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Putting down new roots:

The political economy of relevance for ‘climate-smart’
agriculture in rural Uganda

Author: Johannes Temm

Supervisor: Gustav Agneman

Research internship host: FSD

(Jinja-Uganda Site Team)

Abstract

A growing body of literature within *political ecology* is concerned with the exercise of political and economic power within climate change policies (Robbins, 2020). In this thesis, I explore the political economy of *Climate-Smart Agriculture (CSA)*, using methodological reflections and empirical material from a case study of a Ugandan smallholder agricultural community. To assess how local community members perceive and relate to CSA, I apply a Critical Realist conceptual framework and an Interpretative Phenomenological Analysis approach, highlighting ‘lived experiences’ of the political economy context for CSA. Participation of local stakeholders along a community-based research design, and reflection about the research process itself as an ‘experience’ for participants, was the cornerstone of this approach. Drawing upon a Theory of Relevance framework, I show that farmers’ perceptions (and cognitive frameworks for adapting to them) have been affected by the political economies of land use and agriculture. I suggest that power relations and marginalization, through discursive, institutional, and material forces, have diminished the potential of CSA at the community level. Finally, I recommend that in order to cultivate the social change that is required for communities to mobilize around the idea of ‘climate-smart,’ CSA must consider and embrace the political economy factors influencing those communities.

Keywords: climate-smart agriculture, political ecology, smallholder adaptation, phenomenology, land use management

Word count: 10,008

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And finally, to whomever else reads, webale nyo mukwano gwange.

“It is a ridiculous demand that England and America make, that you shall speak so that they can understand you ... as if nature could support but one order of understandings, and could not sustain birds ... as well as creeping things.”

-- Henry David Thoreau (1854), pg. 253

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Key Terms & Abbreviations

<i>Climate-Smart Agriculture</i>	CSA
<i>Interpretative Phenomenological Analysis</i>	IPA
<i>Local Community</i>	LC
<i>Focus Group Discussions</i>	FGDs
<i>Research Assistants</i>	RAs
<i>Community-Based Participatory Research</i>	CBPR

1. Introduction: Climate Change and Agriculture

Historically, agricultural change and innovation have always been integral aspects of economic development (Juma, 2011). However, an array of emerging global challenges, including “increasing competition for land and water, increased influence of and changing markets, rising fuel and fertilizer prices, and climate change”, are changing ‘business at usual’ (IFAD, 2013). There is a growing consensus that the **problems created by global climate change will necessitate reform** of agricultural policies (Isgren, 2018, Pretty, et al., 2010; Juma, 2011). The rapidly progressing phenomena of climate change and variability has been described as an “environmental, social, and political time bomb” (Vanlauwe & Lopez, 2012). Due to the uneven realization of climate change effects around the world, developing countries and rural populations are overall especially vulnerable (ND-GAIN, 2022). With asymmetrical global risks compounding the effects of climate change and variability, the sustainability of agricultural expansion and intensification has been called into question (ibid.; Pretty, et al., 2010).

Uganda, with its abundant arable land, has long been focused on capturing the potential of agriculture as an engine for development and as a link between food security, economic growth, and other sustainable development goals (Cooper, 2018; CIAT/ USAID, 2019; NPA, 2020). Uganda’s agriculture accounts for a large proportion of its growth in the last two decades (World Bank, 2022). Yet, reforming policy to support more sustainable land use has necessitated deep consideration for local ecological context (Dixon, et al., 2014). In Uganda, the overwhelming physical challenges of degraded soil fertility, reduced water retention of the land, and desertification are all threatening agriculture and making adaptation to climate change a more difficult process (MWE, 2017; CIAT & USAID, 2017). It has been estimated that these local challenges might raise “the number of food-insecure people ... from 7 million (20%) in 2015 to 30 million (60%) in 2025” (CIAT/ USAID, 2017). Climate change can thus be considered as an urgent humanitarian matter for Uganda, particularly for farming individuals and households with little resilience. As described in an ‘agriculture for development’ report, “unless we wake up soon and reverse these disastrous trends, the future viability of African food systems will indeed be imperiled” (Vanlauwe & Lopez, 2012). Recent statistics indicate that:

- Over 5 million Ugandan households are engaged in agriculture (Cooper, 2018; Gov. of Uganda, 2018). Yet ~95% are engaged in “small-holder farming”, characterized by small-scale practice and at-home consumption (Cooper, 2018).
- Uganda’s high (> 99%) reliance on rain-fed agriculture, as opposed to irrigated practices, worsens the vulnerability to climate change and variability (CIAT/ USAID, 2019). Yet, seeing as agriculture creates nearly half of Uganda’s total GHG emissions, the government is also pressured to reform the sector to meet mitigation goals and sequester carbon (CIAT/ USAID, 2019).

Given these circumstances, Uganda’s Planning Authority has recently suggested the need for “*improved land use and management; increasing land area covered under forests and wetlands, increasing compliance of water permit holders with permit conditions and enhancing the accuracy of meteorological information.*” (NPA, 2020). However, since the adoption and success of new practices depend upon social structures, such as local behaviors and norms (Longo, et al., 2021), there is a call for a more integrated approach to policymaking and research about the situation, highlighting the varied processes and actors involved in adapting agriculture to climate change (Robbins, 2020).

1.1 Research Question

Climate changes are altering the landscape of agriculture in Uganda, creating new political and environmental parameters for local land use. Climate-Smart Agricultural *Practices* (CSAPs) are being promoted and implemented across Uganda, including; crop rotation, intercropping, reduced tillage, and uses of natural fertilizers or improved crop varieties (CIAT/ USAID, 2017; Gottshalk, 2020). Moreover, Climate Smart Agriculture (CSA) as a system-level practice has been pursued for sustainable development of local communities (LCs).

Understanding how cognitive and social factors affect the desirability for change (in practices and organization) among community farmers can help show how locals relate to the idea of climate change (Ollinaho, 2016, Longo, et al., 2021).

Considering that many smallholder farmers in Uganda are already in vulnerable positions, this thesis evaluates the local social and political context for organizing CSA (in the form of a situation analysis) and explores the need for a more holistic political science approach. As such, this thesis revolves around the question:

How do local community members in Kalagala Parish experience and relate to Climate-Smart Agriculture (CSA)?

2. Background

2.1 Uganda's Political Economy of Land Use and Agriculture

Politics and governance are inherent features of the discourse around management of natural resources (Hönig, 2014). Uganda's political institutions have undergone significant changes in the last half century yet have still retained many features of the past. The most recent transfer of power occurred in 1986, when the current President, Yoweri Museveni, overthrew the existing regime. Though he established relative peace, he has continued to remain in power by amending the constitution and subjugating opposition with violence (See Annex 1) (Sjögren, 2015; Joughin & Kjær, 2010; Rune, 2007). Heywood's (2019) description of the emergence of new 'grey zone' illiberal democracies, described as "elected regimes that routinely ignore constitutional limits on their power and deprive citizens of basic rights and freedoms", could be applied to Uganda's regime - although some constitute it as in fact authoritarian (Carothers, 2004 & Zakaria, 1997; in Heywood, 2019, p. 121). Nonetheless, the continued centralization of power under President Museveni has had serious implications for farmers' livelihoods.

Understanding Uganda's current political institutions and *their role in shaping agricultural policy* requires us to consider the legacy of colonialism. During the British colonial administration, political emphasis on cash crop export (of sugar, tea, coffee, etc.) largely created neglect for rural development – stratifying a 'peasant' economy made up of politically disenfranchised farmers (Isgren, 2018). This centralized system (during and since the colonial era), has depended upon authoritative land and resource management strategies, such as use of the 'American fortress conservation' model (Barrow,

et al., 2000), and models that encloses natural spaces and excludes local people from planning their uses (Robbins, 2020). In Uganda's case, the colonial emphasis on forced conservation was largely a product of the focus at the time on conserving 'big game' rather than biodiversity (ibid.). These exclusive, focused agricultural and land use policies have been historically shaped to favor "production above conservation", leading to a fragmented land management regime where agriculture 'competes' with other land uses (Barrow, et. al., 2000, pg. 14). Such models for 'controlling' communities to 'protect' land have drawn the critique that:

"by placing the burden of protecting the world's ... flora and fauna on the backs of ... producers, while simultaneously removing some of the most important tools they have to make ends meet... [the] conservation regime has created tensions between rural people and the state" (Robbins, pg 178).

Uganda's neoliberal economic policy with its focus on economic growth and market integration, both regionally and internationally, are affecting the practices and opportunities of local farming communities. At the global level, the integration of agrifood systems are exacerbating inequalities by creating shocks (market and environmental) that disparately affect vulnerable communities (Vanlauwe & Lopez, 2012; Heywood, 2019, p.166). These trends have brought financial networks into a closer engagement with state planning (World Bank, 2022).

Within this global context, Uganda's land use regime continues to be guided by an 'emergence' of "national decentralization policy, new legislation, and devolution of rights and responsibilities to the local level" (Hartter & Ryan, 2010). Describing Uganda as "still in the process of decentralizing its institutional framework", Renner (2020), states that agricultural policy reform has taken place within this increasingly multi-leveled political system. Nonetheless, certain political institutions have simply extended themselves within this structure, shaping options for policy reform. For example, the policy of enabling local elites at the expense of lower classes, rooted in the British colonial administration's divisive rule, has continued in the form of patronage (Mamdani, 1976). One recent study stated that "...much recent research on how patronage demands on MPs [members of Parliament] ... increase pressure on them to engage in clientelist distribution", interrupting fair representation and support to groups without connection to government (Wilkins, 2016).

Yet despite these colonial legacies and post-colonial structures, agricultural production has moved from 'outcompeting' other land use objectives (like conservation or mitigation) to 'complementing' them (ibid). This institutional change has enabled inter-agency planning and a generally more integrated improved integration of land management and agricultural policy systems (Echeverria, Terton, & Crawford, 2016). For instance, Uganda's cross-agency Green Growth Development Strategy was centrally concerned with the holistic transformation toward sustainable agriculture production (Gov. of Uganda, 2018).

2.2 Literature Review: Climate Smart Agriculture (CSA)

This section draws upon institutional and academic literature to present the institutional objectives, definitions, and framings of CSA and emerging critiques relevant to farming communities in Uganda.

New agricultural technologies, crop modeling systems, and land use management approaches have changed the possibilities for sustainable intensification of agriculture. With pressure rising on the agricultural sector to come up with new solutions, the concept of ‘climate-smart’, has shaped a new mold for centralized planning. In the last decade, Uganda’s rural and agricultural development plans have grown increasingly integrated with climate adaptation and mitigation goals (NPA, 2020). In this context, climate-smart agriculture alludes to ‘three pillars’ for supporting change in farmers’ practices:

*“CSA initiatives sustainably increase productivity, enhance resilience, and reduce/remove greenhouse gases (GHGs), and require planning to address trade-offs and synergies between these **three pillars: productivity, adaptation, and mitigation**”* (CIAT; BFS/USAID, 2017).

Agricultural practices implemented holistically within this framework have potential to increase resilience and productivity for farmers (ibid.). Most Ugandan CSA initiatives are oriented toward adaptation and productivity, with more flexible emphasis on mitigation (due to immediate risks and development needs) (WBG, 2021).

Recently, studies focusing on adoption of CSAPs have highlighted the importance of localizing CSA practices in order to create ‘synergies’ and manage ‘trade-offs’ between CSA pillars (Fawole & Aderinoye-Abdulwahab, 2021). CSAPs within this framework can include a variety¹ of ‘cropland management’ activities, including “agronomy, integrated nutrient management, tillage and residue management, water management, [and] agroforestry” (Branca, et al., 2011). However, any agricultural approach is fundamentally context-specific, and there are no universal climate-smart practices, nor firmly defined assessment or management systems (Chandra, et al., 2018).

Despite the proven benefits of CSAPs, Chandra et al. (2018) suggests that CSA as a policy has been shaped to fit very different institutional environments, which govern entry points, available management options, and ‘climate-smart’ goals. While they conclude that there is a lack of systematic review of how these institutions interplay with CSA, and that most literature focus on scientific or technical evaluations, there is nevertheless a growing knowledge of and attention to agricultural practices relevant to Uganda’s CSA context.

CSA and Smallholders: Evidence of a ‘Traveling Paradigm’²

Recent critiques have for this reason called out CSA policies as “old wine in new bottles” (Newell, 2018), arguing that their design remains, overall, sympathetic to the aims of foregoing neoliberalist agricultural reform, creating “trojan horses” (Schnurr, 2015) which bring commercial interests to new markets. Therefore, there is a need for “reframing... adaptation policy, practice and analysis to engage with multiple adaptation knowledges to question subjectivities inherent in discourses and problem understandings” (Eriksen, et al., 2015).

¹ A recent review identified a total of 73 “farm-level management practices” which had been associated with CSA (Rosenstock, T. et al., 2016).

² From: Weisser, F. et al. (2014). Translating the ‘adaptation to climate change’ paradigm: the politics of a travelling idea in Africa. *The Geographical Journal*, 180(2), pp.111-119.

Emerging from political relations between states, the idea of adaptation has been seen as ‘traveling paradigm’; in this case it makes a way through the structural relations of government agencies and financial institutions in order to enter (and mandate change from) the communities of Uganda (Weisser, et al., 2014). Groen, et al. (2012) describes how the international climate discourse perpetuates “*authoritative* international scientific advice to ... avoid dangerous anthropogenic interference with the climate system”. CSA, as an internationally mainstreamed policy framework, similarly brings with it certain ‘discursive framings’ along for the ride down into subnational policies (Newell & Taylor, 2018).

Additionally, the structure of the CSA policy arena has allowed neoliberal interests to materially shape the agenda and orient themselves within it as part of the solution, not the problem. For instance, the interests of ‘agribusiness actors’, vested in CSA research and policymaking, have created an overemphasis on chemical and genetically modified inputs (Weisser, 2014; Newell & Taylor, 2018). However, the paradigm of CSA has also been accompanied by increased space for reflection and dialogue about which solutions are best at the community level. With around half of Uganda’s adaptation projects active in the agricultural sector (Echeverria, Terton, & Crawford, 2016), a variety of new integrated strategies (incl. education and sensitization programs) have been developed at multiple political levels³.

These strategies have been pursued within Uganda’s political-institutional context, targeting overall localization and devolution of adaptation planning and land use management, as reflected by Uganda’s shift toward collaborative management at the start of the 21st century (Barrow, et. al., 2000). Just as national stakeholders in the United Nations and European Union raised the issue of uneven burdens created by the discursive frame of ‘shared responsibility for climate change’ (Groen, et al., 2012), LCs in Uganda are increasingly contesting ‘their share’ of adaptation. This has prompted deeper contextualization of adaptation policy and an increased attentiveness to creating local co-benefits with environmental needs (Morel, et al., 2019; Jayne, et al., 2018).

Working ‘with the Community’

CSA has increasingly been applied within community contexts, involving local stakeholders in program design. As described, institutions are important to how policy affects the actions of local stakeholders. The management systems in place in Uganda, from fortress conservation to restoration ecology, have affected farmers’ capacity and willingness for community mobilization. Considering Ugandan local communities’ persistent contestation of central authority, spanning different levels of centralization and devolution, LCs have been affected by structural relations and imbalances of power (Nsita, 2003, Hartter, 2010; Renner, 2020). The community enforcement approach to conservation, is an example of how framings can constrain community participation; framed by the neoliberal ‘logic of competition’, these systems encourage participants to capture more ecosystem benefits for themselves, as opposed to challenging the distribution in benefits (Barrow, et. al., 2000; Robbins, 2020). Further, working with ‘the community’ necessitates first a definition it. In this case, little criteria exist for defining a farm as small-scale or a farmer as a smallholder; even ‘family-farm’ can be used to refer to farmers at small production

³ From extension services and farmer field schools to champion/model farmers and mother gardens, a range of participatory systems have been developed to target farmer action (Swift, 2022).

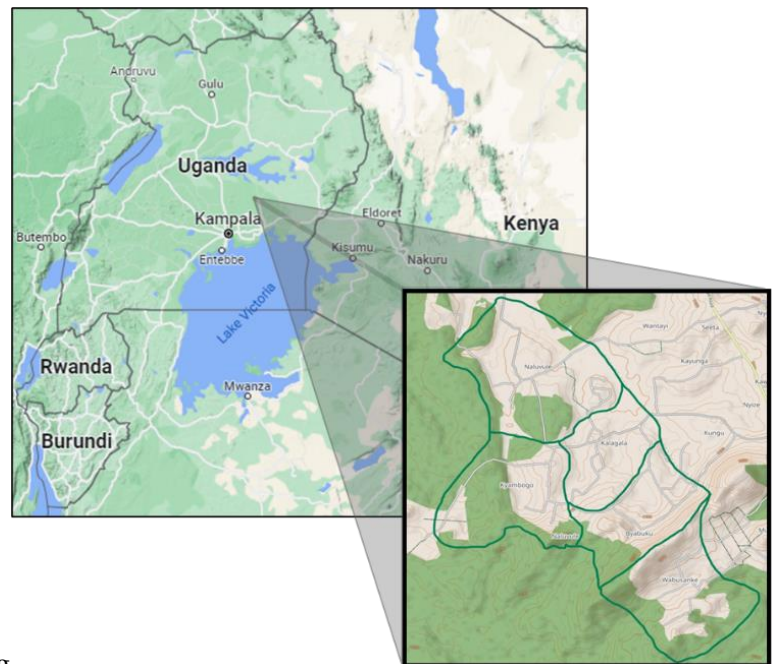
scales with high at-home consumption (Lowder, 2016). Definitions and measurements of agricultural systems have continuously evolved since the mid-1900s (ibid.).

Despite these existing critiques, there remains a gap in understanding about how best to engage communities in the challenge of confronting climate change.

3. Local Overview

Uganda is landlocked yet borders Lake Victoria and is traversed by the Nile River. The climate is generally humid and equatorial, with bimodal rainfall (during March to May and September to November) providing around 800-1500mm (CIAT/USAID, 2019).

The research site, Kalagala Parish, is located in the south of Central Uganda (see map⁴). The commercial centers of Kampala and Jinja are relatively close. Kalagala Parish consists of five villages, situated in a rural area along the border of Mabira Forest Reserve (depicted on the map in green). Its high level of poverty, lack of schools, and limited infrastructure (no paved roads and little electricity) are factors contributing to the dominance of small-scale agricultural production in the area.



As part of the Lake Victoria Crescent agroecological zone, the area receives particularly high (>1,200mm/ year) rainfall, providing fertile land for local agriculture (Bernard, 2018). The nearby Mabira Forest creates a valuable microclimate and ecosystem which acts as a catchment area for precipitation from Lake Victoria (Onyutha, 2016). In this way, the land in and around Mabira has been described as a strategic local and regional asset, retaining water and other valuable resources, while supporting a biodiverse ecosystem (MWE, 2017; Onyutha, 2016).

⁴ See Annex 4 for a note about the map.

4. Meta-Theory and Theoretical Framework

The interplay between local climate and local agri-food production systems has made it difficult to easily design CSA strategies from outside communities. This is underpinned by the idea that farmer decision-making cannot be modeled linearly because highly varied personal contexts⁵ create ‘webs’ of complex risks, vulnerabilities, and adaptation strategies for each farmer. These factors have engendered the study of climate change situations from *both* the more realist standpoint of scientific ecology and the critical social inquiry of political ecology. Despite these varied approaches, it remains largely impossible to describe with certainty how local structures affect community action, because there are both realist social structures and individual agents with subjective interpretations of climate change (Isgren, 2018).

4.1 Critical Realist Meta-Theory

Pursuing proofs of causation has for some researchers been a way to generate deep insight about the makings of complex phenomena - but as an analytic approach, it can restrict a researcher to reductionary or overly ‘realist’ conceptions of the given system. Thus, this thesis instead develops a contemporary Critical Realist (CR) meta-theory to emphasize the nuance in the patterns which shape causes, and highlight the ways in which these causes are perceived, related to, and acted upon (Robson & McCartan, 2016, pg. 32; Isgren, 2018). In this way, CR helps in managing the ‘complexity of climate’ by conceptually approaching ‘material’ and ‘constructed’/‘discursive’ properties of climate change as - separate but intertwined – *structures* in which change can be caused (Isgren, 2018).

Building in CR within an underlying meta-theory orients the theoretical framework and directs subsequent analysis toward identifying causal mechanisms that shape experiences and perceptions of the CSA context. As such, CR supports deeper reflection about the subjective reality of CSA within the local community, by conceptualizing primary empirical data from local farmers as expressions of the (complex, unobservable) political economy context of CSA. As such, critical realism helps shift the focus from ‘what is relevant, admissible data for researching this phenomenon’ to ‘what does this data reflect about reality’, creating better analysis of unobservable structures and ontologies. The CR approach can also be used to highlight “dependence on normative discourse[s]” in social scientific research settings (Sayer, 1997), creating space in the analysis for examining how discursive framings and institutional problematizations affect how local farmers relate to CSA.

Finally, I apply this meta-theory as a “philosophy in search of a method”, opening an exploratory line of inquiry which enables a theoretical discussion about how to approach the research problem of CSA’s largely unexplained local relevance (Yeung, 1997).

⁵ Local farm attributes like crop selection or post-harvest storage/processing capacity, shape how disasters impact food security for smallholders. Furthermore, these attributes affect the sustainability of farmer’s production; with less capacity for coping with environmental change, farmers are more likely to encroach on natural areas, resort to artisanal forestry & charcoal burning, or lease their land to other farmers.

4.2 Theoretical Framework

“Exploratory research begins with a question and perhaps a basic proposition, probes its plausibility against various types of data, and eventually generates a hypothesis as a conclusion” (Halperin & Heath, 2020, pg. 13).

Political Ecology and Interpretative Phenomenological Analysis

Climate, like many other *phenomena*, can only really ‘change’ insofar as that our concepts of it are forced to distort to account for the reality we observe. The constructed meanings around climate change therefore make it difficult to objectively evaluate how human systems relate to natural systems and how this interplay can be managed. With the rise of ideas like ‘climate-smart’, which cannot *exist* in the theory-neutral sense, it has become important to question the “excessive power granted to language to determine what is real” (Barad, 2010).

Further, with the application of such constructed ideas into policy, there is a corollary need for an explicitly political approach to asking these questions. I refer to Bryant and Bailey’s (1997) observation that “any change in environmental conditions must affect the political and economic status quo”. Many scholars recognize the heterogeneous implications of environmental destruction for different groups in society, with uneven costs and benefits (ibid.; Robbins, 2020). It is from this standpoint that Political Ecology can help evaluate the positionality of policy with respect to people – in this case for the problems of climate change, land degradation, and deforestation which apply in Kalagala Parish.

Considering the metaphysical contexts on one hand, and the need for an approach that is feasible within a community-based, participative design on the other, a focus on the individual experience of climate change and perception of CSA was warranted. Hence, I applied social phenomenology within the context of political economy, adapting the **Interpretative Phenomenological Analysis (IPA) approach** which seeks to “uncover the meaning that lives within experience” (Thomas, 2006). As an emerging theory and method, phenomenology focuses on individual cognitive processes to better understand complex phenomena (Smith, Flowers, & Larkin, 2009). It also allows for the researcher to account for an individual’s decision-making processes as expressions of internal subjectivities. In this way, I adopted a focus on experiences such that the reader of the research might be able to say, “I understand better [now] what it is like for someone to experience that” (Polkinghorne, 1989).

Based on the CR framework, and the IPA-experience driven approach, I understand the individual actor within a CSA context as:

- (1) interpreting ‘actual’ outcomes (observable policies and climate changes) to create a personal ‘empirical’ foundation
- (2) interacting with a ‘real’ climate system using their empirical understandings
- (3) influencing the political economy of CSA to create new ‘actual’ policy outcomes.

In summary, the integrated approach of IPA within a broader critique of political ecology was needed to emphasize personal experience and interpretation as factors of agricultural systems change and to demonstrate the power-laden dimensions of local land usage, creating a more holistic grasp of the local context for CSA.

5. Methodology

Community-based Research Design

Community-based participatory research (CBPR) depends upon the involvement of all stakeholders in forming the research question and in conducting the research (Greenwood & Levin, 2007). For this project, local political and civic leaders (including LC1/LC2 levels) identified climate change and the potential of climate-smart agriculture to reduce its negative impact as overall common interests among the villages in the Parish. Subsequently, approval for the research was obtained at the LC3 level and documented to ensure accountability. Further courtesy calls, planning meetings, and research design workshops were applied at various stages to involve additional stakeholders.⁶

This structural component shaped the research design, necessitating a participatory methodology to allow for community members to adjust research objectives to accommodate their logistic and communication needs and capacity. This participatory methodology depended upon local Research Assistants (RAs).

5.1 Methods

As demonstrated above, people use knowledge systems to describe unobservable structures which account for their observations of ‘evidence’ in world around them. Therefore, by designing methods that permit participants to identify causes and decision-making factors, the research project aimed at illuminating the knowledge *and* positionality of local farmers. In such manner hybrid theoretical framework informed the use of multidisciplinary household research methods.

This report draws upon qualitative data collected through **hybrid household surveying, focus group discussions (FGDs), and observations:**

- 60 household interviews and 2 FGDs were conducted within Kalagala Parish, LC2.
- 4 further key informant interviews were conducted at the Municipal Council level (Njeru MC, LC3).

The household survey consisted of flexible and structured components, including interview questions (open-ended) and survey questions (closed-ended agreements statements). These dimensions were designed to account for the critique that “restricting the set of independent variables to observable, structural factors ... impoverishes the study of politics to an unacceptable degree”, which points to the need for multidisciplinary tools for broadening the evidence base (Rathbu, 2009). Interviewing itself has many advantages in addressing this problem; it is referred to by some as perhaps the only method that evinces appropriate data for analyzing “human beings' effort to intentionally transform their environment on the basis of cognition, reflection, and learning” (Almond and Genco 1977; Rathbu, 2009).

⁶ See Annex 2 & 3 for more detail

For each household, two consenting family members were permitted to participate, yet all members of the household were encouraged to attend and experience the process. It should be noted that I worked most closely with two villages, meaning my *observations* are largely drawn from those sites, yet I also draw upon *survey* and *interview* data collected by other teams.

Transect walks throughout the community were used to examine, at plot and system level, the climate, environmental, and agricultural context. ‘Memoing’ and taking notes during these walks allowed for deeper understanding of the local context, and observations were eventually compared with maps to evaluate spatial factors of the local agricultural system (See Annex 3 for a comment on mapping).

Furthermore, the **transect walks served as the vehicle for sampling**:

Systematic random sampling, based on an interval of every tenth household, was employed to survey twelve household interviews in each village (for a total of 60). Due to the estimated 22.7% of local households being female-headed (as obtained from local government, LC3), I ensured that this group was fairly represented by setting saturation requirements for a certain proportion of the interviews. Additionally, the Informants (n=4) were selected purposefully to contextualize local viewpoints with institutional interpretations.

Subsequently, participants for the men’s and women’s FGDs and the four Informants were selected *after* the household interviews, in order to contextualize initial observations from the villages. created consideration for the varied roles and understandings that relate to home-based adaptation and sought to make space outside the home for women to speak about their experiences. institutional and political perspectives

Finally, the participation of the Research Assistants (RAs) on data collection teams was a key feature of data collection, which enabled sampling in each village of the Parish, but also the opportunity for a reflexive look at CBPR through the lens of the participants in it. Along these lines, participatory reflection became an integral part of the research. Debriefing activities for RAs were used to capture their experiences and emotions, while also to give provide them with their own space and time to reflect. Research verification meetings were also used, as per CBPR, in order to create transparency and build community accountability to findings⁷.

Overall, this exploratory mixed-method approach to collecting both empirical and reflective data enabled a deeper look into the benefits and challenges of grassroots CSA as both a system of inquiry and practice.

5.2 Data Analysis

IPA serves as an analytical tool, which, “as far as possible ... enables experience to be expressed in its own terms, rather than according to predefined category systems” (Alase, 2017). ‘Bracketing’ my personal experiences was therefore necessary to prevent my own category systems from invisibly shaping

⁷ These assemblies also ensure that research is not experienced as ‘owned’ by researchers by continuously reattaining feedback or ‘approval’ of findings – something more commonly retrieved from the office of the researcher’s institution and less so from researched populations themselves (Chambers, 1981).

analysis (Smith, Flowers, & Larkin, 2009). This created a better engagement with the conceptual problem of there not being any proven theory for analyzing this type of situation (Smith, Flowers, & Larkin, 2009).

Although a thematic abstraction of data was necessary, IPA emphasizes the importance of generating “a list of significant statements” and grouping them into “meaning units” (Creswell, 2013; Alase, 2016). Therefore, although IPA, as in grounded theory, steadily refines and reinforces conclusions as data is processed, it underscores the importance of preserving the data in the way it comes (Smith, Flowers, & Larkin, 2009; Miles & Huberman, 1984). Furthermore, IPA can be used to apply these meanings in a “textual description” (what participants experienced) as well as a separate “structural description” (the context behind how or why these experiences were realized) (Creswell, 2013). Overall, the inductive approach within the IPA framework allows for the researcher to narrow in on the ‘internal contradictions’ of CSA by analyzing internal experiences of it (Smith, Flowers, & Larkin, 2009). Understanding the results section as the “empirical” and the “actual” processes of CSA (as stressed by the CR framework), the analysis is thus geared toward clarifying what is ‘real’ for CSA stakeholders.

6. Results

The results section presents a report of the empirical data⁸ gathered from mixed-method data collection. Findings are presented in meanings statements generated by the thematic analysis described above.

Local Context

The environment in and around Kalagala Parish is lush and green, despite an overall high proportion of the land being cultivated⁹. However, the overcultivation of land has resulted in widespread land degradation and erosion, and climate change has contributed to unpredictable rainfall distribution. Furthermore, Mabira Forest has been largely depleted in the local area, as demonstrated by the few remaining old growth trees inside the community.

The overall cropping system revolved around Banana-Beans-Maize production, with coffee and passionfruit representing the most common cash crops. This was ascertained by observation, and through household surveys (see chart).

⁸ See Annex 5 for Research Participant Codes

⁹ See Annex 9 for Local Images

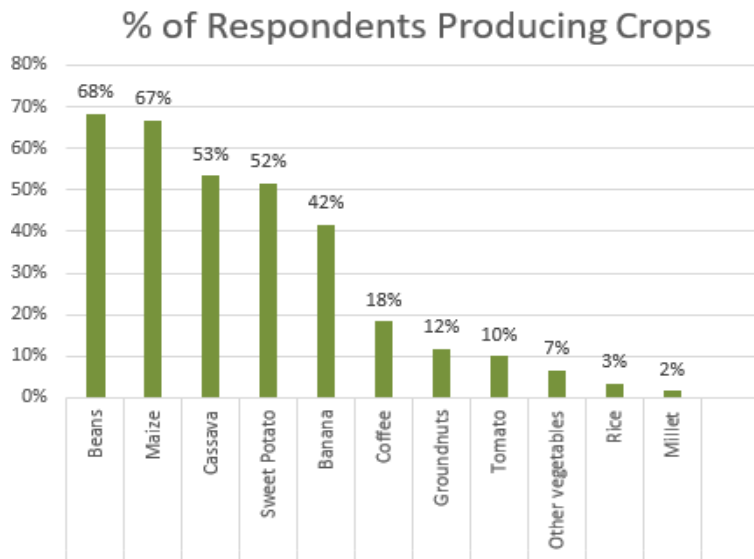


Figure 1

We also surveyed local farmers about their consumption of food. Most agreed that at-home production was the key factor in providing food for the household, yet that it sometimes was not enough, as demonstrated by survey data (take note: green being strong agreement, and red strong disagreement):

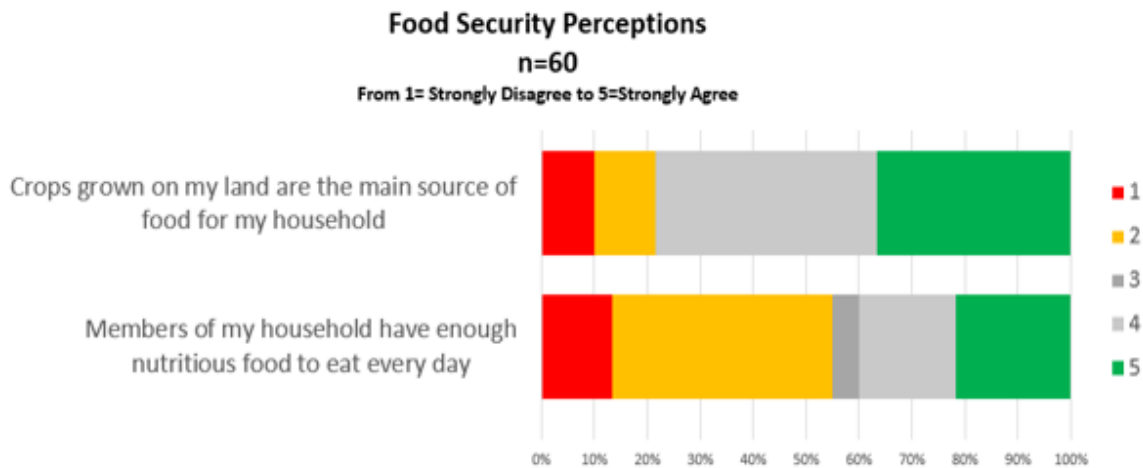


Figure 2

Finally, households that sold no agricultural products far outnumbered those that sold most of what they produced. On the other hand, there were instances of households that produced surpluses of food, including that of a village chairman who was cultivating Maize, Beans, and Passionfruit. He described the important role of ‘local traders’ as the easiest way to sell farm goods. In fact, nine of ten survey

respondents who sold most of their agricultural produce reported selling their good to these ‘local traders’.

Local Meaning Statements

(1) *‘There is confusion about how to adapt to climate change’*

The Kalagala LC was highly aware of changes in the climate, especially in recent years (<2 years), with farmers perceiving climate changes as intensifying, as demonstrated by Figure 3.

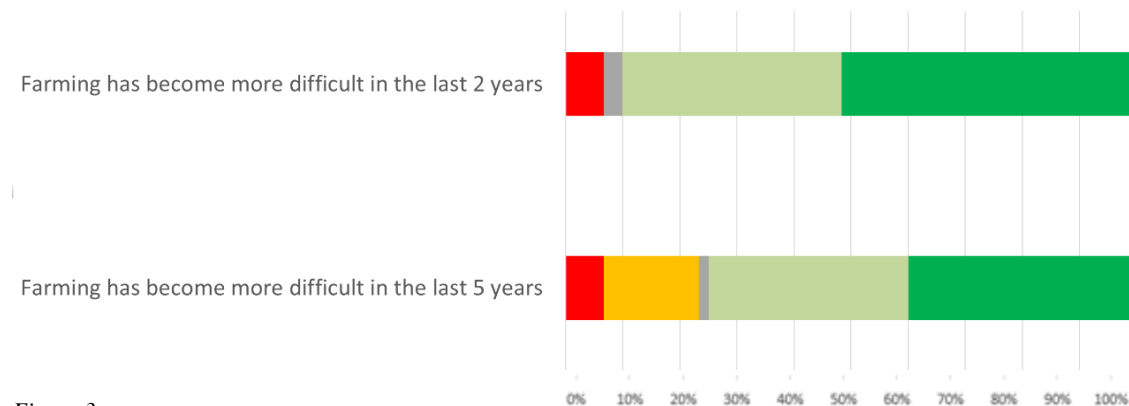


Figure 3

The most frequently specified factors of climate change from the household interviews were “losing trees”, “too much sunshine”, and “tired” or degraded land. Moreover, the common observation that groundwater was linked to forest cover - farmers indicated that less trees leads to ‘dry spells’ - demonstrate awareness of the complexity of the ecosystem. However, the complexity of the changes occurring also confused some farmers, as reflected by the reasoning,

I don't know why they change, I just see so many happening in that way (HA11).

Another farmer offered his meaning of climate change, that,

At times things don't grow as well as we would expect them to, and this demotivates us a lot. (HA6)

At the same time, an **increasing amount of information and misinformation has added to confusion among farmers**. Many farmers stressed that agriculture was closely related to the environment's condition. Several cases of misused pesticide and fertilizer application were identified. In these ways, climate change has increased farmers' levels of anxiety and uncertainty about their agricultural practices, as reflected by survey findings. However, it also appears that this has caused a high local demand for more, and better, information.

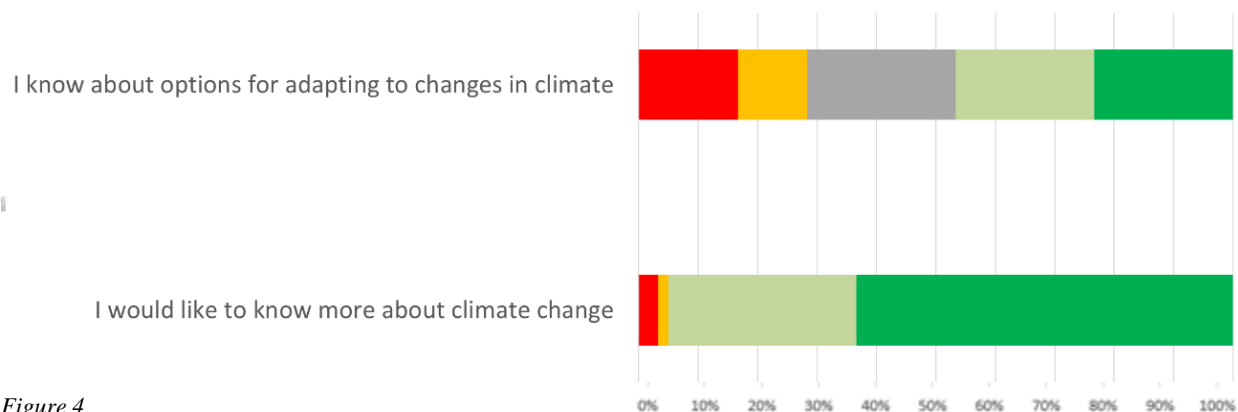


Figure 4

(2) *People look at agriculture as a “curse for the disappointed”*

In the villages of Kalagala many (agro-)cultural management practices were reported, including: *communal cow dipping* (cleaning all cows once a year to reduce disease); *community tree control* (collecting the diseased/pest ridden stems from fruit trees within the village to burn them), *common land* (space for people to plant traditional food), and ‘gifting trees’ (which creates higher social value around trees and greater motivations to take care of them). Additionally, as reflected in the Men’s FGDs,

The leadership back then was highly ethical compared to present day leadership. There was a lot of checkpoints on farming methods, and people checking.

Yet **the use of community management practices has declined**. A community mobilizer expressed his sadness with the loss of ‘traditional land’ management, explaining that the community no longer “works together in farming”. Furthermore, he reflected that he had not seen extension/advisory workers for between five and ten years. Accordingly, I observed the lack of informed practice at household level, noting that many farmers had neglected to address the health of the fruit trees on their compounds, leading to diseases spreading. Informant 2 reflected that, they “*should bring back some of those practices of the old days*”.

It was clear from observation that farmers had begun to shift their agricultural practices toward the ‘new days’, (according to their observations about the climate, with one household observing that,

For two to three years people they plant around all year instead of during the planting seasons ... people used to harvest beans much later than they do now. (HA6)

As such, **the effects of climate change have also forced some farmers to change their practices, turning away from ‘past’ methods**.

One farmer reflected that, “*the soils being less fertile, and also too much sunshine, has ruined the land ... they lead me to growing my crops in swamps.*” (HA9). Considering that cultivating wetlands rapidly depletes groundwater (according to Informant 2), it is evident that poverty resulting from climate change forces farmers to adapt new practices against the interest of the environment.

Another household observed about his neighbors that, “*there is a change in the methods in the way they plant, because the climate is not too good anymore*”, explaining that “*they were once using cow dung, but nowadays they use fertilizer*” (HA12). Overall, use of chemical inputs was drastically increasing; the (chemical) *sprayer* was identified by many as the most important tool for local agriculture, even compared to the local farming machete:

Today’s farming requires fertilizers, without which one cannot realize any harvest ... fertilizers like ‘DAP’ [Men’s FGD]

However, others argued that “*using DAP for a long time turns the land old and it stops working.*” On this note, I asked Informant 1, a volunteer gardener for a nutrition ward, about why some farmers continue to use less environmentally friendly practices despite understanding the effects. He described how people “*no longer respect cultural value of the land ... and [neither] nutritious food crops like vegetables*”.

Overall, he said that in recent years, “*people look at agriculture as a curse for the disappointed*”.

However, many farmers had also adopted creative, small-scale practices to adapt to the changes in climate. During interviews and transect walks, farmers identified a range of adaptation practices - including ones that I had not previously included on my ‘climate-smart list’¹⁰: *mulching, tree-pruning, and ‘covering the land after harvesting’ (post-harvest soil management)*. Cross-checking with informants, I found that there are many benefits to these practices¹¹. This demonstrated the community’s interest in testing new agricultural practices, as demonstrated below:

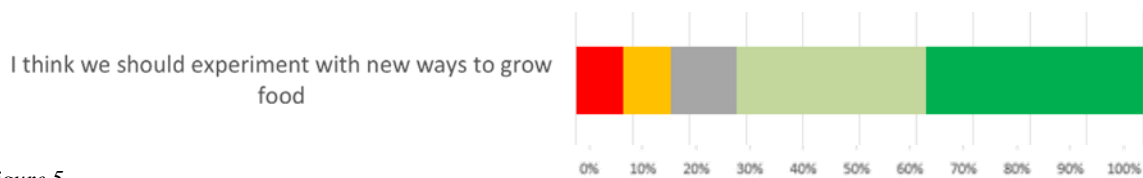


Figure 5

(3) “*The community is changing, we don’t know our neighbors*” (HA2)

The average landholdings of the farmers, though difficult to certainly ascertain, was estimated at less than two acres. Many locals described an overall process of these landholdings shrinking and becoming more fragmented. However, local land ownership has become increasingly complex, with household observations of:

- Inherited lands being split up and sold to outsiders
- Commercial farmers using more land (usually for cash/monocrops)

¹⁰ Additionally, many households were using CSA practices, such as crop rotation, intercropping, reduced tillage, and uses of natural fertilizers (green manure) or improved crop varieties (CIAT/ USAID, 2017).

¹¹ See Annex for more detail

- Rental of land or use of land as collateral for personal loans

Household B6 shared that, “those who hire land do not accept these longer living crops [trees, cassava, etc.] to be planted, and don’t use fallow methods”¹². These trends have affected local land use. For instance, local farmers indicated that land fragmentation had caused them to stop shifting cultivation. Furthermore, showing a different perspective, one woman reflected that, “we need ... land and fruit trees like avocados, mango trees, jackfruit. [But] if I use money to hire these, then I could lose both the seeds, effort and the money”, showing her vulnerability and mistrust for other local landowners and even local traders.

(4) *Mabira is at once a safe place and a danger*¹³

Informant 2, an Environment officer with jurisdiction over the research site reflected that,

all of Kalagala was once Mabira Forest Conservation Area... it was a typical forest ... [but] now it has been encroached and significant area of the trees are lost.

Demonstrating this, a high level of security in the forest was evident, based on my observation of forest officers on most of the days of data collection, and on some household’s reports of key incidents.

In household interviews, Mabira forest was identified in both positive and negative sentiments. Locally, it is a source of fuel (charcoal), fiber, land, timber, animal feed, and hunted and gathered foodstuffs. Yet asked about the forest and their role in it, many responded with a dismissive ‘*tewali*’, meaning *nothing*. An elderman shared a similar sentiment:

You also know what I do in case my yields are not good. I just run to mabira forest and cut trees to get myself some money. (HB4)

Young men without money for school fees or land for cultivation were especially reliant on the forest, with some referring to it as “*Mabira University*”. One young man reflected,

Its God who knows ... Poverty leads me to cut trees and make charcoal, even though I know that its not good. (HA11)

Due to the high importance of access to this ecosystem as a ‘backup’, and for some a primary means of supporting their livelihood, another local farmer reported that “*people cry if security there [Mabira] is tightened*” (HC1). One man reflected that “*we need [Mabira] .. but we fear arrests in the forest*” (HB4), also saying that he,

... would like to know the reason why we are always chased away from Mabira forest. What’s the reason for stopping us from cutting trees?

¹² Surveyed households complained that temporary owners of land often grow monocultured cash crop plantations, use higher amounts of chemical inputs, and skip fallow periods.

¹³ See Annex 6 (research journal)

On the other hand, many locals were greatly concerned about the loss of forest cover, as reflected by an all-woman household (of seven) arguing that,

Those who cut trees should themselves also be cut down (HA7)

This is all evidence of Mabira forest's management as a highly divisive local issue.

(5) Bad-hearted people are to blame

With a complex, changing local landscape, understanding 'who is to blame' for degradation and depletion (of land and forest) has been a difficult question to answer – but it has seemed to occupy many minds in the community and in the government. As Informant 2 (a government official) reflected about the local environmental problem,

Where is the man? Men in Kalagala - typical drunkards... if they are not typical drunkards, those that are doing some activity are forest harvesters. Yes, timber. First-class... They even have a saying that 'its god given - so why shouldn't we enjoy it?'

On the other hand, locals were equally critical of outside institutions, as demonstrated during the women's FGD:

The government is responsible for the Mabira Forest depletion. It stops the poor from using the Mabira resources and let the powerful use it.

They also described that government officers, "never bring any support to here, they don't reach to the grassroots". Additionally, in Kalagala, several surveyed households critiqued how the "inside of the forest" is being deforested and cultivated by people with connection to government.

In this way, blaming and victimization emerged as a repeated theme of the local experience. Another example comes from the opinion that,

Bad-hearted people introduced the pests for some economic gains. The people who make seeds make pests for profit (HC7).

In conclusion, I present one RA team's final reflection about what they had learned about the community from the research:

People are not happy because of poor lifestyle. Their mindset is focused on land grabbing. People have no faith in the government. People are not interested in conversation of environment or about Mabira. But they want to know more about agriculture.

7. Discussion

This section explores the interrelatedness of the local meanings and sense-making (from Results) and the political economy context (Background). It also explores the Relevance Systems framework as a way for interpreting this interrelatedness, finally concluding with broader implications for CSA.

Applying Relevance Systems Analysis as a form of Political Phenomenology

Since political economy factors are relatively unexplored in their role as mediating individual's interpretations of climate change (Carolan & Stuart, 2016), there was little direct precedent to follow to systematically analyze the situation as it relates to CSA. Within the overall explorative CR framework, both a theoretical and practical analysis of this problem was necessary.

During data analysis, I noted economic factors and the institutional context as context for local perception and relation. With data showing an overall heterogeneous experience of the 'actual' system, each farmer evidently has an individual motivational context for interpreting the 'actual' changes around them. Consequently, I chose to apply Schutz's phenomenology of Relevance Systems, which fits as a tool to unpack how individuals 'perceive and relate to CSA', within the broader theoretical framework. This approach highlights the following aspects:

- (1) topical relevance [farmer's awareness]
- (2) interpretative relevance [farmers interpretations of the topical, upon which decisions and actions are take]
- (3) motivational relevance [the political ecology context which affects the topical & interpretative relevance of CSA for farmers]

(Schutz, 1970; Schutz, & Luckmann, 1973)

As described by other studies applying Relevance Theory to agricultural adaptation, "understanding the objective uneventfulness and subjective irrelevance associated with much of environmental changes helps explain the inactivity of the masses" (Ollinaho, 2016). Applying this understanding, I discuss (i) the political economy context and (ii) the specific 'Mabira Forest' context on individual cognition about CSA.

Finally, the topical relevance of CSA can be viewed as either 'imposed' or 'intrinsic' (Schutz, & Luckmann, 1973). This distinction demonstrates that CSA concepts in general lack any inherent meaning, with topical relevance being shaped by motivational and interpretative relevance contexts.

The Local Political Economy of 'Climate-smart' Land Use

Considering the growing influence of the political economy of 'climate-smart', as well as the impact of overall climate changes, there is significant 'topical input' to farmers. Yet with little system-level change

in the community, the question of how the community is *interpreting* the context for application of CSAPs and the political economy of promoting CSA seems difficult to answer.

Overall, with the main eventfulness of climate change being the natural threat it poses to their agricultural production, it could be supposed that farmers will adopt CSAPs if they bring benefits in production. However, this perspective fails to address how farmer's topical relevance to climate change is also affected by local political economy factors. Fortunately, political ecology offers a critical power lens (such as by applying Marxism) which can be used within a Relevance systems perspective to evaluate how political economy forces shape communities' interpretation of phenomena (Adorno, 1967; Houser, 2019).

Economic Change Shaping the Possible Experiences of CSA

With rapid economic development spreading from nearby commercial centers, Kalagala Parish has grown increasingly integrated with the regional and international market. However, this integration has largely failed to bring about improvements for local livelihoods. This can be partially explained by conceptualizing the community as *indirectly* integrated into the regional economy; though it shares the market risks of production it receives few benefits from overall economic growth. The community also struggles to capture benefits from its own growth, with weak infrastructure for bringing goods to market.

Considering the many local commercial farmers using industrial inputs, and the rapid proliferation of local traders and middlemen bringing new inputs and seeds, local farmers have a changing topical relevance to input usage. This has been shaped by the overall motivational context of intensifying production, created by a deeper situatedness in the capitalist mode of production. However, with farmer's desires shifted by the imposed relevance of CSAPs as 'smart', they may grow more vulnerable to being exploited by traders, who are relatively free to provide inputs without informing locals of their proper usage.

Additionally, these changes have affected the local land tenure system. With an increase in land grabbing, commercial farmers purchasing land in the area, or immigrants settling on new lands, the existing community has struggled to maintain its traditional land management systems.

Due to the ongoing fragmentation of land, with already small plot sizes for many households, the locals engaging in the leasing economy has multiplied in recent years. Yet this land leasing system (often short-term, with the norm of leasing by season) has also affected how locals interpret the context for CSAPs. Though some farmers leased out their extra land because they were unable to cultivate it, there were also farmers who feared climate changes without understanding how to address them, and *therefore* resorted to leasing their land in order to secure a source of income for the season. For instance, this occurred for farmers that were unsure about when to plant after initial rains were delayed. In this situation, many farmer's lands have been further depleted by leasers who intensively apply chemicals with little regard for next year's harvest. Additionally, some farmers reported how their leases had been upended, with the owner taking back the land even with crops remaining in the ground.

Due to the imposed motivational relevance of land as an insecure asset, farmers with smaller landholdings have become more hesitant in making long term decisions about their land, instead often

interpreting the local situation in a ‘tragedy of commons’ -like manner. Thus, seeking to cultivate land intensely and productively while it is still available, farmers often turn their back on sustainable land management practices. This can be seen in the reduction of cropped trees due to the length of time it takes to grow them; fruit trees and other traditional crops like cassava are therefore seen as subjectively ‘un-smart’ investments, despite being objectively ‘climate-smart’.

The relations created by the local land use regime restrict smallholder farmers from investing into sustainable land uses, as described by the farmers who were discouraged from planning long-term use of their land. As such, competitive pressures increasingly underpin the motivational relevance that farmers have to CSA.

Political Structure

Informant 2 described that Uganda’s decentralized structure places too much responsibility for overall planning of development on local government, while reserving regulatory power for central government agencies. However, there is little capacity at local government levels¹⁴ to provide the necessary support to local communities to adopt CSA at the system level; this national structural and institutional context burdens the local community system and local NGOs. Further, top-down framings about CSA management have reinforced a “loose structure for communication, monitoring, and evaluating environmental issues”, as in Uganda’s broader natural resource agencies (Hartter & Ryan, 2010).

In this way, the local community has had little success in retrieving support from local government, and less still in participating in policy development. This lack of decision-making control over local land use has created a sense of political inefficacy and shaped farmers’ motivational relevance to CSA management processes in their landscape as an activity that is ‘out of their hands’. Furthermore, these processes of contention erode trust; for instance, the motivational relevance to government as an untrustworthy and unresponsive actor has shaped the topical relevance to land degradation caused by overapplication of fertilizers and pesticides as the government’s fault. Further, the lack of reliable government information amplifies the risk that new practices will result in unexpected outcomes, and force locals to cope with new risks as they arise, often by degrading local ecosystems like wetlands or the forest.

Moreover, patronage at the local level also influences local experiences of the CSA context. In Kalagala, this system has dual implications, with government agencies likely both confronting their oppositions and comforting their ‘clients’ when reforming land usage, such as with CSA (Ampaire, 2017). Uganda’s patron-clientelist distribution of *services* imposes the topical relevance to government extension as a system of ‘quick fixes’ and isolated interventions. For Kalagala Parish, the lack of a more consistent climate servicing has created a *short-term* topical relevance frame for how those local farmers

¹⁴ National Planning Authority (2020) indicated that “most subnational expenditures (around 60 percent) are dedicated to recurrent expenditures, in particular the payment of wages and salaries. This leaves very little (around 30 percent) for actual service delivery”.

view climate-related policy. Additionally, clientelism inspires politicians to focus on technology, input, and direct transfers, which create short-term gratification instead of long-term strategies (Ampaire, 2017).

Materially, the use of neoliberal, technocratic agricultural policy has always been a story of power relations. Prior to independence in the 1960s, government provision of technology toward plantation agriculture was partially “an effort to ‘stem the tide’ of the independence movement by catering to the interests of local elites” (Isgren, 2018). Patronage in this way creates a topical relevance to ‘community citizenship’ as only for elites, thus dissuading locals from organizing CSA at the system level. Additionally, the motivational relevance for participation in CSA as just way to gain access to inputs, trainings, or infrastructure, as opposed to changing livelihood structures, has further disabled local interpretational relevance of CSA in the long term.

The ‘Mabira Factor’ creates apathy through exclusion

Uganda’s resource management has long been underpinned by ‘conflict and compliance’ issues with local communities (Eriksen, et al., 2015). With many livelihoods dependent upon the Mabira Forest ecosystem, much attention has been aimed at maintaining its size, biodiversity, and ecosystem services. However, Uganda’s recent ban on charcoal burning as well as slash and burn agriculture in Mabira forest (MWE, 2017), has negatively impacted the livelihoods of the local population, bringing political economy forces directly into play at the local level. As such, the community’s reliance on Mabira Forest Reserve has prevented its involvement in political deliberation about land use, as the government has enclosed Mabira both physically and ‘motivationally’. The latter enclosure has, broadly speaking, shifted people’s topical relevance to Mabira as a natural space to Mabira as a government space. This has affected their interpretation of its value (shifting away from a cultural value for the forest) and thus their willingness to conserve it.

In Kalagala, most households didn’t seem to feel uncomfortable speaking about their use of charcoal, rather just about its origin. Others, fearing punishment for engaging in forest-based livelihood activities, hesitated at mention of the charcoal subject. In total, three farmers interrupted or refused the interview for this reason, demonstrating a local mistrust for outsiders and highlighting these farmer’s interpretive relevance of participating in CBPR as a potential way to ‘be caught’. With varied levels of dependence on ecosystem services resources and unevenly realized losses to climate change, community opinion is divided on the topic of tree-cutting and charcoal burning. For instance, women were likely to call for regulation of the forest, while young men were more likely to criticize the policing of the forest. Both perspectives indicate that their problematization of charcoal usage is directly tied to the motivational context imposed by government dominance. This shows how the same motivational relevance might not always create the same topical relevance.

Nonetheless, the overall interpretive relevance of the forest is still largely shaped by the motivational context provided by government control over the forest, rather than by the context of the environmental outcomes themselves. In effect, the application of the relevance framework to the charcoal situation demonstrates how climate-smart assumptions (that people can be made to desire pro-environmental change) overlooks the political economic relevance systems of Mabira.

Agri ‘cultural’ Disillusionment and the Social Injustice of the ‘Climate-smart’ Narrative

A Marxist Political Economy perspective highlights environmental crisis as the outcome of a capitalist mode of production (Adorno, 1967; Robbins, 2020). CSA can thereby be seen as situated in a place of tension, legitimizing the mode of production while altering it. From a normative standpoint, this perspective critiques the injustice of the farmers ‘caught’ in this tension.

Historically, being seen as ‘land-smart’ was a matter of intensifying productivity and cultivation. This rhetoric crowded out smallholder producers from support and investment, while reinforcing a political atmosphere which justifies land enclosure (which locals referred to as ‘grabbing’) of un‘smart’ (unproductive) lands (Barrow, et. al., 2000). This reflection is supported by household testimony that ‘land-grabbers’ tend to target confused, unproductive farmers. Though the aim of being ‘climate-smart’ raises entirely different production patterns as desirable, the same motivational relevance applies; the institutional and discursive forces of identifying certain practices as ‘smart’ inevitably casts others as not. In this way, what is smart locally is often not climate-smart institutionally. This has affected farmer’s topical relevance to CSA, in such a way that the farmer’s do not always relate to CSA as a desirable addition to their lives.

In the traditional “moral economies” of smallholder agricultural communities, land management was based on social networks and shared access to resources (Wiegratz, 2016). Forming ‘senso-communes’, communities that shared common understandings about the environment developed their own social and cultural CSAPs to reflect them (Li, 2019). Traditional and socially networked adaptations have existed in Kalagala long before the term ‘climate change’ was even coined; yet community members have described these practices as dissipating. Some farmers demonstrated this through a rejection of ‘traditional’ or ‘old’ practice in favor of technical, modern options, even where these meant creating more environmental harm. This process endangers the existence of “social capital ... [which has the role of] regulating and stabilizing ecosystem flows and access to resources” (Robbins, 2020; pg. 171). As such, farmers are becoming less connected with traditional and community approaches to land management, creating the sense that “agriculture is a curse for the disappointed”, not a blessing for the inspired.

Overall, this discussion raises ethical concerns about the social and political implications of CSA for smallholder communities with less capacity and less willingness for fitting into the ‘climate-smart’ framework. In effect, Uganda’s land management regime and its politicization of certain behaviors opens up space for marginalization and exploitation of these communities.

Implications for the design of CSA

The discussion above demonstrates the possibility that CSA overall might indirectly feed into negative cycles of degradation, given the political economies of agriculture and land use. Research and policymaking around CSA - including regulation - could thus benefit from a more critical stance on land use management, with attention to how structural and discursive tendencies reproduced certain social understandings of policy.

This application of a Political Economy of Relevance shows us that whether CSA can succeed for smallholders is a question of how well its personal relevance is captured by the policy design. Building on this analysis, Kalagala could benefit from an integrated, participatory approach (new roots) to CSA that actively stimulates new social connections and develops more inclusive political relations between land use stakeholders. This depends upon deepening the links between central/top-down climate services (extension and sensitization) with internal participatory systems (community land management and social learning hubs). However, these aims must take place within the overall political context of Uganda and of the global climate agenda.

Given the experience of the community, the definition of sustainability for a CSA *system* must grow to account for the dynamics of the political economy. CSA can transform local agriculture, yet by rendering change technical, there is a risk that local political economy factors are not considered. Thus, by using participatory approaches to help smallholder communities to clarify the role of local context in adoption of CSA, farmers can adapt these systems to their own specific context and motivation.

In conclusion, the context for CSA can be seen as inherently exposing individuals and communities to the exercise of structural, material, and discursive powers by political and economic actors. Therefore, participation in CSA represents an important political act and a necessary human right, shaping a more locally-smart agriculture (Quimbo, et al., 2018).

8. Ethics and Limitations

Ethics: “*You took our voice, when will you be back with it?*”

My role as the only outsider within an otherwise entirely community-based project raised the importance of an ethical conduct. As such, I made a conscious effort to remain transparent with participants about why and how I was present in their community (Robson & McCartan, 2016, pg. 58). Though short-term student-NGO partnerships can be valuable for both parties, they raise concerns about the biases captured in Chambers’ (1981) *Rural Poverty Unperceived*, which limit the researcher’s true understanding of the research case.

Besides this, the central ethical dilemma of this research involved the importance of safeguarding the interests and data of all local participants, which was done according to a strict code of conduct (Robson & McCartan, 2016, pg. 16). Due to the community-based character of my research, both RAs and other participants were subjects of inquiry, making informed consent doubly important to this project (signed forms were obtained for *all* participants). Members of the site team within each research team ensured that consent forms were read and participant questions about the research were accepted and answered.

Limitations

Generally, phenomenological approaches are focused on small sample sizes in order to better capture the experience of the individual. However, practical challenges in data collection emerged as restricting the

true application of the methodology. For instance, it proved difficult to translate the inherent meanings in the answers provided by the respondents.

Further, despite a focus on households as units of collection, inter-village and inter-group analysis was limited. Therefore, there was little systematic investigation of local variances and instead high aggregation to the Parish level. This points to a need for follow-up studies on the local level, including for vulnerable local stakeholder groups, such as women, youth and disabled people. Moreover, a high margin of error of the survey (see Annex) meant that its results have limited internal reliability and were therefore mainly applied to triangulate specifics about the sample group. In these ways, a more comprehensive ethnography and/or a deeper political economy analysis of the local agri-food/climate system could provide more methodical, actionable conclusions. Finally, the breadth of the scope as well as the attention to theory and political background created oversights about important topics, such as about the local role of livestock and grazing.

9. Conclusion

The diversity of cognitive and institutional factors at play in the arena of CSA indicate a need to reflect upon institutional, discursive, and material power that influence ‘official’ understandings of ‘local’ systems. Since many factors relating to CSA are inherently subjective and/or political, this thesis applied a CR/IPA framework.

The Political Ecology perspective helped highlight the role that Uganda’s modernist and technocratic adaptation policy regime has had in (i) shaping CSA to neoliberal purposes and (ii) stratifying a passive role for farmers within this framework. In the more specific case of Kalagala Parish, I emphasize how land use institutions have ‘imposed motivations’ upon the local community, reshaping the identity of individuals. The community’s interpretation of the ‘CSA context’ therefore depends upon their personal experience with the ‘real’ political economies of land use and agriculture. I assert that this argument and thereby the need to redress the local political and environmental injustices, is supported by my observations of the local experience of confusion, isolation, and inaction, and by my experience with community-based nongovernmental research. To this end, I recommend participation as a means and an end for future research and policymaking.

Finally, my application of a Political Economy Theory of Relevance Systems provides an innovative approach to describing how smallholder communities relate to and affect options for CSA, which enhances our phenomenological explanatory capacity for smallholder systems in general. While the approach of examining local relevance systems within a broader political ecology critique should be further evaluated, this paper demonstrates its potential as a method and as a theoretical framework itself, by shedding light on the complex issue of how human systems change in relation to climate change.

Annex

Annex 1. Description of Uganda's Recent Violence and Political Contestation by Youth

For instance, at the start of the SARS-CoV-2 pandemic, “the Uganda People’s Defense Force (UPDF) were deployed to impose lockdown restrictions” (Parker, et al., 2020). Though militaries were deployed around the world to deal with this crisis, Museveni’s Covid lockdowns began in early 2020 - *prior to the first recorded case* and involved prohibitions on movement and political rallies (ibid). Bobi Wine’s feature in the New York Times (2020) asserted on behalf of the youth of Uganda that the President was “using COVID-19 to assert his authority” and “urged ‘the international community . . . to rethink its financial, moral and military assistance’ to Uganda.” (Parker, et al., 2020). Already occupying most of Uganda’s population (World Bank, 2022), youth represent a major force challenging the legitimacy of Museveni’s government - the National Resistance Movement (NRM). Youth movements like Wine’s ‘People Power Movement’ criticize Museveni’s “... *policy* of threatening, beating up and imprisoning members of the opposition [emphasis added]” (Parker, et al., 2020).

Annex 2. Overarching Research Description

The research was conducted during a student internship with the Foundation for Sustainable Community-based Development (FSD-Jinja Uganda). Previously part of a larger international organization (called FSD), FSD-Jinja now operates under the same board of directors but is largely unassisted by and independent from its previous network. Exercising this new autonomy, FSD has pivoted away from consultancy and support roles to external (regional) projects, refocusing its work on the single community of Kalagala. At the inception of this research project, FSD was leveraging its new ‘grassroots’ position to build a stronger relationship with the community members in Kalagala Parish. This research project stood therefore as a practical gateway for further work there and as a symbolic gateway for a starting a new chapter together with the community. This affected the motivations of my team members and subsidized a somewhat grand research purpose, which created mistakes, personal relationships and private stake (potential conflicts of interest), and flexibility with research takeaways. However, though these ‘lapses’ in technical or academic rigor lend themselves to misalignments with policy, they represent more than just oversights – my experience with navigating them contributed insight into how organic innovation and learning processes can take develop from within the local community.

Annex 3. Additional Notes on Research Design

Local contact persons and mobilizers were identified by the NGO prior to government approval of the project, allowing the team to begin with planning meetings and courtesy calls to understand the interests, needs, and demands of the community and orient the objectives of the research. The mixed-method materials used for surveying were developed during planning sessions with RAs, with additional trainings added on to develop interview, note-taking, and data preparation procedures. During the data collection stage, I worked with two RA teams to survey two villages (Byabuku and Wabusanke). The remaining teams, each supervised by Site Team members, surveyed the other villages. Each village team consisted of a recorder, main interviewer, and one member of the site team (including myself), which participated in an overseeing role, cross-checking questions, note-taking, and offering probes when needed.

Annex 4. Mapping Approach and Key

OpenStreetMap (OSM) data was used for mapping, generating an understanding of distribution of settled and cropped land, roads, and local forest cover. Although detailed maps of cropping areas were not obtained, mapping with OSM contributed to a triangulation of findings from a topographical standpoint, through displaying village boundaries with respect to forest boundaries and showing remaining tree cover. Residential/farm area was detailed in the lightly colored regions, and roads (navigable often only by foot, motorbike, or determined vehicles) in white. The five delineated regions refer to each of the five villages constituting Kalagala Parish.

Annex 5. Research Participant Codes

Key Informants

- (1) An agricultural specialist volunteering for a local nutrition ward*
- (2) Environment and Production Officer at LC3 level*
- (3) An influential farmer and Chairman of LC1 level*
- (4) Agricultural Extension Worker at LC2 level*

Households

The household identifiers were recoded into a letter, representing the village, and a numbers, representing the household's sampling position in the village.

- (A) Kalagala [1-12]*
- (B) Byabuku [1-12]*
- (C) Kyambogo [1-12]*
- (D) Wabusanke [1-12]*
- (E) Naluvule [1-12]*

Annex 6. Observation of Policing and Corruption in Mabira: Research Journal Notes

[7th March]:

A truck carrying two young men interrupted my interview at Household B6. With a boda-boda (motorbike) between them, the boys were bound and surrounded by military officers, which sat on the railings of the truck bed. I watched as interview participants shook their heads as the truck drove into the dust. The parents with whom we spoke explained the scene with frustration – reflecting on the boda-boda, they indicated that corrupt forest officers frequently misuse their power and would be unlikely to return it to the arrested boys. Despite not showing it, I felt ‘on the same page’ as the participants, sharing a belief that there must be other ways to address the situation of these young men.

[9th March]:

During an early evening transect walk that passed through the hilly village boundary with Mabira Forest, we stepped into a clearing occupied by a group of young men and a small unit of military officers. Nearby smoke signals from burning piles of charcoal indicated the probable cause of the group’s arrest, but it was unclear to me why they stayed there as the sun set over that clearing. Further down the forest path, a group of men had gathered, each from a different day of work – one man skinned bushmeat while another stood with his farming machete. My surprise at the two scenes of the walk was due to the contrast despite being but a few minutes from each other. With some using the hills to gather and socialize and others experiencing them as a dangerous middle ground, I reflected in a memo that:

The forest is a safe space and a constant danger.

As we continued down the hill, a woman approached us quickly, coming up from the village ahead. She was surprised to see our research team there, with a *Mzungu* (foreigner), and she began to speak rapidly to the RAs, gesturing up the mountain. Just as I started to look to my interpreter for his key insights, I noticed the handful of money in her grasp. Translation soon confirmed my intuition that she was headed up to the clearing to pay forest officers for the release of one of the arrested men. The RAs told me that her son was up there, and that she had been forced to sell a goat for money to return him safely. As she walked up the rest of the hill, I wrote:

They arrest her son today, what will he do tomorrow? How can he pay her back? Using Mabira. He took a risk coming to the forest and was caught. Now he has to make up for this mistake, and he will probably end up cutting more trees [or burning more charcoal] because of it.

Annex 8. ‘Lost in Translation’: Research Journal Notes

Definitions and practices supported by the CSA policy and research frameworks do not always translate simply across different contexts. For instance, the English term for *climate change* doesn’t even have a direct translation in Luganda; it translates to a combination of ‘*enkyukakyuka y’obudde*’ - change in weather – and ‘*enkyukakyuka obutonde*’ - change in the environment. Responses like Household A11’s reflection that, “*climate change doesn’t affect me since, if it rains, I get enough food for my family*”, were indicative that climate change did not always come across right in translation. Further, locals are trapped in viewing their practices as ‘traditional’ or ‘old’ by having a local language to refer to their practices but

having English to refer to CSA practices, as demonstrated by one household's distinction between (traditional) cow dung and 'fertilizer', though both function similarly. This shows the idea that CSA can be lost in translation between languages.

Annex 9. Pictures from Kalagala Parish



Annex 10. Survey Error Table

SURVEY DATA ERROR INFORMATION	TOTAL POPULATION ESTIMATED 1200 HOUSEHOLDS (Retrieved at Wakisi Division Office, Njeru Municipal Council, Buikwe):
SAMPLE SIZE: 60 HOUSEHOLDS	CONFIDENCE LEVEL: 95% MARGIN OF ERROR: 12.34% 95% of them would agree with the findings at +/- 12.34%.

Annex 11. Reflection on Translation: Research Journal Notes

Working until dark on the first day of the participatory research, it became clear that it would be impossible to fully translate the interview, so data collection was adapted, allowing for RA teams to select and translate specific quotes from each interview question. Though I received a modest, somewhat handpicked transcript, participant’s meanings often came across, and could be cross-checked with their survey data. I was able to maintain the same analytical approach of assembling meaning statements with these data using the CR conceptual and IPA theoretical frameworks. This was done by approaching the ‘problem’ of how RA’s selected data as another source of data about the ‘political economy of relevance’ which shaped farmers’ answers (being ‘selections of experience’ themselves). Importantly, the implementation of the research could carry on without serious changes to research design. This example demonstrates the appropriateness of the flexible research design, both in theory and methodology, to the local context of CBPR about CSA.

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