354.
- Schroeder, R. A. (1996). “Gone to their Second Husbands”: Marital Metaphors and Conjugal Contracts in The Gambia's Female Garden Sector. *Canadian Journal of African Studies*, 30(1); 69-87.
- Scoones, I. (2015). *Sustainable Livelihoods and Rural Development*. Halifax: Fernwood Publishing.
- Scoones, I., & Thompson, J. (2011). The politics of seed in Africa's green revolution: Alternative narratives and competing pathways. *IDS Bulletin*, 42(4): 1-23.
- Scott, J. C. (2008). *Weapons of the weak: Everyday forms of peasant resistance*. New Haven: Yale University Press.
- Sen, A. (1981). *Poverty and Famines*, Oxford: Oxford University Press.
- SEND Ghana (2014). Women and Smallholder Agriculture in Ghana. Policy Brief 4. Available online: <http://www.sendwestafrica.org/phocadownload/Women%20and%20Smallholder%20Agriculture%20in%20Ghana%20Policy%20Brief%20-%20Copy.pdf?lbid=phreq=1> (accessed September 4, 2018).
- Seur, H. (1989). Differential Social Responses to Agricultural Innovation in Serenje District, Central Province, Zambia with Special Reference to the Position of Women, Den Haag: WOTRO/NOW.
- Shipton, P. (1990). African famines and food security: anthropological perspectives. *Annual*

- Review of anthropology*, 19:353-394.
- Shiva, V. (2016). *The violence of the green revolution: Third world agriculture, ecology, and politics*. University Press of Kentucky.
- Songsore, J. (2003). *Regional development in Ghana: The theory and the reality*. Accra: Woeli Publishing Services.
- Sørensen, P. (1996). Commercialization of food crops in Busoga, Uganda, and the renegotiation of gender. *Gender & Society*, 10(5): 608-628
- Stanturf, J.A., Warren, M.L., Charnley, S., Polasky, S.C., Goodrick, S.L., Armah, F., Nyako, Y.A. (2011). Ghana Climate Change Vulnerability and Adaptation Assessment; United States Agency for International Development: Accra, Ghana.
- Sultana, F. (2007). Reflexivity, positionality and participatory ethics: Negotiating fieldwork dilemmas in international research. *ACME: An international E-journal for Critical Geographies*, 6(3): 374-385.
- Sutton, I. (1989). Colonial agricultural policy: The non-development of the Northern Territories of the Gold Coast. *The International Journal of African Historical Studies*, 22(4): 637-669.
- Sztompka, P. (1999). *Trust: A sociological theory*. Cambridge: Cambridge University Press.
- Terry, G. (2009). *Climate change and gender justice*. Oxford: Oxfam GB.
- Toenniessen, G., Adesina, A., & DeVries, J. (2008). Building an alliance for a green revolution in Africa. *Annals of the New York Academy of Sciences*, 1136(1): 233-242.
- Tsikata, D., & Yaro, J. A. (2014). When a good business model is not enough: Land transactions and gendered livelihood prospects in rural Ghana. *Feminist Economics*, 20(1): 202-226.
- Vayda, A.P. and Walters, B.B. (1999). Against political ecology. *Human Ecology* 27: 167-179.
- Vercillo, S., Kuuire, V. Z., Armah, F. A., and Luginaah, L. (2015). Does the New Alliance for Food Security and Nutrition impose biotechnology on smallholder farmers in Africa?. *Global Bioethics*, 26(1): 1-13.
- Watson, C. (2006). Unreliable narrators? 'Inconsistency' (and some inconstancy) in interviews. *Qualitative Research*, 6(3): 367-384.
- Watts, J. (2006). 'The outsider within': dilemmas of qualitative feminist research within a culture of resistance. *Qualitative Research*, 6(3): 385-402.

- Watts, M. J. (2013). *Silent violence: Food, famine, and peasantry in northern Nigeria*. Vol. 15. Athens: University of Georgia Press.
- Watts, M. J. (2000). Political ecology. (eds) *A companion to economic geography*, pp. 257-274.
- Watts, M. J., and Bohle, H. G. (1993). The space of vulnerability: the causal structure of hunger and famine. *Progress in human geography*, 17(1): 43-67.
- Weis, T. (2007). *The Global Food Economy: The Battle for the Future of Farming*. London: Zed.
- West Africa Agricultural Productivity Programme (WAAP). (2018). Women in Agricultural Development. Available online: <https://waapp.org.gh/agencies/mofa/wiad> (accessed September 3, 2018).
- Whitehead, A. (2002). Tracking livelihood change: theoretical, methodological and empirical perspectives from north-east Ghana. *Journal of Southern African Studies*, 28(3): 575-598.
- Whitehead, A. (2006). Persistent poverty in north east Ghana. *The Journal of Development Studies*, 42(2): 278-300.
- Whitehead, A. (1984). I'm hungry mum: the politics of domestic budgeting. In *Of marriage and the market: women's subordination internationally and its lessons*. Young, K., Wolkowitz, C., and McCullagh, R., 2nd eds. pp. 93-116. London: Routledge.
- Whitehead, A. (2009). The gendered impacts of liberalization policies on African agricultural economies and rural livelihoods. *The gendered impacts of liberalization: towards 'embedded' liberalism*.
- Whitehead, A. (1990). Rural women and food production in sub-Saharan Africa. *The political economy of hunger*, 1, 425-473.
- Whitehead, A., Adepoju, A., and Opong, C. (1994). Wives and mothers: female farmers in Africa. (eds). *Gender, Work & Population in Sub-Saharan Africa*. Pp.35-53.
- Whitehead, A., and Kabeer, N. (2001). Living with uncertainty: gender, livelihoods and pro-poor growth in rural sub-Saharan Africa. IDS Working Paper 134.
- Whitehead, A., & Tsikata, D. (2003). Policy discourses on women's land rights in Sub-Saharan Africa: The implications of the re-turn to the Customary. *Journal of Agrarian Change*, 3(1-2): 67-112.
- Wiemers, A. (2015). A "Time of Agric": Rethinking the "Failure" of Agricultural Programs in 1970s Ghana. *World Development*, 66: 104-117.
- World Bank (2010). *Economics of Adaptation to Climate Change. Ghana Country Study*; World

Bank: Washington, DC, USA.

Wright W. M. (2005). *Disposable Women and Other Myths of Global Capitalism*. London:

Routledge.

Wright, J. (1997). Deconstructing Development Theory: Feminism, the Public/Private Dichotomy and the Mexican Maquiladoras*. *Canadian Review of Sociology*, 34(1), 71-91.

Yaro, J. A. (2013). The perception of and adaptation to climate variability/change in Ghana by small-scale and commercial farmers. *Regional Environmental Change*, 13(6): 1259-1272.

Yaro, J. A. (2010). Customary tenure systems under siege: contemporary access to land in Northern Ghana. *GeoJournal*, 75(2): 199-214.

Yaro, J. A. (2006). Is deagrarianisation real? A study of livelihood activities in rural northern Ghana. *The Journal of Modern African Studies*, 44(01): 125-156.

Yaro, J. A. (2002). "The poor peasant: One label, different lives. The dynamics of rural livelihood strategies in the Gia-Kajelo community, Northern Ghana. *Norsk Geografisk Tidsskrift*, 56(1): 10-20.

Yaro, J. A., Teye, J. K., & Torvikey, G. D. (2016). Plantation, Outgrower and Medium-scale Commercial Farming in Ghana: Which Model Provides Better Prospects for Local Development?. Africa Portal.

Appendix A

Research Ethics Approval



Research Ethics

Western University Non-Medical Research Ethics Board NMREB Delegated Initial Approval Notice

Principal Investigator: Dr. Isaac Luginaah
Department & Institution: Social Science/Geography, Western University

NMREB File Number: 107695
Study Title: Gender, farming, and food in northern Ghana: Smallholder livelihoods and household entitlements

NMREB Initial Approval Date: March 14, 2016
NMREB Expiry Date: March 14, 2017

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Western University Protocol	Received February 25, 2016	
Letter of Information & Consent	Focus Group	2016/02/25
Letter of Information & Consent	In-depth interview	2016/02/25
Instruments	Survey	2016/02/25
Instruments	Household survey instrument	2016/01/26
Instruments	Unstructured and In-depth Interviews	2016/01/26
Other	Confidentiality agreement for Research Assistants	2016/01/26
Instruments	Focus Group Instrument	2016/01/26

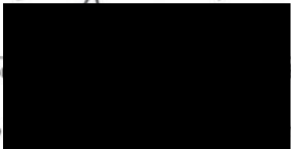
The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the above named study, as of the NMREB Initial Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Ethics Officer, or  EB Chair or delegated board member

Ethics Officer to  ika Basile ___ Nicole Kaniki ___ Grace Kelly Katelyn Harris ___ Vikki Tran ___

This is an official document. Please retain a copy for your files.



**Western
Research**

Research Ethics

**Western University Non-Medical Research Ethics Board
NMREB Annual Continuing Ethics Approval Notice**

Date: February 01, 2017

Principal Investigator: Dr. Isaac Luginaah

Department & Institution: Social Science\Geography, Western University

NMREB File Number: 107695

Study Title: Gender, farming, and food in northern Ghana: Smallholder livelihoods and household entitlements

NMREB Renewal Due Date & NMREB Expiry Date:

Renewal Due -2018/02/28

Expiry Date -2018/03/14

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed the Continuing Ethics Review (CER) form and is re-issuing approval for the above noted study.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), Part 4 of the Natural Health Product Regulations, the Ontario Freedom of Information and Protection of Privacy Act (FIPPA, 1990), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Ethics Officer, on behalf of Dr. Riley Hinson, NMREB Chair

EO: Erika Basile ___ Nicole Kaniki ___ Grace Kelly ___ Katelyn Harris ___ Nicola Morphet ___ Karen Gopaul ✓

UNIVERSITY FOR DEVELOPMENT STUDIES



Our Ref:.....

October 12, 2016

Your Ref:.....

OFFICE OF THE PRO VICE-CHANCELLOR

Date:.....

To Whom It May Concern

Dear Sir/ Madam

LETTER OF ETHICAL CLEARANCE

Ms. Siera Vercelli is a PhD candidate working under the supervision of Dr. Isaac Luginaah in the Department of Geography at the University of Western Ontario in Canada and Dr. Sylvester Galaa, Dean of Faculty of Integrated Development Studies, University for Development Studies,

Ms. Siera Vercelli is currently doing a study on **Gender Inequality in Smallholder Farming and Food Security in the Northern Region of Ghana** in affiliation with the Faculty of Integrated Development Studies, UDS to fulfill Doctoral thesis requirements.

This study topic fits very well in the research interest of UDS. The topic is also relevant to the development agenda of the government of Ghana where issues of inequality and food security are highly placed.

We recommend her to you to extend any courtesies she may require in the process of her research work.

Thank you.
Yours faithfully,

Prof. Seidu Al-hassan
Pro- Vice Chancellor

Appendix B

Smallholder Farmer Interview Guide and Forms

Agriculture Commercialization and Intensification

How have your farm activities changed in the past 10-20 years

How has your access to resources, such as land, credit, input, extension changed over this time?
Why/why has it changed?

What production practices and/or technologies have you tried? What has worked and not worked? Why or why not? How do you access production practices and/technology?

How do you access enough labour? Tell me about seasonality differences?

How do you access the land? Which land do you not have access to, why? How has this changed in the past 10 years, and why? Tell me about the market and how it works.

How do you get the produce to the market site? What kind of market is it? How easy or costly is it to access transportation from the farm to the market? What prices/profits do you get from your farming activities? E.g. food waste, storage

What do you think you do very well as a farmer, why? What are your biggest challenges, why?

Tell me about your household's food consumption and how it links to your farm and the market?
How have these factors changed in the past 30 years ago? Why?

How do your activities and or challenges relate to other farmers in the area? Do you think others in your community have an adequate daily food supply?

Where do you get your farming information and which source do you trust the most? Which source do you not trust?

How have you benefitted from government or other actors and policy (who, which)? Why? Is there anything they do not provide that you want? Anything they provide that you think is not useful/want to change?

How will your future livelihoods be? Why? How do you expect farming in your community will be in the next 10-20 years?

Ecological Degradation, Climate Change and Biophysical Environment

Tell me about the environment around where you farm and how does it impact your activities?

How has it changed 10 to 30 years? Why do you think these changes are happening?

Who and how are people affected by these changes?

How has this affected your food security?

What do you do, and what does your community do to adapt to these environmental changes?

Case study: [specific intervention]

Tell me about how you are involved in [specify intervention] this intervention.

How are you benefitting or not?

How do women benefit from the development initiative?

- How do young, old, rich, poor people benefit from the development initiative?
- Who does not benefit?
- Are there people who are worse off because of the development initiative? Who? How?
- What would you change or evolve further?

Households - Migration, resources, labour relations and decision making

Can you describe your daily activities inside and outside the home?

Which assets do you have control over and which do you not? Why?

Do you have access to: employment and other income-generating activities; common property resources; external social support systems, such as broader kinship networks and informal credit and patronage systems.

- How do you or do you not access them and why? (specify for each)
- What challenge do you face?
- What would you change? (specify)

Does your family originate here?

- Where did they come from and why did they migrate?
- Do members of your household migrate currently out of this area, if so, who? For what? Why?
- Who is left behind?

How has migration impacted your life (i.e. access to resources? your food security situation?)

Has this changed in the past 30 years? How has this migration impacted labour and other resources, including knowledge, networks, contacts, remittances?

Have you ever received any help (financially or otherwise) from any community member? organization (government or private)?

- If you received any help, when and what kind of help did you receive? Why?

Do you participate in any political organizing/ advocacy/ recommendations to make changes for your community? Why or why not?

Food purchase, quality, type

What is your food situation like throughout the year?

- Where does your food come from?
- What do you cook and who do you provide food to?
- Where do you get your ingredients?
- How much money do you spend in a year on food, and on ingredients alone?
- Where do you get the money to buy these ingredients?

Who makes the decision on what to buy? How is that decision made? Who decides what to spend the money on?

- Tell me about the differences in roles and responsibilities for men and women? Do you think this has changed in the past 5 years or 20 years?

What do you do when there is hunger in this household?

- What strategies do you use to mitigate these challenges?
- How far do you have to go get your ingredients when it is not in season?

Do you borrow food from anyone in the community? And do you pay back?

Are there any foods that you consume that you would like to change? If so, what and why?

- What food would you ideally want if you had unlimited money, time and ability to buy anything you wanted? When and how often do you have this kind of food in a year?

In the next 20 years, what do you think you and your community's food situation will be like?



Gender, farming, and food in northern Ghana: Smallholder livelihoods and household entitlements

Dr. Isaac Luginaah (Principal Investigator and Supervisor)

Contact: [REDACTED]

Ms. Siera Vercillo (Doctoral Researcher)

Contact: [REDACTED]

Invitation to Participate in In-depth Interview

I am Siera Vercillo, a PhD student working under the supervision of Dr. Isaac Luginaah in the Department of Geography at the University of Western Ontario in Canada. We are currently doing a study on gender inequality in smallholder farming and food security in [District Name], Northern Region, Ghana, and would like to invite you to participate in this study. I would help to create understandings about the ways in which your farming livelihoods are changing and the ways this is impacting your access to food.

If you agree to participate in this study, you would be asked to answer a series of questions. With your permission we will audio record the interview, but you may still give the interview even if you do not agree to be audio recorded. Interview recordings would be transferred from the recorder into an external drive that is password protected. No personal identifiers are required and will not be collected. The information collected will be used for purposes of the study only. All personal information collected for the study will be kept confidential. This will be kept in a secured cabinet and password protected laptop, and will be destroyed five years after the study is completed. The findings will never reveal what individual people said and we will make all efforts to maintain confidentiality. There will be no information collected with identifiable information and all data will be encrypted and stored for a maximum of 5 years (after which it will be permanently deleted) on a password protected hard drive only accessible by the two investigators, who's contact information is above. Representatives of The University of Western Ontario Non-Medical Research Ethics Board may require access to your study related records to monitor the conduct of the research

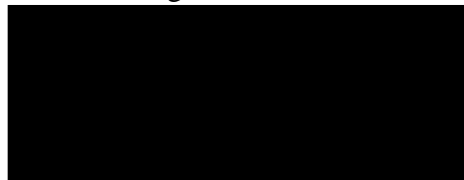
The interview should take approximately 30 minutes to one hour to finish and would be stopped on reaching this time limit. There are no known risks with your participation in the interview, apart from discomforts related to talking about any personal information.

Your participation is completely voluntary and you may refuse to participate, refuse to answer any questions or withdraw from the study at any time. There is no consequence for withdrawing or not answering any questions. You may keep a copy of this information sheet. There are no financial benefits for participating in this interview. However, findings of the study will be available to policy makers and community stakeholders providing areas for improvement. This

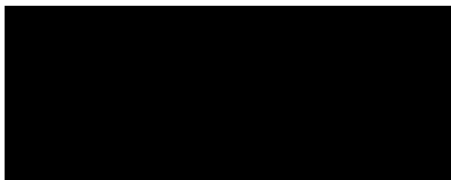
[REDACTED] future policy making regarding continued, and/or increased funding. A summary of results will be given to Dr. Galaa, Dean of Faculty of Integrative Studies at UDS (Tel: (0)244477960), who will then disseminate findings to villages where the study was conducted. You can also contact Dr. Isaac Luginaah you are interested in getting feedback on results.

If you have any questions about the conduct of this study or your rights as a research participant you may contact the primary researcher locally in Wa Ghana at [REDACTED] or the Principal Investigator or primary researcher of the study:

Dr. Isaac Luginaah



Siera Vercillo



**Gender, farming, and food in northern Ghana:
Smallholder livelihoods and household entitlements**

I have read the Letter of Information, have had the nature of study explained to me, and all questions have been answered to my satisfaction and I agree to participate

Do you agree that we can record your interview: Yes No

Do you give permission to allow for the use of de-identifiable quotes collected from this interview? Yes No

Participant Name _____

Participant Signature _____

Date _____

Investigator's Name _____ Investigator's Signature _____

Date _____

Appendix C

Smallholder Farmer Focus Group Guide and Forms

Community Resource and Use Map

Separate groups of men and women (6-14 members in each) for capturing gender-specific information. Will comprise of young and old women and men some household heads and main decision makers about food and agriculture. Selected based on key informant recommendations and interest. Time: 1 ½ - 2 hours

Directions:

- Draw a circle on the ground or on a surface.
- Ask someone to suggest a centrally located landmark in the village. Try placing a rock in the center of the circle and ask participants to mark other important things in the village until they have drawn the entire village.
- Once a basic map has been produced, ask a participant to transfer it to paper (or do so yourself if no other is possible). Make sure to write each resource's name (local and official).
- Ask how this map has changed over the past 30 years
- Ask participants to identify any major conflicts and use over resources.
- Ask participants about the people that are affected in resource use conflicts potentially revealing key gender and other vulnerability issues.
- Ask the group to rank the conflicts in terms of their severity, impact on their household relations, and ability to produce income or ensure food security.
- Ask participants to give reasons for the ranking
- Ask participants to rank people affected by resources use conflict, from most affected to least affected
- Ask participants to give reasons for the ranking

Perceptions of Empowerment

Separated groups [8-10] of mixed socio-economic status and ages selected based on who work as a farming group or sharecropping strategy together. Time: 1 – 1 ½ hours

Directions:

- Have you ever heard of the term 'women's empowerment?' (if not, ask about 'women's rights') How do you define it?
- Who do you consider empowered (or has rights), and why?
- What do you understand by empowerment? (or rights)
- What does it mean to be an empowered woman? In the house? In the community?
- What does it mean not to be empowered? In the house? In the community?
- Can an empowered woman and an empowered man live in the same house? Why or why not?

Women Empowerment scoring:

- Construct a scale of 1 – 5 on the floor by taking 100 beans and explain to the group that they represent all of the women in the community.
- Ask a volunteer to distribute the counters along the scale to reflect how they think the women in the village are today with 1 being least empowered, 5 being most empowered. Ask volunteers to redistribute the counters but this time based on how they think women in the village were 10 years ago and then 30 years ago.
- Ask, the group to explain what has changed and why they think so.

Using the same scale, add any of the following dimensions of agricultural work today all compared with men and also compare with 10 years ago:

1. Women's access to land for farming
2. Women's access to information about new agricultural practices or technology
3. Women's actual use of new practices or technology
4. Women's ability to make decisions about their own plots
5. Women's ability to make decisions about their shared/family plots
6. Women's access to markets for selling their products
7. Women's participation in or ownership of small business
8. Women's ability to control their own income from farms.
9. Women's responsibility for food production and farming

Probe: Why are there changes in the above compared to 10 years ago? Or why are there no changes?



**Gender, farming, and food in northern Ghana:
Smallholder livelihoods and household entitlements**

Dr. Isaac Luginaah (Principal Investigator and Supervisor)

Ms. Siera Vercillo (Doctoral Researcher)

Invitation to Participate in Focus Group Discussion

I am Siera Vercillo, a PhD student working under the supervision of Dr. Isaac Luginaah in the Department of Geography at the University of Western Ontario in Canada. We are currently doing a study on gender inequality in smallholder farming and food security in [district name], Northern Region of Ghana, and would like to invite you to participate in this study. I would like to invite you to join in a focus group discussion as it would help to create understandings about the ways in which your farming livelihoods are changing and the ways this is impacting your access to food. Each focus group will have about six to eight people.

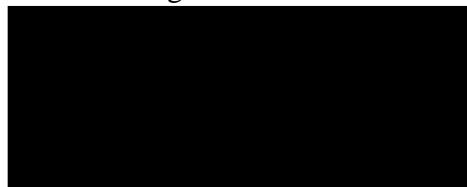
If you agree to participate in the focus group discussions, you and the other people within the group would be asked to answer a series of questions. No personal identifiers are required and will not be collected. With your permission, focus groups discussions will be audio recorded, and recordings transferred into an external drive that is password protected. If you are not comfortable with being audio recorded, you will be invited to participate in a one-to-one in-depth interview, where your responses will be written instead. All the information collected will be used for purposes of the study only. Information will be kept in a secured cabinet and password protected laptop and will be destroyed five years after the study is completed. The findings will never reveal what individual people said and we will make all efforts to maintain confidentiality.

The focus group discussion should take approximately 2 hours to finish and would be stopped on reaching this time limit. There will be no information collected with identifiable information and all data will be encrypted and stored for a maximum of 5 years (after which it will be permanently deleted) on a password protected hard drive only accessible by the two investigators, who's contact information is above and below. Representatives of The University of Western Ontario Non-Medical Research Ethics Board may require access to your study related records to monitor the conduct of the research. There are no known risks with your participation in this focus group discussion, apart from discomforts related to talking about any personal opinions and experiences. Focus group members will be asked to keep everything they hear confidential and not to discuss it outside of the meeting. However, we cannot guarantee that confidentiality will be maintained by group members.

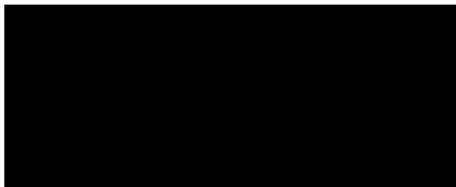
Your participation is completely voluntary and you may refuse to participate, refuse to answer any questions or withdraw from the study at any time. There is no consequence for withdrawing or not answering any questions. You may keep a copy of this information sheet. There are no financial benefits from this focus group discussion. However, findings of the study will be available to policy makers and community stakeholders providing areas for improvement. The findings from this study will be given to Dr. Sylvester Galaa, Dean of Faculty of Integrative Studies at UDS (Tel: (0)244477960), who will then disseminate findings to villages where focus groups were conducted. You can also contact Dr. Isaac Luginaah if you are interested in getting feedback on results.

If you have any questions about the conduct of this study or your rights as a research participant you may contact the primary researcher locally in [REDACTED] or the Principal Investigator or primary researcher of the study:

Dr. Isaac Luginaah



Siera Vercillo



Gender, farming, and food in northern Ghana: Smallholder livelihoods and household entitlements

I have read the Letter of Information, have had the nature of study explained to me, and all questions have been answered to my satisfaction and I agree to participate

Do you agree that you agree that we can record your interview: Yes No

Do you give permission to allow for the use of de-identifiable quotes collected from this focus group? Yes No

Participant Name _____

Participant Signature _____

Date _____

Investigator's Name _____ Investigator's Signature _____

Date _____

Appendix D

Key Informant in Agricultural Development Interview Guide

Agriculture policy and practice

How is commercialization of agriculture being encouraged in northern Ghana (and in this district), and who are the key actors promoting this? How does this relate to household food security?

- What are the main agriculture policies and activities in the district and region, what do you think the goals are? What technology or practices are being encouraged?
- What do you think are the major challenges and successes?
- Why do you think farmers adopt or do not adopt?

How has Ghana's policy changed in the past 20 years? What do you think policy will look like in another 20 years? Why?

How are small scale farmers represented in this region and across the country? Who do you think the government serves better: small scale, family farmers or large scale farmers? Why?

What do you envision for the future of farming in this region? What do you think for the future of Ghana's food system and do you think this is negative or positive or both, why?

Other topics:

- Climate change, environmental degradation cause
- Dependence on cheap grain imports – competition local markets
- Land (bush, roadside, stream beds/smaller wetter patches)
- Migration: out and into other livelihoods
- Government v. NGO program (and other FDI)
- Gender norms over roles & responsibilities control assets labour production and food distribution

Appendix E

Confidentiality Agreement



I understand confidential information will be made known to me as (please check all that apply):

- an interpreter
- transcriber
- audio assistant
- research assistant
- other (please specify) _____

for the study, 'Gender, Farming and food in northern Ghana: Smallholder livelihoods and household entitlements' being conducted Dr. Isaac Luginaah of the Department of Geography, Western University. I agree to keep all information collected during this study confidential, and will not reveal by speaking, communicating or transmitting this information in written, electronic (disks, tapes, transcripts, email) or any other manner to anyone outside the research team.

Name of Participant: _____ (please print)

Signature of Participant: _____

Date: _____

Name of Person Obtaining Consent: _____ (please print)

Signature of Person Obtaining Consent: _____

Date: _____

Appendix F

Curriculum Vita

Siera Vercillo

EDUCATION

2014 — 2018	PhD, Geography Western University
2012 — 2013	MA Gender and Development Institute of Development Studies, Sussex University
2006 — 2010	BA (Honours), Political Science and African Studies University of Toronto

SELECTED WORK EXPERIENCE

Lecturer 2017 - 2018 (Western University)	Course Title: <i>Geographies of World Cities</i> . Department of Geography, Limited Duties Instructional Appointment for Geography 2060
Teaching Assistant 2014 – 2017 (Western University)	Courses include: <i>Social Science Research Methods in Geography</i> , <i>Introduction to How Humans Interact with the World</i> , <i>Developing Countries in Global Politics</i> , and <i>Conservation and Development</i> undergraduate courses. Department of Geography and Kings College.
External Consultant 2013 - 2016 (Agriteam Canada)	Research and capacity builder for the <i>Systems Approach to Improving and Sustaining Food Security in West Africa</i> programme in Sierra Leone and from a distance in Mali. Government of Canada and World Vision.
Research Officer 2013 - 2014 (Institute of Development Studies)	Gender and agriculture research for the Knowledge, Technology and Society Team and the Future Agricultures Consortium.
Researcher-Services 2011 - 2012 (Engineers Without Borders Canada)	Imbedded within the Ministry of Food and Agriculture district and regional level offices in Ghana.
Co-Chair 2010 - 2011 (University of Toronto)	Research Coordinator for Responsible Investing Committee's Environment, Social and Governance sub-Committee at the Division of Business Affairs. Also, co-led student advocacy organization <i>Investing In Integrity</i> (2006-2010).

SELECTED HONOURS, AWARDS AND FUNDING

- 2019-2021 SSHRC Postdoctoral Fellowship Award (\$80,000)
- 2017-2018 Graduate Student Research Fund, The Africa Institute, Western University (\$1,500)
 Gender and Tax Research Grant, International Centre for Tax and Development (£11,000)
 Nancy "Penny" Schwartz Prize, Women's Caucus, African Studies Association (\$250 US)
- 2016-2018 SSHRC Joseph-Armand Bombardier Canada Graduate Scholarship (\$150,000)
 Doctoral Excellence Research Award, School of Graduate and Postdoctoral Studies, Western University (\$20,000)
- 2016 IDRC Doctoral Research Award (\$20,000)
 Ontario Graduate Scholarship (\$15,000) - *Declined*
 Queen Elizabeth II Diamond Jubilee, The Africa Institute, Western University (\$5,000)
- 2015 Ontario Graduate Scholarship (\$15,000)
 Academic Achievement Scholarship, PSAC 610, Western University (\$500)
 Graduate Research Award, School of Graduate and Postdoctoral Studies, Western University (\$750)
- 2014-2018 Western Graduate Research Scholarship, School of Graduate and Postdoctoral Studies, Western University (\$90,000)
- 2014 20 under 35 Young Professionals Changing the World initiative, MEDA

PUBLICATIONS

I. Refereed Journal Articles and Book Chapters

- 2019 **Vercillo, S., & Hird-Younger, M.** (2019). Farmer resistance to agriculture commercialization in northern Ghana. *Third World Quarterly*. Forthcoming (DOI:[10.1080/01436597.2018.1552076](https://doi.org/10.1080/01436597.2018.1552076))
- Cochrane, L., & **Vercillo, S.** (2019). Youth perspectives: Migration, poverty and the future of farming in rural Ethiopia. *Global Perspectives of Gendered Youth Migration*. G. Bonifacio. (Ed). Policy Press, University of Bristol. Forthcoming (ISBN #: [978-1447340195](https://doi.org/10.1080/01436597.2018.1552076))
- 2018

- Sano, Y., Sedziafa, A., **Vercillo, S.**, Antabe, R. and Luginaah, I. (2018). Women's household decision-making autonomy and safer sex negotiation in Nigeria: An analysis of the Nigeria Demographic and Health Survey. *AIDS Care*, 30(2): 240-245. (DOI: [10.1080/09540121.2017.1363363](https://doi.org/10.1080/09540121.2017.1363363))
- 2017 Braimah, J. A., Atuoye, K. N., **Vercillo, S.**, Warring, C., and Luginaah, I. (2017). Debated agronomy: Public discourse and the future of biotechnology policy in Ghana. *Global Bioethics* 28(1), 3-18. (DOI: [10.1080/11287462.2016.1261604](https://doi.org/10.1080/11287462.2016.1261604))
- Kuure, V.Z., Kangmennaang, J., Atouye N. K., **Vercillo, S.**, Boamah, S., Antabe, R., Amoyaw, J.A., Luginaah, I. (2017). Timing and utilisation of antenatal care service in Nigeria and Malawi. *Global Public Health* 12(6), 711-727. (DOI:[0.1080/17441692.2017.1316413](https://doi.org/10.1080/17441692.2017.1316413))
- Atuoye K.N., Amoyaw, J.A., Kuure, V.Z., McMorris, M., **Vercillo, S.**, Boamah, S., Antabe, R., Kangmennaang, J., and Luginaah, I. (2017). Utilization of skilled birth attendants in Nigeria and Malawi. *Global Public Health* 12(6), 728-743. (DOI:[10.1080/17441692.2017.1315441](https://doi.org/10.1080/17441692.2017.1315441))
- 2016 Atuoye, K.N., **Vercillo, S.**, Antabe, R., Galaa, S.Z., & Luginaah, I. (2016). Financial sustainability versus access and quality in a challenged health system: An examination of the capitation policy debate in Ghana. *Health Policy and Planning* 31(9), 1240-1249. (DOI:[10.1093/heapol/czw058](https://doi.org/10.1093/heapol/czw058))
- 2015 **Vercillo, S.**, Kuure, V.Z., Armah, F.A., & Luginaah, I. (2015). Does the New Alliance for Food Security and Nutrition risk imposing biotechnology on smallholder farmers in Africa?. *Global Bioethics* 26(1), 1-13. (DOI:[10.1080/11287462.2014.1002294](https://doi.org/10.1080/11287462.2014.1002294))

II. Book Reviews

- 2016 **Vercillo, S.** (2016). Ethical trade, gender and sustainable livelihoods: women smallholders and ethicality in Kenya by Kiah Smith. Book Review. *Canadian Journal of Development Studies* 38(4), 583-858. (DOI:[10.1080/02255189.2016.1228523](https://doi.org/10.1080/02255189.2016.1228523))
- 2015 **Vercillo, S.** (2015). Sustainable livelihoods and rural development by Ian Scoones. *Canadian Journal of African Studies* 50(2), 326-328. (DOI: [10.1080/00083968.2015.1106713](https://doi.org/10.1080/00083968.2015.1106713))

III. Technical Reports and Conference Papers

- 2018 **Vercillo, S.** (2018). The Narrowing of Crops and the Widening Disparity of Gendered Entitlements to Farm Resources in Northern Ghana. Conference paper for special session on the Feminization of Agriculture. American Association of Geographers 2018 Annual Meeting
- 2014

- Vercillo, S.** (2014). Agriculture as a Business capacity building program pilot evaluation in Sierra Leone and recommendations for Mali. For World Vision Canada and Global Affairs Canada's *System Approach to Improve and Sustain Food Security in West Africa* programme.
- 2012 **Vercillo, S.** (2012). Health and safety in the field in Ghana. Engineers Without Borders Canada.
- 2011 **Vercillo, S.** (2012). Agriculture as a Business handbook and proposal. Engineers Without Borders Canada.
- Vercillo, S., & Felix, T.** (2011). Annual report – Environmental legal risk mitigation importance for institutional investors. *Responsible Investing Committee*, University of Toronto, Available [[Link Here](#)].

SELECTED PRESENTATIONS

I. Presentations at Scholarly Conferences and Professional Meetings

- 2018 Presenter. A bitter pill: Smallholders perceptions of Green Revolution prescriptions and climate change adaptation in northern Ghana. Canadian Association of Geographers Ontario Regional Meeting, University of Toronto, paper presentation, Toronto, Canada, October 20, 2018.
- Presenter. Farmer resistance to commercialization in northern Ghana. Canadian Association of Geographers Annual Meeting, paper presentation, Quebec City, Canada, August 7, 2018.
- Presenter. Gendered crops and resource entitlements in northern Ghana. Special session on the Feminization of Agriculture. American Association of Geographers Annual Meeting, paper presentation, New Orleans, United States, April 14, 2018.
- 2017 Panelist. Reports from the field: Critical perspectives on food and agriculture development in Ghana. African Studies Association 60th Annual Meeting, paper discussion, Chicago, United States, November 16, 2017.
- Presenter. The good husband: Demystifying gendered responsibilities in farming for subsistence vs. cash purposes in northern Ghana. Special panel on Agriculture and Food in Rural Africa. Canadian Association of Geographers – Ontario Division, Queens University, paper presentation, Kingston, Canada, October 20, 2017.
- 2016 Presenter. Gendered agrarian change and food in northern Ghana. Africa-Western Collaboration Day. The Africa Institute, Western International, Western Heads East, poster presentation, London, Canada, November 22, 2016.
- Presenter. Departmental Presentation - Doctoral Research. Geography, University of Western Ontario, thesis presentation, London, Canada. November 4, 2016.

Presenter. Debated Agronomy-Public discourse and the future of biotechnology policy in Ghana. Canadian Association of Geographers – Ontario Division, University of Waterloo, paper presentation, Waterloo, Canada, October 29, 2016.

Presenter. Youth perspectives on migration, poverty and the precarious future of farming in rural Ethiopia. 11th Annual Centre for Refugee Studies Student Caucus Conference, York University, paper presentation, Toronto, Canada, September 24, 2016.

Co-Author. Safer sex in Nigeria: Role of women's household decision-making authority. Population Association of America Annual Meeting, paper presentation, Washington, United States, April 1, 2016.

2015

Co-Author. Financial sustainability versus access and quality in a challenged health system: An examination of the capitation policy debate in Ghana. Africa-Western Collaboration Day in International Week, Western University, poster presentation, London, Canada, November 18, 2015.

Presenter. Is Ghana's Health Insurance Scheme threatened by a capitation policy?. Science in the Developing the World, University of Waterloo, poster presentation, Waterloo, Canada, September 18, 2015.

Presenter. Hunger in the midst of plenty-The messy National Buffer Stock Company policy debate in Ghana. Canadian Association of Geographers Annual General Meeting, paper presentation, Simon Fraser University, Vancouver, Canada, June 4, 2015.

Co-Author. (First paper) Timing and utilisation of antenatal care service in Nigeria and Malawi. (Second paper) Access to and utilization of skilled birth attendants in the context of MDG 5 in Sub-Saharan Africa. Health in Africa and the Post-2015 Millennium Development Goals Symposium, papers presentations, University of Illinois at Urbana-Champaign, United States, May 21-22, 2015.

Presenter. Health Geography. Ontario and Canada Research Chairs Symposium, poster presentation, Toronto, Canada, April 1, 2015.

II. Invited Speaker, Guest Lecturer and/or Workshop Facilitator

2017 Presentation, Guest lecture in Geography 2030 class — *Africa South of the Sahara* on “Gender and development”. Western University, Canada. October 3, 2017.

2016 Presentation, Geography 3250 class — *Social Science Research Methods in Geography* on “Qualitative research example”. Western University, Canada. November 7, 2016.

Presentation, Guest lecture in Geography 2030 class — *Africa South of the Sahara* on “Gender and development”. Western University, Canada. October 6, 2016.

Presentation, “Preliminary findings phase 1 of research”. Ministry of Food and Agriculture District Unit, Ghana. June 21, 2016.

Presentation, Guest lecture in Geography 2030 class — *Africa South of the Sahara* on “Gender and development”. Western University, Canada. February 2, 2016.

Workshop Facilitator, “Attending academic conferences”. Geography, Western University, Canada. January 29, 2016.

Workshop Facilitator, “Submitting an ethics application”. Geography, Western University, Canada. January 22, 2016.

Workshop Facilitator, “Publishing as a graduate student”. Geography, Western University, Canada. November 27, 2015.

2015

Workshop Facilitator, “Getting through comprehensive exams and proposal milestones”. Geography, Western University, Canada. October 30, 2015.

Workshop Facilitator, “Scholarships, bursaries and grants for graduate studies”. Geography, Western University, Canada. September 25, 2015.

Presentation, Guest lecture in Geography 2030 class — *Africa South of the Sahara* on “Gender and development theory applied to rural livelihoods”. Western University, Canada. February 3, 2015.

2014 Workshop Facilitator, “Just because it does not go as planned does not mean you failed: Conversations about risks & unintended complications of field research”. Geography, Western University, Canada, November 24, 2014.

Keynote Speaker for Run to End Poverty event, Toronto, Canada, August 22, 2014.

Presentation for World Vision Canada on “Agriculture as a Business –Farming based organization development”. Toronto, Canada, June 20, 2014.

2013

Presentation, Guest lecture in Globalisation, Business and Development program on “Gender and business development”. Institute of Development Studies, University of Sussex. England, February 15, 2013.

Workshop Facilitation on “Gender and Development” at University of Sussex. England, December 5, 2013.

2012 Workshop Facilitator, Agriculture as a Business Programme capacity development training of trainers. Ministry of Food and Agriculture, Ghana. January 20, 2012 and March 25, 2012.

Presentation for Rite FM Radio Program, “Agriculture as A Business”. Ghana, May 20, 2012.

2009 Workshop Facilitator for Oxfam Canada on “How to communicate complex advocacy campaign material to the public”. Canada, June 5, 2009.

2008 Workshop Facilitator for Centre for Community Partnerships on “Successful Advocacy Within Bureaucratic Institutions”. University of Toronto, Canada, March 5, 2008.

UNIVERSITY TEACHING

University Certificate in Teaching and Learning (ongoing), Western University

Lecturer, *World Cities* (GEO2060), Geography Department, Western University

- Limited Duties Instructional Appointment, Summer (2017) and Winter (2018).

Teaching Assistant, Geography Department, Western University

- *Social Science Research Methods* in Geography with Dr. Carol Hunsberger (GEO3250), Winter 2014, 2015, 2016, 2017
- *Conservation and Development* with Dr. Tony Weis (GEO3441), Winter 2015
- *How Humans Interact with the World* with Dr. Godwin Arku (GEO1400), Winter 2016

Teaching Assistant, Political Science, Kings College, Western University

- *Developing Countries in Global Politics* with Dr. Thomas Tieku (POLSCI2225), Winter 2016

University Teaching Assistant Training Program Certificate (2014), Western University.

SERVICE

Student Representative, Executive Board, Canadian Association of Geographers –Ontario Division, 2017-2019

Peer Reviewer, Journal for Disaster Risk Studies, 2017-2018

Advisory Committee Member, The Africa Institute, Western University, 2017-2018

Co-Chair, Graduate Student Committee, The Africa Institute, Western University, 2017-2018

Board of Directors, [Cow Tribe](#), Veterinary Services Company, Ghana, 2016-present

Research Committee Head and Speaker Series, [GeoGrad Society](#), Western University, 2014-2016

Proposal Writing and Research Coordination, Amplify Governance, Ghana, 2014-2016

Elder Mentor and Coordinator, Pujehun Youth for Development, Sensitization and Attitudinal Change, Sierra Leone, 2014-2015

Conference Volunteer, International Conference on Feeding Cities- Rural Urban Connections and the Future of Family Farming, Ryerson University, June 23-24, 2014

Conference Volunteer, Health and Human Rights Conference, University of Toronto, March 5-6, 2010

Program Coordinator, Study Mission, Foundation for International Training, 2010-2011

Summer Outreach Coordinator, Oxfam Canada, 2009

Vice President, Investing In Integrity, University of Toronto Student Advocacy Organization, 2006-2010