Local People, Local Forests; Using the Livelihood Framework to Evaluate the Representation of Local Knowledge in Ghanaian Forest Policy

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Deforestation issues are not only affecting Ghana’s environment; there are many people who depend on forest resources for their survival. With forest histories grounded in colonial pasts, the government of Ghana has worked to change and reconstruct its approach to forest policy. This research investigates the representation of local knowledge and livelihood practices in current Ghanaian forest policy. A livelihood framework is used in order to better clarify aspects of knowledge and livelihood activities. Qualitative research is employed via semi-structured interviews, map biographies, key informant interviews, and archival research. Analysis is conducted through coding. Participants illustrated a strong grasp of knowledge about the forest and livelihood activities. Findings indicate that while the policies are changing, they are still reflecting a ‘top-down’ approach. Yet communities, while devaluing their own knowledge, are happier with the government structures than their own. In addition, individual communities often have local conditions that also impact their ability to participate in forestry programs.

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List of Acronyms

CBL – community bylaw
FC – Forestry Commission
FORUM – Forest Resource Use and Management Project
LK – Local Knowledge
JSS – Junior Secondary School
SSS – Senior Secondary School
TPR – Togo-Plateau Reserve
TUC – Timber Utilization Contract
TUP – Timber Utilization Permit
VFD - Volunteer Fire Department
1. Introduction

Across the globe, approximately 350 million of the poorest people depend on forest resources to maintain their livelihoods (Nurse and Malla, 2005). Between subsistence agriculture, gathering wood for fuel, hunting animals and other activities, they rely on forest resources for survival. However, with increased stress on the environment, caused by a plethora of human and natural factors, these forests are dwindling quickly. Exacerbating the situation are increased demands on forest resources because of rising populations, accelerating the rate of deforestation (Opoku, 2006). This rapid change has shifted research spotlights onto conservation approaches and strategies employed in the area.

Deforestation and environmental degradation are not the only challenges facing rural African communities. Not only has the spread of global consumerism and Western technology perpetuated the endangerment of indigenous and local knowledge in Africa, it has extended the effects caused by colonialism (Appiah-Opoku, 2001; Smith et al., 2000). As cultural boundaries fade, local groups face the struggle of preserving their knowledge and making their needs clear to the institutions that drove them off of their land and away from resources needed for survival (Smith et al., 2000). Aggravating the problem are claims that these local communities, who have been using these resources for centuries, are the cause of many environmental problems such as deforestation (Agbosu, 1983; Opoku, 2006). Yet despite global pressures, local communities have remained strong, often being the most vibrant contributors to African economies overall (Emeagwali, 2003; Mortimore 2003). Even with colonialism, exploitation, and mal-development all
contributing to unequal distribution of land, resources and infrastructure, these local communities still survived, illustrating the strength and resilience of African local knowledge (LK) (Emeagwali, 2003).

The term ‘local knowledge’ is used in this research as it provides a more comprehensive scope of a community’s knowledge base. Terms such as ‘indigenous knowledge’ and ‘traditional knowledge’ have been used in a variety of contexts, including environmental conservation, each with its own specific parameters defined; however, overall they generally imply the situated knowledge of a particular place (Nazarea, 2006). Yet communities are subject to a variety of external influences that may bring other forms of knowledge to that particular place. Concepts such as Turnbull’s (2000) ‘shared knowledge space’ embraces this, acknowledging that multiple forms of knowledge can operate and simultaneously occupy a similar area. Local knowledge, however, pushes this even step further by stressing the intermixing and fusing of multiple forms of knowledge (Nygren, 1999). In addition, ‘indigenous knowledge’ and similar forms of knowledge are often placed in opposition to ‘modern’ or Western knowledge (Nygren, 1999). The notion of LK overcomes this dichotomy by acknowledging the influences external knowledge can have – regardless of its origin – when it is brought to a community. Hence considering Ghana’s history of colonialism, it would be inappropriate to focus on indigenous knowledge alone – ‘local knowledge’ provides a better alternative.

Forest management practices are often based on a ‘scientific ecology’ that fails to incorporate LK (Chambers and Gillespie, 2001). Unfortunately, there have been many
situations where, in the name of protection, policies restrict access and usage of particular forest areas to all people, including those indigenous people who have resided there for decades. This has not only happened in Africa (Leach et al., 1999), but also throughout South America (Becker and León, 2000) and Asia (Colchester, 1994). The adaptability and resilience of LK promotes both flexibility and sustainability of resource management, two components that are conducive to environmental conservation. The incorporation of LK into forest policy allows for a more intimate and interdisciplinary scope of how resources are managed, creating an epistemological fusion that embraces sustainability.

Deforestation is one of several environmental crises currently facing Ghana; over the last hundred years, the country has watched approximately 80% of its forest cover vanish (Opoku, 2006). The unfortunate spiral began when colonialism moved into the area, permeating into the indigenous societies and marginalizing the local people. Dislodging the local people’s control of the land, State officials implemented policies that supported logging operations and other exploitative processes (Afikorah-Danquah, 1998). Many communities then found their own knowledge overlooked and instead replaced with European technologies and skills brought in by external groups (Appiah-Opoku 2001).

1.1 Statement of Purpose and Research Questions

The purpose of this research is to clarify the associations between forest-dependent livelihoods and practice, local knowledge, and government-based forest conservation policies, specifically in the Volta Region of Ghana. Forest policy in Ghana has undergone a lot of change in the last fifteen years (Opoku, 2006) in attempts to
remove the essence of colonial legacies that constructed these policies. In the past, these colonial approaches have resulted in clashes between local residents, government, and foreign institutions. Now, policies are trying to better involve the needs of local communities. The Volta Region has been especially prone to deforestation, which has led to suggestions such as “all larger remaining forest areas in the Volta Region should be given highest conservation priority” (Rödel and Agyei, 2002, 24), and people with rural livelihoods that sustain local communities have been faced with various environmental and economic challenges. Alavanyo Wudidi is one of these communities. This research then uses the livelihood framework to investigate the representation of local knowledge and livelihood practices in forest policy, guided by three research questions:

- **What do the community members in Alavanyo Wudidi, Volta Region, Ghana identify as their knowledge of the forest?**

  This question explores the sources of knowledge, various dimensions of knowledge, and what community members know about changes in the forest. What are the sources of local knowledge? What environmental, economic, and socio-cultural dimensions of local knowledge exist in the community? What knowledge do community members have about change in the forest?

- **How do community members use forest resources for the benefit of their livelihoods?**

  This question investigates the uses of forest resources, activities that sustain these resources, and livelihood diversification. What livelihood practices have local groups applied to sustain their livelihoods with Ghanaian forests? How is changing forest cover impacting livelihood activities? Do local people protect the forest, and if so, what methods do they use?
• **Are these practices reflected in the Volta regional forest conservation policies set forth by the Forestry Commission?**

This question combines the perspectives of the Forestry Commission (FC) and the community. What do current policies look like? What programs are offered to Volta residents? What is the status of current FC efforts? Have these efforts helped form a dialogue with communities? What do communities think of these policies? Do they follow them? How do these policies relate to community-established laws?

I am interested in the relationship between government and community within the context of environmental resource use. Specifically, the research considers how dialogue between the two has changed alongside recent threats of environmental degradation and deforestation; in addition, many forest conservation strategies are being evaluated in their ability of interweaving local communities and development tactics (Mendoza and Prabhu, 2005). The research framework, based on the commonly used Chambers and Conway definition of livelihood\(^1\), employs other dimensions that incorporate various cultural and social attributes vital to local knowledge and livelihood. Utilizing this framework emphasizes the tangible aspects that can be integrated into policy construction and decision making. The study focuses on the degree of representation of individuals with forest-dependent livelihoods and their knowledge within regional-level forest management policy. Many conservation policies do not recognize the benefits and importance of LK practices – this research underscores how important it is to do just that. Integration of local knowledge into policy is likely to be the key to long-term conservation success (Harris and Hazen, 2006).

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\(^1\) Livelihood is composed of the “the capabilities, assets (including both material and social resources) and activities required for a means of living” (Ellis, 7, 2000)
This project not only raises awareness about the needs of local inhabitants, (Bassett and Zueli 2003; Appiah-Opoku, 2001) – it contributes to the push for shifting forest conservation practices to reflect modern local knowledge in such a way that recognizes the needs of community. A greater understanding of local knowledge and practices could help both clarify environmental issues facing Ghana and provide insight on how future policies can be more efficiently constructed to embrace sociocultural dimensions (Mortimore 2003; Appiah-Opoku 2001; Sheffy, 2006). In addition, collaboration between local communities and government officials to develop, share and apply cultural knowledge becomes a supplemental benefit of cultural preservation and documentation (Hens, 2006, Appiah-Okopu 2001). Overall, this research contributes to the literature on amalgamating local knowledge with forest conservation policy and management.

1.2 Presentation of the Research
This paper is organized into six chapters. In chapter two, the study begins with the current literature on rural livelihoods and local knowledge. Along with this, I will present the modified livelihood framework used for this research. Following is the literature on forest conservation and an overview of Ghanaian forest management. The research study area where fieldwork was conducted is discussed in chapter three.
Chapter four provides the methods used to collect data and how the data was interpreted. Results will be discussed in chapter five. Chapter six presents the discussion, and chapter eight is the conclusion of the research.
2. Literature Review and Theoretical Framework

This research addresses the knowledge, practices and needs of Ghanaian forest-dependent livelihoods within the context of environmental conservation strategies and forest resource management policy. To provide context, this literature review addresses four elements. First, it explores conceptualizations and applications of local knowledge. Second is a discussion on understanding the parameters of livelihood, including definitions, livelihood strategies, and advantages to using a livelihood perspective. Following this is the livelihood theoretical framework used in this research. The last section tackles the incorporation of local knowledge into forest policy.

2.1 Developing Local Knowledge Systems

2.1.1 Defining Local Knowledge

A plethora of definitions have been presented for indigenous and local knowledge (Rahman, 2000). Many terms have surfaced in depicting this concept, ranging from ‘traditional knowledge’ to ‘rural peoples’ knowledge. (Berkes et al., 2000; Davis and Wagner, 2004). Although the same general idea is discussed, there are specific differences between terminology that have been noted. The underlying understanding of ‘traditional knowledge’ is that through its development situated with a local community and terrain (Nygren, 1999), it passed on tacitly generation to generation and various elements picked up from other bodies of knowledge are compiled and intertwined (Rahman, 2000; Emeagwali, 2003; Nygren, 1999; Turnbull, 2000). Indigenous or traditional knowledge is often positioned opposite of modern or Western knowledge (Nygren, 1999; Sillitoe, 1998), which blinds researchers to the possibility of hybrid
knowledge compositions. Applying the concept of ‘local knowledge’ overcomes the ‘indigenous versus Western’ dichotomy.

More specifically, local knowledge differs from indigenous knowledge in that it integrates the external influences that have impacted its development, such as the Western science that accompanied colonization. Rather, LK can be thought of as extremely situated ways of knowing that have endured numerous types of domination and hybridization (Nygren, 1999) – it is an assemblage of the various cultural, environmental, economic and socio-political contexts found throughout the region’s history (Turnbull, 2000; Nygren, 1999). It pushes beyond Turnbull (2000)’s notion of ‘shared knowledge space’, as it embraces not just multiple forms of knowledge occupying one area, but the intermixing and hybridization of these knowledges. In essence, local knowledge is indigenous knowledge incorporating these outside contexts. It is important to recognize that local knowledge can originate from “scientific” processes that are simply different from the familiar industrialized, Western forms of science.

Terms like ‘indigenous knowledge’ and ‘traditional ecological knowledge’ hence fall short and are inappropriate for the context of Ghana, as the colonial legacies left behind filtered into the working knowledge of the country upon independence. (Roucheleau, 1994, 13). ‘Local knowledge’ provides a more comprehensive scope, dislodging ‘indigenous knowledge’ from its bipolar position to Western knowledge (Nygren, 1999), thus accounting for external forces that altered the development of local knowledge. Ghana, for example, did not drop all of the colonial structures when gaining independence (Opoku, 2006), meaning that knowledge after independence was
still influenced by colonial legacies. Because of these strong colonial influences throughout Ghana, I use the term ‘local knowledge’ in this research, inherently allowing for the incorporation of indigenous knowledge and the continuously transforming knowledge fueled by external forces.

2.1.2 Fitting Local Knowledge in a Broader Context
Only recently have researchers recognized the effectiveness of including LK in environmental resource plans and sustainable development (Agrawal, 1996; Sheffy, 2006; Appiah, 2001; McFarlane, 2006), although the format of how LK should be presented is still under debate. Some believe it should be organized and documented in a systematic way (Hens, 2006; Appiah-Okopu 2001). Incorporating LK into policy documents, archives, and digital databases will help maintain it for future reference by communities when it may no longer reflect its original spatiality (Hens, 2006; Appiah-Okopu 2001). Yet others feel that dismantling LK from its original spatial context would stifle its fluid growth and development (Smith, 1999; Tobias, 2000). LK is fluid and ever-changing, hence trying to fix it in time or separate it from where it developed would inappropriately distort it and make it useless (Tobias, 2000; Emeagwali, 2003). Trying to categorize or classify LK into a prewritten framework away from its spatial context contradicts the core of the actual knowledge, as the knowledge is its own framework (Smith, 1999). This dichotomy poses the challenge of how to incorporate and recognize local knowledge into governing institutions without restraining it from its inherent characteristic of progress and development alongside community growth.
At the same time, local groups realize the importance of communication in a broader global network, specifically as it relates to their survival. The exploration of Western-based tools such as the internet (Ansu-Kyeremeh, 2005b), digital technology (Kyem, 2002; Ansu-Kyeremeh, 2005a), radio and television media (Awa, 2005; Bame, 2005) and theater (Epskamp, 2005) have been studied in the context of African indigenous and local land rights. There are advantages and disadvantages to this. Local groups have a medium for expression that helps overcome cultural or language barriers and can present information in a format that is understood in outside ontologies. However, methodological, substantive and contextual differences will always restrict local knowledge from complete translation into other languages, as cultural and situated information is lost in the process (Agrawal, 1996). This process of translation can also be viewed as producing new knowledge (McFarlane, 2006). Knowledge translation not only alters the information at hand, but also the related people, places and concepts (McFarlane, 2006). This continues to be of importance as local groups are becoming more aware and more active in the fight for ownership, power and protection of their cultural knowledge.

2.2 Livelihood
2.2.1 Defining Livelihood
Understanding livelihood is a crucial part of this research. Many draw from the definition constructed by Chambers and Conway (1992): “a livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living” (Baro and Batterbury, 2005; Ellis, 2000, 7). This broadens earlier understanding of livelihood from being more than just a way income is obtained (Ellis,
Building on this, the ways livelihoods can be understood range from the basic practices and actions individuals do ensuring survival and acquiring basic living needs towards increased material well-being (Baro and Batterbury, 2005).

A livelihood can be considered sustainable when it can both respond to and recover from stresses and shocks while preserving or improving assets and capabilities (De Haan and Zoomers, 2003). Considering the various environmental, social, economic and political pressures facing many households, one practice may not be enough (De Haan and Zoomers, 2003). To better ensure household economic and social security, rural residents indulge in various livelihood activities based upon their accumulation of skills, experience, and opportunity (Baro and Batterbury, 2005). Having multiple means of gaining livelihood assets both increases chances of acquiring necessary survival needs and overcomes barriers during times of crisis (Ellis, 2000; Baro and Batterbury, 2005). This is called livelihood diversification, and is commonly found among African households (Baro and Batterbury, 2005).

2.2.2 The Scope of Livelihood Perspectives

An advantage for constructing a livelihood framework is that it extends beyond observing natural resources as the primary element influencing livelihood systems. Rather, a livelihood perspective can actually encompasses a broad scope of environmental, social, economic and political mechanisms functioning in local systems (De Haan and Zoomers, 2003; Warren et al, 2001; Groenfeld, 2004). Examples include social orders (such as gender, class, ethnicity and political strength) and policy agendas (like access or availability to resources, land tenure systems and crop rights). Groenfeldt (2004) even notes the relationship between livelihood and cultural dimensions. All of
these things function within systems of livelihood production, ultimately impacting the outcome of wealth, social status and power (Warren et al, 2001). This context has been coined a “local political ecology” (Warren et al, 2001) and provides an available and realistic approach to livelihood systems (De Haan and Zoomers, 2003).

2.3 The Livelihood Framework
In terms of this research, focusing on the three themes of assets, capabilities and activities, it is possible to understand the role of the forest in Ghanaian livelihoods. The framework begins using the Chambers and Conway definition as a foundation: “a livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living” (Ellis, 2000, 7). However, accompanying the elaboration of this definition are various elements such as cultural institutions, mappability, and the notion of control in capability that all further clarify the livelihood perspective in this research. Figure 1 depicts the relationships of these components of livelihood and their relevance to the research questions. Each component will be discussed below.
2.3.1 Assets

Assets are frequently quantified and measured by forms of capital. This capital is categorized into one of five types (figure 1) – natural, social, physical, human and
Financial (De Haan, 2001; Ellis, 2000). Financial capital refers to the means used to purchase “either production or consumption goods” (Ellis, 2000, 8) such as money or credit. Financial capital increases the ability to consume or invest in ways that could potentially increase productivity. In contrast, physical and natural capital both follow the conventional economic definition of capital, “whereby an investment is made in order to achieve a future flow of returns” (Ellis, 2000, 8). Physical capital refers to economic products, such as tools, equipment or livestock.

Natural capital includes products used by humans for their survival, such as land, water and trees (Ellis, 2000). Forests, for example, can provide the biological resources that when processed, creates capital and thus sustains livelihood. In addition, the forest may be mentioned through human capital, which includes education level, health status, and overall well-being. Being educated and having experience with using forest resources becomes an asset. Considering that education is a measure of knowledge, it is inherent that LK will also become a critical component of human assets, and the forest may be discussed within this context. The link between human assets and social assets should be noted; often, being part of a social structure (as discussed below) allows access to the education and skills that transform and shift into human assets.

Understanding social assets becomes a bit more complex. Social assets refer to an individual’s participation and membership in a social network which reciprocates by communicating information, knowledge, and support (Ellis, 2000). A common critique is that the Chambers and Conway definition of livelihood does not fully address cultural dimensions (Groenfeldt, 2004). However, this can be addressed by linking four cultural
elements – social structure, cultural identity, religion and aesthetics – into the social assets of livelihood.

2.3.1.1 Cultural Dimensions of Social Capital

The first dimension, social structure, refers to the practices of livelihoods that stimulate social interaction, resulting in the access to a social network (Groenfeld, 2004). For example, in Bhutan, a village’s main water source is usually one coming from a stream diversion constructed by farmers from that village (Groenfeld, 2004). This stream diversion infrastructure becomes a “physical representation of the village community” (Groenfeld, 328, 2004). Family and community members gather around this physical place, fostering social exchanges and creating a network composed of trust (Groenfeld, 2004). “Livelihood systems involve social networks of trust” (Baro and Batterbury, 64, 2005), which in turn can result in ‘favors’ among community members, such as labor exchange (Groenfeld, 2004), that can be viewed as an asset. Rural households are noted to invest and put effort into these networks, which help them establish “complex, but informal, systems of rights and obligations designed to improve future livelihood security” (Ellis, 2000, 9).

Cultural identity, the second dimension, is concerned with how utilizing resources is intertwined with culture. People identify with resources, such as food, that help define culture (Groenfeldt, 2004). The intimate relationship between the natural world and “traditional” rural societies is conducive to the growth of local knowledge that enriches their physical, spiritual and social health (Smith et al., 2000). A fundamental piece is the link between cultural identity and place (Smith et al., 2000). Often, cultural rights and
responsibilities are linked back to specific terrains and land. It is impossible to buy, sell, or recreate these rights; “they were established in the ancestral pasts of Indigenous peoples around the world and are reiterated in the present through conceptualizations of spirituality” (Smith et al., 2000, 4-5). Land becomes an important part of cultural self-identity and hence is a crucial element in the survival of local culture (Smith et al., 2000; Opoku, 2006). The link cementing this relationship between land and culture is the continuous development of local knowledge.

This can be grouped with the third dimension, religion – acquiring and processing forest resources can be a spiritual practice. Groenfeldt (2004) provides several examples: “the interaction with plants and animals, the preparation of the soil, diverting of water, all have meanings that are systematized through rituals and ceremonies” (328). Social capital can be both individually claimed and communally claimed – people and groups “have a particular access profile to resources and tangible assets, which depends on their rights by tradition or law” (De Haan, 2001, 363). Hence by identifying with ‘tradition,’ both culturally and spiritually, an individual can gain access to this social network, increasing this social asset.

Aesthetic values of a resource also provide benefits that reinforce one’s placement in a cultural structure. For example, a resource that provides food may have culinary qualities such as texture and taste – that resource may also serve as a symbol of cultural value. Once again, identifying with the cultural traditions through resources allows greater access to these assets. The forest can be one of these resources, as it can provide a plethora of aesthetic and cultural importance that would heighten one’s position in a
social network, relating back to these social assets of livelihoods (Groenfeldt, 2004). Hence with the addition of these cultural dimensions into the understanding of livelihood, the forest can be seen as both a natural and social asset.

2.3.2 Capabilities

The second component of the commonly cited definition of livelihood is capabilities (figure 1). Capabilities refers to peoples’ ability to “be” (such as being free of illness, well-nourished, etc) that allow them to “do” things (make choices, acquire skills and experience, contribute to society, etc) (Ellis, 2000, 7). People do not necessarily have complete control over their capabilities – they are often dictated by social status and institutions (Ellis, 2000). Hence there is a relationship between capabilities and assets – “assets are not simply resources that people use in building livelihoods: they are assets that give them the capability to be and to act” (De Haan and Zoomers, 2003, 352). A person’s access to resources influences their capabilities. With this in mind, Ellis (2000) proposed the following definition of livelihood:

“A livelihood comprises the assets (natural, physical, human, financial, and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household” (Ellis, 2000, 10).

This definition fails to address temporal changes in livelihood, the idea of structure and agency, or livelihood adaptability and resilience. It should be recognized that “people have an active role in inducing change, being able to adapt or respond to changing circumstances” (De Haan and Zoomers, 2003, 352). Peet (1998) ties this concept into Gidden’s notions of structure and agency. Structure refers to the rules and resources of social interaction (Peet, 1998). Specifically, rules are understood as the
“methodological procedures of social interaction” (Peet, 1998, 156), or the meanings and sanctioning of social conduct. Resources, the elements in which an individual can gain control over, are characterized as either allocative and authoratative. The former refers to material objects (such as raw materials and natural assets) and the latter refers to social elements (such as relationships with others and social assets). Agency links together this structure with capabilities, as it “refers to capabilities people have of doing things — agency implies power” (Peet, 1998, 155). The ideas of structure and agency emphasize the value of livelihood capabilities; when an individual employs their capabilities, they increase their control over a situation. These situations can range in dimension from political (e.g., war) to environmental (e.g., drought).

Structuration theory is appealing as it incorporates capabilities in both a temporal and spatial context (Peet, 1998). The relationship individuals establish with their land and its resources provide them with skills and capabilities to acclimatize and survive with those resources even as the landscape changes. Individuals can intentionally exercise specific capabilities they have and expect a particular outcome. Knowledge is employed to attain this outcome (Peet, 1998). This ability to adjust is a skill that is mostly within an individual’s control; hence there are both controllable and uncontrollable influences of capabilities. For this research, capabilities will help clarify what the practices involved in forest-dependent livelihoods are, as well as underscore the influences that alter these practices.

2.3.3 Activities

The final component of livelihoods is activities. Activities are the practices that are carried out and link assets and capabilities (figure 1). When an individual has the
skill (capability) to acquire a certain resource, or asset, there are practices in obtaining that resource, processing it, and applying it in such a way that generates income and thus sustains livelihood. In terms of this research, activity is the component that links people and the forest together (figure 1). These activities are what are most likely to be recognized by the Forestry Department; the livelihood framework is able to contextualize the LK in such a way that LK and the forest policy can be paralleled during analysis.

2.4. Relationships between Local Knowledge, Livelihoods and Conservation

Understanding the local knowledge and livelihood practices pertaining to the forest promotes clarification of the effectiveness of conservation policy in terms of both the forest and the people dependent on it (Gauld, 2000). This part of the literature review tackles the relationship between local knowledge and various applications and integrations of local knowledge in environmental and forest conservation policy – concluding with where this research will fit into the literature.

Acknowledgements of local claims on forest are often only in terms of this ‘cultural significance’ instead of legal rights or livelihood needs (Rangan and Lane, 2001). While there is research that suggests a positive link between sustainable forest use and cultural structures, such as Campbell’s (2005) work on Ghanaian sacred groves, governments need to understand that all forms of local knowledge, whether cultural, economic, or environmental, not only play a role in history but continue to be important now and in the future (Appiah, 2001; Appiah-Opoku, 2001). Especially considering the role of forest in cultural identity, the inclusion of LK in conservation policy is a pivotal point in ensuring both the preservation of local culture (Appiah-Opoku, 2001) and
conservation of forests (Sheffy 2006; Appiah 2001). To transition towards a more effective conservation process will require reconstructing relationships between public and private stakeholders and amongst indigenous cultures (Gray et al., 2001). Only this way would it be possible to acknowledge the authenticity of diverse viewpoints, cultures and knowledge systems (Gray et al., 2001).

2.4.1 Obstacles with Forest Resource Use

Forests contain a plethora of resources many communities use for their survival (Opoku, 2006), naturally making ownership of forested lands a large part of local groups’ fight for social justice. Unfortunately, despite the vast array of forest resource uses, many obstacles create challenges for individuals with forest-dependent livelihoods. These include facing elements of forest regulation that still reflect colonial intentions, resisting destructive incentives, and recovering from the mismanagement of forest resources. The culmination of these complications only further the level of deforestation and environmental degradation, forcing decision-makers to rethink the way in which forest resources are handled and how local communities should be involved (Schroeder 1999).

2.4.1.1 Colonial Legacies in Current Forest Policy

Resource management policies whose origins stemmed from colonialism continue to impact forest-dependent individuals. “The colonial legacy is alive and well in many parts of the third world today” (Bryant, 1998, 83). Protected and ‘reserved’ forests were delineated based on biological notions, political interests and scientific inquiries of Western knowledge decent (Enters and Anderson, 1999). This knowledge clash resulted
in local individuals feeling alienated from forest management. Forest management schemes and land tenure agreements designed with a colonial foundation promote the wealth and power of the economically and politically privileged (Bryant, 1998). Accompanying this is a non-uniform disadvantage for local people as they lose control of the resources needed for survival (Schroeder, 1999). Establishment of forest reserves and resource access limitations only further marginalized the poor as they had no alternative livelihood options (Enters and Anderson, 1999). Decisions previously made by local authorities are now overlooked, creating an imbalance not just between local groups and larger institutions, but also amongst and within communities (Enters and Anderson, 1999). The lack of inclusion can also bring about conflict and hostility, exacerbating the situation (Enters and Anderson, 1999; Appiah 2001).

2.4.1.2 The Economic Incentive versus Sustainability Dilemma

When given the opportunity, people will not necessarily prioritize environmental sustainability and resource conservation (Fairhead and Leach, 1995; Enters and Anderson, 1999). Between the firm grasp of institutional control and stern regulations on the harvesting of timber, many local communities face considerable difficulty trying to formally follow the rules (Vihemaki, 2005). Despite the intention of policies to promote sustainability, these laws often instead endorse exploitation of local resources. Restricting access to resources may reduce the desire of local communities to maintain these resources (Pimbert and Pretty, 1997). Economic enticements tempt many to disobey the laws and perform practices such as illegal harvesting of trees (Vihemaki, 2005). Unfortunately, as illustrated by Allen (2005), the core of sustaining livelihood involves
economic engagement, posing an incredible dilemma on local people. As a result, policies lacking recognition of local communities not only eradicate incentives of traditional resource management (Ndibi and Kay, 1999) but also undermine respect for local knowledge (Enters and Anderson, 1999). People become willing to abandon their traditional practices in order to embrace material wealth, even if it means over-exploiting the resources pivotal to their livelihoods (Enters and Anderson, 1999).

2.4.1.3 Enduring the Blame and the Aftermath
Previous literature in forest conservation depicted local people and communities as threats to a pristine and ‘natural’ forest ecosystem (Afrikorah-Danquah 2003; Enters and Anderson, 1999; Schroader 1999). However, in actuality, local people are not always the primary cause of deforestation, but rather they often endure the aftermath of poor forest management and environmental degradation (Enters and Anderson, 1999). The price paid for social exclusionary is lofty (Enters and Anderson, 1999). This along with the little success in resource conservation forced academics and researchers alike to redesign their approach to environmental conservation in developing countries (Sheffy, 2006; Appiah, 2001; Agrawal, 1996; Enters and Anderson, 1999). Now, most natural resource management plans are, at least in theory, recognizing the importance of local community involvement and acknowledgement (Enters and Anderson, 1999; Appiah 2001).

2.4.2 Recognizing Communities as Stakeholders in Forest Policy
Historical approaches to natural resource management were manipulated by ‘external’ institutions, such as foreign governments and businesses, with little to no
interest in local development and instead sought power over African politics (Schroeder 1999). However, in recent years, social and environmental issues have been increasingly addressed by researchers and policy designers. Forest management plans are now recognizing the importance of involving local institutions and seeking to promote biodiversity conservation via acknowledgement of local people’s needs, constraints and opportunities (Enters and Anderson, 1999). By acknowledging communities as stakeholders in forest decision-making efforts, policy decisions incorporate and consider issues presented by community forest users. Moreover, this inclusion restores credibility and operation of local resource management systems (Long and Zhou, 2001).

Nurse and Malla (2005) designate three recognitions that are all pivotal in embracing local communities and knowledge into government-created forest management plans. The first is the acknowledgement of people living adjacent to forests and thus utilize forest resources on a regular basis to sustain their livelihoods (Nurse and Malla 2005). Because of the need to maintain a means for living, communities neighboring forests tend to have a strong interest in properly managing the forests. For this reason, it only seems appropriate they have input into decision-making (Wily and Dewees 2001). Second, it is important to recognize that indigenous forms of management exist, which provides informational local knowledge about the natural resources at hand. Lastly, there should be an understanding of the need to shift the place of traditional foresters from the budgeting of national forest estate to the more contemporary role as advisers and extensionists (Nurse and Malla, 2005).
Honoring these acknowledgements is important, as ambivalent passing of authority to community level can actually damage a community’s potential for promoting proper forest conservation and management (Wily, 1999). Schafer and Bell (2002) note that in some unfortunate cases, governments take advantage of community-based programs by using them to exercise control in more rural areas rather than devolve the power in the hands of the communities. It is difficult to ensure that benefits of conservation efforts are equally distributed (Schroeder, 1999).

2.4.3 Participatory Methods / Community-based Planning

2.4.3.1 Understanding Participatory Forest Management

Participatory forest management is quickly gaining momentum and support (Sheffy, 2006; Kyem, 2002). Participatory and community-based agendas articulate that conservation strategies must prioritize the survival and livelihood needs of local people at the same level as environmental protection (Appiah, 2001; Mbile et al, 2003). The transition into participatory conservation starts with the acknowledgement of local knowledge and authority (Nurse and Malla, 2005). This helps empower local groups as they regain control over the surrounding environment and can integrate the progression of their knowledge with the progression of their development (Schroeder, 1999). Through the integration of new and traditional resource management methods, interested parties can embrace the various options they have for environmental conservation. Groups are able to express themselves through modes of communication (mapping, for example) that can help overcome and reduce language or cultural barriers (Mbile et al, 2003). Participation opens doors for the validation, recognition and incorporation of indigenous and local practices in greater agendas (Hens, 2006; Appiah-Okopu 2001), and is thought
to be one of the most logical options to discourage biodiversity loss in developing countries (Mehta and Kellert, 1998).

It is important to note that there is no one specific model for community forestry; considering the numerous dimensions involved, an ideal community-based agenda will adapt spatially to the characteristics of a given place (Nurse and Malla, 2005; Martínez, 2003). Project designs differ by country and even down to region. Issues such as wealth, gender, age or ethnic identity all must be considered during the planning phases of community-based projects, as it is not uncommon for communities to be politically fragmented and have delicate social orders (Enters and Anderson, 1999). These social mechanisms often fuel and perpetuate the growth, passing and development of local knowledge (Berkes et al., 2000), ergo become significant during the planning process.

2.4.3.2 “Top-down” versus “Bottom-up”

Previously, many conservation plans that involved communities were built from a ‘top-down’ approach (Thrupp, 2005). However, recently there has been a growing surge in using ‘bottom-up’ techniques (Sillitoe et al. 2002; Campbell and Luckert 2002) as researchers are better appreciating the value of local knowledge in conservation (Agrawal, 1996; Sheffy, 2006; Appiah, 2001). The bottom-up process recognizes the local people as the best fit for decision-making and resource management because of their intimate relationship with the surrounding land (Sheffy, 2006; Barrow et al. 2000). This allows them to challenge and reconstruct the more top-down development ideas, resulting in a more effective conservation strategy.
Taking this even a step further, Brown and Hutchinson (2000) believe that completely transitioning from top-down to bottom-up will still not ensure success, as key stakeholders will either become entirely left out or at best have marginal influence. Sustainability is better embraced when the one-way paths of top-down or bottom-up are scrapped. Instead, a multistakeholder coalition should be built to collaboratively frame the necessary steps towards development and conservation. These steps should focus on the “granting of rights, access and security of tenure to farmers, fishermen, pastoralists and forest dwellers” (Pimbert and Pretty, 1997). Conservation has a better chance of happening when these social forces, power relations and economic structures are rebalanced (Pimbert and Pretty, 1997).

Regardless, the underlying theme is that decentralization of government is key to proper forest management, as there would be greater public accountability and more space for communities to spread out their own development plans (Amanor and Brown, 2003; Schroader, 1999). Integrating local knowledge systems into natural resource policy could also possibly rekindle a national and even possible pan-African identity (Opoku, 2006). Governments and other key institutions with authority need to understand that all forms of local knowledge, whether cultural, economic, or scientific, not only play a role in history but continue to be important now and in the future (Appiah-Opoku, 2001).

2.4.3.3 Critiques of Participatory Forest Management

However, participatory and community-based forestry has not been without its critiques. There is ample debate regarding both the theoretical and practical capacities
and institutional design of community-based environmental management (Gauld, 2000). Defining ‘community,’ for example, has frequently proved to be a roadblock to successful sustainable development (Schroeder, 1999; Agrawal and Gibson, 1999). Individuals who migrate to and from forested regions, for example, may have an impact on the resources used but risk being excluded from participatory agendas (Schroeder, 1999). Defining community goes beyond geographic location – it can manipulate the outcome of development, aid, and educational projects. The use of concepts such as “participation,” “community,” “development” and others continue to enforce the necessity of providing a theoretical framework – built collaboratively by all entities involved – before applying programs to reality, as otherwise the program chances failure (Pain, 2003). Otherwise, the institution crafting the parameters of these terms gains an essence of power and control over other entities in the participatory resource management process (Vihemaki, 2005). Especially when working with participatory methods, it is important to establish both spatial and social boundaries (the latter referring to relevant stakeholders concerned with the resource in question). These boundaries should remain flexible throughout the policy construction process as the needs and numbers of stakeholders change, but at the same time maintain a level of clarity and structure. Ambiguous and multi-interpretable understandings of these concepts can result in failure to install and utilize participatory strategies (Poolman and Van De Giesen, 2006).

In addition, the effectiveness of participatory approaches is still questionable, as many ideas put onto paper never become integrated into practical action (Schroader, 1999). Some current conservation strategies claim to be ‘participatory,’ but attributes
like economic or political interests of other stakeholders actually have a greater influence on forest management (Vihemaki, 2005). Overall, genuine involvement remains the exception rather than the rule (Enters and Anderson, 1999). Although many community-based conservation plans aim to integrate the more ‘influential’ stakeholders (Enders and Anderson, 1999), the stated goal of the project is often left ambiguous (Donkor et al., 2006) so no definite outcome ever surfaces. Issues of power amongst those involved cause forest management to be a multifaceted, unbalanced and constantly changing issue (Vihemaki, 2005).

2.4.3.4 Broader Context of Participatory Methods

In short, the main theme is that community-based forestry rests upon the premise that communities and ecosystems are interdependent; groups and communities, depending on their location and interest, play an important role in the management of natural resources (Gray et al., 2001). However, the way in which development and conservation efforts are put into practice does not reflect the idealistic models discussed in policy plans and academic documents. Many approaches to participatory and community-based conservation have been presented, and successful strategies have no single design that will be applicable anywhere across the globe (Vihemaki, 2005). The recognition of local knowledge and local forest management practices, however, is thought by many to be the key piece of the puzzle (Appiah-Opong, 2001). Hence understanding the particular social, economic, environmental and political contexts involved when putting participatory conservation strategies into practice is important (Vihemaki, 2005; Berkes et al., 2000).
2.4.5 Reevaluating Local Perspectives in Forest Policy

Regardless of the policies in place, not only have numerous Africans advanced their livelihoods significantly considering the challenges posed daily by a trying environment (Mortimore 2003), multiple studies have recorded how local practices have both generated sustainable areas and stayed actively involved with their conservation (Schroeder 1999; Appiah, 2001; Campbell, 2005). This has initiated academic researchers to place the spotlight on forest management policies for reevaluation (Campbell, 2005). Many researchers find conservation pitfalls are often discovered where policies lack consideration for the needs of local peoples who depend on the forest for survival (Appiah, 2001; Fairhead and Leach, 1995; Sheffy, 2006). Academic literature addresses the need for the government to acknowledge local voices, regarding their needs and rights (Fairhead and Leach, 1995; Rangan and Lane, 2001), representation through participatory methods (Sheffy, 2006; Kyem 2002), and the information they could contribute to sustainable forest conservation (Campbell 2004, 2005; Appiah-Opoku 2001).

While Ghana has risen above other African countries with its stable economy and early independence (Aryeetey et al., 2000) only in the last decade have forest conservation laws even begun to consider the rights of local forest-dependent groups (Donkor et al., 2006). Even when forest conservation policies were reconstructed in attempts to erase the colonial legacies used to build them, the only incorporation of local groups were through top-down ‘education’ programs that failed to integrate their voices (Donkor et al., 2006). While academic literature advocates for a more participatory approach to policy decision-making (Appiah-Opoku 2001; Donkor et al., 2006; Sheffy,
2006), there is little evaluation of whether or not this is actually happening and to what extent (Appiah, 2001). The studies investigating the cooperation between Ghanaian local people and large industries or timber companies have demonstrated promise for short-term conservation management (Appiah, 2001); however, the political hand is required to make the necessary policy changes needed to foster long-term collaboration and participatory decision-making (Appiah, 2001).
3. Study Area in Context

This chapter expands on the study area where research was conducted, specifically in the context of forest policy. First, forest policies are discussed on a national scale, including a brief history of forest management in the area. Then, improvements and problems with the current policies are explored. The next section narrows the focus to the regional and district scales, looking at why the Volta Region was an appropriate location for this research. Finally, the last section narrows the focus even more to depict the community researched in the study.

3.1 National Context: Ghana

3.1.1 Ghana Overview

The West African country of Ghana (figure 2) gained its independence from British rule in 1957. Today, approximately 20.5 million people (2005 estimate) live in Ghana (Domson and Vlosky, 2007). With a total area of 238,540 sq km (Beheton and Ibrahim, 1995), Ghana borders Côte d’Ivoire to the west for 668 km, Burkina Faso to the north (549 km), and the Republic of Togo to the east (877 km). The southern coast of Ghana is the Atlantic Ocean for 539 km (World Factbook, 2008). Most of the terrain is low plains, with a dissected plateau located in the south-central area (World Factbook, 2008). The climate tends to be hot and humid in the southwest, tropical, warm and relatively dry in the southeast, and hot and dry in the north (World Factbook, 2008; Donkor et al, 2007). One of its most notable physical features is the manmade Volta Lake, which serves both environmentally and economically, as it provides electricity, inland transportation, and water for irrigation (Donkor et al, 2007). There are 266 forest reserves across the country covering approximately 2.68 million hectares (Aryeetey et al,
Created by the British in the early 1900s, the reserves were intended to both encourage ecological stability, watershed protection and environmental balance while also promising a continual flow of goods and services for economic and social development (Donkor and Vlosky 2003). Forestry, agriculture and mining are the three most frequent land use systems found throughout the country (Aryeetey et al., 2004).

![Figure 2. Map of Ghana. Source: Moliafric, 2007.](image)

**3.1.2 Timber in Ghana’s Economy and Environment**

From the late 1800s until gaining independence 1957, colonialism encouraged the exportation of natural resources from Ghana to European countries. Exportation of timber for commercial purposes was no exception to this, and it was from here that
timber became a big part of Ghana’s economy. However, the environmental effects of large-scale logging operations began to find its way into public spotlight during the early 1980s. Suffering from dropping cocoa prices, lack of government financial support, high inflation and political problems, by 1983 the Ghanaian economy had practically collapsed (Beheton and Ibrahim, 1995). Needing a quick source of income, industries turned up the dial on logging operations, and entering the global market with remarkably priced timber produced the cash (Beheton and Ibrahim, 1995). Between 1900 and 1990, Ghana lost approximately 80% of its forest cover (Opoku, 2006) and the current annual rate of deforestation is about 2.0% (Donkor et al., 2007). Even the government-protected forest reserves suffered deforestation – between 1990 and 2000, some reserves lost up to 90% of forest cover (Opoku, 2006).

Today, after cocoa and minerals, timber is the third most important export commodity (Beheton and Ibrahim, 1995). Between illegal logging operations and clearing practices for cultivation, Ghana’s forests continue to suffer extreme degradation and deforestation. Large-scale desertification, soil erosion and climate change continue to pose a threat to the future of Ghana’s environment (Opoku, 2006). Environmental consequences are not the only cause for concern, with roughly 2 million people across the country reliant on the forest to support their livelihoods and traditional lifestyles (Donkor et al., 2007). Yet somehow this large population dependent on the forest has had relatively little voice in Ghanaian forest policy in the past.

3.1.3 The Beginnings of Forest Policy
Before gaining independence in 1957, Ghana was under British rule and was called the Gold Coast. Forest policy in this region began with the Native Jurisdiction
Ordinance, enacted in 1883. This provided control of forests to traditional authorities, albeit with specific intentions for them to implement forest bylaws and create forest reserves (Agbosu, 1983). However, these groups were uninterested in foreign-based strategies and kept on practicing what they always had. British officials were not happy with this, and in 1894 produced the Report of the Commission on Agricultural Potential of the Gold Coast, which focused on how the unsupervised destruction of forests can lead to droughts, infertile soil economic decline (Agbosu, 1983). This report became the foundation for policies for the next three decades, and served as the justification for why British were better suited for forest management than traditional groups.

The Forest Reservation and Water Courses Protection Ordinance, introduced in 1899, sought to address forestry issues. Despite their appearance on paper, the provisions related to this act were obviously encouraging revenue collection instead of forest conservation. The Ordinance lacked clarity and basically allowed timber industries to continue exporting in large quantities, only now fining them to allow the government to profit from this industry (Agbosu, 1983). Between 1902 and 1904, the quantity of timber exports from the Gold Coast to Europe increased almost 800% (see table 1). Although on paper, policies included forest resource restrictions intended for both local communities timber industries, the latter were not enforced (Agbosu, 1983).
To better embrace forest conservation, in 1909 the British established the Forestry Commission (FC) and implemented the Forest Ordinance Cap 157. This allowed for the establishment of forest reserves and designated for the appointment of Reserve Settlement Commissioners (Agbosu, 1983). Government officials were allowed to stipulate how forests were managed, including the ability to fully confiscate people’s lands.

### 3.1.4 The 1948 Forest Policy

In 1948, the FC produced its first official forest policy - the 1948 Forest Policy statement, which had strong implications for both communities and the forests. The emphasis was placed on the protection and handling of the reserves, with the underlying idea that forests outside of the reserves were open for becoming agricultural land (Agbosu, 1983). In essence, it strengthened timber production and permanent removal of any forest off the reserve (Agbosu, 1983). There was basically no representation of local groups, nor support against entrance of large timber industries exploiting their resources. Overall, this policy helped discourage local subsistence economies, forcing local

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**Table 1**

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantity in feet</th>
<th>Value in £</th>
</tr>
</thead>
<tbody>
<tr>
<td>1902</td>
<td>2,228,616</td>
<td>21,896</td>
</tr>
<tr>
<td>1903</td>
<td>7,832,684</td>
<td>48,853</td>
</tr>
<tr>
<td>1904</td>
<td>16,012,560</td>
<td>34,294</td>
</tr>
<tr>
<td>1905</td>
<td>-</td>
<td>84,429</td>
</tr>
</tbody>
</table>

Source: Agbosu, 1983.
communities to instead become roped into the larger cash economy that supported the colonial state (Opoku, 2006).

Even after gaining independence in March of 1957, the forest policies lingering from British rule remained as the skeleton of Ghana’s legal system (Donkor et al, 2006). The interests still remained with the national government rather than Ghana’s residents. Various acts, amending and adding to the 1948 Policy Statement, continued to be passed in favor of the country’s timber industry. The 1954 Protected Timber Lands Act gave the FC power to zone off-reserve forests as ‘protected timberlands,’ hence giving them control over farm development and expansion (Aryeetey et al, 2004). Amendments such as these continued – the Concessions Act in 1962, Forest Protection Decree in 1974 and Forest Protection (Amendment) Law in 1986 all took away any meaningful rights to local people’s activities within the reserve. Local groups interpreted this as denial of their rights and a sequestering of their forests (Opoku, 2006; Aryeetey et al, 2004).

With this 1948 Forest Policy - even with later amendments – a clearly defined forest conservation plan did not exist. There were no specified goals, objectives or strategies related to forest management and decision (Donkor et al, 2006). The little policy that was present excluded local forest communities in decision-making processes, despite the expectations of these groups to participate in forest conservation (Donkor et al., 2006). Lacking any political support, local people were unable to stand up to forest exploitation by illegal logging operations, worsening the conditions of the country’s forests. It was not until almost five decades later, when poor forest conditions created a public outcry and forced the FC to rethink its forest management regime.
3.1.5 The 1994 Forest and Wildlife Policy

Even independence did not remove the imbalanced policy structures. The passing of power from British to Ghanaian politicians shifted the internal powers of the timber industry (Opoku, 2006). Despite the removal of the British, the distribution of revenue from the timber industry did not filter past the Ghanaian political and economic elite; the interests of the nation remained a higher priority than those of the local people (Aryeetey et al, 2004). Individuals who had previously supported indigenous rights switched over and latched on to logging concessionaires, putting more stress on forest resources (Opoku, 2006). Also, the well-established corporations that worked with the British left and were replaced with new companies that did not understand (or were interested) in environmental concerns or sustainability ideas (Opoku, 2006). These companies were able to walk on the lower levels of the government forestry sector, fueled by the support of the national elite.

By the mid 1990s, the state of Ghana’s forests had turned from bad to worse. Extreme exploitation through illegal harvesting of trees in conjunction with forest encroachment for agricultural reasons heightened the level of forest degradation (Donkor et al., 2006). The timber industries began selective cutting of specific tree species, only further weakening the health of the forests. To exacerbate the situation, the frustrated FC was lacking the necessary funds to enforce the few policies that were in place (Donkor et al., 2006).

Public protests to the irresponsible use and degradation of Ghana’s forests were finally acknowledged by the FC in the mid 1990s. Their response improved the situation
slightly with a redesigned forest and wildlife policy implemented in 1994, which targeted sustainable development and forest management. Overall, the main intention of the 1994 policy was to support conservation and sustainable development of the nation’s forest resources in tandem with environmental balance and a constant flow of maximized benefits to all sectors of society (Aryeetey et al., 2004). The ‘guiding principles’ that outlined the revamped policy placed a substantial emphasis on the integration of people into forest management. These included:

- Acknowledging people’s rights to have access and utilize natural resources to maintain a basic standard of living, concurrent with their commitment and responsibility to properly and sustainably use these resources;
- Recognizing the importance of integrating traditional methods of resource management into national plans, where appropriate;
- Putting portions of financial gains from resource use towards maintenance of resource production capacity and towards the benefit of local communities;
- Involving local people in issues concerning their welfare through a decentralized participatory democracy (Domson and Vlosky, 2007)

These principles were better reflected two years later when collaboration between the FC, the private sector and communities produced the Forestry Sector Development Master Plan (FSDMP) (Donkor et al., 2006). Until that point, emergency measures were established to respond to the rising public pressure angry with the poor forest conditions (Donkor et al., 2006). This included a temporary suspension of log export in 1995, aimed to help the FC regain a grasp on its control on the reserve. Log exporting was only to continue if the surplus was large enough such that the local communities did not need the timber (Donkor et al., 2006).
However, this put the FC at a rather delicate position – on one end, they are trying to meet the demands of local communities. On the other, they need the income generated by the larger timber industries (Aryeetey et al, 1994). Despite the attractive changes to the forest policy in 1994 on papers, reality still reflected that the intents of many FC management plans still heavily stood conflicted with the forest practices of many communities (Aryeetey et al, 2004). A properly granted land permit is required from the FC to utilize certain forest resources. Intentionally, this placed a barrier for timber companies (Aryeetey et al, 2004). However, these permits also impeded on local groups and communities (Opoku, 2002). These people felt that they should have regular and unrestricted access to the forest as they need it to sustain their livelihoods (Aryeetey et al, 2004). Hence the new 1994 measures, although seemingly a step in a positive direction, still failed to fully understand the scope of forest resource management issues.

3.1.6 The FORUM Project

In late 1993, the Volta Regional (map figure 3) branch of the FC, aware of the crisis state of its forests, approached the German government for help. The result was the Forest Protection and Resource Use Management Project, nicknamed FORUM, which was unique to the Volta region. The 15 year project, a collaboration between the German and Ghanaian governments, cost roughly 30 million Euros ($44.4 million USD). Its aim was twofold: to repair and restore various forests throughout the Volta region and reduce poverty with sustainable resource management (Agbewode, 2007). This was to be achieved by installing sustainable and cooperative forest resource management skills in various communities (Ghana Districts, 2008). Specifically, communities would be held
responsible for protecting nearby forest reserves by maintaining cash crops (such as mango or orange) on the outskirts of the reserve (Agbewode 2007). This gained popularity for the FORUM project as families found themselves with more income in the process.

The program promoted workshops, educational opportunities, and forums that allowed various community representatives to discuss their needs and concerns with FC officials, as well as return back home with valuable skills. The FORUM project also
initiated training for FC officers to ensure that the collaborative work will continue even after the program finished in late February of 2008 (Agbewode, 2007). Throughout the project’s duration, roughly 14,212 hectares of forests were restored. In addition, around 10,000 people gained from the 5,907 hectares of woodlots created, opening up and diversifying livelihood opportunities, many dealing with the increasing tourism in the area (Ghana Districts, 2008). Although FORUM did not impact all of the communities in the Volta Region, Ghanaian FC officials hope to take the success of FORUM and apply it to various other places throughout the country. The true test, however, will be whether or not the relationships formed between FC and community will continue to strengthen even without the FORUM project in place as support.

3.1.7 Post-1994 Policy Problems

Despite the new policy’s promises of benefiting all socio-economic groups of society (Donkor et al., 2006), the post-1994 legislation still ignored forest-community rights (Opoku, 2006), mainly because it was unclear how to translate this community recognition into practical action (Afikorah-Danquah, 1998). Profits from timber sales are not properly distributed to all of those entitled; even those paid out to local communities fail to account for the forest-owning individuals (Opoku, 2006). Rather, the money often ends up in the hands of larger timber industries and branches of the government that fail to place it towards rural development projects. Furthermore, there are few safeguards to protect individual and community lands against destruction caused by timber companies and state officials (Opoku, 2006). After being alienated from the policy, local groups were still expected to contribute to forest conservation. (Donkor et al., 2006).
Overall, there were four main problems with the 1994 policy and beyond (Aryeetey et al, 2004). The first was that the state remained a higher priority than the people (Opoku, 2006). Second, the local economies were not integrated into the ‘forest economy’ in a way that was sustainable and beneficial – generated revenue was still directed elsewhere (Aryeetey et al, 2004). The policy still did not fully specify how to handle off-reserve resources (Okrah, 1999). Finally, the link between forestry and wildlife conservation and development was not recognized (Aryeetey et al, 2004).

Although the situation is improving, local knowledge and practices are still not widely recognized by policy makers. The written forest policy may finally be overcoming colonial influences, but the social dichotomy consisting of relationships between the government and forest-dependent communities versus the government and the corporate timber industry still grapple with their exploitative and suppressive past (Opoku, 2006). Considering the plethora of changes in Ghanaian forest management implemented over the last two decades, there is an important need to evaluate the dialogue between local groups and policy-makers in Ghana (Fairhead and Leach, 1995; Appiah 2001; Oduro 2002; Afrikorah-Danquah 2003, Hens 2006); this is where my research will contribute to the literature. Initial steps to overcome colonial legacies have been taken, but their effectiveness has yet to be proven. This research seeks to investigate how the practices involved in local forest-dependent livelihoods are represented in forest management policy designed by the Ghanaian Forestry Department. Understanding the local knowledge and practices pertaining to the forest allows for clarification of the
effectiveness of conservation policy in terms of both the forest and the people dependent on it.

Forest management policies will remain at a disadvantage until the government fully recognizes its potential (Aryeetey et al., 2004; Appiah-Opoku, 2001). There have been little administrative efforts to directly amalgamate the needs of local forest-dependent communities into forest management (Opoku, 2006), and outdated ecological perspectives that place the blame for forest degradation on local residents still serve as the foundation for most conservation and forest management policies in Ghana (Afrikorah-danquah 2003; Schroeder 1999). Only now have global perspectives on forest resource management reached a point where local people can not be excluded from forest policies (Aryeetey et al, 2004), and Ghana’s government is taking action.

3.2 District Context
3.2.1 Hohoe – Topography, Landscape, Demographics

Involvement of the Volta Region in forest policy occurred as early as the 1930s when forest reserves were established in the area (Beheton and Ibrahim, 1995) The Hohoe District in Volta has remained subject to this evolution of forest management policy, making it an ideal place to research. Forest use in Hohoe district was dramatically influenced in the 1930s when the Togo-Plateau Forest Reserve (TPR) was established, sequestering lands from farmers. Policies such as the Concessions Act in 1962 and Forest Protection Decree in 197 reaffirmed the inability of the district’s residents to access the reserve.

Illustrated in figure 4, Hohoe District neighbors the Jasikan District in the north, Kpando District in the west, South Dayi and Ho Municipal Districts in the south, and the
country of Togo to the West. The district is roughly 1,172 square kilometers (Ghana Districts, 2006) and its 2000 population was roughly 144,511 people (Ghana Districts, 2006). The district is also home to part of the Akwapim-Togo ranges, which stretch as far east as Nigeria.

Figure 4. Map of Alavanyo Wudidi and Hohoe District, Volta Region, Ghana. Source: Wikipedia.com

The Hohoe district has a history of being predominately forest. While there has been noticeable deforestation occurring, the vegetation is still described as Moist Semi-deciduous Forest, Wooded Savanna and Mountain Vegetation (Ghana Districts, 2006). In attempts to conserve and protect these forests, the forestry division set aside portions
of the district under reserve, including the Togo Plateau Forest Reserve, which covers approximately 9.3 square miles. There are also several other smaller reserves (Ghana Districts, 2006).

Created in 1979, the Hohoe district is composed mainly of people of Ewe decent. The other major ethnic groups include Akpafu/Lolobi, Santrokofi, Likpe, Logba, Tafi and Nyagbo (Ghana Districts). As of 2000, the estimated population of the Hohoe region was 144,511 with a roughly established district population growth rate of 1.9% (Ghana Districts). The majority of that population resides in Hohoe, the district capital. The rest of the area is mostly a rural district. (Ghana Districts, 2006). Hohoe, with roughly 32,000 residents, far surpasses the rest of the settlements within the district. This population gap between Hohoe and its neighboring rural settlements poses development problems as population densities change and affect efforts put towards service infrastructures (such as roads, electricity, etc) (Ghana Districts, 2006). It is not uncommon for rural residents to seek employment in Hohoe, causing an overall decrease in population rurally and an increase in the city. For the last 35 years, the population density for the district has remained roughly at 123 per sq km; this is high relative to other districts in the country.

With 11 leading communities, there is a traditional and cultural homogeneity amongst the people in the Hohoe district outside of the town of Hohoe (Ghana Districts, 2006). Indigenous inhabitants migrated from Togo in the 17th century (Ghana Districts, 2006). These traditional authorities have a say in land rights, traditional violations, and disputes between local groups (Ghana Districts, 2006). Many individuals practice animal
husbandry, cultivation of root cereal crops and horticulture (Ghana Districts, 2006) to make a living, considering that the environment is ideal for these activities. However, it should be noted that the population density problems mentioned before will become increasingly relevant as ideal agricultural land diminishes (Ghana Districts, 2006).

The majority of the Volta region, save the south most part, was previously part of the German colony of Togoland (Ghana Districts, 2006). The rest of the country was under British rule, under the name Gold Coast. Upon gaining independence, there was a struggle with the new Ghanaian Parliament and people in the Volta Region as to whether or not Volta would be part of Togo or Ghana; they became part of the latter (Ghana Districts, 2006). Doing so opted them into Ghana’s decentralized administrative system. In essence, it is a tiered system in which there is a representative for each region, reporting to the national level. Each district has a director who works with Town Councils and Unit Committees and then reports to the Regional representative. However, not all communities find that their local Unit Committees meet regularly, due to lack of funds or local circumstances, resulting in marginalization for some communities in the area. Alavanyo Wudidi, for example, is one of these communities.

3.2.2 Alavanyo Wudidi

Alavanyo Wudidi is a village of roughly 4,000 people (Ghana Districts, 2006) that sits at the base of the Togo Plateau Forest Reserve. The greater Alavanyo community consists of seven total villages: Abehenease, Agohoe, Agome, Deme, Dzogbedze, Kpeme and Wudidi (Ghana Districts, 2006). These villages all are located on the west side of the Hohoe district, almost on the Kpando border. The greater Alavanyo community is among some of the top producers of plantain, maize, cassava and yam in the Hohoe
district (Ghana Districts, 2006). Farming and hunting are the most common occupation in Alavanyo Wudidi. Some trading goes on within the village, but many travel to the nearby Hohoe or Kpando markets in order to buy and sell their goods. Road structures are in place, albeit in poor condition.

Like any other Ewe tribe, Alavanyo Wudidi’s people migrated from the Republic of Togo during the 18th century. The leader Eto left for what is now Alavanyo Agome. A group of 16 elders led the village until quarrels pushed several of them to move and settle elsewhere. These quarrels inspired the name “Wudidi” as in the native language it means “we have vacated long ago.” Still, there is a solidarity amongst all of the Alavanyo villages, celebrated in a festival that takes place in late October of every year. Alavanyo Wudidi’s history, landscape, topography, proximity to the forest reserve and demographics make it an ideal location for research.
4. Methodology
This chapter illustrates the various methods used to conduct this research. First, the data needs and sources are described, specifically relating back to the livelihood framework. Qualitative methods were employed, including semi-structured interviewing, map biographies, key informant interviews, and archival information. Then, the ways in which the data was analyzed is depicted. The last section dives into some of the limitations faced throughout the research.

4.1 Data Needs and Sources
As demonstrated previously, a livelihood is composed of assets, capabilities, and activities. Assessing the first and second research objectives required data collection regarding what community members view as their assets [e.g. specific species of trees, plants, or animals], capabilities [e.g. ability to perform agricultural practices, knowing locations of forest resources] and activities [e.g. collecting and processing cassava] pertaining to the forest. The first question pertains to knowledge of the forest, which is mainly reflected in livelihood assets (table 2). This includes what is considered culturally important to the forest and physical and biological forest resources important to their livelihood. The second involves skills and practices, hence data needs include the livelihood skills of those in Alavanyo Wudidi community selected for the study. Community member interviews and map biographies serve as data sources for the first and second research objectives (table 2)
Table 2

Research Methodology

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Data Needs</th>
<th>Data Sources</th>
<th>Data Collection</th>
<th>Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do the community members in Alavanyo Wudidi, Volta Region, Ghana identify as their knowledge of the forest?</td>
<td>Information regarding livelihood assets, capabilities, and activities. Understanding of forest significance. Insight to Alavanyo Wudidi local knowledge pertaining to forests.</td>
<td>Alavanyo Wudidi community members</td>
<td>Individual interviews, map biographies</td>
<td>Coding, content analysis</td>
</tr>
<tr>
<td>What livelihood practices have local groups applied to sustain their livelihoods with Ghanaian forests?</td>
<td>Information regarding livelihood skills and practices in Alavanyo Wudidi</td>
<td>Alavanyo Wudidi community members</td>
<td>Individual interviews, map biographies</td>
<td>Coding, content analysis</td>
</tr>
<tr>
<td>Are these practices reflected in the Volta regional forest conservation policies set forth by the Forestry Department?</td>
<td>Information regarding forest policy construction, decision making, and resource management</td>
<td>Affiliates of FC, law and policy documents</td>
<td>Key informant interviews, document collection</td>
<td>Coding, content analysis</td>
</tr>
</tbody>
</table>

The third research question required data from the forestry department, including information about policy construction, decision making in forest conservation, and forest management tasks. Specifically, the answer seeks information about how resource decisions are made, especially when different stakeholders are involved, and how much the role of local communities are considered amongst the various stakeholders. This helped to identify if and at what point local knowledge and practices are incorporated into policy, or if not, why they are not considered. The sources for this information include
both interviews with key informants and literature obtained from the Forestry Department. There are four components to my methodology: community member interviews, map biographies, key informant interviews, and published/unpublished government and affiliated documents.

4.2 Data Collection
4.2.1 Individual Interviews

The first method used to answer the research questions are interviews with community members of Alavanyo Wudidi. Upon arrival, I met with several individuals, including a field coordinator and translator. A total of 30 semi-structured interviews were conducted. Working together with the field coordinator, the first several participants were recruited; a snowball sampling approach (Warren 2002) followed, as people heard of my presence in the village and talked to the field coordinator, who selected subsequent interview participants. Participants were selected because of their dependency on the forest for their livelihood.

Because the native language of the Volta Region is Ewe, I needed a translator in order to conduct interviews. Upon arriving to the village, I spoke with the future chief of the village, who was fluent in both Ewe and English. He agreed to serve as my research assistant. I explained the purpose of my research, and we discussed the interview questions, establishing the best way to present the questions in Ewe as to not lose their meaning through translation. As recommended by Bernard (1995), the questionnaire was pre-tested on 10% of the sample, and then we again discussed the interview questions, adjusting wording and phrasing to be appropriate for subsequent interviews. Overall, being such a respected member of the community, his presence was a benefit – it would
have been impossible not to have a translator there. Furthermore, he provided instant trust between the interviewees and myself, as he reassured that I was only a researcher and everything was confidential; they were able to open up a bit more about how well they abide by the community and government rules and bylaws than they otherwise might have.

All interviews were conducted one-on-one and in person, with the translator present. The list of interview questions (Appendix A) utilizes open-ended questions intended to reveal how community members culturally view the forest, how they view temporal and spatial forest changes, ways in which their personal livelihoods depend on forest resources, and local forest resource management. The interview also addressed if and how effective people consider the forest policies set by the FC, and whether or not these policies affect the way they use the forest. The questions were designed to facilitate information about general practices that incorporate the forest into a household’s livelihood. The open-ended questions are also designed to focus on whatever that individuals’ specialty is in, thus framing it so that the most important livelihood practices for that individual are highlighted in his/her interview.

Semi-structured interviewing was chosen because it allowed for the spontaneous quality of unstructured interviewing, yet was centered with an interview guide (Bernard, 1995). The core of each interview was similar, but the flexibility allowed to explore unique characteristics about particular respondents. Various probes were used to encourage respondents to discuss in greater detail. The echo probe (Bernard, 1995) was frequently used to both encourage the respondent to continue and clarify the information
they just divulged. Long question probes (Bernard, 1995) also helped spell out what types of details and information I was looking for, although the element of translation sometimes negated the probing effect.

Other methods, such as group interviews or surveying, could have been used to obtain similar data pertaining to the research questions. However, the intimate nature of a personal, one-on-one interview allows for a more in-depth understanding of each participant’s relationship with the forest and livelihood practices. In addition, individual interviews could be accompanied by personal map biographies, as described in more detail below.

4.2.2 Individual Map Biographies
In addition to interview questions, these meetings also included a mapping project asking participants to visually illustrate their perceptions of forest uses and resources to spatially articulate their knowledge (Tobias, 2000). Participants were provided with a color base map – a 1:50,000 laminated topographic map of the Kpando and Hohoe district border, measuring six by four feet (Appendix B). The map was large, and was placed on the ground to make it easy for the participant to become involved in the map (figure 5). The only available map at the time did not display the TPR boundaries. First, they were asked a few initial interview questions pertaining to livelihoods, personal information (such as age, time in livelihood, etc) and forest usage. Then, the map was brought in to help spatially depict the locations and quantities of the forest resources discussed in the interview. Markers were provided so that the participants could sketch and trace regions of the map, and objects such as yarn, checkers and clay were available
to allow individuals to move and place these objects on the map. In addition, participants had stones, sticks, and other locally available objects. Using these objects with the map allowed for comparison across participants’ maps as well as making it simpler for them to articulate differences in seasonality, frequency, and significance. Questions and activities related to the map biography were done simultaneously with the semi-structured interview (Appendix A). These included spatial identification of locations of resources, changes in forest use over seasons, territorial and resource disputes, and overall “current use and occupancy” (Tobias, 2000). Although this method was inspired by participatory mapping, map biographies were used to overcome the shortcomings of participatory projects. The ability to discuss spatial information individually removes any relationship, power or other social influences that may impact a participant’s involvement with the map.

One common concern with using map biographies as tools has been cartographic anxiety, or the participant’s lack of graphic skill and inexperience in communication through mapping (Wood, 1976). To alleviate cartographic anxiety, base map and marking tools provide the participant with a language of map expression without limiting what he/she could illustrate on the map. Offering objects familiar to them such as twigs and stones found in their yard will also helped them feel more comfortable and ease nervousness. Overall, there was no hesitation from participants while approaching and understanding the map, although they did illustrate some cartographic anxiety; they were not comfortable with drawing on the map directly, but rather they liked dragging their finger and having me follow with the pen.
Upon completion, the map biographies were traced onto sketch pads in detail. The laminated map became easy to wipe clean and use for another interview. The data collected here reinforced the verbally communicated information in the interview, and help address the first two research objectives.

4.2.3. Key Informant Interviews

Data collection also included formal interviews with key informants – officials affiliated with the Forestry Department. The key informants were recruited because of
they worked for the FC and because of their expertise regarding national, regional or local forest policy. The interview questions, attached as Appendix C, includes open-ended questions intended to identify whether or not local practices are integrated into forest policy construction. They also investigate forest policy construction, how decisions are made in designing this policy, how stakeholders are defined, and how to meet the needs of all of the stakeholders involved with Kpando’s forests. These interviews contributed to answering my third research objective.

4.2.4 Published and unpublished FC and affiliated data
A copy of the most recent forest policy is necessary in answering the third research question. This was obtained from the district-level Forestry Department office in Jasikan, Volta Region. In addition, any other literature available either through the FC or affiliated organizations was also used to accompany the policy documents. This includes informational brochures, newsletters, and transcriptions of government meetings.

4.3 Data Analysis
For data analysis, all interviews were transcribed onto the computer and coded, using content analysis (Bernard, 1995), for elements within the livelihood framework. The codes were designed based on the theoretical livelihood framework (figure 1) presented in chapter 2. Reducing the data into simple codes allowed for comparison between interview respondents. An example of codes used can be found in table 3, demonstrating attributes of human assets. The use of semi-structured interviews incorporates factors, subfactors and variables, displayed in a coding tree, that help clarify
the coding process (LeCompte, 1999). Elements could be identified and further broken into more detailed specifics.

Here is an example of how two codes can be compared to each other. An individual may volunteer for a local conservation group. This can be contextualized as human capital on several different levels. Under the variable (most detailed) level, this person engages in participation in alternative education, and any training received increases that person’s human capital. This volunteering rests within the subfactor of education, and the overall experience factor as a human asset. At the same time, another individual may attend university level education. Again, this is considered an experience factor, specifically education subfactor. Yet the two contrast in their sources of knowledge, as their variables differ.

Table 3 (next page)

*Coding Tree Example: Human Assets*
<table>
<thead>
<tr>
<th>Domain:</th>
<th>Human Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor</td>
<td>Experience</td>
</tr>
<tr>
<td></td>
<td>Education</td>
</tr>
<tr>
<td>Variable</td>
<td>Highest completed</td>
</tr>
<tr>
<td>Rank</td>
<td>Completed JSS</td>
</tr>
<tr>
<td></td>
<td>Completed SSS</td>
</tr>
<tr>
<td></td>
<td>University</td>
</tr>
<tr>
<td></td>
<td>Participation in alternative educational opportunities</td>
</tr>
<tr>
<td></td>
<td>Engages in government-affiliated workshops and education programs</td>
</tr>
<tr>
<td></td>
<td>Engages in inter-government or other external workshops and educational programs</td>
</tr>
<tr>
<td></td>
<td>Volunteers for local groups that provide training</td>
</tr>
<tr>
<td>Example</td>
<td>Member of Volunteer Fire Department, participates in FC volunteer opportunities</td>
</tr>
<tr>
<td></td>
<td>Skills and Experience</td>
</tr>
<tr>
<td></td>
<td>Ability to practice multiple livelihood activities</td>
</tr>
<tr>
<td></td>
<td>Knowledge of how to practice numerous livelihood activities</td>
</tr>
<tr>
<td></td>
<td>Years in livelihood</td>
</tr>
<tr>
<td></td>
<td>Number of years in livelihood</td>
</tr>
<tr>
<td></td>
<td>Exposure to livelihood activities</td>
</tr>
<tr>
<td></td>
<td>Grew up around current livelihood activities</td>
</tr>
<tr>
<td></td>
<td>Selected new livelihood activity not previously exposed to</td>
</tr>
<tr>
<td></td>
<td>Attending university for training on a different livelihood than parents practiced</td>
</tr>
<tr>
<td>Health</td>
<td>Health Status</td>
</tr>
<tr>
<td></td>
<td>Age</td>
</tr>
<tr>
<td></td>
<td>Age, in years</td>
</tr>
<tr>
<td></td>
<td>Physical Shape</td>
</tr>
<tr>
<td></td>
<td>Able to carry out daily livelihood activities</td>
</tr>
<tr>
<td></td>
<td>Needs assistance in carrying out livelihood activities</td>
</tr>
<tr>
<td></td>
<td>Unable to carry out livelihood activities</td>
</tr>
<tr>
<td></td>
<td>Hiring labor, receiving help from children</td>
</tr>
<tr>
<td></td>
<td>Medical Problems</td>
</tr>
<tr>
<td></td>
<td>No medical issues hinder livelihood activities</td>
</tr>
<tr>
<td></td>
<td>Has medical element that affects performing livelihood activities</td>
</tr>
<tr>
<td></td>
<td>Blindness</td>
</tr>
<tr>
<td></td>
<td>Knowledge of treatments</td>
</tr>
<tr>
<td></td>
<td>Ability to utilize forest resources for medicinal purposes</td>
</tr>
<tr>
<td></td>
<td>Has medical knowledge of forest resources</td>
</tr>
<tr>
<td></td>
<td>Able to treat various ailments using forest resources</td>
</tr>
<tr>
<td></td>
<td>Lack medical knowledge of forest resources</td>
</tr>
<tr>
<td></td>
<td>Potential Health Risks</td>
</tr>
<tr>
<td></td>
<td>Risk of medical complications during livelihood activities</td>
</tr>
<tr>
<td></td>
<td>No increased risk for health complications during livelihood activities</td>
</tr>
<tr>
<td></td>
<td>Practicing livelihood activities increases risk for health complications</td>
</tr>
<tr>
<td></td>
<td>Ability to mitigate potential health risks</td>
</tr>
<tr>
<td></td>
<td>Has knowledge of how to reduce health risks</td>
</tr>
<tr>
<td></td>
<td>Unable to avoid risk of health complications resulting from livelihood activities</td>
</tr>
<tr>
<td></td>
<td>Takes necessary precautions when performing potential dangerous tasks; for example, those with health problems planning minimum number of possible trips to farm when the path is difficult</td>
</tr>
<tr>
<td>Availability</td>
<td>Personal Commitments</td>
</tr>
<tr>
<td></td>
<td>Family responsibilities</td>
</tr>
<tr>
<td></td>
<td>Has family member dependent because of medical problems</td>
</tr>
<tr>
<td></td>
<td>Has dependent children</td>
</tr>
<tr>
<td></td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>Available hours per week able to dedicate to livelihood</td>
</tr>
<tr>
<td></td>
<td>Motivation</td>
</tr>
<tr>
<td></td>
<td>Level of motivation and desire expressed to participate in livelihood activities</td>
</tr>
<tr>
<td></td>
<td>Reliance on personal income, availability of incentives</td>
</tr>
</tbody>
</table>
4.3.2 Coding Key Informant Interviews, Archival Documents and Map Biographies

Interviews with key informants were transcribed and coded with the same language used for the community interviews. Elements such as natural, human, and social capital were identified in the FC’s interactions with other communities. Because these two sets of data (community members and FC officials) were coded in a parallel fashion, it simplified the processes of identifying patterns and contrasts between forest boundaries, resources, management, and policies. The degree of similarity between local knowledge and practice and forest policy illustrated how well-reflected this local knowledge and livelihood practices were within forest conservation and management policies.

The sketches from the map biographies were also used during analysis. The sketches were transferred onto transparency paper, and, like the interviews, were coded for elements drawn from the livelihood framework. The maps were coded inspired by a content analysis method as presented by Rose (2001), but not entirely. For example, interviews were coded for a person’s degree of knowledge in handling land cover changes between wet and dry season. Following this, the same individual’s map biography was analyzed in how that person depicted land cover changes on the map. For instance, suppose an individual collects wood for wood carvings and speaks about the various locations s/he acquired wood from for her/his carvings. The map compliments this by allowing the respondent to indicate spatially where these locations are, as well as relate these locations to their physical topography and characteristics. This activity allows for capturing of an individual’s knowledge in more than one form. The map then
provides insight to that person’s level of social and human capital, as well understanding the potential for the particular places discussed to provide natural capital.

4.3.2 Validity and Reliability with Map Biographies

Hence, the map biographies offered a form of validation to interview data. Validity indicates the level of accuracy and trustworthiness in the research data, instruments and findings (Bernard, 1995). Through triangulation, the map biographies provided an essence of validity and reliability to the interview data. In a social science context, triangulation is the process “by which a researcher wants to verify a finding by showing that independent measures of it agree with, or at least, do not contradict it” (Meijer et al, 2002, 146). Even more so, the map biographies in this research were intended to go a step further by employing a different data collection method to complement the interview data (Meijer et al, 2002). The utilization of the base map allowed respondents to visually portray the information they were discussing, and the base map allowed all of this information to be in the same language and thus comparable. With this, the map biographies were also able to challenge the data’s reliability; information discussed during a respondent’s interview could be compared and contrasted to what the participant indicated on the map.

4.4 Methods Limitations

Although the methods used provided a very solid grasp of the community’s knowledge of the forest and how it is used, there were several limitations and notable issues. These included both translation content and map problems. The main language found in the Volta Region is Ewe, and although English is the official language of Ghana, most individuals speak little or no English in Alavanyo. The interview translator has a
decent handle on English and was able to properly translate the questions into Ewe so the participants could understand. However, there were several instances where the literal meaning of questions could not be fully shifted from English to Ewe, causing the participant to answer it from a slightly different point of view than was intended. This was minimized as best as possible through pre-testing the questionnaire, discussions with the translator as to what the questions were intending to ask, what the purpose of each question was, and what I was looking for in the reply.

This also occurred during the map biography portions of the interviews. Despite being familiar with the objects provided, many participants felt more comfortable pointing and talking about the map rather than placing objects and drawing on it. When it came time to mark things on the map, they would point and tell me exactly where to draw. Hence despite efforts to limit cartographic anxiety, participants were not entirely comfortable marking and physically interacting with the map, although they were willing to discuss it. This was especially true for the older individuals (over age 50) during interviews, as at times they physically were unable to draw and place things on the map. Building on this, the map’s scale (1:50,000) also posed a challenge. At times, it was conducive as it illustrated a vast enough terrain that individuals could discuss various locations simultaneously. Yet in other cases it was difficult to work with, as individual farm plots and patches of forest were too small to separate on the map. Because of this, many interviewees – specifically farmers – were not able to illustrate things such as changes from wet to dry season, as these changes within their land and the map was not a detailed enough scale. The question required a larger-scaled map. Although the
language barrier and the map’s scale limited the amount of interaction with the map, important concepts and places were still identified and discussed with this collaborative approach. However, future methodological designs of map biographies may want to take into account the physical ability of elders, map scale, and possible translation issues that may stifle the map’s potential role in the interview.
5. Results

This chapter presents the results. To begin, respondent characteristics are outlined. Then, section 5.2 dives into elements of the first research question. These include sources of knowledge concerning the forest, dimensions of knowledge about the forest, and knowledge pertaining to changes in land cover. The second research question is addressed in 5.3, expanding on essentials such as uses of trees for livelihoods, activities that sustain forest resources, reasons for planting trees, and livelihood diversification strategies.

Section 5.4 explores the third research question, split into seven parts. The first includes an overview of the Forestry Commission’s (FC) current policies and opportunities to Volta residents. Next is the FC’s progress in forest protection and their work with other communities have impacted natural, human and social livelihood assets. Third, community knowledge and opinions of FC policies and projects are discussed, specifically regarding their satisfaction, communication, and suggestions of FC policy. In the subsequent section are the ways community members perceive the forest, and elements like proximity, entry, control and future handling of the reserve are discussed. Alavanyo Wudidi’s forest-related bylaws are outlined. Sixth, the particular local factors that impact FC involvement with a particular area are discussed; Alavanyo Wudidi’s land disputes have hindered the FC’s efforts in the area. Last is a summary of how these things all tie together and address the third research question.

5.1 Respondents Characteristics

The characteristics and demographics of Alavanyo Wudidi residents interviewed are displayed in table 4. Respondents ranged in age from 18-80 years old. Seventeen
(56.7%) of the thirty participants were male, with the rest (43.3%) being female (table 4). Twenty-two of the interviewees (73%) had spent their entire lives in the Alavanyo region, with eight people (27%) who lived a significant amount of time elsewhere. Farming was the most common occupation, with 83% of respondents incorporating farming activities into their livelihood. In fact, 16 individuals (53.3%) reported that farming was their sole occupation.

Table 4

*Alavanyo Wudidi Respondent Demographics*

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of Respondents</th>
<th>n=30</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20</td>
<td>3</td>
<td>10.0%</td>
</tr>
<tr>
<td>20-29</td>
<td>3</td>
<td>10.0%</td>
</tr>
<tr>
<td>30-39</td>
<td>7</td>
<td>23.3%</td>
</tr>
<tr>
<td>40-49</td>
<td>6</td>
<td>20.0%</td>
</tr>
<tr>
<td>50-59</td>
<td>4</td>
<td>13.3%</td>
</tr>
<tr>
<td>60+</td>
<td>7</td>
<td>23.3%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>13</td>
<td>43.3%</td>
</tr>
<tr>
<td>Male</td>
<td>17</td>
<td>56.7%</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>farmer</td>
<td>25</td>
<td>83.3%</td>
</tr>
<tr>
<td>hunter</td>
<td>4</td>
<td>13.3%</td>
</tr>
<tr>
<td>wood carver</td>
<td></td>
<td>13.3%</td>
</tr>
<tr>
<td>palm tapper</td>
<td></td>
<td>10.0%</td>
</tr>
<tr>
<td>soap maker</td>
<td></td>
<td>3.3%</td>
</tr>
<tr>
<td>trader</td>
<td>1</td>
<td>3.3%</td>
</tr>
<tr>
<td>herbalist</td>
<td></td>
<td>3.3%</td>
</tr>
<tr>
<td>drummer</td>
<td>1</td>
<td>3.3%</td>
</tr>
<tr>
<td>Number of Livelihood Occupations</td>
<td>19</td>
<td>63.3%</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>33.3%</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>3.3%</td>
</tr>
</tbody>
</table>
5.2 Local Knowledge and the Forest

5.2.1 Sources of Knowledge about Livelihood Activities

Respondents mentioned sources of knowledge from family, formal school and other sources. The conversations with many respondents clearly indicated that their knowledge and understanding of livelihood activities were taught by their parents, or in some cases other family members (uncle, grandparents, elder siblings). Individuals discussed that through observation and assisting their parents in their work as a child instilled the knowledge and experience needed to practice these skills on their own. The most common livelihood activity passed via family members was farming. A few livelihood activities were exclusive to certain demographics of Alavanyo Wudidi. For example, making palm oil was dominantly a woman’s activity (figure 6), and passed down mother to daughter. In turn, hunting was usually practiced by men, being passed down either from father to son, or from the community’s head hunter.

Figure 6. A woman makes palm oil with her daughter observing.
School is a growing alternative source of knowledge, especially for young generations – only one respondent who cited school as a source of knowledge was over 30 years old. Formal education levels range from Senior Secondary School, or SSS (equivalent to high school in the United States) to university. The youngest individuals interviewed depended on a hybrid of knowledge originating from both family and formalized education. Their overall preference was school-based knowledge, because using “the school one... you can work easily, and you get more crops. The school one is more profitable.” One 18-year old female claimed, “people are using more effective farming as they are becoming educated. School ways make more sense and are more effective than my parent’s ways.” One male stated, “people are going to school to learn how to farm better and be more profitable.” Elaborates another male,

“There is a great difference between [my parents and school methods of farming]. For school one, you plant in rows. And my parents one, they mix them. They didn’t grow in order. I follow school one, because if you plant in whole rows, you can work easily, and you get more crops. The land can capture more... we also do crop rotation. My parents mix up all the crops. School teaches us about during dry season, some types of crops you need to grow. Rainy season, types of crops will grow. As of my parents one, they didn’t do anything about that.”

However, this school-based knowledge involved the use of equipment, machinery, and technology. Explains one student, “At school I am taught better methods of farming, although some of them are expensive like mechanized farming, and it is hard to work without the proper tools.” All of these respondents explained they lacked the physical and financial assets needed to acquire these tools. Hence, drawing upon parts of their family-based knowledge allows them to carry out farming livelihood activities even
without the technology that accompanies farming practices taught in school. This same male elaborates,

“the school, they teach us to apply chemical fertilizer. It is expensive to get, [but] it is worth it... if I get money, farming like my parents with no chemicals, I hope to keep following [what I learned in] school.... if somebody could finance me and give me the proper equipment, I would like that.”

An elder in the community commented on this situation,

“as for those who [go to] school, they don’t have any capital. So, though they may be pretending as if they are farming... the modern way, since they don’t have help and labor, finally they turn to the local one. Because if you want to go the modern way, you need to plant, two or three vertical lines, by side. And you can’t do that alone, unless you get assistance. And if they don’t get money to do this, they have the idea, but they go the indigenous way. That is the thing.”

A few respondents mentioned gaining their knowledge from other sources. Out of the four wood carvers, two of them learned from special experts outside of Alavanyo Wudidi – specifically in Kumasi, located in the Ashanti Region of Ghana. The drummer also noted learning his musical skills first as a child growing up in Alavanyo Wudidi, but then advanced them through specialized training outside of the Volta region. Through his occupation as a drummer, he has traveled throughout the country as well as all over West Africa, with one of his most notable performances representing Ghana in a continental music competition held in Nigeria. These experiences have increased his human assets and musical knowledge, which he was then able to bring back to Alavanyo Wudidi.

5.2.2 Dimensions of Knowledge about the Forest

Alavanyo Wudidi residents were asked various questions regarding their knowledge of the forest in several dimensions, including environmental, economic, cultural, and medical. Environmental and economic knowledge were very prevalent,
while cultural and other forms of knowledge were not as common. Overall, not only was forest related knowledge discussed in multiple contexts, but the value of forest knowledge was frequently noted as well. Table 5 summarizes the various attributes of Alavanyo Wudidi knowledge mentioned by the respondents.

Table 5

*Knowledge Pertaining to Forests*

<table>
<thead>
<tr>
<th></th>
<th>(dimensions and number of people who mentioned that element)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental</strong></td>
<td></td>
</tr>
<tr>
<td>Environmental health, helping to sustain land for livelihood</td>
<td>4</td>
</tr>
<tr>
<td>Encourages environmental health</td>
<td>11</td>
</tr>
<tr>
<td>Place for teaching and learning</td>
<td>1</td>
</tr>
<tr>
<td>Place for healing/medicinal purposes</td>
<td>2</td>
</tr>
<tr>
<td>Place for animals to grow</td>
<td>5</td>
</tr>
<tr>
<td>Serves as archives for past land conditions</td>
<td>1</td>
</tr>
<tr>
<td><strong>Economic</strong></td>
<td></td>
</tr>
<tr>
<td>Source for profit</td>
<td>7</td>
</tr>
<tr>
<td>Source of material resources - fruits, lumber, etc</td>
<td>6</td>
</tr>
<tr>
<td>Provides building and development materials</td>
<td>10</td>
</tr>
<tr>
<td>Aid to survival</td>
<td>5</td>
</tr>
<tr>
<td><strong>Cultural</strong></td>
<td></td>
</tr>
<tr>
<td>Burial ground for chief and royal families</td>
<td>2</td>
</tr>
<tr>
<td>Place for teaching community-kept skills</td>
<td>1</td>
</tr>
<tr>
<td>Place to honor and celebrate hunting accomplishments</td>
<td>1</td>
</tr>
<tr>
<td>Location for cultural acts such as pouring libation</td>
<td>1</td>
</tr>
<tr>
<td><strong>Medicinal</strong></td>
<td></td>
</tr>
<tr>
<td>Source for medicine for community</td>
<td>3</td>
</tr>
</tbody>
</table>

5.2.2.1 *Environmental Knowledge*

Almost all of the respondents discussed their environmental and ecological knowledge of the forest, along with the significance of these environmental aspects. Most of individuals (90%) mentioned how forest cover promotes convectional rain, wind protection, and land fertility. 16.7% of respondents noted that the forest also provides a
place for animals to grow. Below are several examples of discussing convectional rain and soil fertility.

- "Mostly, [the forest gives] us conventional rain. So, we always have rainfall."
- “The trees, after you started the farm, say – you cut down this tree. It will re-germinate, grow aside, then you have to [tend to] it, and others grow. It can take about two years and then they grow back, after five years.”
- "The trees growing keeps my land fertile, and good crops will come."

They also demonstrated biodiversity knowledge, both in ecological importance and within the livelihood context. One individual mentioned that trees and animals can be archived in the forest for future generations. “I can say [forests] are archives, because any species of tree which existed on this land long, long ago, when you go into the forest, you still see.” If forest is left untouched – like the reserve, for example – children can be taught about types of trees that otherwise would be rare to find. This would help sustain ecological knowledge important to keep alive in the community.

Others illustrated knowledge of biodiversity in its relationship to their livelihoods. For example, wood carvers discussed the various types of tree species that are best for carving: “I use teak trees for my carvings. I also use mahogany... and black wood. I can use other trees, but I prefer hard wood to any other wood.” Another wood carver preferred “mahogany, for the mortar. There is one called Atopoly, a soft wood for drumming.” A second example is that of the hunters, discussing how the decrease in animal biodiversity impacts their livelihood. “I hunt antelope, grasscutter, and all of these West Africa animals, only lion elephant, those animals are no more at our area. But below that, we get them.” Hunters understand that animal populations are low and
protecting sections of forests will help preserve these animals as an archive for future generations to discover.

5.2.2.2 Economic Knowledge

All of the respondents discussed the economic value of forest and environmental resources, both at the individual and community levels. Individually, fruits and other products from the forest can be sold to generate household income. In addition, some respondents demonstrated the knowledge of how to process these fruits into other sellable products. This knowledge not only increased their capabilities but also their livelihood assets, as through education and experience they increased their human capital.

Animals were also viewed in the profit context. Hunters specifically discussed the know-how of hunting practices, techniques and capturing animals.

“First, I go to make a bush path, tracks. I construct tracks, trails. I patrol my trails, and when I get some animal, I kill... in the night, when I leave the cottage, at times it takes me no time to kill... any time I go and I don’t get in the night, I try to remain at dawn, then I kill the monkeys before I come back. During dry season, I clear my trail so I do not step on dry leaves and the animals won’t run away. But during the wet season, I just move about.”

Along this line, another common thought was the idea that the forest provided a livelihood ‘safety net’ and could be turned to for these material goods in emergencies.

Respondents also explained how forests provide resources that can help better the village as a whole. “The forest is very useful to the community. We obtain almost everything from the forest. Our trees, medicinal ones, for construction, and everything!”

Some community members know how to use forest resources like timber and erect buildings and edifices beneficial to Alavanyo Wudidi. The drummer mentioned the use of tendrils – “there are some tendrils, roots, for building. I need them for building. Tying
the poles and so on. I get the thatch for roofing, thatch and bamboo.” Overall, respondents discussed the ways in which they know how to turn the forest into material items for the household or profit, and noted that the forest has a significant role in the community’s economic security.

5.2.2.3 Cultural Knowledge

All but four individuals listed no cultural knowledge of the forest. One man clarified that there is no cultural knowledge of the forest, “but there are a few practices of the forest around the villages which are culturally inclined.” An example includes the graves of royal families were in a specific location within the forest; these areas were left alone. As one person stated, “nobody touches that area, it is with tall trees and tall grasses.” Neither individual of the two who mentioned these graveyards were able to locate them on the map.

Second, several individuals discussed the community significance in using forests as grounds for teaching and learning (table 5). The head hunter provides a prime example of this. He talked about how the forest served as a classroom for teaching hunting knowledge and skills. Around three people every month come to Alavanyo Wudidi and spend time out in the surrounding forest learning how to hunt. Not only can skills be taught and knowledge be transferred, but there are visual performances (such as dancing) sometimes held in the forest when individuals make successful and ‘big’ kills (see figure 7). The forest is thus providing a setting to gain both human and social assets. Hunting knowledge is a human asset, as acquiring it increases an individual’s education and experience. In addition, participating in these hunting outings opens entry into the
social network of the community’s hunters, especially for outsiders who come to Alavanyo Wudidi for this reason.

Third, a farmer mentioned that during dry season, cultural acts can be performed to help ensure fertile lands. Community members can send sheep or goods to be left in the forest, and representatives will carry these things into the forest. They will pour libation to the gods – an act involving taking a shot of gin and pouring some on the

Figure 7. Alavanyo Wudidi hunters perform dances to honor successful hunting trips.
ground for the higher beings – and leave these gifts in the forest to say thanks to the lands that provide so much. In return, “the land is more fertile for farming activities.” These activities have been passed down for many generations, and continue to be a part of the community’s knowledge and tradition.

5.2.2.4 Medicinal Knowledge
Another form of knowledge discussed was medical and medicinal (table 5); three respondents mentioned that a lot of traditional medicines can be found in the forest. With the lack of medical infrastructure in the area, and the nearest hospital being a 45 minute long, 8 kilometer trip away, it is important for the community to have any types of medical resources. Several respondents mentioned knowing of medicinal knowledge, but did not have the skills to practice it. However, the herbalist interviewed was able to provide examples of these processes.

“For instance, when you have severe headache, take 7 fruits of the orange, orange fruits. Take 7. Then take water. And your headache will go away. If I know this, I don’t know why I should go to the store to by aspirin, which is chemicalized. This is natural. At times too, when you have severe stomach ache, you will not take the medicine, I will prepare the concord, put mine on your umbilical cord, and I will take the medicine, and you will be cured. That is you reach a place where you can’t take medicine, and you need to be treated. Instead of giving you treatment, I will take it, and you will be cured. As [an] herbalist, there are some herbs, which by all means you get from the forest.”

5.2.3 Changes in Land Cover
Individuals’ abilities to respond and react to changing land covers also demonstrate another form of knowledge. The community used to be much more forested than it appears to be now. Knowledge of how to react to change illustrates a person’s livelihood capability.
5.2.3.1 Long-term Changes
The respondents described past lands surrounding the community that were much thicker in forest cover than they are now. The elders were able to depict in better detail the differences between past and present land. One elder said, “to be frank, when I was young, there are certain places if you want to pass as a child, [the forest] would shield as canopy, very dark. It was fearful to pass there alone. The whole land was forested.” He indicated where this was on the map (Figure 8). Another elder mentioned that while the forest canopy used to be tall, underneath was much clearer. With the decrease in higher forest canopy, tendrils and vines were exposed to sunlight and quickly thickened the lower brush. In contrast, the youngest of those interviewed, all under 20 years of age, found no noticeable changes in the landscape compared to their childhood. A few noted the forest reserve, which had stayed the same because nobody really touched it.
All of the respondents, regardless of age, also noted that the reserve had remained the same since their childhood. The Togo Plateau Reserve (TPR), according to both respondents and the FC, was created around 1931, roughly when the oldest respondents were still very young. However, the reserve affected forests even outside of its boundaries. There was a relationship concerning those who live near the reserve and the presence of trees on their land. Individuals neighboring the reserve noted that their personal farms had either remained the same or increased in forest cover over time, regardless of whether or not they actively planted trees. One reserve neighbor noted, “I do not plant trees... but my area of the forest there’s no bushfire problem. So, the forest

Figure 8. A man’s illustration of how the paths between villages used to be very forested.
grows very much.” On the other hand, almost all of those not neighboring or relatively close to the reserve described the land as thinning into grassland. The exception was four farmers – all whose land is not close to the reserve – who discussed how portions of their land are set aside for farming and others are left alone in order to let the trees grow.

The herbalist mentioned that leaving areas of the land as untouched forest was a common practice in his family. His grandfather used to be the chief of the village, and the family land is very vast. As children became educated and find jobs, their portions of the land would not be tended to, and forest would grow. Rather than hire somebody to farm there, the family tends to leave it as forest. The herbalist leaves portions of his land to grow both because of the natural capital gained and his lack of capability due to old age and health reasons. In addition, having an untouched portion of land allows for medicinal plants to grow. Although not everyone in the family are herbalists, he learned his skills from his grandfather, so he is able to navigate his land well for what he needs. Also, he is able to plant roots and herbs he needs for medicine and knows they will grow alright in the forested parts of his land.

5.2.3.2 Impact of Changing Forest Cover on Livelihood Activities

The overall trend appeared that those who depended on farming as their main livelihood practice actually benefited from the changing landscape. In fact, respondents discussed a pattern of increased farming in the area, as community member convert more land from forest to grassland. Because grassland is easier to clear for cultivation than forested lands, the decrease in forest cover opened quick and easy opportunities for farmers to move in and increase production. Although there was concern expressed
towards having enough farmland to support the increasing population, new techniques and methods taught in schools have helped young farmers become more efficient with less land. Those who gained farming knowledge through formalized education even went so far as to say that acquiring a hybrid of farming skills between parents and school institutions is promoting more effective and efficient use of farm land. Although all three students demonstrated preference to their school-based farming knowledge, they still drew upon their knowledge of farming learned from their family. They lacked the technologies needed to practice the techniques and methods taught in schools.

Hunters, however, face a different situation: the reduction of thicker forests in the area has shrunk the space in which wild animals can reproduce. This has resulted in declining animal populations, making hunting a more time-consuming, daunting task. “In the past, animals [were] very many. This time, they are scarce.” In addition, as previously mentioned, the decrease in high forest canopy was conducive to lower vine growth adding another obstacle for hunters. With a tall canopy, it was easy to move about in the forest. Now, thicker vines make mobility and visibility difficult, also causing hunters to make more noise moving, scaring animals away. “But this time, because of tendrils and other things, the animals hide from me, and I find it difficult to get some.” All of the hunters interviewed talked about the increasing struggles to support themselves with hunting and having to turn to farming and other occupations to diversify their livelihood practices.

5.2.4 Summary of Alavanyo Wudidi Knowledge

Overall, Alavanyo Wudidi community members demonstrated a diverse collection of knowledge of the forest. Respondents demonstrated knowledge about
farming practices, land cultivation, forest vegetation cycles, plant and animal biodiversity, seasonal changes in the environment, and ecosystem processes. They also know how to utilize environmental resources – such as which plant species are best for building construction or making medicine, seasonal techniques in hunting for animals, and how to process various fruits into profitable products, like brewing palm oil. A few outwardly illustrated social, spiritual, and cultural knowledge. Community members (specifically, parents and family) are the primary source of knowledge. Formal education, however, is quickly gaining popularity. A few community members sought out knowledge from specialists both locally and outside Alavanyo.

In addition, the value of the forest was recognized environmentally, economically, and culturally. For example, almost all residents were able to discuss the environmental benefits of the forest, including increased rainfall, soil fertility, and wind protection. Along with this, Alavanyo Wudidi residents not only know attributes of the forest, they also understand the potentials of the forest serving as a tool in teaching and passing on knowledge to future generations. They also take note of how land cover has changed, and what techniques are best to still generate income. Many farmers have taken advantage of the decreasing tree cover. The culmination of these environmental, economic, and social significances of the forest makes it play a pivotal function in the operation of Alavanyo Wudidi. One respondent summed it up by saying “without the forest, there is no Alavanyo.”
5.3 Livelihood Practices that Rely on Forest Resources

To understand the livelihood practices that are dependent on forest resources, it is important to look at several elements. First, the uses of forest resources are investigated. Any activities performed to help sustain the resources are discussed following reasons why participants do or do not plant trees. Diversification strategies conclude this section.

5.3.1 Uses of Forests

As illustrated below in Table 6, respondents in Alavanyo Wudidi reported a variety of ways on how they depended on the forest for their livelihoods. In addition, the ways in which these resources collected also differed. Some uses only utilize the fruits and other products the trees can annually produce, and others require cutting down the tree. Even still, some of these people’s dependency on the forest involves no physical contact with the tree at all.

The most common use of trees involved collecting the fruits and goods the tree generates, as shown in figure 9. This is also exemplified through practices such as making palm oil and palm-kernel oil:

“First, I boil the palm fruits. I will leave it to be very, very cold. Then I pound. After pounding, I mash it. I add water. After that, when I boil down it, I continue to mash until some exchange, and when I feel its well mashed, I pour it into the cooking pot over there, then I remove the nuts from the mashed one, then with all the straws, first I put it on the fire to heat it a little, after that, I will remove the straw from the water. When it is heated a little, I will refer to it, take it away from the fire, remove the straw, squeeze it, and add it to the water, then I put that on the fire again. Then I will be stirring. When it is well cooked, I will remove it from the fire, put it down, when it is cool, then I bottle them.”

The fruits are collected from the tree and through a process of mashing, boiling and mixing them, the oil is created. The same is true for making soaps as well as for some types of medicines. It is also important to note that while some people do these things
has their primary livelihood activity, others practice this at a much smaller level to create things like soap or medicine for their household, but do not rely on it as their primary source of income. The latter was referenced to as an extra ‘security’ for income during rough times.

Figure 9. Respondent climbs a coconut tree to collect the fruit for personal enjoyment.

Wood collected from the forest was also used for different purposes (table 6). Although it was never specified, the respondents implied that the tree was fully harvested, whether from a tree plantation or from a naturally fallen tree. Three people
reported needing trees to make yam poles (wood poles used to support the yam plants as they grow). Objects carved out of wood, such as mortars and pistols, drums, and other statues, all require taking down trees and acquiring the wood (branch harvesting was not mentioned by any respondents, although could be practiced in the community). Many respondents noted the benefits of wood for building materials and timber; firewood was also another common use of wood. One farmer stated, “trees are sold as firewood, charcoal, but I don’t normally burn charcoal. I use them for firewood. Firewood is the only thing you get from the forest directly.”

It is also important to note that several people considered the act of clearing forests as important to their livelihoods; by clearing with fire, the ash rich in organic matter from the trees is ploughed into the soil, resulting in higher harvests during the first few seasons. Although this process involves a very long waiting period between burn, cultivation and re-growth, a few individuals still incorporate it on different parts of their land.
Table 6

*Uses of Trees for Livelihood*

<table>
<thead>
<tr>
<th>Use of Trees for Livelihood</th>
<th>Number of Respondents</th>
<th>n=30</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utilizing Produce</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>palm oil maker</td>
<td>2</td>
<td>6.7%</td>
</tr>
<tr>
<td>sell fruits</td>
<td>7</td>
<td>23.3%</td>
</tr>
<tr>
<td>make soaps with</td>
<td>2</td>
<td>6.7%</td>
</tr>
<tr>
<td>medicinal purposes</td>
<td>2</td>
<td>6.7%</td>
</tr>
<tr>
<td>extra security for personal food source</td>
<td>5</td>
<td>16.7%</td>
</tr>
<tr>
<td><strong>Utilizing Wood</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yam poles</td>
<td>3</td>
<td>10.0%</td>
</tr>
<tr>
<td>wood carving</td>
<td>4</td>
<td>13.3%</td>
</tr>
<tr>
<td>palm tapper</td>
<td>1</td>
<td>3.3%</td>
</tr>
<tr>
<td>Firewood</td>
<td>3</td>
<td>10.0%</td>
</tr>
<tr>
<td>Timber</td>
<td>6</td>
<td>20.0%</td>
</tr>
<tr>
<td>building material</td>
<td>2</td>
<td>6.7%</td>
</tr>
<tr>
<td><strong>No direct physical impact on trees</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shade for crops</td>
<td>1</td>
<td>3.3%</td>
</tr>
<tr>
<td>bring rains</td>
<td>6</td>
<td>20.0%</td>
</tr>
<tr>
<td>provides land fertility</td>
<td>5</td>
<td>16.7%</td>
</tr>
<tr>
<td>trees provide hunting ground and attracts animals</td>
<td>2</td>
<td>6.7%</td>
</tr>
<tr>
<td>left alone, aesthetic pleasure</td>
<td>2</td>
<td>6.7%</td>
</tr>
</tbody>
</table>

Many of the ways in which people depended on the forest did not actually involve physical contact with it (table 6). Hunters all mentioned that having a well-kept forest allowed for animals to reproduce, giving them hunting game. Especially for farmers, ecological benefits were considered livelihood assets. “I need a healthy forest nearby so that my crops will always have rain.” This not only included general processes like bringing rain and soil fertility. Trees and forest can be planted to help ensure crop health. Several farmers mentioned the desire for shade grown crops, possible with the intercropping of non-commercial trees within their farm. In addition, forests and trees provide protection against wind damage to crops. Lastly, two individuals mentioned social assets, specifically, their spiritual connection with the forest. The aesthetic ability
to enjoy it helps make labors outside much easier on a daily basis. “When you enter the forest, you will love yourself. Seeing the forest as I work - I work on my land, the things that I grow, they are mine. And seeing the forest makes me happy when I work.” Although they do not frequently, if ever, enter the forest, it provides a sense of morale and enthusiasm to working on the land.

5.3.2 Activities that Sustain Forest Resources

Respondents were asked what they do to help protect the forests. A variety of answers surfaced, with the most popular being the practice of leaving parts of personal lands as forest (table 7). The prime reasons for leaving untouched forests on personal property were not usually for conservation purposes, but people were happy to acknowledge that this was an added benefit. Many had untouched areas simply because they lacked the necessary tools to expand their farm to its full potential, but would if given the chance. However, a number of respondents left forest on their property to encourage environmental sustainability. One individual, who worked on land that is not his, said that when he is able to acquire his own land he plans on restoring some of the grasslands into forest. “The trees are cut down, but I think if the land were to be mine, I will partly grow trees as my personal property. Because you can use the savannah to grow forest.”
Table 7

List of Forest Protection Practices

<table>
<thead>
<tr>
<th>Practices sustainable and efficient land use</th>
<th>Upkeeps firebelt</th>
<th>Abides by laws</th>
<th>Upkeeps forest on land</th>
<th>Participates in Volunteer Fire Department</th>
<th>Calls upon Volunteer Fire Department</th>
<th>Keeps to own land</th>
<th>Plants Trees</th>
<th>Not sure/nothing</th>
<th>Takes care of reserve</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>7</td>
<td>6</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2*</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

*two others plan to in the future.

Along with this, another popular method of conservation was contributing responsibly to the prevention of forest fires. Seven people mentioned how they prioritize maintaining a fire belt around their farm to avoid any encroaching fires coming on to their land. Another two people specifically mentioned not burning their land at all. Most people called upon the volunteer fire service to help burn and clear their land when needed. Two of the interviewees actually were part of the volunteer fire department (VFD). A volunteer describes his experience: “the community has selected some of us to come and learn the fire safety measures on how to clear your land. You first be like the military by exercising. Then you don’t have to rush things, you just build a fire belt.” In contrast, another woman – who also mentioned not being very concerned with bushfires on her land, as her land neighbors the reserve – does not call the VFD.

“We all clear in common portion, and when we clear, we do it the same way [as the VFD]. Because we are many, we don’t have to work next to the voluntary fire people, but we supervise the burning ourselves. No problem, I have not experienced that.”
Regardless, overall it is clear that uncontrolled fire is a great concern to residents, both in the context of forest protection and resource and livelihood security.

Other efforts in attempts to protect the forest included not purposefully taking down trees. Four people mentioned intentions to plant trees to restore the forest, although two were students who did not have the authority or time to currently do so. All of the students interviewed also mentioned land use efficiency as another forest conservation strategy. Says one student, “school teaches to plant in rows. You can get more crops on your land when you plant in rows then when you mix everything up.” Proper and effective use of land can reduce the total area used for cultivation, allowing more room for forests to grow. Four people did not mention any personal efforts to help conserve the forests.

5.3.3 Reasons for Planting and Maintaining Trees

Understanding why people choose to plant and maintain trees provides insight into what knowledge they draw upon to choose which activities they engage in. Upon acquiring land, almost all plots already had sections of trees (table 8). In many cases, farmers often only utilize small portions of their land, leaving sections of forest alone to grow. Time and labor constraints prohibit them from fully developing the resources on their land into natural assets. Although farmers expressed a desire to expand their farm to increase production and profit, they recognized the benefits and importance of leaving some forested areas, hence enjoyed leaving sections of their land as forest. They planted trees both to help upkeep these forested lands and for personal benefits. Three farmers claimed that there were trees on their land upon obtaining it, but over time the treed
portions were cleared as they increased the overall farming area. All three expressed little concern about replacing these trees. “I have shifted my crops on my land, but the trees have all regerminated. But, my crops are still growing.” Although two of them planted trees, they only planted a select few for extra income, not for the reason of restoring forest benefits to their land.

The land chosen for planting tree seedlings varied as well, with roughly 60% intermixing trees with crops (table 8). A few also ventured into the non-cultivated, forested portions of their land to help maintain these areas. However, no individuals reported planting trees in grasslands in attempts to restore these areas. Planting tree seedling is easier to do in conjunction with tending to crops. One individual specifically mentioned wanting trees present to have shade-grown crops.

However, the most common reason sited for planting trees was for ‘personal use,’ specifically to collect the fruits as a supplement to household food security (table 8). In cases where extra fruit was leftover after the household consumed what was needed, some people made sporadic trips to the market to sell the remaining goods for extra income. Only two farmers, an elder female and a 45 year old male, specifically claimed that they planted trees for the purpose of enriching their farms’ soil, encouraging rainfall, and for the overall health of their farm, although others mentioned these as added benefits.
Table 8

*Distribution of Trees on Land*

<table>
<thead>
<tr>
<th>Composition of land</th>
<th>Number of Alavanyo Wudidi Residents Interviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>all Crops</td>
<td>3</td>
</tr>
<tr>
<td>mostly Crops</td>
<td>4</td>
</tr>
<tr>
<td>mixed Crops + Trees</td>
<td>11</td>
</tr>
<tr>
<td>mostly Trees</td>
<td>6</td>
</tr>
<tr>
<td>Tree Plantation</td>
<td>3</td>
</tr>
<tr>
<td>crops and Grassland</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Already trees on land</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, and still are</td>
<td>22</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>were, now cleared</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Currently plant trees</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>13</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
</tr>
<tr>
<td>used to</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reasons for planting trees</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>personal Use</td>
<td>7</td>
</tr>
<tr>
<td>extra Crops for selling</td>
<td>4</td>
</tr>
<tr>
<td>natural benefits</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reasons for not currently planting trees</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>no land ownership</td>
<td>4</td>
</tr>
<tr>
<td>less room for farming</td>
<td>1</td>
</tr>
<tr>
<td>no time</td>
<td>3</td>
</tr>
<tr>
<td>no need</td>
<td>2</td>
</tr>
<tr>
<td>Did, now old</td>
<td>2</td>
</tr>
<tr>
<td>Did, when first arrived</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Where you planted trees</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermixed with crops</td>
<td>19</td>
</tr>
<tr>
<td>fallow/grassland</td>
<td>0</td>
</tr>
<tr>
<td>existing forest</td>
<td>6</td>
</tr>
<tr>
<td>both mixed and in forest</td>
<td>1</td>
</tr>
</tbody>
</table>

5.3.3.1 Reasons for Regular Planting

Respondents planted trees for multiple reasons (table 8). The most common was for personal use, which mainly indicated consumption of the fruit produced by the trees. Personal reasons also included using parts of the tree for medicinal purposes or building material and house repairs. “Usually, when I clear for farming, I also try to interplant
with trees. I have medicinal trees. They are medicinal so I always try to maintain them.”
A few more planted specifically to help increase income and sell the extra fruits at the
market. An elder farmer added, “I have a cocoa farm. Oranges, I like it. My oranges,
when they are okay and I need to I harvest them and send them to Kpando Market. Even
now I still plant avocado trees.” Only two individuals planted for the purpose of
ecological health: one woman planted so that “thick forest remains on farm to provide
rain and protect from wind.”

5.3.3.2 Reasons for Irregular or No Planting
Individuals who do not regularly plant trees also had various reasons (table 8).
Two had regularly planted in the past, but either old age or health problems prohibited
them from still planting. Others planted upon first moving in or only in extreme situations
when in need of subsistence food crops and had no alternative. Those who did not plant
at all either could not find the time or saw no need to plant trees. One individual whose
farm bordered the reserve claimed there was no need for him to plant since he reaped the
benefits forests bring because of his close proximity to the reserve. Four individuals
expressed interest in planting trees but planted their crops on other people’s farms, hence
did not have the authority. Although there was an overall understanding of the
importance of trees, some individuals valued and took action to perpetuate forest benefits
to greater extents than others. Those who did not take action generally felt that they
gained these benefits from the presences of the reserve.

5.3.4 Livelihood Diversification Strategies
By far, farming is the most common livelihood, although many diversified their
skills and practices. Half of those interviewed gave farming as their sole source of
income. In addition, eighty-three percent of those interviewed overall depended on their skill of farming to support their livelihood in some way (table 4). Sixty percent of interviewees reported depending mainly on one livelihood activity for support. Another thirty percent stated diversification to two activities, and one individual actually listed three activities regularly used to generate income (table 4); palm tapping, farming and hunting. If farming was not the primary livelihood activity, most individuals said farming was their ‘back-up’ (or second) livelihood activity when their primary activities were not generating enough income. As one wood carver put it, “there are some times when you carve is more profitable than farming. But at times carving costs so very much, so I turn to farming.” These primary livelihoods included wood carving, hunting, drumming, palm tapping and market trading.

Some intertwined more than one practice into everyday routines, as was the case for a palm oil brewer and farmer. She made palm oil, in which each step of the process can take between one and three days, with a wait period following. During the few days spent waiting, she tended to her crops. Another combination of multiple livelihood approaches depended on the demand. One man, who carved drums, mortars and pistols, would take to doing that when he had a request. However, during times that he had no business, he took to farming. Overall, it is very common for households to take on multiple livelihood practices to increase their food security and income insurance.

Many individuals scheduled their livelihood activities depending on Ghana’s wet and dry seasons. One man took to farming during the wet season when crops would prosper, and took to drumming during the dry season when crops would suffer. This is
not to say farmers are not facing challenges – according to respondents, shifting from wet
to dry season is accompanied with an entirely different set of tasks. The lack of rainfall
due to decreasing tree cover has been acknowledged by respondents. One woman, whose
farm is a bit rocky, said it was almost impossible to plant during the dry season: “my
land is a bit rocky. So during the dry season, you can’t plant there. When you plant, it
becomes uprooted.” Another man illustrated in his map biography the differences
between where he collects his trees for wood carving in wet versus try season (figure 10).
As illustrated, he prefers the wet season as he can travel along established roads to get to
the best trees. During dry season, he has to navigate along the rivers to find what he
needs.

Figure 10. Map biography of farmer/wood carver and where he indicated sources of
wood during dry season versus wet season.
All of the farmers I talked to discussed how their crops often perish during the dry season. A woman with skills in both palm oil production and farming said she entirely shifted gears between seasons: her farms were profitable during the wet season, and her palm oil was profitable during dry season. This was not that uncommon; another older man took to farming during the wet season but took off on drumming tours during the dry season. Farmers who were not very skilled in another livelihood plant orange, avocado, and other fruit-producing trees to help ensure their food and income security during the dry months. One respondent noted, “dry season, we have different things to do. That is, we have the second cultivation. That is corn, beans, other things. And also tomatoes can grow during this, tomatoes can grow during the dry season.”

Hunters can face both advantages and disadvantages during the dry seasons. Wet season causes forest litter to dampen, providing a natural sound buffer for hunters to stealthily move. Dry leaves and other debris can be difficult to keep quiet when walking on, causing animals to scatter away, making it hard to catch anything. However, the dry season also reduces the amount of water sources available. Animals tend to gather around small ponds of water, providing hunters with a location in which to wait for their catch. Wet season may quiet their footsteps, but more steps need to be taken to track down animals as they have a larger selection of water sources. The hunters interviewed clashed in opinions as to whether or not wet or dry season was an easier time to hunt; overall, they were able to overcome seasonal differences using different methods to catch animals.
5.4. Evaluating Knowledge and Livelihood in Forest Policy
5.4.1 Summary of Volta Regional Forestry Commission Policies

In 1999, the FC revamped their approach to enforcing forest policies, community programs, and conservation strategies. The changes were a result of the realization that many of the ideas intertwined with the 1994 Forest and Wildlife Policy, namely those involving community participation, were not practiced to their full potential. “The new FC is a corporate body integrating the activities of all the public agencies that were previously individually responsible for the management and regulation of utilization of forest and wildlife resources in Ghana.” Community participation could be especially embraced at the regional and district levels. Key informant interviews provided insight into this information.

The Volta Region is unique because of the presence of the Forest Resource Use and Management Project, also known as FORUM. According to the FC, the region had been enduring higher loss of forest than other regions, and the existing systems were not effective. FORUM has helped embrace and set an example to other regions the potential benefits of local participation and education. Specifically, FORUM has been able to bring out the ideologies of the 1994 Forest and Wildlife Policy that had previously only existed on paper. As one FC brochure mentioned, “the policy gives considerable emphasis to involvement of people in forest management” through several fundamental beliefs. The ‘guiding principles’ include: ensuring people have rights to access of natural resources; recognizing the importance of incorporating traditional methods of resource management; appropriately distributing financial benefits from forest resource income; and focusing on decentralizing participatory democracy by embracing local people.
5.4.1.1 Overview of Policies

This section summarizes some of the main points of FC forest policies and laws, specifically those relative to communities in the Volta Region. These include land use rights, felling and harvesting of trees, and hunting. FC officials compiled a brochure depicting forest management policies outside of the reserve, the source for all of the following information. The main policy regarding the reserves is that entering is illegal. To enter, one must obtain a permit issued by the FC. Acts such as burning, hunting, and farming are illegal inside of the reserve, unless with a permit and in collaboration with the FC.

Outside of the reserve, there are regulations on land ownership and land use rights. The Volta Region is home of many Ewe people, who no longer use the ‘stool’ land system. Stool land is considered community-owned land. Considering the troubles that resulted from original government acquisitions of land later established as reserve, the State Lands Act of 1962 insists on compensating land taken from individuals. However, community and stool lands can be confiscated by the FC without compensation. No land in Ewe areas of the Volta Region is considered stool land. Consequently, any compensation in this area is agreed upon before land is sequestered.

Policies concerning harvesting timber and felling trees are formulated by stakeholders. Timber harvesting requires a Timber Utilisation Contract (TUC), issued by the FC. Originally, this contract intended to reduce large-scale logging, which, with colonialism, had become a significant problem. These contracts are specifically designed for corporate groups; there is also a less complex version, called a Timber Utilisation
Permit (TUP) that is aimed for communities or non-governmental organizations (NGOs) doing work in a particular area. Individuals are unable to gain a TUP for domestic use. Instead, if an individual wants to fell a tree, they must obtain a registered chainsaw. However, that individual must use the tree for “non-commercial, community, domestic or social purposes” and may not convert it into lumber.

It is important to note that outside of the reserve, hunting is legal. “No law regulates the gathering of living or dead things from the forest other than timber.” In greater detail, Wildlife Conservation Regulations deal with handling animals, including the context of hunting. Some species are illegal to hunt. Other animals are illegal to hunt when either young in age or with their young. Some animals are illegal to hunt during specific seasons. Particular methods of hunting are also illegal, such as using pitfalls, nets, poison or poisoned weapons. Group hunting is not allowed. Finally, individuals are not able to trade in bush meat unless holding a license to do so.

In summary, many of the policies are applicable only in the reserve and not individually on lands. “In practice there is hardly any management of trees or timber outside of the forest reserve.” The FC is working to establish strong forest reserves, which not only preserves the forest but also stimulates environmental and ecological health. According to the law, individuals, upon acquiring their own land, are generally free to do as they please. However, “free to do as they please” means still requiring permits for certain acts, such as hunting or felling trees. The FC does state that they will step in during a case of extreme mismanagement, such as an individual’s attempt to clear their land resulting in an uncontrollable, spreading bushfire.
5.4.1.2 Seedling Program Available to Residents

Established with the help of FORUM, there are programs that encourage community members to plant trees and take good care of their land, discussed by key informants during their interviews. An example is the seedling project, where community members are able to approach the FC and apply for free tree seedlings to plant on their land. A member of the FC will come out to the individual’s land, survey it and determine which species of trees are most appropriate and beneficial to plant on the land. The FC official will offer several native species of seeds to plant, based on the conditions of the land. Then, people can select the type of seeds they would like from what the FC offers. If the individual proves that s/he can do a decent job tending to the land, s/he is provided with seedlings to intermix with crops and other vegetation. One FC official explained,

“The goal of this project is to enrich ourselves. We need to enrich our lands, and plant indigenous species of trees to Ghana. People can come to us for seedlings and attend the workshop so we can see how the seedlings are doing. Over the last year, we have given out over one million seedlings. Between May and [July 2007], we have given over 300,000. Lots [of these seedlings] have done well.”

Individuals who do not participate in the program (for reasons such as land being unfit for certain species or because the seedling species available were not to their liking) still have the option to buy seeds from the FC.

5.4.1.3 Legal Framework Training Workshop

In addition, the FC has increased the number and locations of workshops offered to Volta residents. Currently, they hold a workshop every two months, averaging 6 to 7 per year. The aim of the workshop is to increase knowledge about the laws, policies, and program options that the FC offers (figure 11). Appendix D contains the general
objectives and outlined schedule of the workshop training. As stated in the 1994 Forest and Wildlife Policy, one objective of the FC is to “initiate and maintain a dialogue with all interests through a national advisory forum... and related district conservation committees to ensure active public participation.” Sessions including the rationale for forest protection, background of reserve status and laws present participants with the most current information produced by the FC. The workshop is intended for “traditional rulers, opinion leaders, landowners and district assembly members,” allowing for collaboration and discussion to occur amongst different stakeholders. The general description of the workshop, entitled “Legal Framework Training FORUM Project”, states:

“Decision-makers at the district level like traditional rulers, opinion leaders, landowners and district assembly members should be able to protect and manage their forest areas according to current forest laws in Ghana with the support from FSD and other law enforcement agencies. Hence this campaign shall ensure that there is considerable knowledge about current forest laws and their practical aspects with the above-mentioned members of the target group, including involved stakeholders from Government Agencies.”

Although the FC has been offering workshops for a while, these workshops have altered their purpose based on the influence of FORUM to better reflect the intentions of policies. They have gravitated from lessons of techniques on how to manage land to explaining recent changes in policy and how to participate in FC programs. Currently, the goal is to have a workshop three to four times a year for communities around each of the four reserves. The workshops are held at various district branches of the FC throughout the Volta Region.
5.4.2 Impact of Forest Policies in the Volta Region

Other communities, away from the TPR, have been actively involved and have taken advantage of FORUM and FC opportunities. Through this interaction, these communities have been able to establish a larger quantity of natural, human and social capital relative to those not as active. This not only benefits these communities, but also strives towards the FC’s goals of increased and healthier forest cover and community participation. The FC discussed these various elements in their key informant interviews.
5.4.2.1 Natural Capital Built through FORUM and FC Programs

The presence of FORUM has intensified the FC’s efforts in forest protection, and according to available information from the FC, these efforts are working. One forestry official claimed “one of our biggest successes in the Volta Region is lowering the number of bushfires that have been in the area.”

An article in the Ghanaian Chronicle, one of Ghana’s newspapers, indicates that statistics show an increase of forest reserves between 1976 and 2007 of 6,000 hectares. Currently, the FC has a program to help keep this up. Volta individuals can volunteer to help plant seedlings and tend to trees in and around the reserve. In exchange, they can collect fruits and other products from these trees, increasing their natural capital. The overall goal is to intensify reserve areas. According to the FC, Healthy forest reserves also promote environmental benefits such as convectional rain, adding to the ecological strength of surrounding individual’s lands.

5.4.2.2 Human Capital Built through FORUM and FC Programs

The aforementioned workshops have brought about human capital within the context of livelihoods. According to the FC, communities throughout the Volta Region who have participated in these workshops have demonstrated greater interest and ability to maintain their lands than those who have not. Topics of education include effective seedling planting strategies, proper construction and maintenance of fire belts, and agricultural ecosystem functions. All of these have potential to both support the goals of the FC as well as benefit community members dependent on the forest. The latter increase their capability to transform this capital into an asset through practicing what
they have learned on their own lands. The FC benefits through improved land management.

5.4.2.3 Social Capital Built through FORUM and FC Programs

Increased interaction and personal relationships built between FC officials and community members also are conducive for the cultivation of social capital. Working on a more direct level allows the FC to generate this social capital that can, in turn, come back around in their favor. For example, during his ten mile commute from work, one FC employee picks up school children along the road and drives them 8 miles back to their community. He began doing this simply as a favor, with no alternative intentions other than it saved the school kids time and energy as well as reduced their risks of danger. The chief of this particular village, upon finding this out, realized that this man was associated with the forestry department. To thank him, the chief has instructed that the village not tamper with or improperly use the forest resources. Hence, the relationship has created trust that translated into increased forest conservation awareness. This entire community has paid more attention to how they preserve, manage and utilize their surrounding resources.

In addition, the recognition of spiritual and cultural forest value can come into play. Communities may have religious connections with nearby forests; in one case, a village believed that a particular stretch of forest was home to a type of animal that was a messenger for their spiritual deities. These community members did not enter or touch that forest, as it provided a home for these spiritual messengers. Upon finding this out, the forestry department worked with the village to help protect and demarcate this land so
that outside groups would not disturb it. This demonstrates ways in which, through combining the priorities and perspectives of communities with FC efforts, forest conservation strategies can integrate the local knowledge and needs that previous forest policies left out.

5.4.3 Alavanyo Wudidi Perspectives of FC Policies

During interviews, participants were asked what they knew about the FC-created forest policies. Overall, respondents were considered to have an ‘understanding’ of forest policies if they could list the major rules in their own words. The level of detail was kept basic. They were not required to know the exact processes of obtaining a permit to enter the reserve, for example, but were considered to have an understanding if they knew they had to obtain one to enter the reserve, and to approach the FC to begin this procedure. Generally, respondents listed several items, including: no hunting, no felling trees without a permit, and fires should only be begun after a proper fire belt has been constructed. All respondents listed that entering the forest reserve without permission was illegal. It is also important to note, that an ‘understanding’ of forest policies did not mean the respondent had an understanding of available FC-based programs.

5.4.3.1 Community Level of Satisfaction of FC Policies

Table 9 displays the varying levels of satisfaction regarding the policies in place by the FC. Overall, over two thirds of the respondents are happy with the FC. Four were mostly happy, one was only partially pleased, and four were not satisfied with them at all.

Those happy with the laws commented on the effectiveness of the reserve and its ability to secure the environmental benefits (like convectional rain) discussed above for the
entire community. One respondent said, “they do a good job of preserving the forest, which helps my land.” 90 percent of the respondents are happy with the presence of the reserve in the area. Even if they were unhappy with the reserve in the area, almost all of the interviewees find it to be an effective method of conservation. Demands for available farm land were the strongest concerns expressed in terms of why the reserve should be open to community use.

There was also a majority when it came to whether or not people felt the policies hindered their daily livelihood activities – respondents feel that the policies allow them to practice the activities needed to sustain their livelihoods. This was especially the case coming from the farmers, feeling that the land tenure system keeps people to their own land and allows them to do what is required. A few people mentioned that the FC is not doing enough to help, but there was no mention that they were suppressing livelihoods with their policies.

The hunters presented a different story in this context. Hunting is an illegal activity, even though it is practiced throughout the entire country. However, hunters support a strict control on the protection and growth of the forest, as the forest provides a place to support animal populations. Although the law makes their job illegal, most hunters abide the best they can by avoiding the reserve but hunting around the nearby areas. As the head hunter stated,

“hunters and government do not get along, although we both want the same thing. We both want the forests to grow, so that the animals can grow. Hunters are okay when these animals stray out of the reserve and onto ordinary land, where we can make our catch. We do not work with the forest people, but we hunters only are hunting, law is against us.”
Table 9

Community Perspectives of the Forestry Department

<table>
<thead>
<tr>
<th>Level of satisfaction with Policies</th>
<th>Number of Respondants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy</td>
<td>21</td>
</tr>
<tr>
<td>Mostly Happy</td>
<td>4</td>
</tr>
<tr>
<td>Somewhat Happy</td>
<td>1</td>
</tr>
<tr>
<td>Not Happy</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Have you ever worked directly with the Forestry Department?</th>
<th>Number of Respondants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, via community workshop</td>
<td>2</td>
</tr>
<tr>
<td>Yes, via school or university programs</td>
<td>3</td>
</tr>
<tr>
<td>Yes, as an involved FC participant</td>
<td>2</td>
</tr>
<tr>
<td>Once, in distant past</td>
<td>3</td>
</tr>
<tr>
<td>No</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you feel you have a voice in FC policy construction?</th>
<th>Number of Respondants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>12</td>
</tr>
<tr>
<td>Don't need one, satisfied with current policies</td>
<td>7</td>
</tr>
<tr>
<td>Not Sure</td>
<td>6</td>
</tr>
<tr>
<td>Indifferent</td>
<td>2</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
</tr>
</tbody>
</table>

5.4.3.2 Alavanyo Wudidi Communication with the Forestry Department

Most of the respondents had never communicated directly with any representatives of the FC, although there were a few that had (table 9). All three students had been to lectures, workshops and forums involving the FC via their school or university. It appears as though the FC does have strong communication with those individuals involved in formal education. One respondent mentioned that in 2003, he attended an educational workshop hosted by the FC held in the neighboring district of Jasikan, but had not heard of another one since. The workshop focused on the process and legal information regarding the felling of trees. Another elder mentioned that in previous times (at least ten years prior, but unsure of exactly how long ago), these workshops were more frequent, however it had been a while since the previous one. The two individuals who became the Alavanyo Wudidi community representatives in the
volunteer reserve group had worked with the FC to a greater extent through training
courses, forums, and by reporting reserve updates.

Although the majority had never worked with the forestry department directly,
most did not feel that they needed to (Table 9). Respondents felt that they had a method
of communication to express ideas and concerns to the FC if the need arises.
Participation in forums and workshops were one way in which respondents had a voice.
Even if individuals did not attend these events, they often knew of somebody who did
and could deliver any relevant messages to the FC. If there was not an upcoming event,
an individual could travel to the FC and express their concerns. Seven people stated that
they did not need a voice because they were already satisfied with the FC policies. Six
were not really sure, and two were indifferent.

Three people, however, did not feel well represented, because of their experiences
with the FC, specifically, the FC’s lack of commitment to be involved with the area
(Table 9). Two individuals did not feel that their voice was well represented in forest
policy. They elaborated, saying the FC was falling short in educating and involving the
people into their policy methods.

“In actual fact, the government involvement is not adequate. I don’t know how I
will put this – the district assemblies, which are supposed to meet even quarterly,
because of lack of finance, at times they only meet once or maybe two times in a
year. Which is not effective. They should meet quarterly. And collaborate, and
know the needs of every traditional area within the district area, and satisfy them.
But because of no money, they will not meet. They will not meet, so it’s not
effective. They should visit the area at least once every month to tell us about the
new laws, and then [educate] the people...all of these things are in this district, but
because of lack of funds, they never come out. So, their position is not felt.”
Despite admitting that she would change nothing about how they operate, the third individual did not feel she had a voice because her family had never been compensated for land the FC had taken decades before. Since that event, which had happened before she was born, she has not had any issues with the FC, and listed no other specific reason why she would not feel they were doing a satisfactory job. However, because she felt her family had no voice concerning the land confiscation matter, she continued to feel as though she was not well represented. “I am not happy [with the FC], once [my land] was taken by government, I am not allowed to seed. They seized my property. It was taken before I was born. There was no compensation, and they took very vast lands.”

5.4.3.3 Respondent Suggestions for Policy Changes
Around a quarter of the respondents interviewed did not have any suggestions for improvements to the FC’s current policy, and, that what the FC was doing was acceptable. The suggestions mentioned followed an overall trend of tightening and strengthening the existing laws. Six people suggested more intensified and enforced laws on bushfires. Another frequent idea was increased hands-on education, accompanied with seedlings provided to community members to plant trees, even if for non-economic benefits. Education classes can also include updates on laws and policy changes. A farmer suggested intensifying fire laws with education:

“One is to educate the community. Second, by all means, when they want to make farm, they will set fire into the bush. We must by all means inform the voluntary fire service to go there, and help them set the fire into the bush. Also, with the help of electricity, we need to educate people about the use of electricity, because that can also cause fire and burning of the property.”
There is also a concern regarding available farmland, and some people suggested that the FC initiate programs to transfer parts of the reserve to the community for farming. “I feel forest people should give [us] the land to use. What I am saying is that even though the reserve is good, this time we have multiplied, so they need to reallocate some of the land to us.”

In addition, eight people felt that the FC needed to have a stronger presence in the reserve; their interaction with the community was not very high. They felt improvements could be made in terms of the education classes offered and by increasing reserve patrolmen.

“They only do general public education... and it is not effective. The legislation is needed and they need to supervise themselves. During dry season, they can even camp, and supervise, control and patrol. But this they have not been doing effectively.”

Representatives of both district-level and regional-level Forestry Departments admit that their presence near the TPR has been lower relative to the other five reserves in the Volta Region. Respondents attributed this to land dispute between the Alavanyo communities and their neighboring Nkonya communities. Over the last 80 years, Nkonya and Alavanyo have been in conflict regarding the land use and ownership of a small area between their two areas (an elaboration about the dispute can be found in section 5.4.6). At times, the conflict escalated to violence and war. It was not until 2006 that the two communities decided to engage in resolution efforts that were facilitated collaboratively by the church and government. Hence while some of the elders can recall back to times when more regular forestry patrol took place, the most recent decades have completely
lacked a governmental presence related to the reserve. Naturally, this repeatedly surfaced as a suggestion from Alavanyo Wudidi residents.

5.4.4 Alavanyo Wudidi Perspectives of the Togo-Plateau Forest Reserve

To better understand how LK is represented in policy, it is important to explore the views community members have of policies and how they position themselves within it. As divulged during interviews, this was influenced by land proximity to the reserve, as indirect natural assets can be gained from the reserve. In addition, whether or not they visit the reserve can indicate if the potential capital that could be gained is taken advantage of. Community members varied as to whether the reserve should be controlled by the FC or local communities, or a mix of both. They also differed on their extrapolations on what the future of the reserve will be.

5.4.4.1 Land Proximity to the Reserve

Respondents who lived closer to the TPR expressed more satisfaction with the reserve than people who live further away. Those whose land neighbors the reserve tended to be happier in regards to the presence of the reserve and the enforcing of the policies. In contrast, those whose land is more distant to the reserve tended to care less about the policies than those who neighbored the reserve. During their interviews, those who neighbored the reserve expressed more overall satisfaction with the reserve policies. The main reason for this was being so close to the reserve, they reaped the benefits from reserve policies. Their social assets increased, as portions of their land were more frequently patrolled for bushfires, encroachers and suspicious activities – yet there was no effort needed on their part. In essence, their proximity to the reserve gave them access to part of a social network, that of the FC’s, which positively impacted their social
assets. Their land also gained natural assets, including increased rainfall, soil fertility, and animal populations. Except for one, all people who neighbor the reserve felt that they gained more privacy, protection and overall benefits with the reserve in place.

Those whose lands do not border the reserve were less specific during their interviews. Of those who liked the FC policies and reserve, fewer were able to provide concrete reasons as to why; rather, they liked them because the policies did not disrupt their daily lives. One respondent explained, “I am always free to go about farming on my land, so, as for the forest people’s work, I like it.” Compared to the reserve neighbors, the distance between the reserve and these individuals’ land decreases the potential to gain environmental benefits from the reserve. For these people, there is no potential to gain the social capital brought about by patrolling and supervising the reserve.

5.4.4.2 Entry into Reserve
The TPR is potentially a natural asset to community members, as it contains forests that have remained untouched and are in healthy ecological condition. However, established forest reserves are illegal to enter without obtaining a proper permit from the FC. During interviews, Alavanyo Wudidi community members did note concerns about an increasing population and the potential of the reserve helping strengthen community food security. For most people, FC policy generally serves as a deterrent for both translating this natural capital into a livelihood asset and for disturbing the reserve in any capacity. There was, however, a different case for the hunters.

Eighty percent of the respondents interviewed said they had never been to the forest reserve. The primary reason was simply because the FC declared it illegal, and getting caught by the FC meant being arrested. Five mentioned that because the reserve
was far away from their personal farms, there was no need to go there. Two simply mentioned no need to go there regardless, and one even went so far as to say that because it is under the FC’s care, it was not her responsibility, hence there was no reason to go. One mentioned his age and health conditions made it nearly impossible to hike up to the reserve. Lastly, one person expressed his sentiments by noting the importance of the natural capital generated by the forest. He mentioned that in order for the reserve to stay in the healthy condition it was currently in, we must abide by the rules and leave it alone so that it stays protected – which is why he never had visited. The respondents expressed an overall fear and respect for FC policies that prohibited reserve intruders.

The remaining six people all admitted to visiting the reserve at some point in their lives. Again, the reasons varied. Four of the individuals expressed curiosity and interest in the forest reserve; they wanted to see how the forest would grow when untouched and unaffected by the local village. One also added that having her farm so close to the reserve made it easy to avoid getting caught. However, this was not the case for everyone; one elder woman, who had visited in her youth, had gotten caught and arrested. Although curiosity brought her there, getting arrested was enough to deter her from ever returning.

Two respondents had some affiliation with the FC through forest management volunteer positions, hence had permission to enter the reserve. The purpose of their permit to enter was twofold: to help plant seedlings provided by the FC, enriching the reserve forest cover, and to help monitor and patrol to keep out intruders. Although one volunteer did exactly that, the second took advantage of his position. This man was also
a hunter, and knew that because the forest is off-limits to most, would hunt within the reserve boundaries. He said that if caught by other community members or by the police, he would explain why he had permission to be there:

“I am the local forest volunteer in charge, so even if they see me, I am always free. I am guarding the forest, which is an advantage. Sometimes, you get your catch, and your home is happy. Sometimes, because of the difficulty of our nature, there is nothing more for hunting. You can see where [the reserve] you can get some animal.”

However, to date nobody had approached him because when seen, he was assumed to be doing his volunteer duties. Hence this man was able to seize various natural capital within the reserve that most did not have legal access to.

In fact, that individual was the only hunter who admitted entering the reserve, when in fact, this was not the case. The other three hunters all answered no concerning whether or not they had ever entered the reserve. However, during the mapping exercise, two of them noted that their favorite hunting location, especially during wet season, was in the middle of the reserve (figure 12). This area was in a relatively flat part of the reserve, near the Fantibi river. Because the boundaries of the TPR were not on the map utilized, both individuals did not think twice about indicating their exact hunting location, even though it was in the reserve. The third hunter’s farm was next to the reserve, and he mainly stuck to hunting on his own farm, having never entered the reserve; he explained that the animals walked over from the reserve, so it was not a problem making a catch.

Figure 12 illustrates where three hunters pointed out their preferable hunting spots. The left image illustrates their markings on the map, and the right image is the
sheet of tracings with a white background in order to make the tracings clearer. The fourth hunter is not included as he was not in the same area and his depiction of the TPR boundaries were close to perfect as he was a forestry volunteer. Note how the hunter who did not enter the reserve (depicted with black lines) hardly traveled outside of his own land.

*Figure 12 – Map Biographies of three hunters. Each color (green, black and blue) represents a different hunter. The purple line indicates the reserve (arrows point into it). The single line represents their farm; the dashed line represents hunting areas; the bolded line represents where the hunters drew where they thought reserve boundary is.*

The other two hunters, however, portray a different story – there are favorable places to hunt in the reserve. The reserve has an upside-down “U” shape, so there is a
TPR boundary to the west that is not illustrated in figure 12. However, they do not acknowledge the boundary east of their farms, either because they disregard it or do not know it. For one, it could be the latter, as he stated ‘I hunt everywhere but the reserve.” Regardless of the reason, they both recognized nearly the same area within the reserve as a good place to catch animals.

5.4.4.3 Government versus Community Control of the Reserve

There was a bit more variation in whether or not community members believed the government or the community should be in control of the reserve (Table 10). Two individuals, both elders, believed the community should be in charge of the reserve. One added, “the land belong[ed] to us, before it was confiscated. So this time they are resistant to our entry, which means they are tampering with our rights.” The issue was not with what the FC was doing so much as to the land being unavailable to Alavanyo Wudidi residents despite their close proximity to the reserve. They felt that the land should be available to the community should they need it, especially considering the pressures resulting from increasing population in the area, requiring more farmland. The community can have educational classes and still properly manage the reserve while reaping some benefits.
However, it is this attitude that made most respondents support with FC control – they felt the community would not properly take care of the land. Over half (table 10) of the respondents believed that the reserve should stay under FC control. Moreover, both community members and the FC recognized that community might have difficulties enforcing strict rules on land use, and let social asset get involved. Several respondents noted that community members can use “who they know” to pull strings and avoid punishments. Hence, if this were to happen, these social networks could potentially be viewed as social capital. An individual could employ this capital, using their position in a social network to avoid facing the law, allowing them to process an otherwise inaccessible natural resource into income.
The government, however, is taken more seriously, and proclaiming a certain act (such as entering the reserve) as illegal deters a large portion of people from doing it. There is an essence of fear and respect for the government’s ability and power. The government is seen as more reliable and responsible over the community structures. One man reasons his preference for government over community control as follows:

“We all fear the government! And government has the forum for punishing people. The community at times, the person who befalls is your relative, and you will be ashamed to give the person the right punishment. So there will be forest intrusion. And through that, the forest will be destroyed.”

Even though people expressed concerns for the amount of farmland needed to sustain the growing population, they felt that the benefits the reserve brings to the community were worthwhile. If placed in the hands of the community, not only will authorities have a tougher time enforcing rules, but the inevitable diminishing of the reserve would result in the benefit of a select few people (taking the form of timber and material goods) at the cost of what the community gains overall from the reserve (increased rainfall, landscape health, etc).

Another eight liked the government hand involved with the reserve, but felt control should be a collaborative effort between the government and local communities. The main structure of this hybrid approach was that the government can still instill the fear and responsibility that cause people to abide by the rules, yet allow the community to better integrate their needs into the government’s agenda. Specifically, people thought that the outskirts of the reserve land could be controlled by the community but overseen by the government to ensure proper and responsible land use. This way, individuals could locally request plots of land for farming without being hassled with visiting the FC
– yet there would be a tight grip on the activities happening on the reserve. It is important to note that those who mentioned collaboration between government and community still depicted the government as the institution with the main power. The community only would manage designated sections of the forest reserve – still within FC jurisdiction – and ultimately still report back to the government.

5.4.4.4 The Future of the Reserve

Considering the potential of the reserve to be developed into natural assets, community members had varying opinions on what the future of the reserve will be. When asked about the future of the reserve, eight people believe that the reserve will be kept as it is or continue to grow. 14 people believed that the size of the reserve would decrease as portions of it are released, although there were varying suggestions about who the land should be released to. Six people believed that if the FC were to decrease the size of the reserve, the new ownership of the released portions should be up to the FC, who can allocate and distribute land to communities as needed. Six others believed the lands should be evenly distributed to the communities, where chiefs and elders can ultimately decide what the land could be used for to best benefit the community. Two people thought that released reserve lands should directly be given to individuals who ask the FC for it, bypassing any community structures. The overall trend was that while the reserve brought benefits to the community, the future will pose a higher demand for farm production with an increased population, and the reserve lands could be put to productive use.
5.4.5 Alavanyo Wudidi Community Bylaws

5.4.5.1 Alavanyo Wudidi’s Forest-related Community Bylaw

Especially relative to the diversity and depth of the FC policies, Alavanyo Wudidi’s forest related community bylaw (CBL) is short and simple: individuals must seek the assistance of the community’s volunteer fire department when planning on clearing their land using fire. The Volunteer Fire Department (VFD) is a group of Alavanyo residents that travel when called to local farms to help construct fire belts and properly and safely clear land. Their main duty is to help individuals create a proper fire belt on their land, prohibiting the fire from accidentally spreading to other areas.

Although it is not known who established this bylaw, the impression gathered by respondents is that it was proposed by the elders of the community, discussed with community and household representatives, and agreed upon by the public as appropriate. It is also unknown when this bylaw was established, although it is thought to be in response to the increased effort of preventing forest fires in the region (much of that is FC effort).

5.4.5.2 The Role of the Community within Forest Management

Concerning the CBL relating to bushfires, over two-thirds of those interviewed were satisfied (table 11). The overall sense was that community members felt that the by-law works for the community and serves its purpose. Another reason for this included a sense of community camaraderie in their design and implementation. “I am happy with the [bylaw] – the community made [it].”
Table 11

*Satisfaction of Community Forest Involvement*

<table>
<thead>
<tr>
<th>Level of satisfaction with CBL (with listed reasons why)</th>
<th>Happy (21)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effective</td>
</tr>
<tr>
<td></td>
<td>created by community</td>
</tr>
<tr>
<td>Mostly Happy (2)</td>
<td>could encourage more community participation</td>
</tr>
<tr>
<td>Somewhat Happy (6)</td>
<td>expand bylaws to cover more than fire management</td>
</tr>
<tr>
<td></td>
<td>focus more on planting trees</td>
</tr>
<tr>
<td></td>
<td>not entirely effective</td>
</tr>
<tr>
<td></td>
<td>needs more clarification</td>
</tr>
<tr>
<td></td>
<td>needs better enforcement</td>
</tr>
<tr>
<td>Not Happy (1)</td>
<td>community bylaws do not function with land tenure system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level of satisfaction with community members’ involvement</th>
<th>Happy (25)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Somewhat happy (5)</td>
</tr>
<tr>
<td></td>
<td>Not Happy (0)</td>
</tr>
</tbody>
</table>

In contrast, seven people were only somewhat satisfied, if at all. One person felt that while rules made by the community have good intentions, community members may not follow them. He noted the trend that farmers will seek the assistance of the VFD to help burn and clear patches of land, but hunters may carelessly set fire to areas in order to make their catch, and recklessly abandon it later without keeping it under control. One farmer, who is part of the VFD, explains:

“During dry season, when people go to bush, to set fire for food without clearing around it, they will just cook and then abandon the farm and then go away. The firewood will burn, and then enter the forest. That’s one. Actually, smoke too. Smokers will smoke and abandon it carelessly, even some when traveling in the vehicles they will throw it. And then hunters, who use cap guns, when they shoot at times the fire will catch the bush. And then palm wine tappers. And then other – some people remove to hunt it, bush hunting.”
Along this line, several who were not fully satisfied claimed that the community rules needed to be stricter. The lack of authority and recognition in community policies makes their rules appear more flexible than those set by the FC. People are apt to either not take them very seriously, or not recognize them as actual policies and laws. This was also accompanied with the idea that the rules lacked clarity; one exemplified this by saying that while the focus is on fire prevention via fire belts and clearing farm land, there is no bylaw about properly burning trash.

Other community aspects were mentioned, including combining FC and community policies as well as establishing community lands. One person specifically mentioned the combination of FC and community laws. He used hunting as an example – although the FC says it is illegal to hunt, people still practice this. By combining FC and community forces – reinforcing the FC laws through community bylaws – perhaps the law will be better adhered to. Another individual placed blame on the land tenure system, saying that people did not abide by the community rules since they personally owned property.

“...there is none, there is no community land at Wudidi. There should be, [because] the chiefs are the custodial of the customs in the place. They arbitrate matters. In the past, they were the rulers, but at this time, because of constitutional rule, that indirect rule is no more... this traditional rule is done in the Ashanti Region, and done in the North, too. But, in the Volta Region, I don’t know how we managed to inherit this sort of thing... everybody has their own. There can’t be any change, I will not allow anybody to tamper with me, so is someone also.”

He continued by explaining that the reestablishment of ‘stool’ land, or land shared by the community, will encourage community members to take better care of land, both personal and community. The ‘stool’ land will set an example to community members.
Furthermore, the respondent noted that this community land will also help enrich respect in community bylaws and authority.

Regardless of the level of satisfaction with the community bylaws, all of the respondents felt they have a voice. Community members have the option of attending village meetings, held every so often when events or important information arises. Although not everybody attends these meetings, usually the head of household will, representing everyone in the house. Every interviewee felt they have a community voice, even if through the head of their household. On this note, 84 percent of the respondents were happy with the community’s level of involvement in terms of forest resource protection. Five were only somewhat happy, believing community members could be more active by planting more trees.

5.4.6 The Alavanyo-Nkonya Conflict

The FC has noted success of FORUM amongst communities in the Volta Region, however, Alavanyo Wudidi is not one of them. Alavanyo Wudidi has been involved in a situation prohibiting them from participating at the same level other communities have. The seven Alavanyo communities as a whole have had conflict regarding community land boundaries with its neighboring group of communities, Nkonya. Nkonya is located to the west of Alavanyo, close to Lake Volta. These land disputes went on for over eight decades, and in several instances resulted in violent attacks. Both key informants and community respondents discussed the conflicts.

5.4.6.1 History of the Conflict
According to Alavanyo Wudidi residents, these conflicts began before Ghana gained independence, around 1923. At the time, colonial groups created maps of the area, demarcating various lands designated as either reserve or belonging to nearby communities. Alavanyo Wudidi respondents who spoke about the conflict explained that the map Alavanyo used was more updated, recent, and created with the assistance of the FC. One individual noted the land under dispute in his map biography (figure 13). In contrast, the Nkonya residents based their land claims from a “hypothetical map drawn by a German who was then the district commissioner.” Because the Nkonya residents have been unable to produce this map with their boundary lines, Alavanyo residents insist that they accept their map instead. One resident elaborated about the beginning of the conflict:

“...our people, and the people long, long ago, constructed boundary poles. So our people went and sealed the boundary poles, made a path around it, and the government office, from the regional of Ho, came together with a video camera and went to the path. We asked [Nkonya] to also show them, and they say according to them, their parents who know the boundary are no more, they are dead, unless you see somebody to go interpret that map, they won’t know their boundary.”

There have been waves of conflict and calmer periods throughout the 80 year land dispute. No land boundaries could be agreed upon, so the dispute rumbled on.
According to one of the elders, the conflicts peaked again in 1983. However, rather than be directly about the land, this violent outbreak was caused by a severe drought. Alavanyo Kpeme, the village closest to the Nkonya communities, constructed
and uses three wells to supply water. According to one respondent, the people of Kpeme allowed Nkonya people to fetch water from one well, but this was not adequate from them. “They rush with clubs and so on to Kpeme, and in that process, they kill one man from Kpeme. So it became at times [a] misunderstanding, and they returned to war.” The elder continued to explain that every so often, when a ‘misunderstanding’ such as this took place, the people of Nkonya would attack the Alavanyo villages, and “even when they tuned to war, we have been able to send them to where they belong, and intermittently, they will just rush on us.”

It should be noted, however, that this history was provided by Alavanyo Wudidi residents. Although no Nkonya community members were interviewed in this research, government officials mentioned during a parliament meeting that both communities admit to partaking in violent activities. “The youths of the two areas vowed never again to allow the return of the era they termed ‘mutual slaughtering’ of their people.”

Although ‘mutual slaughtering’ was likely the case, no respondents interviewed mentioned any aggressive actions taken by Alavanyo.

5.4.6.2 Current Status of Alavanyo-Nkonya Disputes

The current status between the two communities appears promising for permanent peace-keeping efforts. The government attempted to restore peace between the two communities, but failed. The Evangelical Presbyterian (EP) Church put forth efforts, but was also unsuccessful. When these two institutions, the government (specifically, the Regional Coordinating Council) and the EP Church, collaboratively approached the communities they were able to begin mediation processes. These peaceful efforts began
in late 2005, and were recognized by the Ghanaian Parliament in February 2006. The overall goal is to establish boundary lands acceptable to both communities. The government believes that the youth of both communities are responsible for finally engaging the community in these peace efforts. As one government representative said during the parliament meeting held during February 2006, “the youths charged their chiefs and opinion leaders to remain focused on the peace process...it is important that I say special thanks to the youths of Alavanyo and Nkonya.”

5.4.6.3 Impacts of Conflicts on FC Involvement with the Togo-Plateau Reserve

When the FORUM project began in 1993, the Volta Regional FC was unable to fully embrace it surrounding the Togo-Plateau reserve. One community member explained, “The forestry people were actually patrolling and regularly visiting their land before the disputes. During the dispute period, they also fear their live, so they choose to retreat. This time, they are not coming around.” FC representatives and affiliates of FORUM explained that while they organized visits to the area, employees refused to visit the area for fear of violence, attacks, and overall danger. Another Alavanyo Wudidi resident stated, “But because of our land disputes for our friends, [the FC] are scared, so most of them left.” The few times FC representatives visited, they began to set the foundation for various programs. However, because their visits were not consistent, these programs never took off with the success they did in other areas. The FC made promises of incentives and efforts that they were unable to keep. In turn, this deterred the community members from participating in FC programs, as those who did make efforts never found any rewards for their work. Quotes one respondent:
“Formally, [the FC] used to supply [Alavanyo Wudidi forest volunteers] some things yearly. They used to supply stationary, and uh, stationary, for carrying our work. Even this megaphone they supply us before, for announcements. Today we are going to work. Today there is a bushfire. We call the people to go there – that’s what they had been doing for us, formally. But now, at present, there is nothing like that. Especially our stationary. Then when we apply for this good, they don’t get back to us, nothing like that.”

Although this did not heavily alter the community members’ level of satisfaction regarding FC policies (previously discussed in section 5.4.3), it did decrease Alavanyo Wudidi’s opportunity for social and human capital that other communities in the Volta Region were able to take advantage of. As a result, communities such as Alavanyo Wudidi and others surrounding the TPR have fallen behind in workshop programs relative to other communities throughout the Volta region that have been strong players in the FORUM initiative. They have less awareness and understanding of programs offered to residents. For example, several Alavanyo Wudidi residents expressed the desire for the FC to provide tree seedlings to intermix with their crops. They were either unsure how the seedling program worked or unaware that the program even existed. Regarding the seedlings, one respondent states, “What I know personally is that when you apply for the seedlings as an individual, they will give them to you. But there is change in government, so I don’t know if this is continued.”

One FC employee reported that over the last 18 months, district and regional-level branches of the FC had begun to organize workshops and forums specifically designed to involve communities near the Togo-Plateau Reserve, such as the one I attended in Jasikan district held in July 2007. However, not all history has been forgotten, and FC officials are not ready to entirely embrace the Alavanyo-Nkonya area. They continue to approach
the situation with both caution and support. A parliament representative of Volta Region spoke at a national Ghanaian Parliament meeting held in February of 2006, soon after peace-keeping efforts began:

“I want to add that it is by the efforts of the people of Alavanyo and Nkonya to make this peace last that the Government will feel that it should bring development programmes to the area. We know they just happened to stop fighting and we hope that it is going to be a lasting peace. But... we have said this over and over again, that they stop for a while and then they are back at it. Now we are saying that let us see peace and then we can call on the Government to do something for these people. They want peace in their area and they want it also for Ghana and therefore they are willing to develop any projects that are brought there.”

Nonetheless, with the support of the FC, church and youth of the communities, FC officials and community members remain optimistic about the situation.

5.4.7 Progress of Alavanyo Wudidi in Forest Policies
To understand the current status of the community in forest policy involves exploring several dimensions. This section highlights four main elements. The first section depicts the goals of both FC and community. Second, the level of community awareness is discussed, providing an example of how community members are still not fully conscious of their options with the FC. The next section exemplifies ways in which knowledge and policy are (or are not) integrated into policy. The concluding section outlines the future of the TPR.

5.4.7.1 Goals of the community and FC.
It is recognized by both residents and the FC that the communities near the TPR are behind relative to other Volta Region communities. An employee of the FC explained, “for a long time, the Togo-Plateau Reserve has had not many activities. Alavanyo and Nkonya were very unsafe. The reserve has had little care because of this
unsettling situation. Our stakeholders have collaborated elsewhere.” The current goal of both groups, FC and communities near the TPR, is to ‘catch up’ the people who have been unable to fully participate in the FORUM based activities. The conflict has decreased the community members’ capability to be involved and acquire the natural, social and human capital that can be potentially gained from FORUM and FC programs. However, workshops specifically geared towards the TPR, such as the one I attended last July, are designed specifically for this reason. As community representatives are exposed to the human capital offered in these workshops, they will be able to return home and disseminate this information to the whole community.

5.4.7.2 Community Awareness of Policies
The lack of communication between the FC and the community has resulted in community members not entirely aware of their options with the FC. For example, many community residents asked for equipment that would help, such as Wellington boots. “If they could provide us with tools, such as Wellington boots, I would like that.” The FC has actually provided volunteers and those participating in FORUM activities with this equipment as incentives. However, due to both the community conflicts and unstable funding, according to community members, this physical capital never made it to Alavanyo Wudidi. Another example is the seedling program; many residents reflected on a time between 3 and 5 years prior where the FC came in and handed out seedlings. This was done as an invitation to participate in the seedling program, but the community residents saw this as a single anomaly.
Awareness also becomes an issue in terms of the TPR boundaries. As expressed in the map biographies, two hunters located some of their best hunting spots within the reserve (see previous section on visiting the reserve, 5.4.4.2). The lack of education and information flow between the FC and TPR communities is illustrated here. Hunters tended to have land closer to the reserve, and simply may not be aware of where the exact boundary is – both the FC and respondents claimed that the boundaries of the reserve have not been well maintained, making it possibly difficult to distinguish where the reserve begins. At the same time, the hunters may simply disregard the reserve boundaries, knowing that their chances of catching are better within the otherwise undisturbed reserve. Considering the lack of FC presence in the area, they are less likely to get caught while in the reserve. It is important to note that while hunters appeared to have a very decent grasp as to where they were locating places on the map, it could remain a possibility that they were mistakenly drawing in the wrong place.

5.4.7.3 Knowledge and Practice in Policy
The local knowledge of Alavanyo Wudidi is not really incorporated or considered during the decision-making processes in forest conservation. Cultural knowledge illustrates one example. Upon discovering that a community’s spiritual deities lived in a particular forest, the FC was able to demarcate that forest as protected. In contrast, despite being in the vicinity of the reserve, cultural knowledge regarding the royal graveyard in Alavanyo Wudidi mentioned by several respondents is not being intermixed with protected forest lands. It is possible that as dialogue increases between the two groups, cultivating social and human capital, this may change.
The types of knowledge in Alavanyo Wudidi that are being incorporated in policies are those that are very similar to surrounding communities, such as economic knowledge pertaining to livelihood activities. However, this is not because it is Alavanyo Wudidi’s knowledge; some community livelihood activities, such as farming or wood carving techniques, are not only common throughout the area but throughout West Africa. Hence integration is not part of the community, it stems from the greater interest of many communities. The policies do allow for them to carry on the majority of the activities needed to sustain their livelihoods without much interruption.

Several livelihoods, specifically hunting, are a bit more complex in understanding their role in policies. Although hunting of some species is illegal, the decreasing populations of animals cause hunters to capture any creature they can. As stated in the Wildlife Conservation Regulations, amended in 1971: “Regulation 1 entirely prohibits the hunting, capture or destruction at any time of certain species of animals.” Hunters recognize that what they are doing is illegal, but they tend to follow the other laws, because “hunters and the forest people want the same thing. We want good lands for our animals to grow.” However, there is recognition that these activities do still occur. Hunters emphasized that point when on the map they illustrated the reserve as a favorite hunting spot.

Through the workshops and education courses, the FC is trying to ease people out of livelihoods like hunting and into more sustainable, legal ones. In essence, the environmental knowledge hunters demonstrated about biodiversity is reflected in policy, only countered – the hunting laws specifically target certain species, aiming to reduce
hunting anything and everything. Until then, particularly as Alavanyo Wudidi is concerned, the lack of FC presence in the area makes it especially easy to carry on with hunting activities.

5.4.7.4 Summary of Alavanyo Wudidi LK Dimensions in FC Policy

Even with the lack of FC presence in the area, there are still elements of Alavanyo Wudidi knowledge intertwined with forest policy. Mainly, these are dimensions of economic knowledge. Knowledge regarding livelihood activities, capabilities, and human assets all surfaced in policy; this is mainly because Alavanyo Wudidi’s knowledge of these things is not so different than other communities. On this note, what does differ spatially is cultural knowledge, and in this context, Alavanyo Wudidi is not represented very well. Respondent interviews infer two main reasons for this. The first is that the FC has had less involvement in the area, therefore has been less exposed to this knowledge. Second, cultural knowledge was hardly mentioned by participants, meaning its lack of strength would not make a good case for a need to incorporate it into policy.

Environmental dimensions of knowledge are incorporated in two different ways. Alavanyo Wudidi’s environmental knowledge is very similar to that of the FC, recognizing processes like convectional rain, soil fertility, and ecosystem structure. Because both groups recognize the significance of this knowledge in conservation, it is a form of Alavanyo Wudidi knowledge that is within policy, albeit not because of Alavanyo Wudidi specifically. Second, there is recognition of elements such as biodiversity by both FC and community members. Participants demonstrated knowledge of this concept, especially hunters. However, the way that animal biodiversity was
incorporated in the policy – specifically, protection of weaker or endangered species – was not how the hunters viewed the presence of various animals. As demonstrated in the interviews, hunters understood biodiversity in the context of their livelihood and in hunting: what types of animals lived where, mobility of different animals, good times of the day to catch specific creatures. This dimension of environmental knowledge, then, is incorporated into policy but in a reverse way. Although this law technically restricts their ability to carry out their livelihood, the hunters seem to find ways not to let that stop them (as depicted in both interviews and map biographies). The LK matched the policy (biodiversity), but livelihood activities indicated the difference between the two (protection versus capture), emphasizing the importance of studying LK with livelihood context.

5.4.7.5 Future Dialogue of the FC and Alavanyo Wudidi

Currently, the relationship being reestablished between the FC and TPR communities is in its infancy, and its future remains unknown. Even though community members are becoming more willing to participate, the FC still remains cautious of fully implementing FORUM programs near the TPR. As a Parliament representative in 2006 stated, “I am calling on the Government but I am also saying that the youth and the people of Alavanyo and Nkonya should show that they deserve to be given the help that will allow the area to develop.” Furthermore, there is no guarantee even after making a commitment to participate that community members will stay actively involved in whatever programs the FC brings. Again, this derives from the previous lack of communication between the two. There is great optimism because the success of
FORUM elsewhere, but this is accompanied with hesitation and uncertainty produced by troubles of the past.
6. Discussion

Local community involvement in policy construction is increasingly recognized as pivotal to successful forest management, both allowing for a more interdisciplinary approach to policy and enhancing the rights of local communities (Gauld, 2000; Enters and Anderson, 1999; Opoku, 2006; Harris and Hazen, 2006). This research was conducted to gain insight in both the links between local knowledge and forest-dependent livelihoods as well as the way local knowledge is being considered into forest conservation policies. The research used qualitative methods to capture a better depth and understanding of local knowledge and forest-dependent livelihoods. The purpose of this discussion is to place the research findings within the context of local knowledge, livelihood, and forest policy literature, specifically in Ghana and Sub-Saharan Africa.

6.1 Conceptualizing and Defining LK in Forest Policy

Differences in LK from place to place pose a challenge in presenting exactly what conservation policies directly using LK would look like. Communities are not homogenous in their knowledge and activities (Enters and Anderson, 1999), so policies incorporating local communities will not all be alike because the contexts and groups engaged are different (Rangan and Lane, 2001). The essence of local knowledge rests in its spatial relationship to a particular place, which makes each community unique in its environmental, economic, and sociocultural agendas. This variation makes it difficult to depict exactly what a policy that completely intertwines LK would look like. Hence, this research illustrates that while it is important to establish dialogue between government and community, the ultimate goal is not necessarily to directly copy and paste LK into conservation policy. Rather, the relationship developed through government-community
communication allows for dimensions of LK and livelihood practices – even from multiple communities – to be acknowledged during policy construction.

6.1.1 The Livelihood Framework

The livelihood framework, when applied for this type of research, was accompanied by its own strengths and weaknesses. There are several advantages of the livelihood framework. One, the framework allows for flexibility, and can be molded to fit the research context. For example, the framework allowed for forests – whether in the environmental, cultural or economic contexts – to be quantified in a comparable way. Also, the idea of human agency (Peet, 1998) could be incorporated through the capabilities aspect of livelihood. People have agency and the ability to utilize and manipulate their assets in such a way to maximize their livelihood income. These capabilities can influence how people manage forest resources, hence is an important element to address. The flexibility of the livelihood framework allowed for a broader and more encompassing scope of what could be defined as local knowledge about forests and livelihoods.

Because the livelihood framework is not grounded in any particular issue, it can be reworked to address a variety of issues. In addition, applying the livelihood framework allowed to reframe these livelihood skills and practices in such a way that they could be comparable to forest policies and each other. In many cases, it is difficult to understand the links between local development, community behavior, livelihood activities and forest resources (Enters and Anderson, 1999). Using the livelihood framework enhanced the ability to translate local knowledge and livelihood practices into tangible, relatable elements that could, if deemed effective, be recognized in policy.
Yet at the same time, the livelihood framework had to be modified and did not always catch important elements that arose in this research. For example, the livelihood framework was not sufficient enough on its own to address structure; the framework had to be modified to incorporate idea of social networks and structure. Agency could be expressed and integrated via capability, but structure had to be entirely attached on to social capital. Structure emphasizes the relationship between social interaction and ability; incorporating it into social capital does not capture all of or distinguish between the elements that can potentially impact livelihood. For example, structure involves the extent of authority of both allocative (material) and authoritative (social) resources. The livelihood framework dislodges the relationship between these two by separating them into natural and social capital; there may be elements of their connection that influence livelihood strategies.

In addition, the livelihood framework requires modification if it is going to be applied to any sort of issue (such as resource conservation, political instability, etc), as it is not grounded in any particular one. While in some ways this is a benefit, as it can be partially overcome with the framework’s flexibility, specific elements risk being overlooked or detached when the framework is transformed and applied to an issue. For this research, the framework provided no assistance in whether or not livelihood actions encouraged or stifled forest growth and health. The livelihood framework did not distinguish whether or not capital will help or hurt conservation efforts; some forms of social capital are not in line with forest management (discussed more in section 6.4.1).
6.2 Changing Practices and Knowledge about Livelihoods

Community members are diversifying their livelihoods, mainly with farming. Engaging in multiple livelihood activities, thus ensuring a greater security of income even when encountering times of crisis (such as drought or economic decline), is coined livelihood diversification (Ellis, 2000; Baro and Batturbury, 2005). Livelihood diversification is a strategy commonly practiced throughout African households (Baro and Batturbury, 2005). In Alavanyo Wudidi, farming tends to be the main livelihood activity practiced; however, those with other livelihoods such as hunting or wood carving also tended to rely on farming. They practice diversification in response to long term land cover changes as well as shorter, seasonal changes. Activities such as crop diversification raise the quantity of crops produced, increasing both income and food security (Tschirley and Benfica, 2001).

Even within Alavanyo Wudidi, the development of LK in the context of farming livelihood is changing. More and more, the youth seek their knowledge of livelihood activities from formalized education and other external sources. In acquiring this education, these youth are more exposed to FC information and opportunities. However, in many cases, agricultural lessons in school utilize mechanized technology. Youth return to the community with this new information but are unable to employ that capability as they lack the physical assets and technology to do so. Hence they are forced to only apply some of that knowledge, and draw upon knowledge they gained locally from their families and community members. Although community members are concerned with rising population levels, causing an increased demand on food production (and a decreased interest in farming from younger generations), those who do engage in
farming are learning more effective – and thus, more profitable and productive – farming methods. They are contributing to the development of LK as they incorporate hybrid methods of farming into the community.

6.3 Understanding the Scope of FORUM’s Success

Positive change is in the making as African governments seek to reform their environmental resource policies by dropping the embedded colonial structure and replace it with a stronger focus on participatory action and democratization (McLain, 2001; Wily, 1999). The case of the Volta Region demonstrates potential of this, as their forest cover has increased over the last decade through the implementation of FORUM. This project has aided in changing the FC’s approach to forest policy. Because FORUM is unique to the Volta Region, it pioneers new methods for Ghanaian forest management. Statistics at the regional and district levels illustrate that progress is being made.

However, it is important to note that honing in to the community scale exposes a different story. One of the reasons for the success of FORUM thus far has been its ability to cultivate human and social capital through dialogue and interactions with communities. Depending on the LK and practices of the community, this social capital spawns various extra benefits (such as the case with the chief who protected nearby forests in thanks for the man driving the village school kids home). Again, LK in every community differs, so these added benefits will also differ. When only generalizing the communities that have been involved, and broadening the scope to a district or regional level, FORUM appears to have been extremely successful. Yet focusing in on particular villages, such as Alavanyo Wudidi, the pitfalls and flaws of FORUM are highlighted. Failure to
participate, regardless of the reason, creates an uneven playing ground for communities. Intensifying government-community relationships is not the cure-all solution to forestry issues.

Just as communities differ in their knowledge, they also differ in the extent they value it. Even though the FC is striving to be more interactive with the community, interactive does not mean ‘bottom-up.’ The attributes of FC policies and programs still reflect a relatively ‘top-down’ approach, albeit with a bit more flexibility. Yet respondents did not seem too phased by this; community members, rather than actively attempting to argue for the integration of what they know into forest policy, were happier with the FC simply telling them what to do. This surfaced in several different ways. Many of the community respondents indicated that they would prefer the FC to have control of the reserve over the community, because they did not trust that their own system would work. Younger generations are shying away from what their parents are teaching them and preferring methods taught in school – even if those methods are not feasible to actually practice. Very few community members recognized specific cultural knowledge of the forest, and those who mentioned it hardly expressed concern of protecting it. This is not just an anomaly; around the world, local communities, both at the margin and within the forests, are becoming more and more affected by modernization and marketization (Enters and Anderson, 1999; Smith et al, 2000). What is the value of local knowledge if the local people do not value, respect or embrace it themselves? And what is, then, to become of it? A top-down approach, where
incorporation of local knowledge is optional, will not help embrace the essence of local knowledge.

6.4 Complications of Community Involvement
Researchers designing environmental conservation strategies increasingly understand the importance of including community perspectives (Agrawal, 1996; Sheffy, 2006; Appiah, 2001; McFarlane, 2006). Currently, as these strategies are implemented, governments and other institutions are facing a number of complications in ensuring community collaboration goes smoothly. These obstacles include: local situations that may interfere with community involvement; creating a setting that fosters trust; assuming community members are willing to engage in sustainable practices; and the extent to which people are motivated by material incentives.

6.4.1 Actors in Forest Conservation Policy
The actors involved in a forest conservation policy determine how much that policy can be manipulated, overridden, ignored or changed. In the case of Ghana, the government is the primary actor designing and implementing forest conservation policies (although with programs like FORUM, the government is strengthening their scope and considering the needs of other stakeholders). Regardless, there is little flexibility or ability for residents if they are caught breaking these laws. Community members have a sense of fear and respect for government policies, and are overall unwilling to push their limits or test them. In addition, people generally lack any forms of assets and do not have the capability to override government-created policies. Government policies are more immune from social networks and other actors that could alter or sidestep them.
However, policies and laws constructed by other actors become a bit more complex. Policies separate from the state may be linked to other networks and structures that increase their flexibility; the community bylaws for Alavanyo Wudidi exemplify this. As noted as one of the weaknesses of the livelihood framework, some capital may become a disadvantage to a greater cause if used by an individual (Duncan, 1999). For example, suppose a person may not call in the VFD when preparing to burn their land, and they get caught for it. This person happens to have a relationship with the village head police officer – thus belongs to a specific social network, increasing their social assets – who then removes any charges that otherwise the person would be facing. Respondents cited cases where this happened, explaining that for this reason, government rules are better. Community laws are tied in with social networks that could increase a person’s capability to avoid them, even if the law is in place to protect the community as a whole. Those who are not involved in this social network are then forced to follow the rules or face punishment if the rules are broken. Hence, in placing the livelihood framework with a particular issue, assets can be classified as being positive or negative to a broader issue (Duncan, 1999).

6.4.2 Local Conditions and Cultivating Trust

One primary concern, as communities become more integrated into government agendas and conservation strategies, is the imbalance of participation amongst them. A number of unique local factors will influence a community’s opportunity and ability to actively participate in government and other institutional programs (Kyem, 2002. Alavanyo Wudidi’s prospects of becoming involved with FORUM were hindered by the
land disputes that occurred in the area. The government faced a situation in which they were forced to choose between working with TPR communities and placing themselves in danger, or, eliminating that risk by reducing their involvement in the area. For a few community members, a cycle of distrust originated from the government’s unwillingness to fully embrace the TPR due to the area’s conflicts.

Establishing trust is a pivotal element in ensuring community involvement (Kyem, 2002). FC officials, during the few instances they were willing to enter the area, encouraged community members to volunteer, with promises of incentives. However, they never delivered, and individuals became skeptical as these promises were not kept. Earning a community’s commitment to engage in a forest initiative involves fostering the social capital that produces trust. Alavanyo Wudidi residents quickly lost interest and enthusiasm for FC programs when they could not trust they would follow through. Conflict frequently originates from disagreements of land ownership (Kyem, 2002). Furthermore, there is potential to increase this tension and conflict amongst communities as they vary in level of involvement and collaboration with the government (Opoku, 2006). The situation with Alavanyo Wudidi exemplifies this, underscoring the importance of taking local conditions into account as collaborative forest strategies are constructed. It also demonstrates the need to delicately approach generating trust in special circumstances.

6.4.3 Willingness and Motivation to Engage in Conservation

Another issue that needs to be addressed is that many participatory approaches rely on the assumption that local communities want to actively conserve and protect
natural resources (Enters and Anderson, 1999). Community members recognized the environmental importance of sustainable activity and forest resource conservation. Yet many respondents openly admitted that the only reason forests remained on their land was not because of environmental stability, but because of time and labor restraints keeping them from clearing and farming on it. Furthermore, a number of respondents felt that the forest reserve would serve better as an economic material producer than it would as an environmental archive.

It is interesting to note that while the environmental impacts of the forest were understood and considered important, very few people planted trees for this reason. If offered to be provided with the physical and financial capital (specifically, tools for mechanized farming) necessary to clear forests and expand their farm, most would accept. In many cases, people will participate in conservation programs if provided material incentives, but will cease the activity when the incentives stop coming (Pimbert and Pretty, 1997). Building on this, they may willingly accept material goods despite knowing they are damaging the natural resources they depend on (Enters and Anderson, 1999). For many individuals, interest in forest conservation rests on the extent their own behavior influences their survival (Enters and Anderson, 1999).

6.4.4 Understanding ‘Participation’

Creating the groundwork that defines terms such as ‘participation’ is pivotal in the success of any development project (Burkey, 1993; Poolman and van de Giesen, 2006). The poor transition of these buzzwords into their application in development programs has produced more problems than solutions in West African settings (Poolman and van der Giesen, 2006). Although details differ, the overall idea is that a participatory
approach means engaging people, planners and policy designers from all levels (Poolman
and van de Giesen, 2006). However the design of any participatory project intending for
particular spatial locations to ‘participate’ needs to incorporate conditions specific to that
area. Alavanyo Wudidi exemplified what happens when this does not occur; their terms
of participation were different than other communities because of the lack of FC presence
in the region. If local issues were considered, perhaps a different participatory approach
for communities in the TPR region could have kept them involved without FC officials
risking violence. Thus failing to solidify what is expected with ‘participation’ can create
even more problems. “Different and multi-interpretable definitions of participation have
led to unsuccessful implementation and use of participatory methods” (Poolman and van
de Giesen, 2006, 562).

Building on this, even after a community’s local circumstances are understood,
the goals of participatory management may not actually line up with the goals of the
community. Additionally, coining a development strategy as ‘participatory’ does not
necessarily change its mechanics; the goals of an ideal participatory approach may not
line up with the demands of a community (Poolman and van de Giesen, 2006).
Relationships within a community might not surface in a compatible way with
participatory methods (Poolman and van de Giesen, 2006), rendering the participatory
approach inappropriate. Strategies could still reflect top-down or imposed agendas on
local areas, as witnessed in the case of FORUM; FORUM still reflects a top-down
approach even though communities are included. Respondents recognized the
importance of forest protection, and acknowledged that they like FC involvement, but
still prioritized the desire to clear trees and expand their farms as most important. A participatory approach for conservation would then be questionable as the community Hence to successfully implement participatory methods, local level investigations require moving past identifying the symptoms of problems and instead addressing the causes (Burkey, 1993).

6.5 A Future without FORUM

In many instances, NGOs and other groups implement projects that are successful throughout their duration, but fail upon ending (Gray et al., 2001). Many communities suffer as they become reliant on projects that really only serve as a temporary and quick fix, but do not last (Agrawal and Chhatre, 2006). Having just ended in February 2008, the implications of FORUM’s exit and the responses from parties involved will remain unknown for a while. The absence of FORUM will pose several challenges to communities, especially those like Alavanyo Wudidi who were unable to take full advantage of it while it was present. The FC now faces the task of maintaining and further developing the work begun with the help of FORUM.

Regardless of its pitfalls, FORUM’s unique approach has placed the Volta Region on a positive path of forest management. For reasons previously discussed, incentives alone will not be the solution to forest mismanagement. Instead, conservation projects should encourage alternative income sources, education on natural resource conservation, and increased awareness of environmental issues (Enters and Anderson, 1999). Along with restoration of forests, FORUM’s goals involved establishing a working dialogue between district governments and local groups. FORUM is providing incentives, but is also reaching a bit deeper and embracing things like education in order to reach the
foundation of the problem instead applying a quick fix. A fifteen year project has come to a close, hopefully leaving behind the remaining building blocks the FC needs to continue to construct and develop relationships with communities in forest contexts.

6.6 Map Biographies and Interviewing
An important element to note was the contribution of the map biographies to the research. The use of map biographies deepened the understanding of participants’ spatial knowledge of the forest. Respondents’ words could be spatially illustrated in the maps, and things such as location and topography were easily discussed in the context of their knowledge about the forest. Expanding the idea of ‘participatory mapping’ and recreating the ways in which maps are used as conservation tools can potentially improve and clarify community voices in conservation strategies (Harris and Hazen, 2006).

6.6.1 Overcoming ‘Participatory Mapping’ Issues
Employing participatory mapping as a conservation tool is growing in popularity (Harris and Hazen, 2006), however presents many drawbacks. Participatory approaches involve collectively gathering a group of community members to collaboratively construct a map that illustrates their needs, knowledge and significant elements of the area (Harris and Hazen, 2006; Tobias, 2000). However, as previously discussed, terms like ‘community’ and ‘participatory’ may be defined outside of the local context and may not accurately represent or be appropriate for a specific area. Although the use of map biographies does not fully overcome this, as participants selected could still be selected based off of externally predetermined criteria, there is less of a risk of social networks impeding on an individual’s ability to participate. Future conservation projects involving resource mapping can sample people that are dependent on a resource and related to a
community, but not necessarily considered part of it. This would include those living in the surrounding areas, who are not involved in a social network but still spatially in the region, or who migrate in and out seasonally. All of these people interact with and hence should have a say in how the resources are managed. Map biographies, unlike participatory mapping, allow involvement of individuals who may otherwise have been left out. Participatory mapping approaches the community as a whole, only involving those who are seen as part of the community’s social network.

In addition, another shortcoming of participatory mapping projects is the presentation of social relationships and power. There may be links between people that are difficult to understand, especially for an outsider (Poolman and van de Giesen, 2006). Using a participatory approach presents these connections alongside the group studied; however, the map biographies separate individuals, allowing them to more freely express what they know about the area (Poolman and van de Giesen, 2006). Although maps in general are accompanied with elements of power and influences of social structure (Harris and Hazen, 2006), individual map biographies at least allow each person to express their own knowledge with less concern about these power differences. Alternative mapping strategies to participatory may better “address power differentials between populations, areas or species” (Harris and Hazen, 2006, 119).

Building on this, participatory mapping projects often involve the use of technologies such as remote sensing or GIS (Kyem, 2002) in order to appear more ‘valid’ or ‘formal’ (Harris and Hazen, 2006). This poses a challenge for many participatory projects as the epistemology does not match the cultural knowledge sought (Smith,
1999). Uses of Western cartographic forms to incorporate alternative knowledge risk losing information through language translation (Harris and Hazen, 2006). Although using the Western-based map for the map biographies did not entirely overcome this issue, the simplicity of a base map and providing of a relaxed cartographic language allowed participants more freedom to express what they needed to – how they needed to – on the map.

Participatory mapping would not have worked for this research; the map biographies helped overcome the drawbacks of participatory projects and were a more fitting solution. Not only did the extensive effort and time involved stifle any chance of a participatory project, but this method would not have worked well in this research’s context. The idea was not necessarily to get a sense of ‘land use and occupancy’ (Tobias, 2000) but instead to get what they know about the surrounding lands, and how they apply their knowledge during these activities involving the land. The livelihood framework served as a tool to help translate this information from the map.

Map biographies did not only jump over the problems of participatory – they provided other benefits (and presented their own drawbacks) as well. Along with this, the map biographies also added a different element to understanding the participants’ knowledge of the forest, in essences not just discovering what they know but what they do not know. Absences in a map can be as significant as what is present (Wood, 1992; Turnbull, 1994). In participatory mapping, only one individual need know what to put, and it becomes representative of the entire group upon agreement. However, with map biographies, it is possible to compare several elements beyond this, including what
people choose to put on the map and find significant versus what they do not find important, and what people do not know to put on the map. For example, only two participants mentioned the royal burial ground in the forest, and both were elder males. On a community-based map, this could appear as community knowledge; however, with individual map biographies, what surfaced was not a consistent knowledge of these burial grounds amongst participants.

Interacting with individuals instead of groups not only overcomes the aforementioned problems, it can also strengthen that person’s spatial relationship with that area (Tobias, 2000). This can trigger a deeper sense of cultural pride and identity (Opoku, 2006; Tobias, 2000), which may help communities revalue their own knowledge. Although the map biographies only presented pieces of the community’s knowledge (Tobias, 2000), juxtaposing them together and integrating them with the livelihood framework created a new perspective on how to interpret local knowledge of the area – thus creating a new interpretation of the idea of ‘participatory.’ However, this is not to say that map biographies are without their weaknesses; measuring quality (validity, reliability, accuracy) pose a challenge with such a project (Tobias, 2000). Cartographic anxiety is a huge risk, as individuals are afraid to physically interact with or mark on the map (Wood, 1976). The questions arising with the hunters’ map biographies are one example of issues that can surface.

6.6.2 Speculations on the Hunters’ Situation

Moreover, in this research, the map biographies triangulated the data and proved that the information portrayed between interview and map did not always match up. The case of the hunters exemplified this – despite answering ‘no’ to questions regarding entry
into the reserve, they openly sketched their favorite hunting locations in the center of the reserve. This could indicate several things: one, it is possible that the hunters are disregarding the boundary lines, and were unwilling to admit this during the interview. They have little chance of getting caught, as it was known that the FC did not patrol the area very regularly. Perhaps these two hunters would have been a little less honest with the map if the reserve boundaries had been on it. Two, it is possible that the hunters are unaware of where the exact reserve boundaries are. For other reserves, volunteers actively participate in up keeping a fire belt. Yet this has not been the case for the TPR, and the actual boundary may no longer be very obvious. Hunters could honestly believe they were staying outside of the reserve, but are wondering in. Three, although there appeared to be no hesitance in how to read the map, the hunters could have been reading it incorrectly. Language barriers, translation, illiteracy, and other issues could hinder a participant’s ability to fully understand the map.

Regardless of the reason, this issue would not have surfaced without the use of map biographies. Supplementing the semi-structured interviews with this allowed for a unique check of the data’s validity and reliability.

6.6.3 Broadening the Applications of Map Biographies
6.6.3.1 Map Biographies in Livelihood and LK Research

From a broader perspective, the application of map biographies in this research reveals a few key points. First, it underscores the importance of data triangulation in qualitative methods. It aligned the information discussed during interviews with the area’s geographical location, complimenting and strengthening the data. It also revealed information that otherwise would not have surfaced, ensuring and giving insight to the
data’s validity and reliability. This is an important issue to address in all qualitative research.

On this note, the use of map biographies also contributes a new dimension of visual and spatial data when studying local knowledge and livelihoods. Participatory mapping can be very beneficial, but can also be accompanied with various power dynamic issues between involved stakeholders (Harris and Hazen, 2006). In contrast, this one-on-one approach allowed individuals to locate what was important to them without the influence of other community members, FC officials, or researchers, helping to relieve the pressure of what participants think might be the ‘right’ answer. Allowing people to spatially recognize what is personally important may provide a new lens into how we understand and work with both LK and livelihoods. However, the drawback to this is that it is very labor intensive, and not always practical for larger geographical study areas.

6.6.3.2 Important Cartographic Elements in Map Biographies

Future researchers using this method must prioritize the importance of various map attributes. The scale of the map in this research was 1:50,000. This was the most detailed and only available map for this area. The geographical area covered in this map played to both an advantage and disadvantage in this research. In some cases, especially with individuals whose livelihoods cause them to be on the move, the vast area on the map was conducive to their ability to illustrate their knowledge of livelihood. Farmers, however, had difficulty expressing changes in land cover because their farm was a very small feature on the map. Hence the scale of the map did not always fit the scale of the question.
The language of mapping is another important point; the base map used in this research was constructed using Western cartographic language. Using these maps when working with local, traditional and indigenous groups could potentially stifle their ability to read the map properly. Yet if the base map not been there, it would have been nearly impossible to compare map biographies to each other. Hence researchers further exploring this method must prioritize what elements are important to preserve.

Also, the features selected to be on the map are important. In this research, the map did not have the boundaries of the TPR. This influenced what participants sketched on the map. Researchers should consider which geographic features are important both in the participant’s ability to read and understand the map and in the context of their research.

Lastly, researchers need to consider when the map was created. It should be noted that, especially in developing countries and rural areas, availability of topographic maps may be low. Maps that are available could be out of date or inaccurate. This could initiate a negative effect if the outdated information on the map is sensitive to the area (for example, if I had provided community members a map that wrongly demarcated the boundaries between Nkonya and Alavanyo, I could have instigated unnecessary and irrelevant tension during the interview, or risked losing trust with the community). Reconnaissance efforts should be made to make sure that the map is an appropriate representation of the area for the participants.
7. Conclusion

Ghana continues to make progress in fostering dialogue and discussion between forest stakeholders, acknowledging and addressing many problems along the way (Donkor et al., 2006). This research evaluated the extent to which this progress involves local community collaboration, specifically in the contexts of LK and livelihood activities. A livelihood framework was employed, and juxtaposing that with qualitative methods emerged various elements of forest-based LK and livelihood activities. Community members demonstrated various contexts of local knowledge as well as how to apply that knowledge in their livelihood activities. Local circumstances can prevent a community from fully participating in a government project (Kyem, 2002), as was the case with the community studied. Governments are faced with the challenge of distributing representation evenly and fairly amongst communities, while communities must demonstrate their willingness to become and stay involved.

Within the context of this research, the closure of FORUM brings up several significant questions. First, will the legacies left behind by the project remain as positive as they are currently? If the project has indeed been as exceptionally successful as the FC says it has been, Ghana could be a frontrunner in the global pursuit of forest conservation. Yet if in a short while, the relationships established via FORUM evaporate and forest cover decreases once again, FORUM has only proved itself to be another quick fix. Second, the imbalances of community participation present a challenge for government officials. How are local circumstances to be overcome, by both government and community, in order to ensure inclusion? Finally, if the program remains successful,
how might it serve as an example to other regions, within Ghana and across the globe? Aspects would have to be altered to better reflect the local knowledge of that region.

Overall, this research not only highlights the importance of acknowledging local voices, but also helps encourage the transition for forest conservation practices to recognize the needs of local inhabitants. This research addresses the marginalization between communities and policy-makers in Africa. On a broader scale, the project advocates for other countries to consider their own forest usage policies, their communities’ local knowledge about national forests, and how this knowledge can help foster a more collaborative and cohesive effort for forest conservation and sustainable use.

7.1 Contributions of Study Methods

In a methods context, this study underscores two major elements. First, it contributes to the small but growing literature on the application of the Chambers and Conway livelihood framework to local knowledge. Not only can new insight be gained by viewing local knowledge from different perspectives, shortcomings of the livelihood framework can be overcome through studies that modify the framework and address these concerns. The livelihood framework enabled me to better understand and interpret dimensions of LK and livelihood practices, translating it into a language comparable with the forest policies. Second, the potential to utilize maps as conservation tools has not been fully explored. I constructed the map biography methodology guided by literature on participatory mapping, indigenous cartography and mapping for conservation. The map biography was able to add a new, spatial dimension to how LK and livelihood
practices can be understood. In addition, it contributed to data validity and reliability.

More so, it was able to collect information in a way that at the community level, the use of maps as conservation tools help clarify and strengthen community voices within resource policy construction (Harris and Hazen, 2006). Many potentials of their applications remain undiscovered.

7.2 Broadening the Scope of Forest Conservation Policy

It is clear that environmental conservation strategies must involve the perspectives of local communities in order to be both environmentally effective and socially just (Harris and Hazen, 2006; Amanor and Brown, 2003; Brown and Hutchinson, 2000). What remains ambiguous is how collaborative tactics currently proposed and implemented address the underlying causes of conservation issues. This will continue to be a challenge as we assess whether or not development and conservation can successfully occur in tandem. With a decent grasp on environmental and ecological processes, we do this by broadening our interdisciplinary scope to tackle other dimensions of conservation, such as economic, social, religious and cultural. Instances where cultural beliefs are incorporated into forest conservation have been considered, although there remains a need to explore formalized dualities between conservation policy and forests with socio-cultural values (Campbell, 2004). Overall, researchers must continue to place forest policy under spotlight to better address deforestation and problems of resource mismanagement (Opoku, 2006; Afikorah-Danquah, 1998). This is the trail we must blaze, through protected, healthy forests and accompanied by local residents, to fully embrace the idea of a sustainable planet.
References


Appendix A: Community member Interview Questionnaire

Semi-Structured Community Member Interview Questionnaire (with Map Biography)

What is your main occupation? How long have you been doing this?
How long have you lived in this area? What is the size of your land? Is any of it under protection? What is the structural composition of your farm (crops, trees, and animals; crops and trees; trees only; etc)?
What are your main crops, animals and tree species?
Do you plant trees on a regular basis? Have you ever planted trees?
Are they planted together with crops, or alone?

Do you use the forest on a regular basis?
What kinds of things do you get from the forest?
What do you use these things for?

MAP: [Orienting individual with map, using the city of Hohoe and the hills as reference]
Can you tell me the names of important places on the map? You mentioned ________, ________, and ________ as resources you get from the forest to use for your livelihood. Can you show me where these resources are on this map? What path do you take to get there? Use the [insert color] strings/stickers/markers to show me. How often do you go there? How long do you stay? Use the [insert object] to show me how often you go to each place. Are resources you need from the forest hard to find? What is this resource used for? How important is it to get? How does this change during [wet/dry] season? Can you show me where you go during [wet/dry] season for these resources? Use the [insert color] objects.

Does the forest have any cultural or personal significance? Explain, if possible.
What would you say the forest means to this community?
Have there ever been problems or issues with who uses the forests and its resources?
Did these problems get resolved? (If so, how? If not, what is the current status of these problems?)
Is there another group (outside of this community) that uses these resources? Who are these groups? Mark that with the [insert color] objects to show me.

Are the forests the same as they were when you were growing up?
If not, how were they different? Why do you think the forests have changed?
You mentioned that the forest used to be ________ way [eg turned into pasture, farming, etc]
Use the blue marker and stickers to show me where these places are.

What would you do without the forest there? Where would you go to get [insert resource]? Show me this on the map, using [insert color] objects.
Have you or anyone you know ever worked directly with the Forestry Department in planning who gets the forest resources?

What do you know about Ghana’s laws and policies on using the forests?

Do you feel that the current forest conservation policies are doing a good job of protecting the forest? What about the policies are good or bad? How do you think they can be changed to improve them? Has there ever been an effort to meet as a community and discuss what goes into making forest policies? Do you think such a meeting would be helpful?

What types of things do you do to protect the forests?

Tell me anything else you think is important to know about the forests.
Appendix B: Base Map

Western half; following page has eastern half
(Special thanks to the University of Florida for their help in obtaining these maps!)
Appendix C: Key informant Interview Questionnaire

Interview Questionnaire for Key Informants

What is your role at the Forestry Department? How long have you worked here?

Explain the goals and purposes of the Forestry Department.

There have been several collaborative efforts nationally to create programs that protect Ghana’s forests. Can you tell me about them? How successful have these efforts been?

What goes into constructing the forest conservation policies on the [local, regional, national] level in Ghana? How applicable and effective have these policies been?

How does the Forestry Department define ‘conservation?’ What elements of the forest are considered important to protect? What does the department believe the role of local people dependent on the forest should be? How do you define conservation and view the role of local people to be? Do you feel that local people are adequately represented in forest conservation policy?

How do you address various stakeholders’ needs when designing forest management plans, and how do you select the priorities? [Note the scale to which they are discussing – national, regional, local] How are forest resources distributed?

Are participatory and community mapping projects funded by the Forestry Department, or any other organized group affiliated with the Forestry Department? Tell me about them. What types of results do these projects provide? Are these results considered in constructing forest management policies? Do you believe these projects are worthwhile to implement in policy decision-making?

Overall, what do you consider to be the biggest problems facing Ghana’s forests right now? What do you feel are the biggest successes the country has had in protecting these forests? Do you foresee any future issues, or do you feel the current forest management regime as a successful path to be on?

[Discuss any other topics based on employee’s specialty, such as GIS, biogeography, etc.]

Is there anything else important to consider when discussing Ghanaian forest management at this level?
Appendix D: Legal framework training forum project

General Objectives of the Legal Framework Training

Decision-makers at the district level like traditional rulers, opinion leaders, landowners and district assembly members should be able to protect and manage their forest areas according to current forest laws in Ghana with the support from FSD and other law enforcement agencies.

Hence this campaign shall ensure that there is considerable knowledge about current forest laws and their practical aspects with the above – mentioned members of the target group, including involved stakeholders form Government Agencies.

Contents of the Training

Day 1

1. Introductory Activities

2. Rationale for Forest Protection

3. Background of the current off – reserve status
   Information and discussion about the history of the Off-Reserve.

4. Laws
   a) Time – Line of Legislation
      This is a review of legislation from the 1927 Forest Ordinance to the Timber Resource Management (Amendement) Act, 2002.

   b) Ownership
      Definition / Ways of Ownership / Problems

   c) Management
      Definition/Traditional Methods of Forest Management / Laws on Management and Laws affecting Management / Offences and Penalties in Management and Forest Operation / Problems

   d) Explanation of Log - Marking
      Property Marks / Locality Marks / Trade Name / Stock Survey Number / Stump Markings / Conveyance Certificate / Restricted Species / Problems

Day 2
4. Laws (Continued)

   e) Benefits
       Customary Law / Statue Law / Private Plantations, in particular the Forest
       Plantation Development Act and its potentials

5. Case Study – Nana Ampadu

6. Land Lease Agreement
   The Land Lease Agreement developed by FORUM is examined and
   explained to participants.

7. Evaluation