ABSTRACT

WOMEN’S VIEWS ON THE POLITICAL ECOLOGY OF FUELWOOD USE IN THE WEST USAMBARA MOUNTAINS, TANZANIA

By Betsy Anne Beymer

This study examines women’s views on the political ecology of fuelwood use in the West Usambaras and asks how they view their access to fuelwood: (1) across the local landscape; and (2) as it is influenced by local, regional, national and international factors? Between May and August 2003, I worked with women in Mgwashi and Sagara villages to compile activity schedules, resource maps, photos and narratives, and Venn diagrams. This study demonstrates how the work of fuelwood can intersect women’s triple role, and considers the complex relations among regulated forests, the Sagara Community Forest, and locally-driven initiatives that are promoting agroforestry. My participatory research suggests that women’s unique, situated environmental knowledges need greater recognition in the ‘community’ management of Sagara Community Forest. The conservation of forest resources must be a collaborative process that supports women’s empowerment and encourages their self-mobilization.
WOMEN’S VIEWS ON THE POLITICAL ECOLOGY OF FUELWOOD USE 
IN THE WEST USAMBARA MOUNTAINS, TANZANIA

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Chapter One

INTRODUCTION

Forests are a ‘renewable’ natural resource that contribute to the subsistence livelihoods of many people (Adamowicz et al. 1993; Furze et al. 1996; Hannon 1998; De Groot et al. 2002). Rural people depend on forests for meeting their basic needs (Sponsel et al. 1996) and, particularly in Africa, the livelihoods of many cultural groups rely on their access and control over forest resources (e.g., Moore 1993; Thomas-Slayter and Rocheleau 1995; Schroeder and Suryanata 1996). One important example of a forest resource use that may directly influence livelihood security is the extraction of wood for fuel (Furze et al. 1996; Boahene 1998; Green and Thrupp 1998). People living in Sub-Saharan Africa greatly influence the environmental sustainability of forests because the collection of fuelwood supplies anywhere from 50% to 95% of their total energy needs (Thomas-Slayter and Rocheleau 1995; Boahene 1998; Boberg 2000). A decline in forest resources has negative environmental consequences such as the silting of surface water supplies, a decline in local rainfall and consequent loss of land productivity for food production, and a loss of native biodiversity (Anderson and Fishwick 1984). Moreover, and central to this research, is the fact that subsistence livelihoods are greatly affected by a decline in forest resources (Green and Thrupp 1998), and that women, through their reproductive work responsibilities, play a central role in meeting livelihood needs through fuelwood management (Moser 1993; Mitchell 1997; Green and Thrupp 1998). Women’s access to fuelwood resources depend on forest conservation and development initiatives that are immediate and local (Elliott 1999).

How women perceive their access to a natural resource, however, can have two dimensions. They may be viewed spatially, across their landscape, or by scale, in relation to hierarchically-arranged political economic structures that influence local use (Peet and Watts 1996). Political ecology is an important research approach to investigate relationships between forest resource conservation and livelihood security because it simultaneously evaluates political-
economic and ecological dimensions of environmental resource use at different spatial scales of analysis, from the local to regional, national and international levels (Blaikie and Brookfield 1987), and focuses on how resource access is influenced by development interventions (Peet and Watts 1996; Bryant and Bailey 1997). Feminist political ecology is particularly important because it treats gender as a critical variable in shaping resource access and focuses on the struggle of women to sustain ecologically viable livelihoods (Rocheleau et al. 1996). Resource use is a social process that shapes, and is shaped by particular regional contexts, contingences, and activities (Peet and Watts 1996; Rocheleau et al. 1996).

Fuelwood use, while central to local livelihoods, has an important regional dimension because its use is now considered a leading cause of deforestation (Boahene 1998; Boberg 2000). Mainstream views of degradation often ignore local-specific strategies that have shown potential to regulate against resource exploitation in the past (Fairhead and Leach 1996; e.g., Nagothu 2001 for India; Rocheleau et al. 1995 for Kenya). In contrast, community conservation emphasizes how local-specific strategies promote positive changes by, for, and with local communities (Western et al. 1994). Community conservation is significant because communities have a long-term need for the renewable resources near which they live, and possess more knowledge about these resources than other potential actors (Agrawal and Gibson 2001). Conservation ‘with’ local communities is strengthened by local knowledge that specifically addresses how forest resource use influences local livelihoods: “forest people are organizing to conserve their natural resources, which they depend on for their survival and well-being” (Sponsel et al. 1996:22).

Community forestry is now emerging as an important approach for local people to conserve forests while meeting timber and non-timber resource needs (Bojang 2000; e.g., Iddi 2000 in Tanzania; Dongol et al. 2002 in Nepal; Nightingale 2003 in Nepal; Sjoholm and Luono 2001 in Tanzania; Straede et al. 2002). According to the FAO (2000), community forestry policies should empower local communities to arrest forest resource degradation and
secure/guarantee access to, and ownership of forest resources. Community forestry incorporates the ‘participation’ of local people as the key element in locally empowered conservation strategies (cf. Slocum and Thomas-Slayter 1995; Buck et al. 2001; Agrawal 2001; Dongol et al. 2002). Through their participation, local people can organize and influence change over political processes that often dictate the availability of financial, social, and natural resources (Slocum and Thomas-Slayter 1995). Participatory research approaches, when applied to studies of community relations with forest resources, are also significant because they provide opportunities to validate local perspectives on opportunities and constraints (Jewitt and Kumar 2000), and support the gender-specific nature of local resource use and management (Slocum and Rocheleau 1995; Argawal 2001).

Much research supports the notion that fuelwood is primarily a women’s issue (Mitchell 1997; Green and Thrupp 1998; Stott and Sullivan 2000; Argawal 2001) and that: “conservation cannot succeed in Africa without the support and full participation of women who are closest to the natural resources in rural areas” (James 1993:256). Fuelwood collection and use is “women’s work”, adding significantly to their workloads (Moser 1993; Rocheleau et al. 1995; Wanjama et al. 1995; Green and Thrupp 1998; Agrawal 2001). Therefore, research on the conservation of forest resources needs to encourage local participation in better understanding the political ecology of fuelwood resources by collaborating with women under a participatory research design that supports power with and power for women over their access to fuelwood.

Statement of Research Purpose and Questions

The purpose of this research is to gain a local understanding of how women perceive their access to fuelwood in the West Usambara Mountains of Tanzania (Figure 1). Local communities in the West Usambaras, particularly women, depend on montane evergreen forests as a source of fuelwood, and extraction practices are now in conflict with government policies for protection (Kaoneka and Solberg 1997). The West Usambaras are part of the Coastal Forest-
Eastern Arc biodiversity hot spot, which is a global priority for conservation (Myers et al. 2000). I emphasize a ‘feminist political ecology’ lens on resource use, by focusing on how women perceive their access to fuelwood across the local landscape (space) and in response to political-economic structures (scale; Figure 1). Two research questions guide the research:

1. *How do the women village residents in the West Usambaras view their access to fuelwood resources across the local landscape?*

   This question investigates local views on the spatial distribution of forest resources. Local village women were asked to map out specific areas of fuelwood resources and provide images of how they are distinguished across the landscape. A topographic map of the study area was used to collaboratively georegister women’s mapping of resources with local land cover. These participatory methods determined how women perceive opportunities and constraints in their access to fuelwood as determined by the geography of their distribution and if there were significant changes in their spatial distribution over time.

2. *How do the women village residents in the West Usambaras view their access to fuelwood resources as it is influenced by local, regional, national and international factors?*

   This question explores how women perceive their access to forest resources is influenced by political-economic factors from the outside. Semi-structured interviews and the participatory construction of Venn diagrams were used to identify institutions and characterize how they influence their access to fuelwood resources. I focused particularly on how these women perceived opportunities and constraints as imposed by development initiatives, and regulations that control resource use in the nearby (adjacent) forest reserves and their local views of what forest sustainability means.

   My study assumes women have unique and important perspectives on the conservation of fuelwood resources in the West Usambaras. I focused on women and employed feminist methodologies. Feminist methodologies question power relations within the research process by working directly to validate local views, reducing an otherwise hierarchical relation between the researcher and the researched, and engaging in a process that promotes women’s empowerment (Oberhauser et al. 2003). My research considers how women connect their everyday life to broader political economic change and societal structures (cf.
How do the women village residents in the West Usambaras view their access to fuelwood resources as it is influenced by local, regional, national and international factors?

How do the women village residents in the West Usambaras view their access to fuelwood resources across the local landscape?

Figure 1. Research framework used to investigate the political ecology of fuelwood use in the West Usambaras, Tanzania.
Oberhauser 1997; Oberhauser et al. 2003). The study framework, as defined by feminist political ecology, especially focuses on gendered knowledge, the link between culture and resource use practices, and the importance of the macro-context (Jackson and Pearson 1998). Understanding the factors that dictate access to resources is an important first step toward empowering women to obtain more control over resource management (Moser 1993). Women’s access and eventual control over fuelwood resources is considered critical to the conservation of forest resources for local livelihoods (Rocheleau et al. 1996).

**Presentation of the Study**

This study is organized into six chapters. In chapter two, the study begins with a literature review on the relationships between local communities and forest resource management, theoretical frameworks in political ecology, and the contributions of participatory approaches to gaining local knowledge from women. Chapter three describes the area of study by providing brief descriptions on the local ecology, and the livelihood strategies of the study population. Chapter three also presents a historical analysis of forest resource management in the West Usambaras that particularly distinguishes policy changes in colonial and post colonial times. Chapter four describes how the study population was chosen, the data that were collected, and the participatory methods employed. Chapter six presents the discussion and conclusion section of the thesis.
Chapter Two

LITERATURE REVIEW

The purpose of this literature review is to provide a research context to my study on women’s views of forest resources in the West Usambaras, Tanzania. I first elaborate on relationships between local communities and forest resource management, particularly focusing on the idea of community forestry and how local communities are empowered through their involvement in local management practices. The second section of the review expands on the theoretical frameworks in political ecology, emphasizing the role of gender, and the significance of historical analysis to any study of resource access and control. Lastly, the review illustrates the contributions of participatory approaches to gaining local knowledge from women, and describes a number of different tools that promote opportunities for information sharing and collaboration.

Forest Resource Management and Local Communities

Prolonged interaction with the natural world enables traditional societies to possess a wealth of indigenous knowledge that is fundamental to their physical, spiritual and social well being (Shiva 1988; Agarwal 1992; Marchant 1992). Forests and forest resources in village commons provide basic necessities for rural households, and indigenous people have been defending their biodiversity for many generations (e.g., Agarwal 2001 for South Asia; Long and Zhou 2001 in Southwest China). However, people’s ability to fulfill such needs decreases with a decline in communal products due to an increase in local demands (Momsen and Kinnard 1993; Long and Zhou 2001), and shifts in property rights from communities to private and state land owners (Agarwal 2001). For example, regulatory policies for resource use implemented during the colonial period in African nations persist in a post-colonial era where governments delineate forest reserves, restrict indigenous access, and alienate local communities from forest ownership (William 1995; Bojang 2000; Adams and Hulme 2001). These laws, while a response to evidence of resource degradation, may promote local
exploitation by eliminating the incentives for traditional sustainable management practices (Ndibi and Kay 1999), and any respect for traditional ecological knowledge (Furze et al. 1996; William 1995). Furthermore, African countries faced inadequate financial and human resources to implement their ‘regulations’ without community support (Bojang 2000).

The conservation of forest resources can only become a reality when a consideration for local knowledge and human livelihoods becomes a collaborative priority with resource management. Community conservation specifically argues that conservation goals should be pursued by strategies that emphasize the role of local residents in decision making about natural resources (Adams and Hulme 2001; Kleymeyer 1994). Communities represent an important intersection of an individual’s ‘lived experience’ with a range of local and broader processes; communities can be an important vehicle for integrating conservation and development programs (Furze et al. 1996). Communities are interested stakeholders because they need to have some control over their access to communal resources (Bojang 2000). Community conservation policies begin the process of authorizing informal forest user groups and reempowering the traditional resource management institutions of local societies (Long and Zhou 2001).

Community-based conservation is one way that ecologists and conservationists can turn their attention to rural areas and seriously examine the options for coexistence (Western et al. 1994). Community-based conservation includes new and traditional conservation strategies that are developed collaboratively with communities and show mutual benefits to communities and resources (Lynch and Alcorn 1994; Western and Wright 1994; Armitage and Hyma 1997; Barrow et al. 2000; Adams and Hulme 2001; Hulme and Murphy 2001). Community-based conservation initiatives must be founded on images of community that recognize their internal differences and processes, their relations with external actors, and the institutions that affect both (Agrawal and Gibson 2001).
Community-based conservation requires the participation of local communities in program design, implementation, management, and monitoring (Curran and Tshombe 2001). When communities participate, they become active subjects of knowledge and action, they begin to construct their own history and engage in processes of self-controlled development (Bicker et al. 2002). Community participation in development is broadly understood as active involvement of people in making decisions about the implementation of processes, programs and projects that affect them (Slocum and Thomas-Slayter 1995). Participation is judged almost entirely by its potential to enhance equity, efficiency, empowerment and environmental sustainability (Agarwal 2001). Participation as a process of empowerment can help to amplify traditionally unacknowledged voices. The most promising examples of conservation and resource management projects, and those with the greatest potential for long-term success, are those in which local communities have been given a genuine participatory role (Curran and Tshombe 2001).

“This forest problem is complicated. If you see that we no longer have control over the forest, it is because of the forest agents who come with their papers and delimit the forest. If we are given the responsibility of the forest, we are ready to act in the interests of conservation...If we had full responsibility for the management of the forest, we could give you the assurance of protecting it. But as long as control is left in the hands of the State, we can do nothing.” (senior elder of Guinea’s Ziama forest reserve, see Pimbert and Pretty 1997:319).

The idea of local ‘participation’ in community forestry was introduced in the late 1970’s, when development policy was moving towards assistance in the provision of basic needs at the community level, and recognizing that the State was unable to protect forests adequately in many developing countries (Skutsch 2000). Participation in forest resource management requires community involvement in defining local needs regarding trees and tree products, and assisting in the selection of management strategies to meet such needs (Skutsch 2000). For example, in response to the failed attempts to manage forests according to scientific forest management objectives in India, many areas now use
an ‘emergent system of management’ that requires local participation (Furze et al. 1996). Statistics show that 15 of India’s states have passed resolutions and orders initiating participatory forest activities, indicating that participatory forest management is responsive to prevailing problems and opportunities at the local level (Furze et al. 1996). Curran and Tshombe (2001) show in Lokeke, Cameroon that local participation in conservation can promote forest protection in reserves if local control over some resources is maintained. In this case, foreign exploitation has undermined their access to resources, promoting the need for a partnership between protection and control.

Many countries have begun to integrate community forestry schemes into their resource conservation programs. Concern about deforestation in Nepal led to the implementation of a community forestry scheme that is largely State-initiated, where good forest is transferred to a set of users who form a forest user group and who are entitled to all of the benefits (Agarwal 2001; Dongol et al. 2002). The Forest Act of 1993 in Nepal gave local people the legal control and responsibility for the management of forests (Dongol et al. 2002). Community forestry is highly supported in Nepal because it focuses on addressing the wide range of institutional, social and political issues, and problems embedded in reversing the nationalization of forests and handing them over to local people (Nightingale 2003; Straede et al. 2002). More recent initiatives in Nepal promote community forestry in protected area and buffer zone management. The establishment of community forests in buffer zones surrounding protected areas can be seen as a panacea in solving park-people conflicts because they can provide sufficient forest products that would otherwise be obtained within protected areas (Straede et al. 2002).

Community forestry evolved in Africa as a means of both resolving environmental problems associated with deforestation and satisfying the subsistence needs of rural communities (Dongol et al. 2002). Community forests now occur in Cameroon through their recent revisions in forestry policy, which grant village communities forest areas to manage for their benefit and at their cost (Ndibi and Kay 1999). In Tanzania, community forestry is seen as a possible
solution to the increasing pressure from encroachment, shifting cultivation, illegal fuelwood and timber harvesting as well as charcoal burning that result in deforestation (Iddi 2000). The Gologolo Joint Forest Management Project in the West Usambara Mountains represents a specific example where community involvement was practiced and tested in Tanzania. Local level governments in rural Tanzanian villages gained the authority for forest management under the National Forest Policy of 1998, and they provided institutional support for community forestry (Iddi 2000). Tanzania provides a positive lesson through its grassroots administration, which directly encourages and supports devolutionary and associated democratizing processes (Wily 2000).

In Tanzania, national support for participatory forest management (community forestry) began in late 1994 through the Tanzanian Government’s issue of formal guidelines for assisting rural communities in bringing either reserved or currently unreserved forests under participatory forest management. In the Suledo Village Forest, local communities gained control over their own land since 1994 to sustainably use the forest resources for their livelihoods (Sjoholm and Luono 2001). This project’s foundation is based on an institutional framework in Tanzania that put the village at the center. Another case study that focuses on participatory forest management in Tanzania is located on 40,000 ha of miombo woodland in the Great Rift Valley (Massawe 2000) that is now managed by five village communities (Massawe 2000). The villages manage their forest reserves in collaboration with the local authority, which provides technical guidance and some financial support (Massawe 2000). The forest is now safe and prospering under community management. These case studies show that community involvement can prevent forest loss and degradation.

Community-focused conservation agendas exemplify a growing trend from ‘top down’ to ‘bottom up’ approaches in rural development (Sillitoe et al. 2002; Cambell and Luckert 2002). They are part of local-level development, which assumes that decision-making and project implementation are best undertaken by local people and for local people (Furze et al. 1996). Local people’s integration in resource conservation developed alongside the growing
interest and respect for indigenous knowledge, and challenges to top-down approaches to development projects and extension (Goebel 1998). The conservation process becomes less top-down because people’s knowledge can transform top-down bureaucratic planning systems (Mosse 2001). Bottom-up policies occur in the context of changing from more centralized government management and control to a more integrated approach that recognizes the rights and responsibilities of communities and rural people (Barrow et al. 2000).

“To enable participation of all stakeholders in forest management and conservation, joint management agreements, with appropriate use rights and benefits will be established. These agreements will be between relevant government authorities, at local or national levels, and organized local communities will be encouraged to participate in forestry activities. Clearly defined forest land and tree tenure rights will be instituted for local communities, including both men and women” (Barrow et al. 2000:28).

A Theoretical Framework in Feminist Political Ecology

Institutional structures play a key role in supporting, or not supporting, local participation in development and community-based conservation (Western et al. 1994). Political ecology is a significant conceptual framework for investigating relationships between forest resource conservation and institutions because it simultaneously evaluates political-economic and ecological dimensions of environmental resource use at different spatial scales, and focuses on how resource access is influenced by development interventions (Bryant and Bailey 1997; Peet and Watts 1996). Feminist political ecology particularly treats gender as a critical variable in shaping resource access and focuses on the struggle of women to sustain ecologically viable livelihoods (Rocheleau et al. 1996). Two areas of research that have most influenced the formation of political ecology are: a) research on the political economy because of the need to link the distribution of power with political activity, and b) ecological research because of its broader vision of bio-environmental relationships (Greenberg and Park 1994). Political ecology emerged from the notion that within the social sciences, there was not
enough focus on integrating local cultural dynamics with international exchange relations, and that past and present relationships with the political economy and the environment need to be explicitly addressed, thus introducing issues of relative power at many levels of environmental and ecological analyses (Greenberg and Park 1994).

Blaikie and Brookfield (1997) first define the term “political ecology” as a combination of the concerns of ecology, and a broadly defined political economy. In a Marxist-inspired tradition, the environmental behavior of the peasant is explained by social relations of exploitation and surplus extraction at scales extending to the global political economy (Walker 2003). Political ecology suggests that environmental problems in the Third World are less a problem of poor management, overpopulation, or ignorance, as of social action and political-economic constraints (Peet and Watts 1996). Political ecology looks at how communities are being integrated into, and transformed by a global economy and raises questions about the social origins of degradation, the plurality of perceptions and definitions of ecological problems, and the need to focus on the land manager, and his/her opportunities and constraints for a sustained livelihood (e.g., papers in Zimmerer and Bassett 2003). Escobar (1998) raises questions in political ecology about the notions of ‘sustainability’, ‘biodiversity’, and ‘nature’ as ecological or political terms. Vayda and Waters (1999) also criticize political ecology by arguing that political ecology is too concerned with the politics of environmental degradation, and all but ignores the complex and contingent interactions of factors whereby actual environmental changes often are produced. Political ecology must consider how access and control over ‘natural’ resources are contested within political arenas of the State and influenced by local cultural and physical-environmental conditions (Peet and Watts 1996; Zimmerer and Bassett 2003).

In application, I focus on how theoretical frameworks in political ecology can be used to investigate questions about resource access and control. A number of studies in political ecology have focused on who controls resources, and how and why that control has changed over time. For example, Myers (2002)
examines historic debates concerning Tanzania’s control over Zanzibar as it relates to local perspectives and support for a protected area on the island, and Rangan (1996) considers a similar debate over national sovereignty as it influences and plays off the Chipko movement for forest protection in Uttaranchal. Becker (2001) and Bassett (1988) consider the legacies of colonial history on resource access and environmental degradation in Sub-Saharan Africa, and Sioh (1998) argues that the lack of indigenous support for rain forest protection in Malaysia relates to a complex colonial history and military struggles. In contrast to these studies that focus on the conservation of existing natural resources, Zimmerer (1991) and Grossman (1993) examine the production capacity of land as it is being influenced by state control and the political economy. All of these studies, while emphasizing the important role of history, also distinguish between a local understanding of history and placing that location in a regional context. Walker (2003) defines a regional political ecology that is gaining support in studies of resource production (e.g., Black 1990 for agriculture in Northern Portugal; Zimmerer 1991 for wetland agriculture in highland Peru) and sustainability (e.g., Basset and Koli 2000 in the Ivorian savanna). Walker (2003) argues that understanding the geographical complexity of regions is critical to any effort to expand local outcomes, for those outcomes are often the result of the intersection of broader structural forces with regionally distinctive social histories, cultures, environments, and institutions.

Feminist political ecology merges theories in political ecology that emphasize the micropolitics of households and communities as well as their linkages to political economies at national and international levels. It also uses feminist conceptions of power to examine environmental issues that have particular importance to the livelihoods of women (Rocheleau et al. 1996). Feminist political ecology explores the nexus of politics, ecology, development, and gender in order to clarify the diverse sources of female oppression and the multiple sites of women’s resistance that have stemmed from contemporary development and environmental management policies that are particularly prejudicial to the interests of poor women (Bryant 1998). Feminist political
ecology demonstrates the gendered nature of the third world’s politicized environment because it draws more attention to the nature of gendered knowledge, the connection between culture and resource use practices, and the importance of the macro context (Bryant 1998; Rocheleau et al. 1996).

I focus on two important themes in feminist political ecology: 1) women's knowledge based on their experiences, emphasizing the relationships women have with the environment and how life experiences shape women’s views; and 2) women's rights and responsibilities, which deals with issues related to access and control. Feminist political ecology employs feminist methodologies that value the situated knowledge of women, and a number of studies demonstrate the wealth of knowledge that women have about resources (e.g., Fortmann 1996 in Zimbabwe; Hyma and Nyamwange 1993 in Kiambu District, Kenya; Rocheleau et al. 1995 in Machakos District, Kenya; Agarwal 2001 in South Asia; Gururani 2002a in Kumaon Himalayas). Through a political ecological analysis, Robbins (1998) demonstrates in Rajasthan, India that responses to authority differ along axes of gender, caste, and class. Several studies concur that women’s access and control over resources is often disproportionately limited (e.g., Moore 1993 in Zimbabwe), and that these limits are imposed both locally (e.g., Carney 1996 in the Gambia; Rocheleau and Edmunds 1997 in Africa; Gezon 2002 in Ankarana, Madagascar), and within a political-economic context (e.g., Wangari et al. 1996 in Kenya). Schroeder (1997) in a study of West Africa clearly points to the importance of including women in development plans. Placing a focus on women’s access and their knowledge about natural resources is crucial to development and planning processes for their management because women are among the most experienced rural actors and resource managers; gender, in particular, mediates the cultural construction of environmental resources (Moore 1993; Rocheleau et al. 1995).

Women grow trees for fuel, fodder, and construction materials. One of the most difficult constraints facing agroforestry projects is the lack of access to land, which restricts community tree-planting programs designed by and for women (Fortmann and Rocheleau 1985 in West Africa; Schroeder and Suryanata (1996)
in Indonesia and West Africa; Fortmann 1996 in Zimbabwe; Rocheleau and Edmunds 1997 in Africa). Many studies illustrate that the institutionalization of community forestry needs to be designed specifically in relation to women’s needs and their environmental concerns, and planning programs need to reflect the existing indigenous knowledge of tree management and conservation practices of both women and men (e.g., Hyma and Nyamwange 1993 in Kiambu district, Kenya; Agarwal 2001 in South Asia; Nightingale 2003 in Nepal). While men are likely to be interested in forest products for commercial sale, women undertake both productive and household responsibilities that include collecting fruits and fuelwood. Women, therefore, often possess greater knowledge about the relative food value or burning efficiency of various trees (Rocheleau et al. 1995 in Kenya; Wanjama et al. 1995 in Kenya; Wangari et al. 1996 in Kenya; Armitage and Hyma 1997 in Indonesia; Gururani 2002b in Kumaon, India).

**Participatory Approaches to Gaining Local Knowledge**

Conservation in East African forests needs management inputs into the resource itself and the human populations who depend on the resources for their livelihoods (Lovett and Wasser 1993). One way that this is accomplished is through the participation of local people. Participation in development is broadly understood as active involvement of people in making decisions about the implementation of policies, programs and projects that affect them (Slocum and Thomas-Slayter 1998). Participation supports gender equity because it by definition incorporates their keen sense of reality, and enables women to express their own priorities (McIntyre 2003; Clift and Freimuth 1997). Participation validates women’s knowledge and their relationships with resources; as a process, **participatory research** generates knowledge that is ‘owned’ by local people (Fortmann 1996; Slocum and Thomas-Slayter 1998; Agarwal 2001).

“One aim of participatory research is to produce knowledge and action directly useful to a group of people, and another aim of participatory research is to empower people on a deeper level through the
process of constructing and using their own language” (Gatenby and Humphries 2000:89).

Participatory research represents one way to expand sustainable development research to consider the complex conditions faced by rural people (Rocheleau 1994). Participatory research emerged in the 1970s in response to western perceptions concerning ‘top-down’ development that was being pursued in the absence of adequate knowledge about and consultation with local communities (Campbell 2002). The defining characteristic of participatory research is not so much the methods and techniques employed, but the degree of engagement of participants within and beyond the research encounter (Pain and Francis 2002). For people who do not usually have the opportunity to voice their concerns, participatory research can be very positive and enabling because it encourages such people to articulate their needs: “participatory research can sometimes lead to actions which break from tradition, and in doing so it may be empowering for groups involved” (Scheyvens and Leslie 2000:127).

Participatory field research in resource conservation often uses rapid appraisals for research or development planning (Rocheleau 1994). One specific method is participatory rural appraisal (PRA; Chambers 1997). PRA is a method that seeks to maximize the equal involvement of all community members in planning their collective development, and is purported to overcome cultural, political, and economic barriers to meaningful participation in development planning (Tlamelo and Prinsen 2000). PRA is now an accepted component of ‘‘bottom-up’’ poverty-alleviation efforts that seek to re-orient the development process away from technocratic interventions (Chambers 1997). PRA finds ways for donors to enhance already existing modes of making a living and managing human and natural resources (Gladwin et al. 2002). PRA provides a contextual approach to understanding the relationships between gender, and geographical space/place (McIntyre 2003). Local people become critical analysts, monitor their knowledge, evaluate their performance, criticize received information, and become more self-aware learners (Shahvali and Zarafshani 2002). Local people
begin to feel proud and empowered when using PRA: “and we thought we were so foolish because we could not write. Yet look, we had all this information inside us” (Chambers 1997:130).

Participatory rural appraisal, as applied research, seeks to gain collective action and interactive participation. Collective action involves interdisciplinary methodologies that gain multiple perspectives and make use of systematic and structured learning processes that enable local people to take control over local decisions (Nemarundwe and Richards 2002). Interactive participation focuses on the joint analysis of problems and action plans (Pimbert and Pretty 1997; Tuxill and Nabhan 2001).

Research for the management of natural resources relies on a good rapport for collaborative learning (Ford and McConnell 2001). Participant field observations are an important way to learn about the daily activities of local people as well as helping to establish a collaborative relationship with them. They enable the researcher and participants to develop the trust that is needed for participants to reveal the “backstage realities” of their experience that are generally concealed from outsiders (Paterson et al. 2003). As a participant observer, the researcher interacts with the informants on a daily basis and gathers information through direct observation and open-ended informal interviews in a community setting; contact is intimate and prolonged (Cotton 1996 for examples in ethnobotany). Participant observations offer a deeper and more contextual understanding of what is being studied that goes beyond the participants’ explanations of what they do and why they do it: “to rely on what people say about what they believe and do, without also observing what they do, is to neglect the complex relationship between attitudes and behavior” (Paterson et al. 2003:3). Participant observations can function as the initial medium for learning about social and physical-environmental relationships (Kajembe et al. 2003).

Participant observation is often used with interviews and document analysis (Paterson et al. 2003). Semi-structured interviews are often used in conjunction with participant observations. For example, semi-structured interviews can explore how local people view their relationships with forest
resources, and more importantly, the reasons for those relationships (Cunningham 2001). They are conducted in a friendly relaxed atmosphere, and are open-ended in nature (Dunn 2000). In semi-structured interviews, the interviewer maintains a balance between covering specific topics that are compiled before the interview, while at the same time pursuing topics brought up by the informants. Structured questions are content focused, and include the construction of free lists (e.g., what trees do you use for fuel?) (Mohamed and Ventura 1998; Campbell 2002; Mapedza et al. 2003). Every informant is exposed to the same questions, controlling the input that triggers each informant’s responses, so that the findings can be reliably compared (Campbell 2002).

**Venn diagrams** are used for cause-effect analysis of human–environment relationships (Spaling 2003). They are ‘conceptual maps’ that identify and analyze the relationships among key locations, social groups, organizations, and institutions that affect local people (Byers 1996; Mohamed and Ventura 1998; Campbell 2002). Venn diagrams particularly focus on understanding the roles of local organizations and the perceptions that people have about them; they clarify which institutions are the most important, which have the respect and confidence of women and men, and who participates or is represented (Slocum et al. 1995). Venn diagrams also help to identify linkages between outside groups and community groups and/or individuals (Slocum et al. 1995). People are asked to draw on the ground or with paper and markers, circles that represent people, groups and institutions and draw lines between the different circles, thick lines showing strong relationships and thinner lines for weaker ones.

**Transect walks** look at changes over horizontal space, where communities walk along a line that crosses land-use zones, and complex human-resource relations (Byers 1996; Ford and Razakamarina 1996; Spaling 2003). Transect walks portray the interactions between the physical environment and human activities over space and provide an opportunity to discover changes over time (Slocum et al. 1995). A transect walk can be critical in providing a quick understanding of the research site’s physical nature (terrain, soil types, topography, water systems, forest areas, agricultural land) and social
characteristics (ethnic and caste settlement patterns, government vs. private ownership of land, who owns what and why) (Slocum et al. 1995). Transect walks also provide opportunities to talk with the people about problems they face and the relative importance of different resource areas (cf. Ford and Razakamarina 1996 for Madagascar).

*Mapping activities* are widely used to foster the empowerment of local communities, and for exploring community-resource interactions (Mather 2000). Resource mapping focuses directly on land-use patterns and the distribution of different natural resources (Slocum et al. 1995). Resource mapping presents information on land, water and tree resources, land use, soil type, cropping patterns, etc.; it is a useful visual indication of ‘resource clusters’ (Fortmann 1996; Shahvali and Zarafshani 2002), a ‘spatial signature’ that integrates the influence of the past (Slocum et al. 1995) and a geometric point of departure for planning future land use systems (Slocum et al. 1995). Gendered resource mapping especially focuses on differences between women and men in how they view the distribution of resources and assess issues of access and control (Slocum et al. 1995). The tool is useful at different scales-household, community, regional, and national. It is an especially dramatic way to convey issues of gender differences in land use, responsibilities and labor:

> “Indigenous communities and conservation organizations are increasingly turning to mapping and spatial information technologies for implementing their strategies to strengthen tenure security over resources and improve natural resource management” (Mohamed and Ventura 1998:226).

Recognizing that local participation is a critical goal of development, new and different resource mapping techniques are being designed to increase indigenous knowledge in the planning process (King 2002). Resource-mapping techniques using *geomatics* integrate local knowledge and georegistered maps of physical attributes and political boundaries (Mohamed and Ventura 1998). For example, Ford and McConnell (2001) overlay local interpretations of land cover change onto satellite images of land cover as a basis for creating a future land use plan. Mohamed and Ventura (1998) emphasize the role of geomatics along with
traditional indigenous knowledge in demarcating traditional lands. King (2002) georegisters maps with a local community in South Africa as a basis for participatory development. Robbins (2003) found that integrating participatory mapping and remote sensing provided opportunities to collaboratively explore the production of knowledge about a place, including its politics and traditions. Mapedza et al. (2003) demonstrate the benefits of combining technical methods with participatory approaches to investigate land cover change in Mafungautsi Forest, Zimbabwe. Lastly, Mather (2002) exemplified how aerial photographs made issues surrounding forest management, and participatory processes more accessible to non-literate people that engendered a greater sense of trust and confidence among stakeholders in a community forestry initiative in the Middle Hills of Nepal.

The discourse of participatory development, and consequently participatory research for development, is criticized as a potentially unjustified exercise of power, and an opportunity to facilitate tyranny (Cooke and Kothari 2001). Participatory planning has been viewed as the acquisition and manipulation of a new ‘planning knowledge’ rather than the incorporation of ‘people’s knowledge;’ it often does not take into account the relative bargaining power of local stakeholders and thereby is guided only by the more powerful (Cooke and Kothari 2001). Others argue that participatory methodologies mean ‘a way to get people to do what the researcher wants’, rather than a means to fundamentally change the project idea or construction, or a way to involve and respect local knowledge on equal footing with foreign, particularly scientific expertise (Goebel 1998; “coercive” and “manipulative” sensu Slocum and Thomas-Slayter 1998). A misunderstanding of power underpins much of participatory discourse and proponents of participatory development have generally been naïve about the complexities of power and power relations (Wright and Nelson 1995; Cooke and Kothari 2001). A genuine and rigorous reflexivity that acknowledges power relations and works constructively to work for a “power with” the research participants is certainly one important goal of a positive
participatory approach (England 1994; Cooke and Kothari 2001; Pain and Francis 2002).
Chapter Three

STUDY AREA

The Usambara Mountains, contain “dark majestic forests, compact woods, wilderness of brown jungle, expanses of tall, waving grass, beautiful slopes of short green turf, and everywhere patches of cultivated land, fresh and verdant as an Eden; brooks, streams and torrents trickle and murmur, tumble and splash and roar on all sides” (Iverson 1991:20). These ancient crystalline mountains are part of the biologically significant Eastern Arc that stretches down the coast of East Africa from southern Kenya to southern Tanzania (Figure 2). Proximity to moisture from the Indian Ocean, an old geologic history, and physical isolation allow for a high concentration of species (Newmark 2000).

The Usambaras contain many endemic plants and animals, including the African violet (*Saintpaulia grandifolia*), and their biological importance attracts much research and global efforts for their conservation (Giblin et al. 1996; Newmark 2000; Mowo et al. 2002). Based on species-area relationships, approximately 34% of the species in the West Usambaras are predicted to be extinct or are in danger of extinction (Mowo et al. 2002; Newmark 2000). The impact of forest loss on biological diversity is of global concern, ranking the Eastern Arc among the ‘hottest’ biodiversity hotspots (Myers et al. 2000; Newmark 2000).

The Usambara Mountains are divided into two major blocks by the Luengera Valley, running north-south (Iverson 1991). The West Usambaras, situated between 4°25' to 5°07'S and 38°10' to 38°35'E, are the focus area for this study. The land area of the West Usambaras is approximately 2,200 km², mostly within the Lushoto District (Figure 2; Halperin 2002). Elevations in the West Usambaras range between 900 and 2,250 meters above sea level (Mowo et al. 2002). The forests of the West Usambaras are home to at least 11 vertebrate species endemic to the Eastern Arc (TFCG 2004).

Ten types of forest and woodland types are found in the West Usambara Mountains (Iversen 1991). The submontane evergreen forests are found between
Figure 2. Location of the study area, identified with a star, in the West Usambaras, Tanzania (modified from Feierman 1974; Halperin 2002). The Eastern Arc Mountains are shown in the inset.
750 and 1400 m (Iversen 1991). Other forests include dry lowland evergreen forest, wet and dry montane evergreen, ericaceous scrub, montane mist, and a limited number of riparian forests (Iversen 1991). *Protea* woodlands, bushlands and grasslands occur along the fringes of the forests along with extensive coniferous tree plantations (Iversen 1991). The western side of the mountain is in a rain shadow and is considerably drier than the eastern side that has a more profound change from bushland to evergreen woodland (Lovett 1996). Among these montane forest communities, my study was situated in the eastern side of the West Usambaras, above 1400 m or within the evergreen submontane to montane forest zone (Figure 2).

Natural open and closed forest cover for the West Usambara is estimated at 1,094 km², and located in small fragmented patches (Newmark 2000). Three forest reserves were the focus of this research: Mazumbai University Forest (450 ha), the Baga Catchment Forest Reserve (320 ha), and the Sagara Community Forest (100 ha; Figure 3). The Mazumbai University Forest, gazetted in 1968, is managed as a research forest by Sokoine University of Agriculture in Morogoro, and is comprised of mostly montane forests (Halperin 2002). The rare banded green sunbird is an endemic species only found in the Mazumbai forest, and it is also home to the Usambara endemic frog *Arthroleptis tanneri* (TFCG 2004). The Baga Catchment Forest Reserve contains an extensive area of montane and upper montane forest up to 2032 m, and is managed by the Tanzanian Forestry Department (Lovett 1996). Both the Baga Forest Reserve and the Mazumbai University Forest are managed as protected forest reserves.

Adjacent to the Mazumbai University Forest and Baga Forest Reserve, the Sagara Community Forest, is an area of submontane to montane forest previously owned by the Mazumbai Tea Estate (Figure 3; TFCG 2003). The forest was gazetted as a ‘Community Forest’, which is a new category of forest reserve recognized in Tanzania’s Forest Act of 2002 (TFCG 2004). The Sagara Community Forest is owned and maintained by a group of former workers of the Mazumbai Tea Estate who comprise the population of Sagara Village (TFCG 2004). The Sagara Community forest is the largest public forest in the West
Figure 3. Forest reserves and location of hamlets sampled in Sagara (5 hamlets) and Mgwashi villages (6 hamlets; adapted from Halperin 2002).
Usambaras, as serving as a buffer area that allows for the migration of animals and protects the Baga Forest against encroachment (Lovett 1991).

This research was conducted in the villages of Sagara and Mgwashi with the Shambaa people who are the dominant ethnic group of the West Usambaras or Shambaai (Figures 2 and 3). By their own definition, the Shambaa are agriculturists who depend on local forest resources for their livelihoods (Feierman 1974). They speak their own language, Shambaa, which is one of the many related Bantu languages (Feierman 1974). The Shambaa settled on steep slopes in the West Usambaras, and are located in cool high areas above 1,000 m (Feierman 1974; Kaoneka et al. 2000). The Shambaa are known to have had, and still have, much knowledge regarding their use of natural resources (Kaoneka et al. 2000).

The Shambaa cultivate food gardens that consist of tubers, several kinds of medicinal plants, tobacco, and beans that are interspersed in the shade of banana plants on the sides of the steep mountains they inhabit (Feierman 1974). In Shambaa villages, women have many tasks to perform such as child care, household chores, food preparation and cooking, weekly marketing trips, fuelwood collection, and the bulk of household food production (Fleuret and Flueret 1978).

Most recent population figures for Lushoto District, which includes the Shambaa of the West Usambaras, are about 400,000 people in 1,300 villages with a growth rate of about 3.2-4.0% annually (Kaoneka et al. 2000). These rates of growth are much greater than the national average of 2.8%, and they contribute to a high population density of 200-400 persons km$^2$ (Halperin 2002). Traditional settlement patterns of Shambaa villages occur as several low-density clusters of approximately ten houses called hamlets (Halperin 2002). Shambaa houses are small round huts completely covered down to the ground with grass thatching as a protection from the cold winds, however with European influence, the tendency is to build larger square or oblong houses divided into several rooms (Dobson 1940; Figure 4). A typical Shambaa village is spread along the crest of a ridge, with banana gardens and fields running downhill from the homesteads (Feierman 1974). The Shambaa people prefer to live in small clusters of hamlets that
Figure 4. Picture of a homestead located in Sagara Village.
comprise a village rather than in houses on their farms (Dobson 1940). Shambaa villages are permanent places of residences but not the actual locations of economic activities. Most daily activities are carried out within radiiuses of 8 kilometers or more, sometimes infringing on forested areas (Feierman 1974).

My study was conducted with women residing in 11 hamlets that are dispersed between the villages of Sagara (5) and Mgwashi (6; Figure 3). Sagara and Mgwashi villages occur between 1000-1700 m experiencing a cool montane climate with temperatures averaging 20 degrees Celsius. These villages receive 600-1000 mm of precipitation annually; long rains occur from April to May and the dry period extends from November to December (SECAP 2000). There is a high degree of subsistence farming in both of these villages, and the main crops are maize, beans, bananas and cassava (SECAP 2000). Sagara is a village of 1,350 people that is located to the east of Baga Forest Reserve and the Sagara Community Forest (Figure 3; Tanzania Sensa 2002). Mgwashi is a larger village located north of Sagara Community Forest (Figure 3) that is comprised of 3,735 people (Tanzania Sensa 2002).

Gaining a Historical Context

Forests in the Usambaras changed in their size and ecology over time in response to human-resource interactions and particularly because of conflicts between indigenous people and colonial states (Conte 1999, 2004). Forest history, particularly the political ecology of that history provides an important context for the study. I focus on factors dictating and characterizing the use of forest resources in a Pre-Colonial Era before 1881, the German Era (1881-1918), the British Era (1918-1961), and post independence under Julius Nyerere (1962-1985), and recent years after 1985.

- **The Pre-Colonial Era**

  Shambaa ancestors moved into the West Usambaras some time after 500 A.D., when tools to clear forests and suitable crops to grow reached Africa from
Asia (Massaro 1993). The Shambaa people restructured their social systems over time from open usufruct land systems to permanent settlements by 1500 (Massaro 1993), and by the early eighteenth century, Shambaa communities were under a single power known as the Kilindi Dynasty (Conte 2004). By 1800, it was evident that the Shambaa people gained environmental knowledge that enabled them to prosper as ecologically sound communities (Conte 2004).

By 1857, the Shambaa population reached 60,000 in the mountains, and they were practicing traditional farming from permanent settlements (Massaro 1993; Johannson 2001). The traditional agricultural system of the Shambaa did not maximize production, but rather minimized risk, through an agroforestry system that gradually replaced the less desirable species of natural forest while preserving valued indigenous plants (Johansson 2001; Halperin 2002). Instead of ‘clearing’ closed forest to establish new plots, farmers gradually replaced the forest plants, tree for tree, shrub for shrub, and vine for vine, so that the plot retained the multistory structure of the natural forest, as well as similar ecological and hydrological properties (Johansson 2001). Subsistence activities occurred in at least a partially forested landscape, and farming communities developed a complex tenurial system under which local leaders and farming communities controlled immigrants’ and young men’s access to forest resources (Conte 1999). The Shambaa were knowledgeable regarding forest preservation through their view of the forest as a sanctuary, forming an integral part of their language, oral history, and sense of place (Conte 2004).

Indigenous knowledge extended from the use of timber and non-timber forest products to the management of forest cover (Halperin 2002). Forest management, as authoritative regulation, did not exist in traditional Shambaa culture (Halperin 2002). Traditional boundaries of land use existed only in a ‘concept of ownership’ managed by the chief over a collection of hamlets (Halperin 2002). By the mid 1800’s, an aerial observation of the Usambara Mountains would have revealed an area covered largely in primary and secondary forest with open patches of several square kilometers surrounding permanent settlements (Conte 1999).
One important period of forest recovery occurred during the second half of the nineteenth century, following the political and economic crisis of the slave trade in the West Usambaras (Conte 1999; Conte 2004). Demand for agricultural slaves, primarily for clove production in Zanzibar, and ivory in both the Atlantic and Indian Ocean trading zones fueled a particularly violent era of slave raiding (Conte 2004). Historical evidence suggests strongly that as populations declined or migrated, forest began to recolonize several regions of previous settlement (Conte 1999). At this time of indigenous crisis, Western colonizers arrived and were anxious to exploit East Africa’s potential in naturally recovered forest resources (Conte 1999).

- The German Era: 1881-1918

The German colonial state acted to alter human-environmental relationships toward Western perceptions of market-led agriculture and top-down resource management at the onset of their control (Conte 1999). German settlers were interested in the Usambara Mountains because of its abundance of montane forest that was thought to be free of malaria and in close proximity to the coastal ports of Dar es Salaam and Tanga (Conte 2004). German colonists chose not to consult the collective experience of the local people of the Usambaras who understood Usambara’s environmental limitations in agricultural development (Conte 2004), and immediately began to clear and reshape forest lands for commodity production that focused on export crops such as coffee (Johansson 2001).

German colonists established coffee plantations that required the removal and burning of forest cover on West Usambara’s wetter southeastern facing slopes, causing the destruction of thousands of hectares of indigenous forest (Conte 1999). Consequent soil erosion from coffee plantations caused a radical change in the landscape, and decreased the potential for any productive interaction with landscape resources (Conte 1999; Halperin 2002). Unlike the ecologically diverse plant and animal communities of regrowth forests, monodominant coffee stands proved to be vulnerable to disease and pest
infestations; they died off, negatively influencing the land’s agricultural potential (Conte 2004).

This alarmed the forestry service and soon thereafter, German foresters established the first centrally managed forest reserves for species diversity, watershed protection, and the long term maintenance goal of timber export (Hurst 2003; Conte 2004). By 1912, nine forest reserves of over 35,000 ha were established (Table 1; Iverson 1991). The establishment of these reserves essentially closed forest lands to Shambaa settlement (Massaro 1993), and resulted in Shambaa farmers abandoning traditional land-use practices because of the legal boundary between public land and completely restricted government land (Conte 1999). German forestry set out to introduce suitable exotics of teak and pine for “a more profitable botanical composition of the new forest”, and served to support a directional change in export crops from coffee to timber (Conte 2004:75).

- **The British Era: 1918-1961**

After World War I, The League of Nations granted German East Africa to the British government, and renamed it Tanganyika (Conte 1999). The agricultural and forestry policies of the new colonial government were similar to the German’s view of a radical transformation of indigenous land use (Conte 1999). British colonial planners wanted to ensure that the dependent colonies would be able to meet their own timber needs in the face of predicted global timber shortages. Therefore, colonial policies stated that forests were part of government land, and should be protected as watersheds and serve timber needs (Conte 1999). This led to a British forestry policy that placed strict controls over local access and control of forest resources (Conte 1999).

Encroachment by indigenous populations in forest reserves from 1914 to 1920, after the Germans left and there was a lack of a centralized power, caused the British colonial power to initiate a new Forest Department in 1920 (Iversen 1991; Table 1). All existing forest reserves were newly proclaimed in the Forest Ordinance of 1921 (Table 1; Iversen 1991). Two types of forest reservations were
Table 1. History of forest management policies affecting the study area in the West Usambaras, Tanzania.

<table>
<thead>
<tr>
<th>Date</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>1912</td>
<td>Germans establish nine centrally managed forest reserves covering 35,000 ha (350 km²) (Iversen 1991)</td>
</tr>
<tr>
<td>1920</td>
<td>Establishment of the British Forestry Department (Halperin 2002)</td>
</tr>
<tr>
<td>1921</td>
<td>British Forest Ordinance; all existing forest reserves are newly proclaimed (Hurst 2003)</td>
</tr>
<tr>
<td>1933</td>
<td>British Forestry Rules; an increase of designated forest reserves to 10,945 km²</td>
</tr>
<tr>
<td>1964</td>
<td>German development agencies begin to fund conservation projects</td>
</tr>
<tr>
<td>1973</td>
<td>First explicit conservation project; Dodoma Region Soil Conservation Project (Hurst 2003)</td>
</tr>
<tr>
<td>1989</td>
<td>First conservation project to have a distinct forestry component; Soil Erosion and Agroforestry Project (SECAP) (Massaro 1993)</td>
</tr>
<tr>
<td>1998</td>
<td>Tanzanian National Forestry Policy; allocated public land forests to local villagers and encouraged their participation in forest management (Baldus &amp; Siege 2004)</td>
</tr>
<tr>
<td>2002</td>
<td>Tanzanian Forest Conservation Group (TFCG, est. 1985) begins a project in Sagara village to encourage participatory forest management of the Sagara Community Forest (TFCG 2005)</td>
</tr>
</tbody>
</table>
set into place, protective and productive forests. Forests reserves were established to ensure that the natural functions of the country remained efficient, e.g., climate, rainfall, and fertile soil upon which the agricultural components of the economy depended (Hurst 2003). Central Government (productive) Reserves were conceived as spatially segregated from other productive functions of the landscape (Hurst 2003), and focused on the export production of timber (Halperin 2002).

Twenty years later, conservation received even greater consideration in the British Forest Rules of 1933 (Table 1). Conservation initiatives received support to promote water catchments, the sustainable use of forest products, reforestation, and outdoor labs for research (Halperin 2002). Conservation was based in part on “the awareness that agricultural change in the earlier years of colonial rule had in many areas disturbed the balance between the people, animals and the land” (Massaro 1993:32). The need for natural forest conservation was clearly acknowledged in the official forest policy,

“For forests must be preserved in perpetuity on behalf of the community as a whole…For the benefit of present and future inhabitants of the country, sufficient forested land or land capable of afforestation needs to be reserved to improve local climates, preserve water supplies, stabilize land liable to deterioration, and provide a sustained yield of forest produce for internal use and export…To promote a real understanding among the peoples of the country and their descendents the value of forests and forestry” (Massaro 1993:34).

Under the British administration, the total area of forest reserves increased significantly from 231 reserves covering 3386 km² in 1921 to 10,945 km² after World War II (Hurst 2003; Table 1).

In the 1930s, the Agricultural Department called the Usambaras seriously eroded, clearly identifying that the British’s efforts to solve the problem through fines or imprisonment for the enforcement of erosion control were not working. Local animosity towards increased policing created an ongoing battle between colonial authorities and farmers (Conte 1999). Encroachment increased and any indigenous impetus towards forest conservation in or outside of reserves declined
(Conte 2004). Tree cutting for domestic fuel and hillside burning for pasture were also cause for concern. In response to the apparent stripping away of protected forest cover, the colonial forest and agricultural departments initiated a reforestation campaign, whereby any areas of uncultivated land were completely closed off to local people and reforested with exotic species of trees, mostly fast-growing acacia species (Massaro 1993). Reforestation efforts failed early on in part because of a lack of resources to buy seedlings, lack of labor, and a simultaneous increase in demands for timber to support the construction of railways (Conte 2004).

Usambara’s forestry officials were concerned with protecting the reserves, but failed to recognize or work with the Shambaa and utilize their local knowledge of forest conservation (Conte 1999). For example, government foresters had conflicts with those entering the reserves to collect firewood (Conte 1999). Firewood plantations of fast-growing acacia species, planted to reduce demands on forest reserves, were not able to meet local needs. Throughout the colonial period, women from heavily populated areas traveled increasingly long distances to gather fuel (Conte 1999). Forest values such as aesthetics or biodiversity were never recognized under colonial forestry (Conte 1999).

Colonialization marginalized the Shambaa people and altered their lands such that neither indigenous tree species nor indigenous communities merited a place (Conte 1999). Traditional patterns of resource use were eroded under German colonial rule through regulation under British forest governance (Conte 1999). Since colonization, Shambaa subsistence agriculture lost its complexity, diversity, and sustainability (Johansson 2001). Slash-and-burn farming became the quickest way to earn money as long as there was land to take, and farm sizes grew as people took more land for subsistence and economic production (Johansson 2001). These types of expansive farming dominated throughout the colonial time, converting much secondary forest and causing enormous losses of fertile topsoil (Johansson 2001).
Post-Independence: 1962-1985 under Julius Nyerere

Tanzanian foresters after independence worked within a colonial legacy of imperatives to maintain forest reserves and continue bureaucratic management for national forest resource needs and increased financial returns (Hurst 2003). National forest policy since independence in December 1961 continued to significantly impact the way Shambaa use forest resources (Massaro 1993). Land scarcity, deforestation, overgrazing, erosion and deteriorating water catchments didn’t go away with independence (Johansson 2001). As early as 1964, German development agencies began to fund a series of projects focusing on the conservation of resources (Massaro 1993; Table 1). Rural communities carried the burden of these externally driven projects for soil, water, and forest conservation (Conte 2004).

During the late 1950s, peasant farmer’s demands for arable land caused Tanganyika’s new leaders to authorize a number of forest-reserve excisions (Conte 2004). The allocation of forestlands to local people illustrated the state’s recognition that Colonial land law and land confiscations had disregarded local people’s needs. The State provided land in order to solidify its popularity in these early days after Independence. These excisions were an exception to its later authoritarian stances under the villagization movement of the 1970s (Johannson 2001).

In the Arusha Declaration of 1967, President Julius Nyerere outlined *Ujamaa* or villagization. *Ujamaa* combined modern technology with communal farm organization that would comprise the center of Tanzania’s development effort (Hurst 2003). *Ujamaa* was the largest rural resettlement effort in the history of Africa (Bruce et al. 1995), during which an estimated five to eleven million people were relocated into rural villages (Bruce et al. 1995). In these cooperative settlements, each household was assigned a site of less than a hectare for subsistence farming purposes, temporary use plots in newly created, rectangular tracts of land known as block farms, and a work assignment in newly established village communal farms (Bruce et al. 1995). It is important to note that villagization did not occur with the Lushoto District that includes the West
Usambaras. Shambaa farmers had permanent crops and would have had to be compensated for them with planned land transfers (Johansson 2001). The Ujamaa era in this region, however, promoted strong organization at the village level and accordingly much local authority over land resources (Johansson 2001).

Despite the fact that the Independence government sought to protect valuable supplies of remaining natural and plantation forests in the reserves (Conte 1999), they did not abandon the ideology of profitable forestry inherited from colonialization (Conte 2004). The Forestry Development Plan in 1969 (Table 1) highlighted the need to develop and expand non-catchment forest reserve resources by completing tree enumerations, providing access roads for harvesting, and providing for adequate replacement of cut timber by natural regeneration (Hurst 2003). This policy continued the dramatic biological simplification of natural forests and increased exploitation of both natural and plantation forest under mechanized logging and pit-sawing practices (Conte 2004).

Forestry initiatives mostly lost out to other land use agendas that were seen as more politically pressing, such as the need for increased land under cultivation (Hurst 2003). Forested lands controlled by the government were seen by many local people as idle and the exclusion of local people as unjust. Many politicians at this time were elected on promises of opening up (i.e. degazetting) previously reserved land for local peasants (Hurst 2003). These attitudes were also supported by international institutions that provided the majority of the financing for Tanzanian development (i.e. WHO report of 1960 in Hurst 2003). It was not until 1973, with the Dodoma Region Soil Conservation Project (Hifadhi Ardhi Dodoma), that the Tanzanian government embarked on any explicitly conservationist interventions (Hurst 2003; Table 1). Foresters at this time had little basis to initiate any peasant involvement in forest conservation because they were still following the discourse of colonial forestry (Hurst 2003).
Recent: 1985-Present

Commercial logging of government forest reserves reached a critical point in the 1980s when unsustainable logging practices in the East Usambaras provoked national and international outcries (Massaro 1993). The loss of native trees and their replacement by invader tree species radically changed the composition and structure of the forests (Massaro 1993). Deforestation during the late 1980s prompted forest conservation projects along the boundaries of threatened government forest reserves and revisions in forest policies (Conte 2004).

The Soil Erosion Control and Agroforestry Project (SECAP), established in 1989, was the first project to have a distinct forestry component in the West Usambaras (Table 1). SECAP is a community-based, ecologically sustainable, and economically viable effort to increase people's capacities to meet their livelihood and development needs as well as an effort to control and reverse the processes of soil erosion and environmental degradation (Massaro 1993; Kisanga 1999). SECAP has the goal of ensuring the participation of all people in activities such as establishing village tree nurseries and training nursery managers (Massaro 1993; Kisanga 1999).

The most recent revisions in forest legislation in Tanzania has been the Tanzanian National Forest Policy of 1998. The objective of the Tanzanian National Forest Policy was to promote the involvement of local communities in forest management and conservation; it allocates all forests located on public lands to local villages (Baldus and Siege 2004; Table 1). These revisions delegated power to local governments and local communities, encouraging their involvement in forestry (Baldus and Siege 2004). Shortly after the National Forest Policy of 1998, the Tanzanian Forest Conservation Group (TFCG), a non-governmental organization aimed at developing conservation strategies that improve livelihoods, began a project with local people living in Sagara village who own the Sagara Community Forest. Since 2002, TFCG has sought to encourage local people living in Sagara village to engage in a participatory forest management strategy, and promote the halting of unsustainable commercial
timber extraction in the Sagara Community Forest (TFCG 2005). Tanzania, already empowered locally by the *Ujamaa* movement, stands out globally for its promotion of community forests and community-based forestry. Community forestry as it softens the boundaries between protected forests and local resource needs may be instrumental in restoring deforested landscapes degraded by complex political histories.
Chapter Four

DATA AND METHODS

This study employed a feminist political ecology framework (Rocheleau et al. 1996) to gain a local understanding of how women view their access to fuelwood resources as an environmental resource in the West Usambara mountains of Tanzania (Figure 1). I combined feminist geographic inquiry with qualitative research methods to shorten the distance between the women included in the study and myself, and effectively collaborate on identifying important opportunities and constraints influencing women’s access to fuelwood (cf. Warren 1990 on feminist contributions to environmental studies; Oberhauser et al. 2003 on geographic perspectives on women). All interviews for this research followed the requirements of informed consent and confidentiality described in my Human Subjects proposal approved by Miami University (Appendix I). Prior to the research, I also received approval from the Sokoine University of Agriculture to conduct the fieldwork in Tanzania. Throughout the study period, Kiswahili, Tanzania’s National language and the local language of Kishambaa were translated to English by my female local research assistant, Bernice. A tape recorder was used throughout the data collection, and all language translations during data collection were confirmed by Mr. Modest Mrecha, a local forester for the Mazumbai University Forest, on a daily basis. A hired technical assistant for the participatory exercises also facilitated my research. This facilitator was trained in Participatory Rural Appraisal (Chambers 1997), and helped the women who participated in this study to better understand the methodologies that were being used.

Selection of the Study Population

Mr. Modest Mrecha, introduced me to the village chairmen in Mgwashi and Sagara villages, who provided their consent to conduct the research. My local assistant established introductory meetings with the women in the villages. These visits made me aware of self-help groups that had been formed by the
women. Two self-help groups were chosen for this research: the Sagara Women’s Religious Group of Sagara village and the Mgwashi Tree Planting Group of Mgwashi village.

The Sagara Women’s Religious Group formed two years ago and is comprised of approximately fifteen women from Christian and Muslim religious affiliations. The group engages in a variety of activities such as making floor mats and pottery, and planting trees. Each member of the group first pays an entry fee of 500 T/Shillings (approximately US 50 cents) and then contributes a certain percentage of the money generated from selling crafts at market day to the group fund. The women’s ages vary from 17 to 60 years old and most of them are married. Most of the women in this self-help group are subsistence farmers who have little abilities to generate cash. The group leader, however, is an exception, whose husband is the preacher for a church in the Sagara Village.

The Mgwashi Tree Planting Group was formed by a group of women three years after SECAP (Soil Erosion Control and Agroforestry Program) donated seedlings and had a seminar to teach local villagers the significance of planting trees. The group is comprised of approximately 11 women. The group has two designated tree plantations located within the village. The women in the group donate an entry fee of 600 T/Shilling (approximately US 60 cents) to become a member of the group. This money is used to buy seedlings for the tree plantations, and for a security fund that is used if a woman needs financial assistance. The ages of women in this self-help group vary from 20 to 50 years old and are similar in their socio-economic status.

After meeting on several occasions with the women from the Sagara Women’s Religious Group and the Mgwashi Tree Planting Group, I formed two focus groups comprised of six women volunteers, each group stratified by their residence among the hamlets of Mgwashi and Sagara villages (Figure 3). Following a protocol that respects their daily schedule and ensures that participation is voluntary and confidential (see Appendix I), I set up meetings with these focus groups. Because each of the twelve women from the focus
groups was promised confidentiality, I use no names in the reporting of the results.

Gaining a Sense of Place

Participant field observation helped to establish collaborative relationships and learn about the daily activities of the local women in Mgwashi and Sagara villages. Participant field observation was conducted during a four-week period, where I interacted with the village women daily and gathered information through direct observation and open-ended informal interviews (Paterson et al. 2003). The four-week period was divided into two weeks per village where I met with each of the six participants from Sagara and Mgwashi every day except Sunday. Particular attention was directed towards their daily work activities and how the extraction of fuelwood fit into these activities. I used open-ended informal interviews to elaborate on the participant observations (Table 2). Women’s activities schedules illustrated the variety of activities they were in charge of as they contributed to their reproductive, productive, and community managing roles (Moser 1993).

These participatory research methods were used to gain local understandings of resource use and focus attention on the ‘work’ of firewood collection (Fortmann 1996; Slocum and Thomas-Slayter 1995; Agarwal 2001). I accompanied each of the six women from the Sagara and Mgwashi focus groups on transect walks to the fuelwood collection sites and recorded where they went, how far they traveled, and how long it took. Transect walks provided opportunities to talk with the local women about problems they faced such as obtaining fuelwood resources, and important areas where fuelwood was located. During the walks, location data were compiled with an eTrex Vista Global Positioning Satellite (GPS) device, and supplemented with open-ended questions (refer to leading questions in Table 2). One to three transect walks were recorded for each of the six women from the two focus groups (refer to Appendix II for the exact number of trips per woman), and a map was compiled of the most common route each woman took to their fuelwood collection sites.
Table 2. Some leading questions used to guide participant observation, transect walks, participatory mapping activities, Venn diagrams, and semi-structured interviews.

- Tell me about your daily activities?
- Where do you go to collect fuelwood?
- What kinds of problems do you face collecting fuelwood?
- Where are forests located today?
- Do you have enough fuelwood for you and your family’s everyday needs?
- Who is in charge of the forests in this area?
- What will the forests around your villages look like in the future?
Women’s Views on the Landscape of Fuelwood Use

Women’s views on the landscape of fuelwood use were assessed through participatory resource maps with semi-structured interviews on historical conditions. To demonstrate the validity and preciseness of women’s notions on the distribution of fuelwood resources, a mapping session was conducted on a georegistered topographic map that showed the distribution of forest landcover and water features. The women were asked to take photographs and describe captions on their local landscape. I used the mapping exercises and discussions about the photographs as a time to consider the distribution of fuelwood resources, and changes in their landscape over time.

Resource-mapping activities were held on separate days for each of the focus groups at the Mazumbai research field station. The women chose the Mazumbai research field station as the venue for mapping sessions because it was a central location that would not have disruptions. During mapping sessions, the six women from each focus group were invited to draw a sketch map of their hamlets and villages, and locations of fuelwood resources on large sheets of paper using colored pens. Maps were compiled through the help of [a] group member[s] who knew how to read and write, and with the assistance of the female PRA facilitator. All features drawn on the map were achieved by consensus among the focus group members. The questions that guided the mapping exercises focused on important aspects of fuelwood collection: where forest resources were located in relation to their villages, and how the distribution of forest resources has changed over time.

After completing the resource mapping sessions with each focus group, a topographic map of the study area was provided to georegister women’s views on the current distribution of forest resources with the local landcover. A copy was made of an original 1:50,000 topographic map acquired from the University of Dar es Salaam in Tanzania. The topographic map portrayed regional forest cover, which included the boundaries of the Baga Forest Reserve, the Mazumbai University Forest, and the Sagara Community Forest. For this exercise, the topographic image was overlaid with mylar so the women could locate and draw
where fuelwood resources are located and obtained. Together women from each focus group, my female translator, and the assigned female PRA facilitator identified where current forest and water resources were located on the topographic map. Relative areas and distances to forest resources, and how women’s access to forest resources has changed over time were also discussed (Table 2). The purposes for using the topographic image was to illustrate the preciseness of women’s views of where forest resources are located, and help local women move to new levels of detail on mapping forest resource distributions (Ford & McConnell 2001; Cunningham 2001).

During the transect walks, women were given cameras and asked to take photos illustrating where forest resources were located, social aspects of fuelwood collection (i.e. who they go with to collect fuelwood), and issues of access to and control over forest resources to meet subsistence needs. Each photo was accompanied by a description of what the woman wanted to communicate about fuelwood resources. Through photography, local women were given the chance to share their knowledge and opinions visually.

**Women’s Perceptions on their Access to Fuelwood Resources**

Semi-structured interviews and Venn diagrams were used to focus on ‘who’ influences women’s access and use of fuelwood resources, how they perceived their access has changed over time, and their views on what forest sustainability means. I worked from a list of leading questions that focused on who controls different forest resources and how their access to forest resources has changed over time (Table 2).

Venn diagrams are ‘conceptual maps’ that focus on understanding the roles of local organizations and the perceptions that people have about them (Slocum et al. 1995). Venn diagrams were constructed to show if local women had an influence on decision-making, as well as how they viewed their relationships with different village institutions and outside institutions, governmental agencies and policies, and development institutions (Byers 1996). Venn diagrams were constructed after each of the focus group’s resource and
topographic mapping sessions at the Mazumbai research field station. The six women from each focus group were asked to place different sized circles that represented key people, social groups, organizations, and institutions on paper. The size of circle indicated how women perceived the importance of these categories, and the circle’s proximity to the center circle that represented their women’s group revealed how closely the group influenced their activities. The purpose of the Venn diagram exercise was for local women to convey issues of access to and control over the management policies that govern designated forested areas (i.e. the Sagara Community Forest, the Mazumbai University Forest, and the Baga Forest Reserve), and other areas (i.e. farms, agroforestry plots) where they obtain fuelwood.
Chapter Five

RESULTS

Gaining a Sense of Place

Women in Sagara and Mgwashi villages are in charge of many daily tasks that contribute to reproductive (domestic) roles in the home, productive roles to gain income, and community managing roles for their self-help groups (see Moser 1993 for triple role, Table 3). Reproductive work were subsistence activities, which included cleaning the house floor, laundry, preparations for lunch, dinner and tea, water and fuelwood collection, livestock feeding, and crop maintenance. I considered productive work to be activities that had exchange value, and generated income for the women’s groups. Productive work included baskets and floor mats that were made to sell at the market by the Sagara women’s group, and seedlings from fast-growing species of trees that were sold by the Mgwashi women’s group. Seedling sales represent productive work because women from Mgwashi village would spend time maintaining seedlings for fuelwood in the group’s agroforestry plots, and would sell the seedlings and fuelwood at market day. Community managing work included Muslim and Christian religious activities for women from both villages.

The two villages differ distinctly in how much time is allocated for reproductive and productive work because of the tasks that surround fuelwood resources (Figure 5). Women from Sagara village allocate more time to the reproductive task of fuelwood collection because of the far distances they travel to fuelwood collection sites in the Sagara Community forest. In contrast, women from Mgwashi village more commonly collected fuelwood from their agroforestry plots, which allowed them to spend less time on fuelwood collection and more time to the productive task of seedling sales, including the work of seedling production and tree maintenance.

The amount of time directed toward firewood collection is also explained by differences in the calculated distances women traveled to and from their homes to fuelwood collection sites, including the time spent cutting the firewood.
Table 3. Weekly work activities for women in Sagara and Mgwashi villages.

<table>
<thead>
<tr>
<th>ROLE/Activity</th>
<th>MGWASHI #women (weekly hours per woman)</th>
<th>SAGARA #women (weekly hours per woman)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REPRODUCTIVE:</strong> child rearing and domestic tasks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cleaning House Floor</td>
<td>6(1)</td>
<td>6(1)</td>
</tr>
<tr>
<td>• Laundry</td>
<td>6(5)</td>
<td>6(5)</td>
</tr>
<tr>
<td>• Chai Preparation</td>
<td>5(1)</td>
<td>6(1)</td>
</tr>
<tr>
<td>• Lunch Preparation</td>
<td>6(13)</td>
<td>6(14)</td>
</tr>
<tr>
<td>• Dinner Preparation</td>
<td>6(7)</td>
<td>5(8)</td>
</tr>
<tr>
<td>• Water Collection</td>
<td>6(4)</td>
<td>6(7)</td>
</tr>
<tr>
<td>• Livestock Feeding</td>
<td>5(1)</td>
<td>5(3)</td>
</tr>
<tr>
<td>• Crop Maintenance</td>
<td>6(22)</td>
<td>6(29)</td>
</tr>
<tr>
<td>• Fuelwood Collection</td>
<td>6(5)</td>
<td>6(26)</td>
</tr>
<tr>
<td><strong>PRODUCTIVE:</strong> work activities that have exchange value and generate income for the women’s groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Seedling Sales</td>
<td>6(22)</td>
<td>1(3)</td>
</tr>
<tr>
<td>• Handcrafts to Sell at Market</td>
<td>0</td>
<td>5(2.5)</td>
</tr>
<tr>
<td><strong>COMMUNITY MANAGING:</strong> voluntary 'unpaid' work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Religious Activities</td>
<td>4(1.5)</td>
<td>5(1.5)</td>
</tr>
</tbody>
</table>
Figure 5. Average time per day spent on daily activities for the six women in Sagara village and the six women in Mgwashi village.
Women from Mgwashi village traveled an average distance of 2.7 km to and from their fuelwood collection sites, with a minimum distance of .6 km and a maximum distance of 8.2 km (Figures 6 and 7). It is important to note that these data show high variation between women who are currently traveling far distances to the Sagara Community Forest to collect fuelwood (8.2 km) and those who mostly travel shorter distances to their agroforestry plots (.6 km; refer to Appendix II for individual data on distances to fuelwood collection sites). Women from Sagara village traveled a greater average distance of 5.5 km to and from fuelwood collection sites, with a minimum distance of 2.4 km, and a maximum distance of 8.4 km (Figure 6). Women from Mgwashi village primarily obtained fuelwood from the tree-planting group’s agroforestry plots that are located in close proximity to their houses in the center of Mgwashi village (Figure 7). The Sagara Community Forest is the primary fuelwood collection site for the Sagara women’s group, and the women varied in how far they had to walk to the forest (Figure 7). Women from Mgwashi village spent an average of 117 minutes collecting fuelwood, with a minimum time of 63 minutes and a maximum time of 229 minutes (Figure 6). The minimum time of 63 minutes spent on fuelwood collection is representative of those women who are walking to their agroforestry plots to obtain fuelwood, and a maximum time of 229 minutes is for those women who are occasionally walking to the Sagara Community Forest for fuelwood (Figures 6 and 7; refer to Appendix II for individual times to fuelwood collection sites). Women from Mgwashi stated that the reason they occasionally walk to the Sagara Community Forest for fuelwood is if they are unable to supply their fuelwood needs through the group’s agroforestry plots. Women from Sagara village spent on average a greater time collecting fuelwood (199 minutes), with a minimum time of 129 minutes and a maximum time of 265 minutes, which relates to the distances they travel to the Sagara Community Forest (Figures 6 and 7). Overall, times and distances correspond to the average route each of the twelve women traveled to fuelwood collection sites (Figure 7; refer to Appendix II for specific number of trips to fuelwood collection sites).
Figure 6. Compiled from trips with women in Mgwashi and Sagara village average distance (km) and time (in minutes) to and from fuelwood collection sites (see also Appendix II).
Figure 7. Location of fuelwood collection sites relative to homes sampled in Sagara and Mgwashi villages. The symbols for the villages mark the end point of fuelwood collection sites (map adapted from Halperin 2002).
Women from both villages stated that the best areas to obtain fuelwood were in the Mazumbai University Forest and the Baga Forest Reserve because they contained ‘natural’ or native species of trees such as *Albizia schimperiana* and *Ficus leprieurii*. Women from Sagara village stated that they preferred non-native trees for fuelwood including species of eucalyptus, *Grevillea robusta*, and *Acacia mearnsii*, as well as native species of trees including *Newtonia buchanannii*, *Syzygium guineense*, and *Albizia schimperiana*. Women from Sagara village stated that best areas for fuelwood collection have changed over time: “the trees in the Baga Forest Reserve used to be natural species, now they are mixed with un-natural species because Bwana Miti and other foresters have been logging in the reserve.” Women from both villages stated that before management of the Sagara Forest was given to Sagara village it had a greater abundance of trees suitable for fuelwood collection, and shortly after it was allocated to the community in 2000, local village men decided to log the forest for timber. Many women from Sagara village stated that fuelwood collection was hard work because they have to travel long distances to obtain fuelwood, and must go on average three to five times per week because the type of fuelwood they collect burns quickly. In contrast, Mgwashi women stated that fuelwood collection is easier since the establishment of their agroforestry plots. The preferred trees that women from Mgwashi are planting in their agroforestry plots are non-native species of eucalyptus, *Acacia mearnsii*, and *Grevillea robusta*. They occasionally plant *Ficus capensis* and *Ficus leprieurii*, which are fast growing native species.

Women from Sagara village stated that they collected one to four bundles per week, with a weight of 30 to 60 kilos from the Sagara Community Forest, but occasionally they would collect fuelwood from their farms if a tree had fallen. Women from Sagara occasionally used maize stalks as a fuelwood supplement. Women from Mgwashi village stated they collect three to four fuelwood bundles per week weighing 40 to 60 kilos, and would only travel to the Sagara Community Forest for extra fuelwood needs, but most women had enough fuelwood near their homes. Women from Mgwashi village are collecting a
greater quantity of fuelwood because they are growing fast-growing low-quality tree species for fuelwood in their agroforestry plots.

None of the women from Sagara village stated that they sold wood or charcoal for monetary profits. One woman from Mgwashi village stated that she sold 50 kilos of charcoal for 2,000 Tanzanian shillings (approximately two US dollars) at market day but did not elaborate on the source of that wood. Women from Mgwashi village stated that they sold bundles of wood and seedlings from their tree nurseries at market day. One woman from the Mgwashi tree-planting group stated that she sometimes bought her fuelwood from another woman in her tree-planting group for 400 Tanzanian shillings per bundle (approximately 40 US cents) because the woman had less money than herself.

Participant observation in both of the villages revealed that women have a very close bond with the ‘work’ of firewood collection. They learn to collect fuelwood from their mothers and in school, and at the age of six, young girls are required to collect and bring a bundle of fuelwood to school once a week. I observed women collecting fuelwood when they were pregnant and nursing. Women most often collect fuelwood with other women who live around their homes in groups ranging from two to six. When traveling in groups to collect fuelwood, women would each cut as much wood as they could and then evenly divide the entire amount of fuelwood amongst themselves.

Women’s Views on the Landscape of Fuelwood Use

On separate days, each of the six women from the focus groups gathered at the Mazumbai research station, from approximately 10AM to 2PM, to conduct the resource mapping session, the topographic map interpretation session, and Venn diagrams. Lunch was provided during these sessions. The resource maps included captions in English and Kishambaa. The resource map drawn by the six women of the Mgwashi group focuses primarily on resources located around the town center of Mgwashi village, within a village boundary line (Figure 8). The map does not include the women’s homes because they are located in Mgwashi hamlets that were not mapped. Instead, women focused on important areas where
Figure 8. Participatory maps drawn by six women from the Mgwashi Tree Planting Group. The map shows current natural resources (water, forests, and agricultural crops), agricultural lands, agroforestry plots, local institutions, most commonly used fuelwood collection sites, and some homesteads. The map also shows where forest resources occurred ten years ago (map redrawn by the researcher).
different crops are grown, the town center, water resources, the group’s tree nurseries, and agroforestry plots near their homes: “we like to plant trees in our farms because it helps keep the nutrients in the soil” (Figure 8). Women did not indicate individual farms on the map and instead drew areas where farms are located with symbols of different types of crops including coffee, cassava, beans, maize, and yams (Figure 8). Women indicated that they actually use an intercropping system, where different types of crops are mixed together when planted, but this is only mapped along the river. For water resources, women drew a piped water area (maji bomba) that doesn’t always work, and the river with its adjoining watershed that women said was a good place for farming (Figure 8). One woman stated, “I wish that the water pipe worked because walking to the water hole many times a day takes a lot of time.” Women highlighted one large area on the map that was forested ten years ago but is now farmland (Figure 8). Women stated that in the past, fuelwood was collected from individual farms located near their houses when the population was not as dense: “we know that we have too many people in our village and not enough trees, which is why we have our agroforestry plots.” Women also stated that as the demand for agriculture land increased, forests were cut down to serve these needs.

Current forest resource areas that the Mgwashi women drew included their women’s tree planting group tree nurseries, two agroforestry plots that were planted by two of the women participants, and the home of ‘Bwana Miti’ (Figure 8). Women stated that ‘Bwana Miti’ is a forester for the Baga Forest Reserve and owns a big home in Mgwashi village. The women wanted to incorporate his home on the map because they said ‘Bwana Miti’ was in charge of all the trees in the village and the forests:

“Bwana Miti is in charge of all the forests in this area. I have to ask him permission when I need fuelwood from the forests [the Baga forest and the Sagara forest]. Bwana Miti owns a big house in Mgwashi because he takes trees from our farms and from the forests for timber.”

Women from Mgwashi stated that they obtain fuelwood primarily in areas where they plant trees, and occasionally from the Sagara Community forest for rotting logs, or waste wood. Women did not decide to include the Sagara
Community Forest on their map, but stated that they sometimes had to travel there for fuelwood. During the mapping session, Mgwashi women discussed how they plant trees for fuelwood as a response to the long distances traveled to obtain fuelwood, heavy workloads involved, and Sagara village government’s decision to make it illegal for them to collect fuelwood in the Sagara Community forest. Women also discussed land ownership, stating that the men of the household own trees that are located in farming plots, and overall, men own private land and women have the right to use it, but are not able to sell the land if the man of the household dies.

The resource map drawn by the six women of the Sagara focus group shows a larger land area focuses on the village center in relation to the Sagara Community Forest and the Mazumbai University Forest (Figure 9). Women did not indicate their individual homes, located outside the mapped area by Sagara village (Figure 9). Similar to Mgwashi women’s resource map, women from Sagara did not indicate individual farms, and instead drew areas where farms were located with symbols of different types of crops, including coffee, cassava, beans, corn, and some trees (Figure 9). Women stated that they also use an intercropping farming system, and have tea plantations located near their individual farms that are worked on and controlled by the men in the village (Figure 9): “men in our village work on the tea plantations, and we sometimes help them with the tea crops, but we are not in charge of how they are traded and the money that comes in from the tea.” Tea plantations were not discussed in detail or drawn on the resource map because they were considered men’s work by the Sagara women. Women illustrated the road to Mgwashi where market day is held, and indicated that their water resources are obtained from the river on the map and the Mazumbai forest (Figure 9).

Women from Sagara village represented the Sagara Community Forest as the primary area for fuelwood collection (Figure 9). Women stated that two small agroforestry plots (one at the primary school and the other at an elder’s home), and the Mazumbai University Forest were other areas where fuelwood could be collected, but that they did not use them often (Figure 9). Women in Sagara stated
Figure 9. Participatory maps drawn by six women in the Sagara women’s religious group. The map shows current natural resources (water, forests, and agricultural crops), agroforestry plots, local institutions, most common fuelwood collection sites, forest reserves, and some homesteads. The map also shows where forest resources occurred ten years ago (map redrawn by the researcher).
that men control the trees, forests, and agricultural fields, but women do the labor: “men in our village own everything, but we are in charge of making sure that all our resources are taken care of.” Trees are found on the Sagara women’s farms, and women stated that they help with soil erosion and water catchment. Women stated that their primary sources for fuelwood are dry wood from natural trees and cut wood from *Grevillea robusta* in the Sagara Community Forest, and from trees in their farms (Figure 9), “Grevillea is the type of tree that we gather fuelwood from the most.” Women stated that there are “hundreds” or “thousands” of these trees in the Sagara Community Forest (Figure 9). Women from Sagara village stated that they do not plant trees because they have not been taught how, and that if they did know how to plant trees, they could not plant them in their farms because they need room for food crops to feed their families during periods of hunger. Women from Sagara showed one area where forests were located ten years ago, and stated that fuelwood could be found everywhere around the village in the past (Figure 9). Women emphasized during the mapping session that they refuse to terrace their crops because during ‘colonial times’ Germans used physical force to make local people terrace their crops.

After the resource maps were compiled, the focus groups (on their respective mapping days) were asked to reconsider and map the distribution of forest resources onto a topographical map that showed forest cover. During this exercise, women were able to clearly indicate where fuelwood resources were located within the Sagara Community Forest, their village town centers, Mgwashi women’s agroforestry plots (because they are located within the town center of Mgwashi), and some of the streams where water resources were located on the topographic map. The women were also able to locate the various hamlets dispersed around the villages, and the proximity of their hamlets to forested areas (i.e. the Sagara Community Forest, the Mazumbai University Forest, and the Baga Forest Reserve) on the topographic map. Women from both villages stated that this exercise gave them a greater sense of confidence in their knowledge of forest resources. A woman from Sagara village stated: “when the people come here from TFCG [Tanzanian Forest Conservation Group] and use their maps, I will be
able to help them now because I can read a map”. Women from both villages seemed surprised when they realized exactly how far they were traveling to obtain fuel from the Sagara Community Forest, and water from the Mazumbai and Baga forests. One woman from Mgwashi stated: “now I know the correct distance for how far I used to walk to collect fuelwood.” The fact that the topographic map was at a 1:50,000 scale caused some limitations during this exercise. Women were not able to map out specific fuelwood collection routes that could be georegistered onto a map using GIS because of the topographic map’s low level of detail.

The pictures the women took and their captions provided during the transect walks illustrate women’s views on forest resources across the landscape (Box 1), the ‘social’ dimension of fuelwood collection (Box 2), and important issues on their access to and control of forest resources (Box 3). Women from both villages highlighted of the location and relative abundances of fuelwood resources and how they had changed over time (Box 1). They had a keen sense of forest resource boundaries, and were able to capture contrasts in forest resource abundances (Box 1). One women even described the ecological services such as the origin of water resources from forested areas, and the importance of maintaining healthy forests to serve as water catchments (Box 1).

Women captured in their photos how fuelwood collection is women’s work and how they enjoy the communal aspects of gathering fuelwood together (Box 2). The photographs and caption emphasized the hardships women face while collecting fuelwood. Women in Mgwashi are in a transitional phase from collecting fuelwood in the Sagara Community Forest, to collecting solely in their agroforestry plots (Box 2). Women from Sagara village clearly identified set boundaries where her access to fuelwood resources is defined, and how the ‘heads’ or village leaders had control over its management (Box 3). One woman from Mgwashi village emphasized how she did not have access to designated forest reserves (Box 3), and one woman from Sagara village emphasized how restrictions in the management of the Sagara Community Forest affected their ability to collect fuelwood (Box 3).
“This is a picture of the forest environment. There are many trees in the forest right now, but there are fewer trees today than during the years when my grandmother collected fuelwood. The forest is good and I need to use the forest for many reasons.” (Sagara women participant; Sagara forest)

“This is a photo that shows the boundaries of the forest. The forested part is Mazumbai forest. Mazumbai forest is not like the Sagara forest, where there are not many good trees left. I have to travel further and further to find the good trees that burn a long time for cooking. I am not sure what is going to happen to Sagara Community Forest when all the trees are gone.” (Sagara women participant; a farm adjacent to Mazumbai forest)

“This is a picture showing a natural resource. This stream comes from the top of the mountain through the forest to our village. The water is good because it helps the forest grow without sunlight and helps to catch the rainfall. We need to have trees to keep the water flowing throughout the forest and to our villages.” (Mgwashi women participant; Baga Forest Reserve)

Box 1. Women’s photos and captions on the distribution of forest resources along transects to their fuelwood collection sites.
“This is a picture of me and the group of women that I always go with. We walk many miles while collecting fuelwood for our homes. The wood in this area burns fast, so we have to collect it many times a week. Even though we have a long walk ahead of us after collecting our fuelwood, we are all in good spirits.” (Sagara women participant)

“This is a photo of a baby waiting while its mother collects fuelwood. The baby is too young to stay at home while the mother is collecting fuelwood because it needs its mother’s milk. This baby’s mother will take breaks to feed the baby while collecting fuelwood and then she will carry the baby and her bundle of fuelwood home with her.” (Sagara women participant)

Box 2. Women’s photos and captions on the social dimensions of fuelwood collection.
“This is a picture of my friends walking out of the Sagara Community Forest where we have gotten fuelwood. This forest sits right next to Mazumbai Forest Reserve. We are not allowed to go into Mazumbai to collect fuelwood, and we can only collect fallen trees in the Sagara Community Forest. This forest is managed by the village heads in Sagara. There are not as many trees in Sagara compared to Mazumbai.” (Sagara women participant)

“This is a picture of how much fuelwood I use in one week. I collected this wood from the forest near my house [Baga Forest Reserve] even though I am not supposed to. This wood will burn very fast, and I have to gather it often. Because I am not allowed in any forest around my house I now collect wood from my tree-planting group’s plots.” (Mgwashi women participant)

“This is a photo of women collecting fuelwood for cooking. This area is close to the Mazumbai Forest Reserve, and is now considered a part of the Sagara Community Forest. It has good wood that can be used for fuel, but it is sometimes hard to find fallen wood, which is the wood that we are supposed to take for fuel.” (Sagara women participant)

Box 3. Women’s photos and captions on important issues of access and control to fuelwood resources.
Women’s Perceptions on their Access to Fuelwood Resources

Women from Mgwashi village collectively described how SECAP (Soil Erosion Control and Agroforestry Program), religious institutions, TFCG (Tanzania Forest Conservation Group), SUA (Mazumbai University Forest), the Sagara Community Forest and Village Government, the Baga Government Forest, the primary school, and various women’s groups were the institutions that influenced their access to fuelwood resources (Figure 10). After deciding on these institutions, the women categorized their importance, and found that SECAP was the most significant, giving this institution the largest circle (Figure 10). Women stated that SECAP was the most important institution because SECAP taught local women how to plant trees, and are currently providing seedlings for the group’s tree nurseries. The second most important institution was TFCG because TFCG has taught local women how to build fuel-efficient stoves that decrease the amount of fuelwood they need for cooking. Women’s various groups, which is essentially their tree-planting group, was the third most important organization because women have access to the group’s agroforestry plots. The primary school was the fourth most important institution because young girls are taught how to collect fuelwood at school, and are required to bring fuelwood to school as their homework. Religious institutions were the fifth most important institution because all of the women in the group, who were both Muslim and Christian, attend church on a weekly basis. SUA (Sokoine University of Agriculture), the Sagara Community Forest and village government, and the Baga Forest Reserve were the sixth, seventh, and eighth most important institutions. SUA was chosen because it represents the Mazumbai forest, and women stated that this forest helps bring rain to their crops. The Sagara Community Forest and Government was not considered very significant because women are decreasing the amount of fuelwood they collect in the Sagara forest, and are not allowed to attend meetings for the forest. The Baga Forest Reserve was not significant to the women because they are not allowed to enter the forest for fuelwood.
Figure 10. Venn diagram configured by the women of Mgwashi Women’s Tree-planting Group (diagram redrawn by the researcher).
Women from Sagara village collectively described how Mbailwa and Shabani (Sagara and Baga forest managers), the Sagara Community Forest and Village Government, SUA (Mazumbai University Forest), Baga Forest Reserve, the primary school, TFCG (Tanzania Forest Conservation Group), and SECAP (Soil Erosion Control and Agroforestry Program) were the institutions and people that influenced their use of fuelwood resources (Figure 11). Women found that Mbailwa and Shabani, and SUA (Sokoine University of Agriculture) were the most significant; giving these people and institutions the largest circles (Figure 11). Women stated that Mbailwa (also known as ‘Bwana Miti’) and Shabani were influential because they decide on the rules regarding the Sagara Community Forest, and women have to go to Mbailwa and Shabani to ask permission to collect fuelwood that is not on the ground in the Sagara Forest. Women stated that Mbailwa is in charge of all the trees in the village: “sometimes Mbailwa asks you to cut down trees in your farm so he can make money for timber.” SUA was significant to the women because Mazumbai is where they obtain water for their homes. The third most important institution was the primary school because it has an agroforestry plot where children learn to plant trees, young girls are taught how to collect fuelwood, and they want their children to learn how to help with the development of the village. The Sagara Community Forest under the village government was the fourth most important institution because women said they have access to the forest for fuelwood, but ranked it lower than other institutions because they were not able to speak at meetings regarding its management (Figure 11). The Baga Forest reserve was the fifth most important institution because women occasionally obtain fuelwood from the forest if they cannot find good fallen logs in the Sagara forest. TFCG was the sixth most important institution because TFCG has taught women how to build fuel-efficient stoves; one woman stated: “TFCG has helped us to decrease our fuelwood needs from one bundle per day to one bundle per week”. SECAP was least important because women said that SECAP has not provided seedlings to Sagara village (Figure 11).

Semi-structured interviews illustrated women’s knowledge and concerns for forest sustainability. One woman from Sagara said: “I think the Sagara forest
Figure 11. Venn diagram configured by the women of Sagara Women’s Religious Group (diagram redrawn by the researcher).
will go away and there will be no water or animals left because they use the forest for timber.” A woman from Mgwashi indicated the forests future sustainability: “I don’t think the forests will disappear because I know how to plant trees, and I don’t need to cut down the forests.” One woman from Sagara indicated: “school children are told to plant trees, but it is hard to plant trees if you don’t have any money for seedlings.”

Issues of forest resource management were illustrated with one woman from Sagara’s statement,

“Bwana Miti was appointed by the government to protect the Baga forest. Now that there is a Sagara forest he does the same protection type. He is a tribal person from Mgwashi and studied forestry in college and uses the British ways for forestry.”

Another woman from Sagara stated, “I am allowed to enter the Sagara forest for fuelwood on the ground, but my husband has to ask Bwana Miti for permission if I want to cut down a tree in the forest.” A statement from a woman in Sagara illustrates how she felt excluded from the management practices that govern the Sagara Community Forest:

“I have to travel far to find the good trees for cooking. I am not sure what is going to happen to Sagara Community Forest when all the trees are gone because my husband speaks at the meetings about the Forest.”

Many women from Sagara village felt they were excluded from meetings held in regards to the community forest because they were not allowed to speak at the meetings.

Mgwashi women stated that they have begun planting trees in their agroforestry plots in response to their exclusion from the Sagara Community Forest:

“I used to collect wood from the Sagara Community Forest, but that forest is far from my house and I sometimes get in trouble for collecting there. Now it is much easier for me to get good fuelwood because I collect from the tree plantations that my women’s group has made.”
Overall, women from Mgwashi stated that they felt proud of their agroforestry project because they could manage it themselves and make all the decisions about the trees.
Chapter Six

DISCUSSION AND CONCLUSION

Women’s Livelihoods and Knowledge of Forest Sustainability

Fuelwood is a livelihood issue for women in Sagara and Mgwashi villages because they rely solely on the fuelwood they collect for all their cooking needs (Green and Thrupp 1998; Argawal 2001). The work of fuelwood collection, which includes the distances they travel to obtain fuelwood and the amount of time they spend on fuelwood maintenance, adds significantly to women’s daily workloads. This is exemplified by women from Sagara village walking far distances to the Sagara Community Forest to obtain fuelwood, and by women in Mgwashi village spending a great amount of time on seedling production and tree maintenance in their group’s agroforestry plots that also serve as their primary fuelwood source (Rocheleau et al. 1995; Wanjama et al. 1995). Because of the distances and time women in Sagara and Mgwashi village spend on the work of fuelwood collection, they are beginning to shift their work from the production of wood for fuel. Mgwashi women now rely mostly on their agroforestry plots, and women in Sagara are beginning to recognize the role that agroforestry might play in fuelwood production.

Women from the two focus groups are in charge of a variety of productive, reproductive, and community managing tasks that connect them in important ways to forest resources. The amount of time Sagara women spend for fuelwood collection, and the amount of time Mgwashi women spend on seedling production and tree maintenance in their agroforestry plots illustrates the intersection of reproductive and productive work (Moser 1993). Women’s interaction with non-governmental organizations such as Soil Erosion Control and Agroforestry Program (SECAP) and the Tanzanian Forest Conservation Group (TFCG), suggests that they have taken on a community managing role. With the assistance of SECAP, women of Mgwashi village have been able to collectively organize themselves to form their tree-planting self-help group to meet their subsistence needs (Mwaniki 1986). Mgwashi women’s formation of their tree-
planting group, and Sagara women’s interaction with TFCG, as well as the high priority they place on educating children in their village about the benefits of tree planting, suggests that women in this region are mobilizing themselves in order to secure their livelihoods (Oberhauser et al. 2003).

The relationships that local women in this study have between fuelwood extraction and sustainability have significant implications as well. Women from Mgwashi and Sagara villages use low diversity, low quality wood, with the exception of non-native forest products, for fuelwood extraction and production. Women from Sagara also use maize stalks as a fuelwood supplement and collect dead wood from the ground in the Sagara Community Forest. These women are not impacting native forest diversity in this biodiversity hotspot. Through their daily interactions with forest resources, women in this region gain knowledge of their ecosystems, and through this knowledge they are beginning to mobilize themselves towards fuelwood production outside of forest reserves to ensure that resources are used sustainably over long periods of time (Argawal 2006).

**Issues of Access and Control and the Political Ecology of Fuelwood Use**

Fuelwood is becoming a limited resource despite the location of these communities in a forested area. German and British colonial management activities caused a shortage in forest resources for the women in this study, and this is exemplified by current management policies that restrict women’s access to forest resources in the Baga Forest Reserve and the Mazumbai University Forest. The primary fuelwood collection sites for women in Mgwashi and Sagara villages are outside of these restricted areas, in the Sagara Community Forest (for women in Sagara village) and agroforestry plots (for women in Mgwashi village). The women participants in this study are respecting the forest boundaries.

Women from Mgwashi and Sagara village are also experiencing local pressures over their access to and control over fuelwood resources. This is exemplified by Mgwashi and Sagara women’s statements that ‘Bwana Miti’ has control over all forested areas in Mgwashi and Sagara villages, which includes the
Baga Forest Reserve, the Sagara Community Forest, and trees that are located in their individual farms. Women from Sagara village appear to have no control over the management of the Sagara Community Forest, and this is demonstrated by local governmental restrictions on the types of wood they can collect, and their inability to speak at the meetings regarding the forest’s management.

Local people in Sagara village are now experiencing the effects of subsequent revisions in national forest policies (i.e. National Forest Policy of 1998 and Forest Act of 2002), towards local control over forest resources with the establishment of the Sagara Community Forest in 2000 (Iddi 2000; Baldus and Siege 2004). Tanzania is thought to be the best location for community forestry, where the goal is to promote forest conservation and equitable access to resources by and for all people who utilize the resource for everyday needs (Nightingale 2006), because of strong local village governments that are a result of President Julius Nyerere’s *Ujamaa* movement. Despite a strong organization at the village level, women are being excluded from participating in the Sagara Community Forest’s management. This was illustrated by women saying that local men decided to log the forest for timber shortly after it was given to the village. Therefore, this research suggests that community forestry policies do not always empower the entire local community to arrest forest resource degradation and secure/guarantee access to, and ownership of forest resources.

This research has been able to reveal how local women perceive their access to forest resources in relation to hierarchically-arranged political economic structures (Peet and Watts 1996). Women from Mgwashi and Sagara village were able to convey influences over their access to and control over forest resources at different scales of analysis. Women from Mgwashi village ranked regional influences such as SECAP and TFCG the highest, and local institutions such as their tree-planting group and the primary school as the second highest. In contrast, women from Sagara village ranked local restrictive controls, such as ‘Bwana Miti’ the highest, and local institutions such as the Sagara Community Forest the lowest.
Mgwashi women’s high rankings of SECAP and TFCG suggest that Mgwashi women view their seedling distribution and fuel-efficient stove programs as a factor in helping their mobilization toward fuelwood production. Women from Sagara village’s high ranking of ‘Bwana Miti’, and low ranking of the Sagara village government suggests that their main concern is their access to and control over forest resources for the extraction of wood for fuel in the Sagara Community Forest. The women from Sagara greatly differ from Mgwashi women along a continuum of self-mobilization, from the extraction to the production of wood for fuel.

**Participatory Research and Local Empowerment**

Through feminist participatory research, gendered representations of authority and inclusion within the Sagara Community Forest (Tinsman 2004), and less visible dimensions of power relations at the local and national levels have been revealed. This research has un-packed the dynamics of women’s lived experiences to illustrate how their oftentimes erased and neglected voices are actively engaged in struggles over access to and control over resources (Nagar et al.). This research demonstrates that feminist theory and methodology enhance political ecology frameworks to help identify power relations that are produced and suppressed at the local level and in turn provide insight into how women in these villages can become more empowered.

**Conclusion**

Overall, this study demonstrates how women in Mgwashi and Sagara village are relying solely on fuelwood for subsistence needs, and how the work of fuelwood can intersect women’s triple role. This study has unpacked the complex relations between regulated forests, community forests, and locally-driven initiatives that are promoting agroforestry, and suggests that governmental forest management strategies need to take local women’s unique, situated environmental knowledges into account, and be designed specifically in relation to women’s needs and their environmental concerns. If these considerations are not taken into
account, the Sagara Community Forest may be seen as a failure of community forestry due to each member’s inequitable access to the management process (Nightingale 2006).

This research has emphasized the resilience and creativity with which the women from Mgwashi and Sagara village deal with securing their livelihoods, and suggests that women in this region will continue to collectively mobilize themselves in order to sustain their livelihoods. Therefore, this research supports the notion that the conservation of forest resources needs to encourage local participation in better understanding the ‘political ecology’ of fuelwood resources by collaborating with women under a participatory research design that supports women’s empowerment and encourages their self-mobilization.
References


Bryant, R. 1998. Power, Knowledge and Political Ecology in the Third World: A


Gatenby, B., and M. Humphries. 2000. Feminist Participatory Action Research:


Appendices

Appendix I

The research protocol for the thesis was approved in 2003 by the Human Subjects Committee at Miami University prior to the actual field research.

Research Description

Women’s views on the political ecology of fuelwood use in the West Usambaras

1. **Project Personnel**
   
   *Principle Investigator (PI):* Betsy A. Beymer, MA Student, Department of Geography, Miami University.

   *Advisor: Kimberly E. Medley, Associate Professor of Geography, Miami University.*

   *Local Field Assistant:* Field assistants will be hired to help in the translations from English to Kiswahili, Tanzania’s national language. They will also help with introductions to the community and the identification of key informants.

2. **Purpose:** I propose to study how the local village women perceive their access to fuelwood resources as an environmental resource in the West Usambara Mountains of Tanzania. This study addresses the opportunities for a positive relationship between sustainable fuelwood extraction and human livelihoods by examining their perspectives on local and outside factors influencing access to forest resources. The contributions of this research are to empower local women to gain control over forest resources. This study will address two research questions:

   (i) How do the women village residents in the West Usambaras view their access to fuelwood resources, horizontally across the local landscape.

   (ii) How do the women village residents in the West Usambaras view their access to fuelwood resources hierarchically as it is influenced by local, regional, national and international institutions and policies.

3. **Subject Population:** The people occupying the areas of study are known as the Shambaa people, an ethnic group practicing subsistence farming on the slopes of the West Usambara Mountains. The traditional settlement patterns of the Shambaa people are low-density clusters of houses placed
on ridgelines near the edge of the forest and agricultural fields on the slopes. Participants will include women 18 years and above.

4. **Recruitment and Selection of Subjects:** I will observe and interview adult female village residents in order to gain local understanding of how women perceive their access to fuelwood resources as an environmental resource. The local administration will be notified about my research. I will work along with a field assistant (Mr. Mrecha, a forester for the Mazumbai region of the West Usambaras) who will introduce me to the village residents. Participation in this research will be completely voluntary and the focus for my interviews will be individuals or recognized groups of local women. The people who volunteer to participate in this study will be compensated for their time with small quantities of commodities such as flour and cooking oil; no cash will be given. My intentions are to gain a local understanding through conversations and participation in their daily activities. I will not be discriminative or coercive during the research process.

5. **Informed Consent:** I will work with the forest director and local assistants on the research. The assistants will be the only people involved directly with this research. One of the assistants will make introductions during each interview session, and then I (the PI) will go over the Consent Form (one of the assistants will translate this to kiswahili). Those in agreement with the form will then participate in the research process. Any participant will be at liberty to terminate an interview session without special permission from the PI. Interviews will be carried out during times compatible with the participant’s time schedules.

6. **Research Procedures:**

   - **Nature of Activities in which Participants will be engaged:**
     I will investigate the spatial distribution of forest resources as perceived by the local women. To achieve this, the PI will ask the participants to construct their village maps and indicate the locations of fuelwood resources. I will also investigate how the women view their access to fuelwood resources hierarchically as it is influenced by local, regional, national and international factors. To achieve this, the local women will be engaged in semi-structured interviews. Throughout this process, emphasis will be on a two-way dialogue to enhance optimal information exchange between the PI and the participants. I also plan to use participatory observations while I join the local women in their daily activities and particularly help them in the acquisition of fuelwood for their homes.

   - **Research Location:**
     This study will be carried out by the PI in two villages that surround the Mazumbai Forest Reserve located within the West Usambaras, Tanzania.
- **Data Gathering Instruments:**
  The PI will use semi-structured interviews, gender resource mapping and Venn diagrams to obtain information. The local women will also take photographs and provide captions for resources. Documentation will be done by hand in a field notebook, and tape recorders will be used if permitted by the respondents. To guide the interview process, the PI will use leading questions such as “Tell me about how you use forest resources for fuel?” “Where do you go to find fuelwood and have those locations changed over time?” “Are some trees better than others for fuel? Where are they located?”

- **Frequency of Activity and Overall time of Participation:**
  I anticipate that interviews will last no more than an hour. Participatory tools such as mapping and Venn diagrams will be conducted with groups of women and may take two hours. The photos will be taken by women while I join them during their daily tasks. I anticipate holding a total of five to ten interview sessions and one Venn diagram in each village. These will be spread over the entire time of data collection. However, they will not be used in such a way as to be time consuming and therefore interfere with the participant’s daily schedules.

- **Training of Persons Administering Data Collection:**
  The PI, working with a translator will be the only person collecting data during individual interviews. While carrying out the participatory methods, I will have two assistants and will provide and orientation before the session and collaborate with them on the results. However, the PI will be responsible for final compilation of all information obtained.

- **Potential Risks and Discomforts:**
  This study does not anticipate any potential physical, physiological, social and/or legal risks. Participants will be at will to terminate their involvement at any time should they feel the research poses any risk.

- **Anonymity and Confidentiality of Information:**
  To protect confidentiality, respondents will not be identified by names or locations in their village. No respondent will mention her name even during sessions that will be tape-recorded.

The following is an introductory letter and informed consent form

**INFORMED CONSENT FORM**

*To Whom It May Concern:*
My name is Betsy A. Beymer and I am a graduate student in the Department of Geography at Miami University in Oxford, Ohio, USA. The purpose of my study titled, Women’s views on the political ecology of fuelwood use in the West Usambaras, is to gain local understanding of how women perceive their access to fuelwood resources as an environmental resource in the West Usambara Mountains of Tanzania. Your input into this study will help to understand the opportunities and constraints that influence your daily use of fuelwood. I hope to collaborate with you on making a map of where the fuelwood resources are located and to record how your access over forest resources has changed over time.

To achieve this goal, I will administer a number of interview sessions with willing community members that are women and at least 18 years of age. I will ask you to participate in a group mapping session, where you will be asked to portray the land areas and fuelwood resources within and around your village. I will also ask you to draw Venn diagrams that specify how you view your access to forest resources as it pertains to different levels, such as the regional, national and international. During each session, I will take notes of your responses and in some circumstances tap record our conversations as a way of more carefully recording your responses. I will also ask you to take photographs of different areas where you obtain fuelwood. I estimate that each activity that you participate in will last approximately 2-3 hours and you will be compensated in a small way for your time through the provision of some food goods (maize meal).

Your participation, nevertheless, is voluntary and you will be able to terminate an interview session at your will, or avoid answering any questions. Your identities, both names and locations, will remain confidential at all times.

Prior to the study, I will submit a copy of the findings of my study as well as photographs of your forest resources. You will be at liberty to suggest areas you wish to be modified.

I thank you in advance for considering my request and ask if you would be willing to participate in the research study.

Sincerely,

Betsy A. Beymer

For Further Information, Please Contact:
1. Department of Geography
   216 Shideler Hall,
   Miami University,
   Oxford, Ohio 45056, USA
   TEL: 011-513 529 1558
To: Chair, Committee on the Use of Human Subjects Research, Miami University

From: Betsy A. Beymer, Graduate Student, Department of Geography

Date: April 2003

RE: APPLICATION FOR CERTIFICATION OF EXEMPT STATUS

This memo kindly draws your attention to my impending research in Tanzania for my Masters Thesis in Geography.

I anticipate conducting research from May to August 2003. To collect data for this research, I will observe and interview women residents in two villages near the West Usambara Mountains of Tanzania. I will treat the information given with utmost confidentiality, by not disclosing any respondent’s name or revealing their specific location. The data that I will obtain will be for research purposes and will not constitute a basis for legal or economic appraisal of the respondent’s activities. The respondents will provide information on a voluntary basis and will have the right to terminate their participation in the research process at any given time.

I therefore, apply for the Certification of Exemption for my research and attached are the relevant documents for your consideration.

Thank you in advance.

Yours sincerely,

Betsy A. Beymer
Appendix II

Data on average distances and times to fuelwood collection sites for each of the six women from the focus groups in Mgwashi and Sagara villages.

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