IMPLICATIONS OF INCENTIVE-BASED CONSERVATION PROGRAMS FOR GOVERNANCE, GENDER AND COLLECTIVE ACTION IN THE ULUGURU MOUNTAINS, TANZANIA

By

Mamta Vardhan

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ABSTRACT

IMPLICATIONS OF INCENTIVE-BASED CONSERVATION PROGRAMS FOR GOVERNANCE, GENDER AND COLLECTIVE ACTION IN THE ULUGURU MOUNTAINS, TANZANIA

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Payment for environmental services (PES) is often promoted as a win-win option for conservation and development, but its potential social impacts remain underexplored. PES literature has not focused much attention to the important issues of institutions and governance underlying PES projects, the potential of PES to alter existing rights to resources which may work against marginal groups, and the possible perverse impacts of introducing money on collective action for provision of ecosystem services. This research explores these issues in the context of tree planting programs and forest management arrangements in the Uluguru Mountains in Tanzania. The first essay, "Forest Governance in Participatory Forest Management Regimes in Tanzania: Lessons for REDD," indicates that although participatory forestry programs appear to offer a good institutional base for launching REDD, in practice they are plagued by poor governance, corrupt practices and low accountability. Participatory forestry institutions in Tanzania need to be strengthened in order to ensure effective and equitable implementation of REDD. The second essay, "Payments for Environmental Services and Women's Land Rights in the Uluguru Mountains, Tanzania," presents a case where men in the study villages have used tree planting projects to claim women's lands. The paper cautions that contestations over land may become pronounced if PES projects continue to ignore the social relationships underlying the production of ecosystem services. The third essay, "Pro-Social Behavior and Incentives: Experimental Evidence from the Uluguru Mountains, Tanzania,"

explores the impact of payments on collective action through village-level field experiments. It shows that participation in communal tasks is high irrespective of the incentive; high payments can increase participation but low payments can reduce participation relative to when no payment is made.

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Looking back, I do not think I leave with just a PhD, I leave with a fuller and richer sense of life-touched by so many intellectual, emotional and spiritual moments. I will truly cherish my Grad school days.

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CHAPTER 1: INTRODUCTION

Tropical forests and ecosystems in developing countries provide a number of valuable environmental services such as biodiversity conservation, carbon storage and watershed protection. However, forest environmental services are being lost because people who live in forests are not compensated for providing environmental services and thus often have insufficient incentive to protect forests. In view of the failure of traditional command and control approaches to conservation, there is growing interest in designing more direct institutional approaches whereby those who receive environmental services compensate those who provide them (Pagiola et al., 2005). The resulting approach is known as payment for environmental services (PES). PES thus involves compensating land users through economic incentives so that they benefit directly from conserving landscapes and providing environmental services. Thus, PES projects are akin to creation of a market for environmental service through which buyers and providers of environmental services interact. In the past decade many PES projects have been established in developing countries. For example, PES is being explored as a way to compensate communities all across the tropics under the new Reduced Emissions from Deforestation and Forest Degradation (REDD) regimes being promoted to reduce green house emissions by conserving forests in developing countries.

Reactions to PES in conservation and development circles have been mixed. Proponents argue that by targeting conditional payments to those who constitute a potential threat to environmental service provision, PES represents a more cost-efficient way to achieve landscape conservation (Wunder et al 2008). This vision of PES is promoted since environmental financing is limited and greater efficiency in spending is the overriding concern. However, this narrow

vision of PES is deemed problematic on several counts. PES literature has not focused much attention to the crucial issues of 1) institutions and governance underlying PES projects, 2) the potential of PES to alter existing rights to resources and create enclosures which may work against the marginal groups, and 3) the possible perverse impacts of introducing money influences collective action that underlies provision of ecosystem services. The slant towards technical issues in design of REDD (such as scale, funding designs, monitoring systems) with too little attention on governance dimensions such as the social impacts, fairness and distribution has been flagged as an issue by scholars (Hufty and Haakenstad, 2011). Others critique the commoditization entailed in PES and emphasize that as monetary values for ecosystem services arise, other values (held by other people) may be left behind, resulting in enclosures of newly valuable land and dispossession of the poor and powerless (Sullivan, 2009). There are concerns that the use of cash as incentive may erode culturally-rooted, intrinsic motives for cooperation and trigger people to behave in self-interested ways (Deci, 1971) with the result that this "motivational crowding out" may destroy existing pro-environmental ethics (Fehr and Falk, 2002).

The need for a sharper understanding of the problematic complexities of the relationship between payment-based conservation instruments and local social processes, including impacts on governance, gender equity and norm-based collective action is important as there is much discussion but little empirical evidence about these aspects of PES. This research explores each of these three big issues in pilot PES tree planting projects and ongoing forest management institutions in the villages in the Uluguru Mountains in Tanzania. The research attempts to locate answers to the following three research questions:

RQ 1. What are the institutional and governance outcomes of decentralized forest management in Tanzania? What do these outcomes imply for the implementation of upcoming village level PES/REDD projects?

RQ1. How does introduction of payment based landscape conservation and tree planting projects mediate and impact gendered access to and control over land resources?

RQ 2. In what ways does the introduction of direct financial incentives interact with social norm-based collective action for management of common pool forest resources?

Research on these issues remains important in the study villages because the region is a global biodiversity hotspot and the provider of many ecosystem services of global and local importance. The Uluguru mountain ecosystem faces conservation threats from human activities such as conversion of forests into farm, heavy soil erosion and declining agriculture productivity. The mountains are home to the Waluguru people, who are a matrilineal community where traditionally women own land. The forests in the region are being managed under several decentralized, community based, participatory regimes. There is a tradition of undertaking social norm mediated voluntary work and collective action on issues of village development. PES projects are being introduced in the area as a means for landscape conservation and poverty alleviation. However, many of the projects are being overlaid on existing social, economic institutions and ecological systems without being deliberate about the likely interactions of these new projects with pre-existing institutions, resource use and conservation practices. This research is an attempt to study the likely interactions of the payment-based ideology with pre-existing norms of access and control over land, the day-to-day governance of forests and the potential impacts of PES projects on norm-based collective action.

This research work draws from a variety of theoretical and methodological domains, from behavioral economics, social psychology, environmental anthropology to political science. Thus, methods that are representative of research in these various disciples were purposefully selected and applied to collect data under this study. In the tradition of qualitative research, an ethnographic approach was followed, which included unstructured interviews and conversations, participant observations, participatory research such as rural appraisals and more structured approaches such as topical interviews, focus group discussions. Following the quantitative tradition, household survey and field experiments were conducted. The research participants included government officials at the district, ward and village level, community members from six villages.

The three research questions are pursued in separate essays:

Essay 1: Forest Governance in Participatory Forest Management regimes in Tanzania: lessons for REDD

The Tanzanian national REDD framework identifies participatory forest management (PFM) as a strategy to achieve forest conservation. Lessons about the performance of PFM are important for assessing the social feasibility of REDD. Two main approaches to promote PFM in Tanzania are Joint Forest Management (JFM) on government-owned forests where the communities are not entitled to any benefits and Community Forest Management (CFM) on village-owned forests where community members have rights to proceeds from forests. This paper is based on a comparative study of forest governance in two JFM and two CFM sites in the Uluguru Mountains of Tanzania. Findings indicate that people responsible for managing village institutions under JFM feel challenged by the responsibility of protection and expect more

support from the state. In contrast, even with its apparently more favorable tenure and benefit-sharing arrangements, CFM in the study villages suffers from weak governance in particular inequitable benefit-sharing, corruption and elite capture. With the reluctance of Tanzanian state to share benefits under JFM, it is likely that the REDD revenues may remain centralized and the communities continue to bear the costs of protection. Given the poor governance outcomes of CFM, questions about its use as a means to deliver equitable forest conservation under REDD remain unresolved.

Essay 2: Payments for Environmental Services and Women's Land Rights in the Uluguru Mountains, Tanzania

Payment for Environmental Services (PES) is often promoted as a win-win option for conservation and development. At the same time, there is little focus on the how placing new values on land through PES might reshape rights to land and alter social relationships that underlie production of environmental services. This paper examines these processes in the Uluguru Mountains, Tanzania, focusing on the shift in gendered rights to land occurring in a context of environmental and socio-cultural change. While the weakening of women's land rights is happening endogenously, they risk coming under further contestation with the spread of incentive-based tree planting programs. This paper presents a case in which men have used tree planting as a means to claim women's lands, and raises the concern that this process could become more pronounced as PES projects scale up without sufficient understanding of gendered property relationships around land.

Essay 3: Pro-Social Behavior and Incentives: Experimental Evidence from the Uluguru Mountains, Tanzania

Payment for environmental services (PES) for common pool resources is based on the premise that offering payments to groups of land users will motivate them to organize collectively to provide environmental services. In contrast, research from behavioral economics shows that introducing monetary incentives can undermine collective action that is motivated by social norms. In such a case PES could have perverse impacts. To resolve this dichotomy and better understand the relationship between monetary incentives and collective action, we conducted a set of choice and field experiments in rural Tanzania. Findings indicate that participation in communal tasks is high irrespective of the incentive; high payments can increase participation but low payments can reduce participation relative to when no payment is made; payments can reduce the satisfaction people derive from participating; social approval incentives play a strong role in motivating participation; and people express preference for payment in the form of infrastructure as opposed to either cash payments to individuals or groups.

The essays in this dissertation make a contribution to the scholarly and policy literature by adding much needed empirical evidence about issues that remain crucial to the successful implementation of PES and REDD projects.

The first research paper, by providing evidence about the governance outcomes of participatory forest management programs in Tanzania, indicates that even when the forest management policies are robust in principle, with appropriate powers vested with appropriate local level institutions, in practice the governance outcomes are not all positive. These research findings are important because participatory forest management is being explored as a means to propel the

UN-REDD program in Tanzania. The research indicates that the design of REDD projects needs to account for the multiple actors at local level so as to account for the interests of the powerful and not-so-powerful. This is especially important because REDD implementation entails huge amount of funds to be used as incentives to scale up conservation. However, if these power hierarchies and poor governance outcomes are ignored, the funds under REDD may create perverse incentives and enormous potential for misappropriation.

The second essay adds to and furthers the scholarly work on gendered access to resources. It supports previous research experience that concluded that projects aiming to commercialize use and management of natural resources may displace the rights of women and marginal groups. This essay furthers this literature by providing empirical evidence about the potential adverse social equity aspects of PES projects. These findings are important especially because market-led environmentalism is being touted as the panacea to the problems of landscape degradation and further conservation in the developing world. This paper uses the evidence from emerging contestations around land and displacement of women's land rights to caution policy makers that these dispossessions might worsen if the complex social context of the area remains invisible within the PES discourse. It demonstrates the need for project designers to understand and account for complex relationships around land rights if PES is to help rather than harm the poor.

Interaction between payments and social norms are critical areas for research with strong implications for PES and REDD. Many REDD projects in Tanzania are expected to be implemented on communally managed forestlands. The provision of environmental services (in this case reduced emissions) would require that these community groups manage forests collectively. In the case of collective contracts, it is important to understand the interaction between payments and collective action that would underlie provision of ecosystem services.

The third and final essay in this dissertation explores these issues and suggests that during design of incentives under REDD it is important to refrain from offering very low payments as they may reduce participation, and not to rely on money alone but also build on the positive role that social norms play to motivate people to undertake collective tasks and consider offering non-cash incentives at the group level. Much discussion is ongoing on this issue of what types of incentives to offer under REDD. The focus of these discussions is on cash incentives. However, as this research shows there is a need to consider other forms of incentives.

To summarize the overall message of this dissertation, the concerns that it raises about governance, gender equity and erosion of norm-based collective action call for a reformulation of the present idealistic but simplistic vision of PES with its focus on efficiency to a new and more realistic vision that acknowledges potential tradeoffs between efficiency and equity in the supply of environmental services and articulates the possibility of synergy between them.

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CHAPTER 2: FOREST GOVERNANCE IN PARTICIPATORY FOREST MANAGEMENT REGIMES IN TANZANIA: LESSONS FOR REDD

2.1. Introduction

Deforestation and degradation of the world's forests produces 17% of global carbon dioxide emissions, thereby contributing significantly to climate change (IPCC 2007). UN-REDD, the United Nations program on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries, offers a mechanism to mitigate these emissions by offering financial incentives to preserve existing forests (Miles and Kapos, 2008). REDD+ goes beyond REDD by also offering incentives for enhancing forest stocks (UN-REDD, 2011). Wealthy countries have pledged $4.5 billion for the implementation of REDD+ activities in developing countries (Astill, 2010). Decentralized forest management through communities is being viewed as a means to channel REDD+ activities at the local level (Angelsen, 2009).

Over the past two decades, many countries have introduced decentralized forest governance aiming to improve forest management. The rationale for these reforms is that decentralization may result in fair and effective local forums for cooperative resource management (Kaimowitz and Ribot, 2002). However, evaluations of some decentralization efforts point to challenges ranging from weak governance including local corruption, poor accountability, inequitable benefit sharing and contested forest ownership (Ribot and Larson, 2005). These are important concerns for REDD+ because of the likely use of community forest management as a means for its implementation (Angelsen, 2009). At the same time there are concerns about the emphasis on technical issues in design of REDD+ (such as scale, funding designs, monitoring systems) with

too little attention to governance dimensions such as the social impacts, fairness and distribution (Hufty and Haakenstad, 2011).

The purpose of this paper is to analyze the process of forest governance by drawing upon empirical research on decentralized forest management in Tanzania and to draw lessons for implementation of REDD+ projects. Mainland Tanzania has gained the reputation of having one of the most progressive community forestry management regimes in Africa as reflected in policy, law and practice (Wily, 2000). The Tanzanian forest policy aims to create an enabling legal environment for decentralized forest management under which local communities, alone or in conjunction with government authorities, can participate in the management of forest resources (Blomley and Ramadhani, 2006). The three stated objectives of Tanzania's decentralized participatory forest management policy are: (1) improved forest quality through sustainable management practices, (2) improved livelihoods through increased forest revenues and secure supply of subsistence products, and (3) improved forest governance at village and district levels through effective and accountable natural resource management institutions (URT, 2003).

Tanzania is one of the nine pilot countries for the United Nations REDD program (Burgess et al., 2010). Substantial funds have been pledged for REDD interventions in Tanzania that conserve forests and improve local livelihoods. In Tanzania, many pilot REDD+ interventions are being linked to the existing participatory forest management (PFM) programs. However, considerable challenges to REDD implementation at the local level, especially with regards to governance deficiencies including occasional corruption (Burgess et al., 2010). It is important that the development of the UN REDD program in Tanzania learns from these challenges in PFM to

design REDD+ interventions. The few evaluations of Tanzania's PFM programs comment mostly on the outcomes in terms of forest quality (Persha and Blomley, 2009; Blomley et al., 2008) and livelihoods (Lund and Treue, 2008), and not so much on forest governance. Forest governance outcomes can be defined in terms of accountability of local institutions, effects on equity and inclusion, elite capture and corruption (Agrawal and Ribot, 1999). In light of the likely reliance of REDD+ implementation on participatory forest management institutions in Tanzania, it is important to examine the governance outcomes decentralized forest management on the ground.

This paper assesses PFM in practice according to the actors, power and accountability framework (Agrawal and Ribot, 1999), relative to what is the formal policy. The paper is based on comparative case study of three villages engaged in PFM activities in Morogoro district in Tanzania. In this paper, PFM is used as a generic term to describe a number of different participatory arrangements, including Joint Forest Management (JFM), in which communities participate in the management of state owned forest, and Community-based Forest Management (CBFM), in which village communities have the rights to declare and manage parts of village lands as village land forest reserves. The study villages include one with a local forest managed under JFM, a second village with forests being managed under CBFM, and a third in which one patch of forest is under JFM and another under CBFM. By examining forest management under these participatory regimes, this paper aims to show the complexity of actors, their interests involved in decentralized forest management and underscores the need to be aware of this institutional context in order to develop policies and projects that satisfy the objectives of

REDD+ implementation while engaging local communities as active partners in forest management.

2.2. Decentralization of Forest Management: Justification, Process and Outcomes

Decentralization occurs when a central government formally transfers powers to actors and institutions at lower levels in a political-administrative hierarchy (Ribot, 2002). Over the past two decades, a majority of national governments in Asia, Africa and Latin America have launched decentralization initiatives in natural resources management (Ribot & Larson, 2005). The most far-reaching policies of decentralized natural resource management in developing countries around the world have been in the case of management of forestlands (Agrawal et al., 2008). In developing countries, community-owned and managed forests are estimated to be around 22 %of all forests (White and Martin, 2002). Around 10-12% percent of forests in 21 sub-Saharan Africa countries are being managed under decentralized arrangements that include popular participation (Sunderlin et al., 2008).

Political decentralization or democratic decentralization is said to occur when the central government formally transfers powers to actors or institutions that are downwardly accountable to the population in their jurisdiction (Ribot and Agrawal, 1999).

In most cases decentralization of natural resource management to local institutions is done on grounds that it may result in improved efficiency, equity and improved local participation and in turn better and more sustainable resource management (Manor, 1999; Crook and Manor, 1998; Ribot, 2002). It is argued that the equity and efficiency benefits of decentralization come from the presence of democratic local institutions that can better discern and are more likely to

respond to local needs and aspirations because they have better access to information and are more easily accountable to local people (Ribot, 2002).

While decentralization reforms are promoted on the grounds of equity and inclusive participation that results in better management of local resources, these desired outcomes are seldom achieved according to research on decentralized natural resource management. Ribot (2003) through a comparative study of innovative decentralization reforms in six countries of Asia, Latin America and Africa, show that the purported goals of equity and efficiency have not come about. Ribot (2003) explain that the fundamental elements of democratic decentralization, including transfer of discretionary powers and downwardly accountable local institutions, are missing in these cases. Studies of forest decentralization in Uganda, Mali and Senegal (Oyono, 2004; Ribot, 2004) report that these decentralization efforts have been attenuated by subsequent *de facto* and *de jure* limitations on exercise of local powers (Ribot, et al., 2008).

2.3. Decentralized Forest Management in Tanzania

Tanzania has about 34.6 million ha of forest and woodland habitats. The most important administrative categorization of a Tanzanian forest or woodland is “reserved” and “unreserved”. About 14.3 million ha of forests and woodland are found within forests declared as reserves (URT, 2001). These forest reserves are under the legal authority of the either the central government (national forest reserves) or local government (local authority forest reserves) and are managed either for production (timber and other uses) or protection (of biodiversity, water catchment). The remaining 19 million hectares of unreserved forests and woodland areas form a

larger proportion (56%) of the total forest area in Tanzania and fall mostly on village or general land (URT, 2001).

While forest reserves traditionally were characterized by an exclusionary management policy, since the 1990s forest management in Tanzania has undergone a reform where key responsibility of forest management was transferred from central government to village government. The 1998 Tanzanian national forest policy and the 2002 Tanzania forest legislation allow for advancement of participatory forest management and entitles local communities, either alone or along with government authorities, to manage forest for sustainable use and conservation (Blomley and Ramadhani, 2006). Currently more than 3.6 million hectares of forest are being managed under some form of PFM arrangement (Blomley et al., 2008)

Two main approaches for implementing PFM exist in Tanzania: Joint Forest Management (JFM) and Community Based Forest Management (CBFM). Both of these programs transfer some forest management rights to elected local institutions called village environment committees (VEC), which report to the village council, the governing body of the village elected by village residents. While VECs are the lowest institution responsible for forest management in both JFM and CBFM, there are important differences in the rights and decision-making authority under the two regimes.

Joint Forest Management: JFM is a collaborative management strategy that divides the responsibility of forest management between the state forest department (usually the central or district government) and the communities living adjacent to the forest. JFM is usually undertaken

on reserved forests such as the national or local authority forest reserves. JFM arrangements are formalized through the signing of a joint management agreement between village representatives and either the District Council or the Director of Forestry and Beekeeping (Blomley and Ramadhani, 2006). JFM agreements specify that local village communities participate as co-managers but under no circumstances can they become owners of reserved forests (Wily and Dewees, undated). In principle, the joint management agreement does not allow the sharing of any benefits (in terms of harvest and sale) from forests under JFM (Blomley and Ramadhani, 2004).

Community Based Forest Management: CBFM takes place on village land, i.e., land that is under the jurisdiction of the village council. The objective of CBFM is to bring unreserved forests and woodlands under management and protection. Under CBFM, village councils are given the right to declare, enclose and manage parts of village lands as village land forest reserves, which are registered with the district councils. The villagers take full ownership and management responsibility of these village forest reserves, including the rights to harvest timber, collect and retain royalties, and undertake patrols (including arresting and fining offenders). They are exempted from local government taxes on forest products and are not obliged to remit any part of their royalties to either central or district government (Blomley and Ramadhani, 2006). The implementation of CBFM gets further support by the provisions of two key legal documents. Firstly, the Village Land Act (1999) which recognizes customary tenure rights for village and communal land and allows for its registration as “village land”, and secondly, the Local Government Act (1982) that empowers village councils as executive agencies charged with the

supervision of adjudication of village land within their boundaries, including forests and woodlands (Blomley and Ramadhani, 2006).

To summarize the two forms of PFM, JFM reserves all rights and benefits for the state while encouraging local government institutions to help enforce access restrictions. Local government can keep the proceeds of fines that it chooses to impose on intruders. CBFM, on the other hand, is an effort to introduce management arrangements to forests that presumably were previously ungoverned, and thus local government is given much stronger authority over their management, including the rights to all economic benefits. Theoretically, the returns from forest conservation under CBFM are vested with the local community thus providing the community with right incentives to conserve as compared to JFM where there are limited or no returns to conservation.

Studies that have monitored forest conditions over time comment that decentralized forest management results in improved forest conditions. Blomley et al., (2009) offer a comparative evaluation of forest conditions in 13 forest sites under JFM and CBFM and show that forest condition under JFM is better than CBFM in terms of variables such as stems per hectare, basal area[1] and volume increment. While the data from the two forest types are not directly comparable owing to different base condition across forests, nevertheless they raise some interesting questions about the returns to forest conservation and incentives to conserve under JFM and CBFM regimes. Blomley et al. (2009) provide an explanation in the form of elite capture in JFM forests; they argue that by concentrating benefits within a small group of people,

[1] Basal area is the term used in forest management that defines the area of a given section of land that is occupied by the cross-section of tree trunks and stems at their base. A higher basal area signifies a better forest condition.

the incentives under JFM may become sufficient to maintain active patrols that exclude other villagers. In an evaluation of coastal forests Persha and Blomley (2009) report that forest conditions under JFM are worse than forests under CBFM. While comparing a CBFM, JFM and an open access forest, Persha and Blomley (2009) conclude that greater tenure security and institutional autonomy under CBFM resulted in maintenance of good forest conditions as compared to forest managed under JFM. While underscoring the importance of a well-designed institutional structure for forest management, these results are based on special circumstances wherein the CBFM forests included in the study were privately owned and managed by a cooperative group for a long time before the start of CBFM.

The outcomes of decentralized forest management in terms of enhancing livelihoods of communities engaged in PFM are ambiguous. Persha and Blomley (2009) suggest that generating livelihood benefits has remained a challenge under decentralized forest management. Lund and Treue (2008) discuss that CBFM has been successful in generating forest revenues that cover the costs of management and even fund local public services; at the same time, the poor households who depend on forests for livelihoods are negatively affected.

Regarding the effect of decentralized forest management on governance, the few studies that exist point to corruption at the level of the village council. Brockington (2007) questions the remarkable successes of decentralized forest management in Tanzania. In a study from Iringa region, he juxtaposes the claim that CBFM brings about better democracy and conservation, on one hand, with detailed accounts of corrupt and violent practices of the village government on the other. He suggests a need to reevaluate the purported success of CBFM. Lund and Treue

(2008) remark on the limitations of CBFM in achieving the goals of good governance. Lund and Treue (2008) present evidence about corrupt practices and the tendencies to promote personal economic goals prevalent within the village council, and suggest devising additional accountability measures to ensure better governance outcomes.

This paper analyses the outcomes of forest governance in JFM and CBFM regimes in Tanzania. The actors, power and accountability (explained in the next section) framework is used to assess the practice of JFM and CBFM and compare it to the formal policy with a goal to understand the gaps in implementation of decentralized forest management and what they imply for the upcoming REDD regimes.

2.4. Conceptual Framework: Actors, Powers and Accountability

The actors, power and accountability framework (Agrawal and Ribot, 1999) is an analytic framework to assess the degree to which the conditions necessary for meaningful decentralization are represented in the framework of PFM in Tanzania. This framework suggests three aspects that underlie all dimensions of decentralization.

Actors in decentralization: Actors in decentralization in the local arena who exercise powers over public resources may include appointed or elected officials, NGOs, chiefs, powerful individuals or corporate bodies such as communities, committees or cooperatives. Each of these actors is typically located in particular relations of accountability and has certain types of powers. These relationships depend on the historical, social and political constitution of powers of each actor, which may be based on ideology, wealth, election or other means. Consequently,

the nature of decentralization depends to a significant degree on who gets to exercise power and the accountability relations to which they are subject.

Types of powers: The framework distinguishes between four types of powers of decision making that are crucial to understanding decentralization. These four types of powers correspond to legislative (creation of rules), executive (implementing and enforcing decisions), and judicial (adjudication of disputes). More specifically they are:

(1) The power to make rules or modify old ones is held in some domain sof decision making over which governments seek to decentralize control, and in relation to some group of actors. This set of powers allows actors to legislate principles that determine who can benefit from given resources, how, and to what extent.

(2) The power to make decisions in some domain of action that influences others increases the autonomy of the actor who gains these powers. Such powers enhance the discretionary authority of local bodies. For instance, if a local body has powers of raising revenue, a degree of decentralization has been achieved.

(3) The power to implement and enforce compliance to the new or altered rules implies the power to execute, monitor whether actors are carrying out the roles that they are supposed to perform and also includes the power to impose and enforce sanctions on those who do not subscribe to the tasks they are supposed to perform.

(4) The power to adjudicate disputes that arise in the effort to create rules or modify existing ones. It is important that such adjudication is done independently and without bias at a level that is accessible to local constituents.

Accountability in decentralization: The effectiveness of decentralization hinges on accountability. If powers are decentralized to actors who are not accountable to their constituents, or who are accountable only to themselves or their superior authorities, then decentralization is not likely to attain its stated aims. In order for decentralization to be effective, the constituents need to possess countervailing power. Downward accountability of power holders to their constituents broadens participation and ensures that decentralization is effective. A number of ways exist through which actors can be made downwardly accountable to their local constituents. These may include elections, procedures for recall, referenda, legal recourse through courts, third party monitoring, political pressures and lobbying by associations, auditing and evaluation, belief system of leaders and their communities, embeddedness of leaders in their community, pride of leaders, social movements, threats of social unrest and resistance.

2.4.1 Characterizing the legal framework of PFM in Tanzania according to the Actors, Powers and Accountability Framework

This section analyses the Tanzanian policy on JFM and CBFM on the three dimensions of decentralization as per the actors, powers and accountability framework. The analysis of these three dimensions of decentralization follows from literature on Tanzanian PFM policy (Blomley and Ramadhani, 2006).

Actors:

As per this framework, the decentralized forest management reforms under JFM and CBFM entitle actors at the lowest level, the village councils and village environment committees (VEC) to participate in forest management. Both these institutions are bodies elected by the village assembly, which comprises village residents 18 and older. While the actors in both PFM

arrangements are the VEC and village council, there is an important difference between the two PFM regimes in terms of the powers that have been decentralized.

Powers:

Under CBFM the powes of the VEC and village council are clearly defined and vested with them. The village council has been given the power to own village lands and the power to declare part of this village land as village forest and mange it under CBFM. This implies that the village council in consultation with the VEC has the power to make, enforce and ensure compliance to rules for forest management, decisions as regards commercial exploitation of forests and the power to impose and collect tax revenues from sale of forest products. The VEC reports to the village council and depends on its approval in matters of apprehending and sanctioning offenders.

In contrast, although JFM is termed as a participatory forest management arrangement, the powers and autonomy of local actors is limited. Unlike CBFM, the VEC and village council do not have the powers to decide which forest areas can be brought under JFM and do not have the tenure rights over forests under JFM. The VEC participates in the decision to make rules of protection however the approval of these rules is vested with the district or central government authority. The VEC remains responsible for day-to-day management in the form of patrolling forests, apprehending offenders, sanctioning them with support of the village council, and the district forest offices. Although the VEC has the responsibility of patrolling the forests and the power to enforce rules, it does not enjoy any share in benefits from the co-managed forests.

Accountability:

In terms of accountability mechanisms, both CBFM and JFM have downward accountability mechanisms wherein the VEC reports to the village council, which in turn is answerable to the village assembly through bi-annual meetings of the village council. However, in JFM along with reporting to the village council, the VEC is also answerable to the district forest offices about developments in the JFM areas and expects support in sanctioning offenders.

CBFM can be characterized as democratic decentralization as it entails the devolution of authority of forest management to local level actors, who have appropriate legislative, executive and judicial powers and are downwardly accountable to their constituents. Analyzing the JFM regime through the actor, powers accountability framework reveals that under JFM the local actors enjoy rather limited powers and autonomy, while the state continues to centralize decisions as regards designation of JFM areas and control over benefit streams. These centralizing tendencies do not qualify JFM as a form of democratic decentralization.

2.5. Study Area

The field research for this paper was conducted in the Uluguru Mountains in Tanzania. The Uluguru Mountains are among Africa's ten most important conservation sites (Burgess *et al*., 2002). The research was conducted during 2008-2009 in three villages in the eastern part of the Ulugurus. Another round of follow-up field work to triangulate and validate findings was conducted in late 2010 and early 2011. The three villages in the study area are located in the wards (administrative sub-unit of the district) Mikese, Gwata and Matombo of Morogoro district. Before selecting the study villages a list of villages in Morogoro district under different kinds of

PFM arrangements was compiled. The compilation of this list revealed that some of these villages were studied more frequently, while others were not. Based on this knowledge, three villages were purposefully selected to represent the variation of PFM arrangements and the fact that they were not researched previously. Three villages in Morogoro district were thus selected. The village Muhungamkola represented the CBFM arrangement, Kibangile represented JFM, and Gwata represented both CBFM and JFM.

Muhungamkola is located at a distance of 25 kms from Morogoro town along the Morogoro-Dar highway on a dirt road about 10kms off from the highway. The village is heterogeneous with members of Mluguru, Mkamii, Mkwere, Mzigua tribes. These groups are settled in the three sub-villages of Muhungamkola, Kikulungundu and Nyagwambe. There are 283 households in the village (Source: Village records). The village has been protecting two patches of CBFM forests since 2004. They are called the forest of Kila towards the north-east and the forest of Ngongolo towards the south. The forests represent the dry woodlands of the miombo type.

Kibangile is located on a dirt road about 45 kms away from Morogoro on the Matombo road. The village has four sub villages, Gulioni, Kibangile Juu, Kinasimba and Vizi. The village has 298 households (Source: village records) and is predominantly inhabited by the Mluguru. The catchment forest reserve Kimboza surrounds the village on three sides. The Kimboza forest reserve holds a significant conservation value as the source of the tributaries that make up the river Ruvu which is the lifeline of the city of Dar es Salaam. The forests represent low montane forests and harbor many historic and sacred sites. The VEC was formed in the year 2004 and

JFM was initiated in partnership with the state and the four villages surrounding Kimboza, including Kibangile.

Gwata is located on the Morogoro-Dar highway, about 40 kms from Morogoro town. The village has five sub-villages, Lukwambe, Geza Ulole, Kaalia, CCM and Shuleni. The village is heterogeneous and inhabited by members of Mzigua, Mkwere, Mluguru, Mkamii tribes. There are 382 households in the village (Source: Village office records). The village has a JFM forest towards west and a CBFM forest to north. While JFM forest is part of the central government owned catchment reserve called Kitulanghalo, the CBFM forest is called Kimunyu. The VEC was formed in the year 2002 and protection of both JFM and CBFM areas ensued thereafter. A part of the JFM forest is used and managed as a research forest by the local agricultural university in Morogoro. The university has paid two guards to patrol this forest. In 2007, the university also initiated a pilot project that paid village community for good protection and upkeep of its JFM and CBFM forests. These forests are representative of the dry miombo woodland that characterize much of central Tanzania.

2.6. Methods

To address the research question about the governance outcomes of the two decentralized forest management regimes, JFM and CBFM in Tanzania, this study relied on using qualitative methods which included focus group discussions. Qualitative data are non-numeric, textual and visual data derived from interviews, observations, documents or records, gathered from a small number of informants (Chung, 2000). Qualitative methods are useful when research topics involve exploring processes and meanings of phenomena under study (Reinharz, 1992).

A focus group consists of a small group of individuals from a well-defined target population in order to generate discussion focused on pre-selected topics of interest to the researcher (Knodel, et. al., 1990). Morgan (1988) suggests that focus groups be used in situations where the researcher is new to the area and the research topic requires an exploration of topics. The main feature of the focus groups is the explicit use of the group interaction to produce data and insights that would be less accessible without the interaction found in the group (Morgan, 1988).

In each of the three study villages focus groups were organized to understand the current and past use of forests by various social groups, current management rules, and functioning of village environment committees and village councils. As the villages in the study area differed from each other in terms of the type of institution involved in forest management as well as the different types of communities who use forests for particular purposes, a study design to compare and capture this heterogeneity was developed. Study villages were categorized as per break and control variables (Knodel, 1990), to determine the number and composition of focus groups to be organized. Break variables define how study villages are differentiated from each other. Two sets of break variables were identified (table 2.2). These are: (i) the type of forest management institution (JFM/CBFM), (ii) type of forest users: poor women, men and charcoal makers. Together these break variables define different subsets for which separate focus group sessions were held. While the groups were differentiated along various break variables, it was also ensured that they share some common characteristics. Such characteristics that are shared by all members of each group are referred to as control characteristics (Knodel, 1990). Membership

in village environment committee was identified as the control characteristic for identification of focus groups.

Four focus groups per village were thus identified as per a combination of these break and control variables. However, since all combinations of break variables were not found in the study area, a few of these were eliminated. For instance, during fieldwork it was found that charcoal makers do not exist in Kibangile so this category was eliminated from the list of focus groups to be conducted in that village. Thus, focus groups were purposively selected to ensure a match between break characteristics and actual situations on the ground. In addition, some combinations of focus groups were replicated in each village to get responses from a larger cross-section of the village residents. For instance, in village Gwata, two focus groups were organized with charcoal makers as charcoal production is a major activity in the village. Similarly, focus groups with women were replicated in Kibangile, Gwata and Muhungamkola. In all, fifteen focus groups spread over these three villages were conducted (Refer table 2.3). The final composition based on the combination of break and control variables of the fifteen focus groups is listed in table 2.3.

The participants of the focus group were purposively recruited after conducting key informant interviews with village chairpersons across selected villages. Each focus group discussion had about ten members and followed a question guide which consisted of a number of open-ended questions around management of forests, roles and responsibilities of various stakeholders, problems and challenges, ownership of resources, past and present management practices, use of forest, and people's perceptions about the village council and VEC. All focus group discussions

were conducted in the local language Swahili, audio recorded and transcribed in verbatim. The transcribed data were translated into English. This resulted in a rich set of textual data that were analyzed using Carney's ladder of analytical abstraction (Miles and Huberman, 1994). Carney's ladder of analytical abstraction is an analytical framework used to analyze qualitative data. The ladder has three steps:

i. Summarizing and packing the data: This step of analysis involved transcription of recorded data to create a text to work upon. These transcripts were read with an eye to look for codes using key ideas from the actors, powers and accountability framework on decentralization. Codes are tags or labels used for assigning units of meaning to the descriptive information gathered during a research (Miles & Huberman, 1994). These first rounds of codes were descriptive in nature (Miles & Huberman, 1994) and entailed little interpretation, and related directly to the topics covered in the group discussions. A provisional list of codes thus emerged from this early coding. These descriptive codes were later applied to the data to look for relationships among codes and to arrive at a revised and enlarged code list. These second order codes were recorded in a code book memo (Refer table 2.5 for code book)

ii. Repackaging and aggregating the data: The aim of this step in analysis is to search for relationships in the data and find out the areas of emphases and gaps. At this stage, the transcriptions from all sets of data were searched for relationships and patterns among codes. Definitions and operational rules for application of codes were developed for each of these codes, to help in the process of standardization and cross-comparison of the data (refer to table 2.5 for themes and definitions). Upon completion of coding a final family of inferential codes

emerged, termed as a structure. The final structure thus contained “larger” (more conceptually inclusive) and “smaller” (more differentiated instances) codes (Miles & Huberman, 1994). This final structure thus tied related codes or themes into a pattern or a meta-code. These meta-codes elaborate upon explanations for the research problem (Miles & Huberman, 1994).

After the entire data had been coded, case summaries were prepared for each theme or concept that emerged from the list of codes. For instance, case summaries were prepared for the theme financial management, as it emerged as a theme central to assess the performance of JFM and CBFM regimes. These case summaries were then combined in order to have an overall summary statement for each major theme or concept. This step resulted in reduction of the entire transcribed data, into three-four line summaries around major themes and concepts in the data.

iii. Developing and testing hypotheses to construct an exploratory framework: The aim of this level of analysis is to cross-check findings through matrix-analysis of major themes in data and finally integration of data into an exploratory framework. At this stage, the summary statements developed in the previous step are sorted and organized as per important concepts that emerge from the data. These summary statements are organized in form of matrices or grids, and can take many forms, depending upon the nature of relationships and patterns among themes. A matrices for the theme accountability mechanisms was prepared to examine the pervasiveness of the poor information flow across JFM and CBFM villages (Refer table 2.6 for matrix on accountability mechanisms)

2.7. Findings: Assessing PFM in practice according to the Actors, Powers and Accountability Framework

The analysis of the Tanzanian PFM regimes through the lens of the actors, powers and accountability framework shows that in principle, forest management has moved from being an exclusionary management approach to a decentralized one where people have been handed the responsibility of forest management. However, the extent to which these decentralized regimes are also democratic remains in question. Clearly, JFM with its tendencies to centralize revenues and tenure over forests and upward accountability structures cannot be termed as democratic decentralization. On the other hand, CBFM with a high degree of devolution of powers to local institutions is clearly democratic decentralization. At the same time, it remains important to analyze the *de facto* performance of Tanzanian PFM to understand whether decentralized forest management is performing as expected. Analysis of the village data assesses the reality of democratic decentralization in Tanzania and shows the tensions and multiple interests that come up repeatedly may potentially undermine governance outcomes even in a progressive decentralized regime.

2.7.1 Actors and their interests in practice

There are multiple actors in the study villages, each having distinct interests that impinge on forest use and management. While the village council and the VEC are the actors formally entrusted with responsibility of forest protection and management, there are other actors such as the farmers, graziers and charcoal producers whose interactions with the forest are mediated by their livelihood choices, with implications on how forests are managed and powers are exercised.

VEC and forest management

The use of forests in JFM and CBFM areas is banned. This includes a ban on felling trees for timber, firewood, poles. The rules of protection are strict and fines are stiff across JFM and CBFM areas. In group discussions in the JFM and CBFM villages, the community members mentioned refraining from use of JFM and CBFM areas. Women in particular said that the closure of forests has not had any adverse consequences as there are plenty of wooded patches on their private lands that they use to access fuel wood. There is no commercial timber logging in any of the CBFM and JFM forests, there are incidents of illicit timber logging by powerful members in the three study villages. The members in CBFM village Muhungamkola report better outcomes for forest conditions in terms of return of some wildlife and stream flows from the forest. Forest patrols were frequent and rules were enforced when offenders were apprehended. During one of the forest patrols in which the author accompanied the VEC to the CBFM area the VEC caught a person who was sawing timber for charcoal. The offender was brought to the VEC who decided upon the sanction. The tools were confiscated and a stiff fine of Tshs 50,000 was levied. Upon inspection, the record books of the VEC revealed that patrols were frequent in 2009 and fines were levied if offenders were apprehended. This incident confers confidence in the ability of the VEC to protect the CBFM forests. Confidence in the ability of VEC is also reflected in the responses of VEC members who sense a feeling of belonging and ownership to the forests. Considering that these lands were under state control until a few years ago and face heavy pressure from the local users given an extensive demand for charcoal, the ability of VEC to continue with protection is remarkable.

Similar enthusiasm prevailed in the JFM village Kibangile as observed during the first round of fieldwork in 2008-09. The VEC patrolled the JFM forests and earned revenue from visitors to the forest and from offenders. It participated in fire fighting and received considerable support from the district forest office in the form of training sessions and donation of bicycles and boots.

Farmers and forest management

Farmers are actors with interests that impinge on forest management. The farmers are interested in gaining farmland. The village council can grant framers rights to new farmland if it is available. The farmers slash trees on their newly allotted lands and carve out fields for agricultural use. As of now there is no shortage of farmland, and most residents across the study villages report not having to experience land shortages. However, much of the public land has been allocated to non-resident outsiders who, having experienced land shortages in Morogoro town, come the village to acquire land. Large contiguous patches of public lands, many with wooded areas, have been allocated to outsiders who only farm parts of this land. Thus, across villages, almost all public land has been allocated to big private farms, some spanning almost 500 acres. The only public land remaining in the village of Gwata and Muhungamkola is what is now the CBFM forest. Since none of the farmers report that they currently face land shortages this is not an important issue for the time being. However, as demand for land will likely increase in the coming decades and since all lands have already been apportioned, CBFM forests being the last patches of open public land could come under immense pressure. With the village council vested with authority to convert village lands and earn revenue through these land allocations, it can be expected that some lands from CBFM forests might be diverted for other uses. The closure of public land is compounded by the absence of maps that document the extent and location of village lands and the location of forests vis-à-vis village lands. As a result of this

ambiguous state where boundaries of private lands and forests are known to residents but not documented, it is possible that parts of public lands that are currently forests are allocated as private lands.

A case illustrative of this came to light during the author's field visit in early 2011. In village Gwata, in a follow-up focus group discussion with the VEC it was discovered that a substantial part (5000 acres) of a CBFM forest called Kimunyu was under private ownership. The VEC members forcefully asserted that in all probability the CBFM forests had been sold by the village council without the knowledge of the VEC or the village assembly. The purported owner of the CBFM forest is from Dar es Salaam, and plans to use the forest to log timber and mine for limestone. An interview with the village council members revealed that the land transfer to the owner predates the establishment of the CBFM forests. However, the VEC members harbor mistrust in the word of the village council and maintain that the village council might be involved in this deal. In fact, the VEC members are quite disgruntled with the audacity of this private owner who wants to mine the forests that the VEC has protected since 2004.s They also express frustration in this state of affairs wherein as the entity responsible for management of CBFM areas, they neither have information about the transfer of CBFM forestlands nor do they have the power to oust the occupant or ask the village council to explain things. When the issue was brought to light of the district forest office, the nodal agency for CBFM, the officer in charge did not comment upon the issue. At the time of the close of fieldwork, the matter remained unresolved but the private owner had initiated fencing and mining in the patch of CBFM that he claimed to own.

While not representative of all CBFM villages, the issue does raise some interesting questions that will have implications for the implementation of REDD+ interventions. First is the mosaic of land tenure arrangements on wooded areas that lie outside of protected forests that makes it potentially impossible to control land and its use. Second is the absence of village level mapping that documents and delineates of village forest lands from other public and private lands. This kind of mapping and documentation is an absolute must for the ground level implementation of REDD+, with implications not only for the design of projects but also to avoid potential land grabs by the powerful who in absence of any maps may fence off forest areas and claim public lands as private property.

Charcoal makers and forest management

Charcoal making although illegal in Morgoro district is still practiced, especially in villages that fall along the Morogoro to Dar es Salaam road. Two of the study villages, Gwata and Muhungamkola have charcoal producers. Until the mid 1990s, the district authorities issued permits to make charcoal to groups of outsiders from Mbeya and Iringa. While these licensed traders exploited village public land, the village council had no authority to stop them. However, after the enactment of Tanzania Village land Act (1999) the public lands being exploited by outsiders became village property. At around the same time, charcoal making was banned in the district. In early 2000, parts of village public lands in the villages of Gwata and Muhungamkola were enclosed to create the CBFM forests. While these outsiders made charcoal under commercial licenses, local villagers also produced charcoal from the public lands but mainly as a subsistence activity to supplement agriculture incomes. The charcoal makers in the two study villages report using public lands that are now CBFM areas. Charcoal makers report a decline in the number of bags and quality of charcoal that they produce annually. This is because they have

to scout for trees on private lands as public lands in these two villages are non-existent. However, charcoal makers do not seem to complain about the decline in their productivity because charcoal making is illegal and the general tone within the village is laden with the rhetoric of conservation of CBFM areas. In interviews with the village council and the VEC, the idea that all forests should be strictly protected and that there are no obvious losers of protection of CBFM areas was pronounced across the two study villages. As a result, during 2008 in Muhungamkola the patrols were frequent; in one instance a charcoal kiln that was in the process of being built was destroyed by the VEC members in the presence of the author.

While the charcoal makers do not complain publically about this loss in production due to forest closures, a conflict over forests is visible in the tension between charcoal makers, the village council and the VEC. This conflict stems from the fact that the VEC is entrusted with protection of CBFM areas. At the same time, charcoal making used to be a source of revenue for the village council. However, with the protection of CBFM areas and the district ban on charcoal making, the village council uses its authority to penalize charcoal makers through seeking bribes. Of the 16 charcoal makers who were included in this study, a majority report paying bribes to the village council members and specifically to the village executive officer at some point. The charcoal makers cannot resort to any official means to address this conflict as what they are doing is illicit. In fact the village council in Gwata is complicit with some charcoal makers who are family members; the village council allows them to make charcoal with impunity in CBFM forests. This puts the VEC in a state of quandary when they try to stop charcoal makers who are aligned with powerful people in the village. There are spillovers of this stalemate to the other residents of the village, who question the authority of VEC in enforcing rules in CBFM areas

when it cannot stop these charcoal makers with powerful connections. As a result, the state of affairs in CBFM in Gwata is that stealing is common both by villagers and several charcoal makers report to chopping trees in CBFM areas to produce charcoal. At the time of fieldwork during 2009, the author witnessed a charcoal kiln right inside the boundary of CBFM forest in Gwata.

Charcoal making in the study villages has implications for REDD interventions, especially as it impacts leakage[2]. If village forests constitute unit of project implementation under REDD, then clearly activities such as charcoal making get displaced to other patches of wooded areas inside the village. So while protection of CBFM areas may be in good shape, the other destructive uses of forests may continue.

Graziers and issues of authority

Graziers are a third set of actors that impinge on use and management of forests and on the authority of the village council and the relationship between VEC and village council. Migrant graziers en route to the coast from the central parts of Tanzania come around each year and graze their herds on public lands along the way. While this practice was not problematic in the past it has become so now. With the decline of public lands and enclosure of CBFM forests in both Muhungamkola and Gwata and several nearby villages, there is a conflict between farmers and graziers and between graziers and members of the VEC. On the one hand, the graziers' herds frequently graze on private farmlands, sparking conflicts between these two groups. On the other, the graziers take their herds into CBFM areas and when VEC members try to stop them, the graziers reply that they have the permission from the village council. In addition, the village

[2] In an avoided deforestation program like REDD, leakage refers to deforestation outside of the program area that takes the place of deforestation inside the program area.

residents question the authority of VEC in stopping the residents from accessing CBFM areas when it is unable to keep the graziers out. In general, there prevails a situation of mistrust, with villagers assuming that the village council has accepted bribes from the graziers.

As a result during 2009, the residents of Muhungamkola took complaints to the district authorities. The village executive officer was expelled from office in early 2010. However, at the time of the author's second round of fieldwork in late 2010, the issue of graziers remained unresolved. The district forest officer of Morogoro suspected graziers' connections to senior people in the administrative hierarchy. Meanwhile, the village residents continue to push the new village executive officer to address the issue with little knowledge of the fact that it might be too difficult to address it.

In light of this discussion, it can be concluded that while on one hand decentralized forest management, especially in CBFM has devolved considerable rights in Tanzania and has made transparent the conflicts and divergent interests around forests which were so far neglected. As evident from these examples, the marginal groups such as charcoal producers, village residents feel empowered to challenge the village council and the VEC and to voice concerns about addressing trade-offs associated with protection and the use of forest fines and revenues. At the same time it has also given the local elite an opportunity to gain privileges as illustrated by cases of rent seeking from charcoal makers and grazers.

2.7.2 Powers and their negotiation in practice

While decentralization efforts under PFM regimes grant powers to local communities and institutional structures, the issues of who represents local people and how these representatives use these powers remain unresolved but important questions.

The CBFM regime transfers significant powers to the village council over decisions to enclose village lands as forests, levy duties, make and enforce rules, and sanction offenders. These powers make CBFM a very forward-looking policy that has instilled a sense of ownership and belonging amongst community members towards the CBFM forests. In all the study villages, despite the multiple and often conflicting interests, community members express great pride over their ability to participate in forest management. In the two CBFM sites of Gwata and Muhungamkola, a sense of ownership can be discerned from the group discussions. In a group discussion with elder men, there emerged a consensus “It is our village and our forests and we, not the government, can oust the outsiders if they do not comply to our rules.” This feeling conveys a sense that given the right institutional support, communities may be able to partake in CBFM.

At the same time the complete vesting of powers with the village council has created avenues for their misuse. For instance, the village council in Gwata has been involved in seeking bribes from the charcoal makers routinely. Interviews with charcoal makers in this village revealed that they were routinely apprehended by village council members who demand bribes. These bribes were explained as tax that the charcoal makers were required to pay when charcoal making was not prohibited. No receipts were issued for any of these transactions. In the same village, the family

members of the village council were complicit in charcoal making. Two sons from the extended family of sub-village chairperson made charcoal in the CBFM forests with impunity.

Discussions with village residents and also members of VEC in Gwata revealed that there are more incidents of offences within CBFM areas as compared to JFM forests. The reasons for this is that people feel that since CBFM is their forest it is easy to negotiate lighter penalties because one knows the people who enforce the rules. On the other hand, the village residents express that the incidence of offences is quite low in JFM forests. The reasons that came out of discussions were that JFM forests, although under co-management, are still considered state property for which there is higher degree of regard as compared to CBFM areas.

The narratives of charcoal makers raises a concern about the issue where the village council holds the legislative, executive and judicial powers over all matters. While vesting powers over all domains of a village with a local level institution represents the strength of the decentralized forest management in Tanzania, at the same time it also represents its weakness in terms of achieving good governance. In fact such concentration of powers breeds corrupt and violent practices as evidenced from the narratives of charcoal makers and graziers. At the same time, this fusion of powers in one body undermines exercise of powers by other local institutions such as the VEC, which is an important actor in decentralization. Increasingly, in the cases of charcoal making or graziers the village council has made decisions that undermine forest management. The VEC officially is the body in charge of managing forests, but it has little say to overrule the village council's decisions. The evidence brought forth by this research shows that the vesting of VEC within village council has eroded the motivation of the VEC in upholding the system of

patrols. For instance, the VEC members in Gwata express a sense of disempowerment that stems from their lack of authority to take action against offenders on CBFM forests (which are technically part of the decision-making domain of the VEC) some of which are complicit with the village council. There are spillover effects of this erosion of the powers of the VEC to the other residents of the village, who question the authority of VEC in enforcing rules in CBFM areas when it cannot stop these charcoal makers with powerful connections.

In JFM areas, owing to the very limited power that the VEC can exercise and the nearly non-existent returns from forest patrols that the VEC members undertake has decreased the morale of VEC in patrolling the forest. During the author's first round of fieldwork in 2008-09, the VEC members across the three villages were pretty enthusiastic about taking on the roles of protection and patrol. They cited their reasons for undertaking these roles, without any direct monetary incentives as doing the job with heart or "kwa moyo". They equated the job of patrolling to other voluntary activities that they are expected to perform in the village. In the initial years of PFM, the district forest office provided support in the form of training, bicycles and boots. In addition, the money collected from fines from offenders and fees from visitors to the forests was used to compensate the VEC members. However, during the author's recent field visit during 2010-11, the VEC members were not enthusiastic about continuing with forest patrols. The VEC members in the three villages feel fatigued as expressed by the members of VEC Kibangile who say, "We have lost heart," (Tumekosa moyo) and, "Why should we meet? We have no authority and we have made no patrols in this year." Among the reasons that were mentioned by VEC Kibangile were that they do not receive support from the district authorities, they lack powers and authority to decide over JFM forests and, and they do not gain any returns from patrolling JFM areas. As a

result, the patrols into JFM areas have become infrequent and the VEC members responded with delay in a recent fire outbreak that burned down a about 2/3rd of JFM forests in 2010.

What appears on paper to be an ideal situation with regards to democratic decentralization, in practice is mired with concentration of powers and their misuse by one group in the village to the detriment of governance goals of equity and transparency. It has led to the erosion of powers of other actors. This discussion points to the need for having additional mechanisms to ensure firstly that powers are not concentrated at one level and second that there are checks and balances to monitor use of powers.

2.7.3 Accountability in practice

While decentralization policies privilege actors at the local level as sources genuine of authority they allow insufficient consideration for whether those actors are accountable to local people. As pointed in the actors, powers, accountability framework, decentralization is incomplete if actors are not downwardly accountable to their constituents. As analyzed in the previous section, in principle the mechanisms for downward accountability are in place in the JFM and CBFM arrangements. However, the embeddedness of the VEC and the village council in hierarchical power relations challenges the exercise of downward accountability. In principle, the village council is the authority vested with powers over forests in CBFM. Bi-annual meetings of the village council are an accountability mechanism where village council shares information about village matters with its constituents, the village assembly.

The *de facto* situation on the ground reveals that downward accountability is much more difficult in practice. The accountability mechanisms are compromised on two accounts: Firstly, the concentration of all powers with the village council leaves little space and authority to negotiate with other actors in the decentralization process. Thus, the village council, at least in the cases of Gwata and Muhungamkola, misused its powers. A second reason why accountability is difficult in practice is that the actors who have the powers and their constituents are entrenched in hierarchical structures of power that are difficult to overcome.

The inability of the VEC to demand accountability from the village council stems from the fact that the VEC is a body within the village council and finds itself without powers to make the village council answerable. At the same time, some information about the use of funds by the village council is known to the VEC through members of VEC who also sit on the village council. This ambiguous channel of communication presents various avenues of mistrust among the VEC members. So for instance, in the village Gwata, funds were transferred from a local university for a pilot project offering payment for avoided deforestation. This money was banked by the village council, which planned to use it for village development. However, because a few members of the VEC were represented on the village council, they came to know about this money. At the same time, the other members of VEC remained unaware. The issue of the money came up in a group discussion wherein a part of the VEC already had misgivings about misuse of this money by VEC members who sat on the village council.

While annual meetings of village council are organized regularly, in discussions the village residents pointed out repeatedly that matters related to forests and forest management revenues

are not disclosed in the meetings of the village council. Illustrative of the power divide is this discussion with charcoal makers in village Gwata: in response to the question of whether they demand (from the village council) financial records of taxes earned from the forest, the charcoal makers responded, “We get air (as an answer).” They were of the opinion that they cannot ask for the records since they are complicit in the illicit charcoal business and have no moral grounds to subject the village council to interrogation.

To conclude, while downward accountability is difficult to achieve in practice, decentralization of forest management has made local actors aware of their rights and the need to ask questions about corrupt practices and use of monies from their leaders. Thus, while unsupportive of the corruption within leadership, the village residents support forest conservation and expect their leaders to use of funds for the benefit of the village and share information about it.

2.8. Relevance for REDD

One of the proposed outcomes identified for the UN-REDD pilot program in Tanzania includes building the capacity of the institutions in decentralized forest management to implement REDD+. Work on achieving this outcome would primarily be undertaken in two ways: first, by implementing REDD+ at the village level on lands that fall outside the formal government managed reserved forests; and second, albeit on a more limited level, by implementing REDD+ on the forest reserves co-managed by the state and the local communities (Burgess et al., 2010). Implementation of REDD+ aims to make use of the PFM arrangements in two ways: by building upon lessons from PFM implementation into the design of REDD projects, and by making use of REDD funds as an incentive to instill conservation in PFM (Burgess et al., 2010).

Given the evidence from this paper, REDD implementation on lands that fall outside the formal reserves i.e. lands that are under the jurisdiction of the village would be comparable to the CBFM scenario discussed in this village. The existing institutional infrastructure of CBFM and the ability of communities in the two study villages to successfully take charge of conservation of village forests is indicative of the level of commitment that a REDD regime can expect. At the same time, the issues of conflicting interests of actors and the fusion of legislative, executive and judicial powers at the level of village council might undermine the equity, fairness goals of REDD projects. Additionally, the availability of considerable REDD+ funds might create opportunities of misappropriation given the track record of coercion and corruption in some CBFM sites. These issues would be significant for REDD+ implementation and if remain unaddressed, they can threaten the functioning, especially permanence of REDD conservation. Thus, a major lesson that REDD+ projects need to take from the decentralized forest management on village lands is the need to strengthen accountability mechanisms and establish checks and balances to the powers of the village council in order to make REDD implementation fair, equitable and permanent.

The implementation of REDD activities along with use of REDD funds to provide incentives to conserve reserve would be similar to JFM in so far as conservation is on reserve forests, but unlike JFM where there are no incentives to participation, REDD on reserve forests plans to disburse funds as incentives to undertake conservation. The plan to use REDD+ funds to provide incentives to local communities to participate in conservation on this category of land would make for a good strategy. As the discussion on JFM implementation in this paper points out, the

VECs under JFM are demotivated and face challenges to continue with protection without any tangible returns from JFM. The potential of REDD+ funds to support VEC and incentivize their efforts may give a boost to the lethargy prevalent in JFM. However, there is a strong concern that the reluctance of Tanzanian state to share revenues and returns from JFM might carry into disbursement of REDD+ funds. Given the past record of the government on benefit sharing and the protracted delays on coming to any conclusion on this issue, it is quite likely that REDD+ funds on co-managed lands might be centralized while the communities continue to bear the costs of conservation. JFM and REDD+ implementation on co-managed forests should draw lessons from CBFM, which indicates that when meaningful powers to manage and rights to revenues and management are devolved, local communities are ready to take up the task of managing natural resources. With REDD+ the availability of funds provide the added attraction and incentive for communities to partake in forest management. Only cautionary note is that, there needs to be mechanisms for close monitoring of exercise of powers and funds so as to avoid the pitfalls of corruption and coercion that have surfaced in some CBFM sites.

2.9. Conclusion

This paper has analyzed the institutional context of decentralized forest management in Tanzania with respect to governance outcomes and contrasted the *de jure* status of decentralization to the *de facto* situation on the ground. There are a number of positive effects of decentralization, in terms of ownership of forests and ability to take local level decisions. At the same time, some negative outcomes in terms of equity, misuse of powers and poor accountability are lessons that call for improvements in the way in which decentralized forest management operates in practice.

While not being able to generalize to the entire country, one thing that comes out clearly from this paper is that where powers have been meaningfully devolved (such as in the case of CBFM), decentralization has aided the ability of local communities to shoulder responsibility to conserve village forest lands which were under state control until about ten years ago. This development of independent local capacity and enthusiasm in conservation constitutes a strength of the decentralization efforts. However, the concentration of power with the village government has also bred corrupt and coercive practices. But, despite the prevalence of these practices in the study villages, the village residents in certain instances have felt empowered to question and challenge their leaders. While important these outcomes are presented here not as an argument against CBFM but as a caution that future policies need to have additional accountability mechanisms in place. Clearly, CBFM has lessons for JFM. JFM can also become a program with broad base support based not on fear but on negotiated respect if meaningful powers are transferred at the local level. The current state of apathy that VECs in JFM villages face could be reversed if significant rights were devolved to these institutions.

Finally, the lessons about forest governance from the implementation of PFM have practical relevance for the design and implementation of REDD+ projects in Tanzania and elsewhere. Firstly, the design of REDD+ projects needs to account for the multiple actors at local level so as to account for the interests of the powerful and not-so-powerful. As pointed out in this paper, forest governance is affected by the socio-political structures. Therefore, the design of REDD projects should be tailor made to fit these realities. This is especially important because REDD+ implementation entails a huge amount of funds to be used as incentives to scale up conservation.

However, if these power hierarchies and existing relationships are ignored, the funds under REDD may create perverse incentives and enormous potential for misappropriation.

In conclusion, is Tanzania ready for REDD+? Since Tanzania has a favorable legal and policy environment for REDD+ implementation on the majority of its forest land, it provides a good institutional base for REDD. However, the implementation of these good policies requires strengthening of accountability mechanisms in the existing participatory forest management policy.

Appendices

Table 2.1: Actors, powers and accountability according to the legal framework of decentralized forest management in Tanzania

Decentralization variable	JFM	CBFM
Actors in the local arena	Village environment committee along with the village council has joint authority to mange forests along with district forest office; ownership of forests vested with the state	Village environment committee along with the village council has the full authority to manage forests; ownership of CBFM forests lie with the village council
Types of powers		
Power to make rules/modify old ones	*de jure:* rules made, altered with joint participation of village environment committee along with the district forest office, rules approved by the district forest office.	*de jure*: rules made, modified and approved by VEC, Village council and village assembly
Power to make decision to use resources	*de jure:* made by the district office, no power to use, harvest, sale any forest products	*de jure:* powers to harvest, sell, tax forest products lie with Village council, VEC participates in these decisions, rules shared with village assembly.
Power to ensure compliance and implement/enforce rules	*de jure:* responsibility of VEC to patrol, monitor rule enforcement/compliance, offenders are apprehended by VEC and sanctioned by village council with help from district office. Fines and penalties are stiff.	*de jure*: responsibility of VEC to patrol, monitor rule enforcement and compliance, offenders apprehended by VEC but sanctioned by village council in consultation with VEC. Fines and penalties are graduated and specified in byelaws.
Power to adjudicate disputes	*de jure:* with district authority; VEC and village council to adjudicate on minor infractions only.	*de jure:* power to adjudicate disputes with village government.
Accountability mechanisms		
Downward accountability mechanisms	*de jure:* VEC reports to village council, Recall mechanisms for VEC, village council exists.	*de jure:* VEC reports to village council, Recall mechanisms for VEC, village council exists

Table 2.2: Criteria for selection and composition of focus groups

Village	Control	Break Variables			
	VEC	*Charcoal producers*	*Women*	*Men*	*Type of PFM*
Kibangile	√		√*	√	JFM
Gwata	√	√	√*	√*	JFM&CBFM
Muhungamkola	√	√	√*	√	CBFM

* signifies a replicate; √ signifies a focus group

Table 2.3: Focus group sessions

1. Village environment committee JFM village Kibangile
2. Village environment committee JFM and CBFM village Gwata
3. Village environment committee village CBFM Muhungamkola
4. Charcoal producers JFM and CBFM village Gwata
5. Charcoal producers CBFM village Muhungamkola
6. Women forest users JFM village Kibangile I
7. Women forest users JFM village Kibangile II
8. Women forest users JFM and CBFM village Gwata I
9. Women forest users JFM and CBFM village Gwata II
10. Women forest users CBFM village Muhungamkola I
11. Women forest users CBFM village Muhungamkola II
12. Men forest users JFM village Kibangile
13. Men forest users JFM and CBFM village Gwata I
14. Men forest users JFM and CBFM village Gwata II
15. Men forest users CBFM village Muhungamkola

Table 2.4: Focus group Guides

Village Environment Committee

1. What is the forest area under JFM/CBFM/sacred forests in your village? What is the name of the forest? Which other villages have rights over it?
2. Are there any areas with trees outside of PFM forests? What are these used for? What are the major threats to these areas?
3. Why was PFM initiated in the village? When did PFM activities start in the village? From where did the village get the idea to initiate PFM?
4. When was the VEC formed? How many members? How was the VEC members selected? Probe criteria for selection as per sub-village, women etc.
5. How was the area to be protected under PFM decided/demarcated? Who decided upon the selection of this area? Did village people apart from the VEC and village council participate in deciding the area? If yes, what was their role?
6. What was the area currently under PFM used for before the initiation of PFM? What was the status of the area (in terms of vegetation, trees density, species diversity) before the start of PFM? Record types of uses of PFM area and types of users (eg. Graziers, charcoal producers, fuel wood collection).
7. What uses are currently allowed in the PFM area? Can fuelwood, timber,charcoal wood, poles, medicines be collected?
8. What are the rules for management of the PFM area? Are these management rules strict? Why did you decide on such strict rules? When will harvest be permitted? How were these rules formed? Were village people apart from VEC and village council consulted?
9. What are the roles of the VEC in protection? What activities does the VEC do to protect the poorest? Are their any guards employed to patrol the PFM area?
10. If someone from the village or outside is found engaging in illegal activities in the protected forest what actions are taken? How is fine decided? Who collects it? What is fine money used for?
11. If someone on the VEC engages in illegal activities related to protected forest what action is taken?
12. What are the sources of income for the VEC? Are VEC members paid?
13. What motivates the VEC members to engage in patrol and protection?
14. In what ways does the district/catchment office assist you in PFM activities? Did you receive money, training, fish ponds or other income activities? Who got these?
15. In your opinion, has the forest changed under PFM? In what ways?
16. In your opinion, have any forest areas outside PFM/public lands changed after the start of PFM? In what ways have they changed- better or worse? What tree related uses from the current PFM area have been displaced since the start of protection? To which lands/ other forest area? What are the major threats to protection of forests outside of PFM?
17. In what ways have VEC members benefited from PFM? In what ways have the village people benefited from PFM?
18. Have any community members who previously used the PFM area lost out because of PFM? Have the VEC members discussed in what ways these people can be accommodated?
19. Have there been any conflicts between VEC and village community over use of PFM area? Please discuss what was the issue in detail?

Table 2.5: Code Book: Forest governance in Participatory Forest Management in Tanzania

Theme	Code	Code name	Definition	Rule	Example
Knowledge of program (CFM/JFM)	Knowledge about existence, working of forest protection programs in village	KNOWPROG	Evidence of know how about forest protection programs amongst village communities	Direct or indirect reference by community members in the village about the functioning of PFM projects	About five years ago they reserved the two forests of Kila and Ngongolo
Rules of forest protection	Rules for protection of PFM forests	RULPFM	Guidelines that specify how to protect of PFM forests	Direct reference to rules that exist to facilitate protection of PFM lands	So since it has been declared you will find that you cannot take any tools such as axe inside there. If you are found then you will be charged
	Rules for protection of general lands	RULGEN	Guidelines that specify how to protect general lands in the village	Direct reference to rules that exist to facilitate protection of general lands	
	Process of rule formation	PROCRUL	Processes and negotiations through which rules for protection of forest are made	Direct reference to deliberations and negotiations involved in making of rules of protection	We had our meeting where this issue of reserve was discussed. The ministry of natural resources helped us to make rules. We could not have done by ourselves, we could have failed. We are lacking skills.
Offences in forest protection	Stealing/theft in forest areas	OFFFORST	Evidence that forest offences are committed	Direct reference to instances of illegal use of protected forests	Yes, people do steal from the reserved forests in Kimboza. People steal wood and make timber. You cannot tell who does it.

Table 2.5 (cont'd)					
Scarcity of general lands	Absence of open areas to extend farming	SCRLND	Evidence that the general lands in village are getting scarce	Direct reference to the fact that general lands are on the decline	I think if those areas were open forests, even me I would own a part of it. That is why I have a small farm as land is scarce
	Reasons for land scarcity	RSNSCRLND	Ways in which general lands are diminishing	Direct reference to ways in which lands are getting scarce	Because we have been invaded by newcomers. They take big areas of land. Now then you see there is no open areas in Gwata.
Use of village lands	Use of PFM lands		Evidence about the use of PFM lands	Direct reference to ways in which PFM forests are used	Legally we are not allowed as this is a reserve. So no harvesting will be done.
	Use of general lands		Evidence about the use of general lands	Direct reference to ways in which general lands are used	We get firewood and wood for building from open lands
Conflicts around forest management	Conflict with herders over forest protection	CONHERD	Evidence of conflicts that exist with herders as regards forest management	Direct reference to instances of discord between herders and village government or between herders and village environment committee	These pastoralists are here for a long time. We had serious problems.
	Conflicts within Village forest committee and village government	CONVEC	Evidence of conflicts that exist between village environment committee and village government	Direct reference to instances of discord between village government and village environment committee	The village forest committee is responsible for evaluating income from forest. But the government has separated us.

Table 2.5 (cont'd)					
Motivation of Village forest committee	Voluntary	MOTVOL	Descriptions of voluntary ways in which the village environment committee is motivated to engage in forest protection	Direct references to feelings of voluntary behavior, duty being the reason for engaging in protection	VEC is chosen by the village and national government. Their work is volunteer work. There is no pay. This is government work.
	Support by government	MOTGOVT	Description of how support from the government motivates the village environment committee to engage in forest protection	Direct references to incentives from the government/forest department as being the reason for engaging in protection	Government gives them incentives such as shoes and bicycles
Financial management	Use of fines and monies from offenders in PFM	USEFINE	Descriptions of use of money collected as fine	Direct reference to knowledge of use of money collected from fine	That is (money) is their benefit. That amount is in the stomach, it goes into the crocodile mouth.
	Corruption Charcoal regulation and fines	CHARCRPT	Descriptions of how illicit charcoal activity is regulated through fines and corrupt rent seeking	Direct and indirect references to instances where charcoal makers were subjected to rents	Yeah (for those who are doing charcoal business) they are paying something. No not to serikali, mtendaji.
Perceptions of fear about PFM	Fear/respect for JFM	FEARJFM	Descriptions of how feelings of fear or respect for government property act as deterrents to forest offences in JFM	Direct reference to instances where people refrain from using a JFM forest out of fear or respect for state authority	People are afraid to cut trees so thy will get punished. It is government forest for so long.

Table 2.5 (cont'd)					
	Fear/respect for PFM	FEARCFM	Descriptions of how feelings of fear or respect for government property act as deterrents to forest offences in CFM	Direct reference to instances where people refrain from using a PFM forest out of fear or respect for village authority	The village forests belong to the village. You know the committee and the people. Serikali ya kijiji na kitu kidogo.
Accountability in PFM	Information sharing between Village government and village environment committee	INFOVG	Descriptions of how information about use of funds, rule making is shared at various levels within the village	Direct or indirect reference to channels that exist for the flow of information between village government and village environment committee	Now if they (village government) are collecting taxes, we in the committee are not informed.
Power in institutions of forest management	Power of village government	POWVG	Descriptions of how power to control/regulate forest management is vested with the village government	Direct or indirect reference to how the village government wields influence to control/ regulate forest management	If you have little charcoal, when you reach the road to sell your charcoal is taken away by the leaders. We don't know their procedures, they use power.
	Power of village forest committee	POWVEC	Descriptions of how power to control/regulate forest management is vested with the village environment committee	Direct or indirect reference to how the village environment committee wields influence to control/ regulate forest management	As a committee we are not free. I mean the environmental committee has problems. The village council decides for us. When we are needed they put us there like furniture

Table 2.5 (cont'd)					
	Power of herders	POWHERD	Descriptions of how power to break rules is vested with certain actors such as the herders	Direct or indirect references to instances where herders have gotten away with breaking the rules of forest management and the perceived reasons behind it	If you look at the herder he has 1000 cattle and he is not a normal person. His cattle may belong to political leaders. That is why you see they have more power. The village government could have more power, and it has failed.
Benefits of PFM	Benefits to people	BENPPL	Descriptions of how PFM benefits people	Direct references to improvements in quality of life as result of PFM	We are benefiting in terms of rain, soil erosion
	Benefits for community development	BENCDEV	Descriptions of how PFM benefits community development	Direct references to improvement in opportunities created for community development through PFM	When guests come to pay a visit to the forests, they cannot enter without a permit. They will enter with a permit. So our village can earn something and when it goes to the village it is also for our development
Outcomes of PFM	Livelihoods displaced	OUTLVLH	Descriptions of how initiation of PFM has resulted into displacement of forest based livelihoods of certain groups	Direct reference to forest based livelihoods (charcoal making) being negatively affected as a result of PFM	The charcoal maker and farmer is affected. Because when the farmer wants to extend his farm, no more areas. Charcoal maker cannot even get 50 bags or even a quarter of it. Here are no more trees on open lands. Forest is closed.

Table 2.5 (cont'd)					
	Forest condition	OUTFOREST	Descriptions of how there is an improvement in forest condition as a result of PFM	Direct reference to cases where forest condition has become better after initiation of PFM	It is better now. It has improved a great deal since protection.

Table 2.6: Matrix: Accountability mechanisms in JFM and CBFM in Tanzania

Summary Gwata	Summary Muhungamkola	Grand summary
There does not seem to be formal avenues for sharing of information among the VEC and village government. This is almost notable in instances where sensitive matters such fines, rents or allocation of forest land are concerned. The CBFM forest has been sold and even though the VEC is supposed to know about these details it is unaware. The VEC has come to know of this only because one of the member of VEC is also on the village government council. In another case, while charcoal making is illegal the village government allows it and seeks rent. The VEC feels disempowered to deal with forest offences because the village government overrides decisions in domains that fall under the purview of VEC	The VEC of Muhungamkola is skeptical about the role of village government in safeguarding forests. The VEC complains that the village government has not shared matters of revenue from forests and the matter of negotiations with graziers. Two incidents point this out. On the issue of revenue from forest, the VEC found illegal logging in village lands that was approved by the village council However, die to the absence of any formal information sharing between the two, the VEC found out about this only after the forests on general lands were logged. On the issue of graziers, the VEC feels that the village council did not share the negotiations that transpired between the graziers and village council. As a result, they are unable to challenge the graziers and demand eviction.	The lack of any formal channel of information flow between the VEC and village government is an important issue. The issue has three dimensions: (a). overlap of the domains of decision making of VEC and village government; (b). VEC reports to the village council on matters that are under its domain of decision making and (c). lack of downward accountability of the village council. This has resulted into opportunities for corrupt practices for the village government and the resultant erosion in the morale and authority of the VEC.

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CHAPTER 3: PAYMENTS FOR ENVIRONMENTAL SERVICES AND WOMEN'S LAND RIGHTS IN THE ULUGURU MOUNTAINS, TANZANIA

3.1. Introduction

Payment for environmental services emerged in the 1990s as a way to help overcome the problem that often conservation is not undertaken because the market does not value it, and as a response to earlier approaches based on regulations and indirect incentives that had yielded disappointing results (Ferraro and Kiss, 2002; Pagiola and Platais, 2002). It is based on a recognition of the very real opportunity costs that land mangers often face in adopting conservation practices whose benefits may accrue largely to others (e.g. Pagiola and Platais, 2002; Wunder, 2005). PES thus aims to help align the private interests of land stewards with the value that wider society places on the services that nature provides (Engel et al., 2008). In that sense, PES aims to mimic a market transaction where the price determines how much of the good is produced.

The rise of PES brought hope that it could serve as a win-win approach for improving environmental management while also offering a source of income to poor people (e.g. Fearnside, 1997). At first glance the logic appears straightforward: important environmental services such as biodiversity, carbon sequestration and watershed protection are produced by landscapes widely populated by poor people, so paying those people to protect that landscape should result in benefits to both the natural environment and the local people. NGOs and development activists quickly began to consider ways to put PES to work as a tool for poverty

alleviation, while scholarly literature pointed out the (sometimes restrictive) conditions under which in fact PES could help the poor (e.g. Landell-Mills and Porras, 2002; Pagiola et al., 2005).

On the other hand, Pagiola et al. (2005) and Wunder (2005) caution that PES is intended as a way to promote environmental conservation and that it is unrealistic to expect a single policy tool to achieve conservation and poverty alleviation objectives simultaneously. Tradeoffs between the two objectives may arise in which case multiple policy tools may be required. Landell-Mills and Porras (2002) pointed out conditions under which PES could actually harm the poor. Kosoy and Corbera, (2010) argue that PES simplifies complex socio-ecological systems and masks the social relationships embedded in the processes of producing and selling ecosystem services. They emphasize the need to understand the power asymmetries and social relationships embedded in the process of ecosystem service production. Sullivan (2009) stresses that as monetary values for ecosystem services arise, other values (held by other people) may be left behind, resulting in enclosures of newly valuable land and dispossession of the poor and powerless. Swallow and Meinzen-Dick, (2009), Corbera et al., (2007) and Kerr et al. (2006) all comment on the potential of PES projects to alter property rights relations, making certain lands and land-uses “off-limits” for the poor.

The need for a sharper understanding of the problematic complexities of the relationship between incentive-based conservation instruments and local social processes is important as there is much discussion but little evidence of negative social impacts of PES. Moreover, the literature gives little if any attention to potential gendered and intra-household outcomes of PES.

While actual empirical studies on the gendered outcomes of PES remain limited, there are lessons to be gleaned from earlier efforts at environmental conservation that made land more valuable. Scholars across the social sciences have long noted that commercialization and natural resource improvement initiatives in developing countries risk transforming social relationships around production in ways that harm the interests of less powerful segments of society (e.g. Carney, 1993, Schroeder, 1997; and others discussed below). These studies show that when market forces or a development project intervention raises the value of land or another natural resource, people with power develop an interest in controlling that resource, often at the expense of others who previously used it. It is logical to anticipate that PES interventions could have similar impacts in situations characterized by weak institutions.

This paper illustrates the potential of PES to create contestations around gendered command over resources. It presents a case study from the Uluguru Mountains in Tanzania in which monetary incentives for tree planting have created tension around access to and control over land resources. The case also illustrates the concern expressed by Kosoy and Corbera, (2010) that valuation of ecosystem services tends to mask the local social relationships embedded in their production and ignore resulting contestations and exclusions.

These ideas of exclusion of local people and invisibility of social relationships are explored in the context of PES-based tree-planting projects that are being developed in the study area. The Waluguru people of Eastern Tanzania are a matrilineal society, where traditionally women have rights to own land. Local socio-cultural changes are leading to a patrilineal and patrilocal social order, with women's rights to own land shifting in favor of men. These social processes of

change are unfolding alongside increasing population pressure, land scarcity, and environmental degradation. It is in this state of social and environmental flux that PES-based tree-planting projects are being introduced. Local social norms link tree planting to proprietary rights to land, and men in the area have manipulated these norms to their advantage. While these processes are to a large degree endogenous, the proliferation of payment-based tree-planting projects has the potential to accelerate it by providing men the motivation to plant trees on and thus claim rights to lands belonging to their married women kin who live in other villages. This paper places these ongoing processes of change as a backdrop to an ongoing PES project that aimed to promote tree planting, and cautions that these dispossessions might worsen if the complex social context of the area remains invisible within the PES discourse. It demonstrates the need for project designers to understand and account for complex relationships around land rights if PES is to help rather than harm the poor.

The paper is organized as follows. Following this introduction, the second section reviews three interrelated strands of literature: first, the evidence of differential gendered and intra-household effects from previous natural resource improvement projects; second, the cultural norms linking tree planting and land ownership in much of Africa and the implications for women, and third, the changing cultural norms among matrilineal communities in Africa and their implications for women's land rights. The third and the fourth sections introduce the methods and the study area respectively. The fifth section presents the findings. The paper concludes with some implications for future PES projects.

3.2. Gender and intra-household effects of environmental stabilization projects

A vast array of studies examining the intra-household effects of agricultural development and environmental conservation projects in developing countries demonstrate that women's interests often are harmed in cases where monetization approaches to natural resource management converge with customary tenure regimes undergoing transitions. Gray and Kevane, (1999) provide evidence from across Africa about the local tensions that emerge when customary tenure regimes that honor the claims of women undergo changes through processes of titling or commercialization that render land valuable. Men have used their position of dominance to take advantage of these processes to challenge women's usufruct rights to such lands.

For instance, Carney (1993) in her work with Mandinka women in the Gambia documents new claims over communal land tenure systems when introduction of irrigated paddy raised the profitability of land use. Serious intra-household conflicts over land and labor resources resulted wherein men as household heads claimed control over lands that were traditionally reserved for women's use. In another example from the Gambia, Schroeder (1997) illustrates that the introduction of commercial fruit orchards by international development agencies led to the imposition of new forms of property claims that worked against women. Such problems exist beyond Africa; Rochleau and Ross, (1995) provide evidence from the Dominican Republic, where the introduction of a so-called miracle tree species (*Acacia mangium*) for ecological restoration generated unpredictable outcomes that undermined rural women's land use strategies.

These exclusionary processes have occurred even in societies where matrilineal kinship systems have prevailed. Gray and Kevane (1999) cite Tambiah (1989) as reporting that introduction of

perennial cash crops like tea or cocoa transformed matrimonial land into patrimonial properties capable of being owned and transferred, with men exercising rights of ownership and excluding women.

3.2.1 Tree planting and land tenure

Land tenure and tree-planting are interrelated in much of Africa, Latin America and Asia (Fortmann, 1987). In principle, rights to trees do not extend to rights to land on which they are planted, but in practice planting trees on a particular piece of land has come to signify rights to that land under customary land tenure systems (Berry, 1988; Fortmann, 1985). Fortmann (1987) discusses examples from Africa, where farmers enthusiastically adopted tree planting to mark their proprietary claims to land. Evidence from West Africa also indicates that relatively strong individual rights are granted to those who plant trees (Otsuka et al., 1997).

For decades, researchers have argued that promotion of tree planting projects has triggered the privatization of rights to land. When trees were planted for commercial reasons, increased planting led to a growth of a market in trees. This resulting commercialization of trees, together with individual ownership of trees have been taken to mean that the spread of tree crop cultivation has acted as an impetus towards privatization of rural land rights (Kobben, 1963 cited in Berry, 1988). Some others point out that because of this relationship between tree-planting and land ownership, an individual community member who acquires land through inheritance or allocation may have a strong incentive to plant trees in order to consolidate their individual land rights more permanently (Quisumbing et. al., 1999).

Tree planting projects tend to have gender and equity effects similar to those that have been described for other agricultural development and environmental projects. This happens for two reasons: first, trees can make land valuable thereby creating avenues for its appropriation by the powerful. The case of horticulture development in the Gambia illustrates this point wherein fruit crops added value to women's garden lands resulting in men taking control (Schroeder, 1997). Fortmann (1987) explains that the introduction of commercial tree planting in parts of Africa resulted in the privatization of communally owned land, which in turn resulted in women losing their usufruct rights to land. Secondly, more men avail of tree planting and acquire new rights to land because in some societies there are explicit restrictions on women planting permanent crops. This has resulted in tree planting being used as a means to get or maintain de-facto ownership rights to land with prohibitions against women from planting trees lest they become owners (Fortmann, 1985).

While both formal and customary restrictions may discourage planting of trees on communal lands, land scarcity induced by population pressures and the erosion of customary authority have led to poor enforcement of these rules (Fortmann, 1985). For instance, trees were planted on lineage lands in the Uluguru mountains despite rules forbidding it (Maack, 1992).

If an agroforestry or land use project does not recognize the influence of tree planting on land tenure, project-driven tree planting opportunities in a community may enable individuals to establish de-facto ownership of land. Since PES projects provide cash incentives for planting trees, similar gendered and intra-household contestations over claims to land can be expected. In the context of prevailing customary norms that link tree-planting and land tenure it becomes

essential to examine who is planting the trees and where, and to be forewarned about the unintended gendered outcomes of such projects.

3.2.2. Transition in matriliny and women's land rights

Ethnic groups in Malawi and southeastern Tanzania such as the Chewa, Yao, Makonde, Makua, and Mwera share many cultural traits and form part of a wider belt of matrilineal peoples extending from the coast of East Africa to Central Africa (Dondeyne et al., 2003). The concept of matriliny as a closed and complete system of social organization has been the subject of debate. Among social theorists there is now an emerging agreement to consider matriliny in terms of a cluster of characteristics (Peters, 1997). Among matrilineal peoples of East and Central Africa these include a greater degree of autonomy for women in local politics and ritual, control over land and income, uxorilocal marriage for men (explained below), tracing descent from the mother, rights of the maternal uncle (instead of father) over his sister's children, and inheritance to men's sisters' children rather than to their own sons (Phiri, 1983; Richards, 1934 (cited in Peters, 1997); Holy, 1986).

Uxorilocal residence upon marriage means that upon marriage the husband comes to stay in his wife's village and provides labor on farms owned by his wife and her family. Thus as against a patriarchal group, matrilineal land inheritance and uxorilocal residence together allow women to maintain economic rights including independent control over land. Lovett (1997) illustrates the significance of these two characteristics of matrilineal social organization for gender relations. Among the lakeside Tonga people in Malawi, matriliny implied that as members of their matrilineage women could claim certain economic rights, the most important of which was

independent control over land (Lovett, 1997). Uxorilocal residence upon marriage further provided these women with a chance to retain control over their land and labor. This is in contrast to the position of women in patrilineal groups where virilocality is practiced, meaning that upon marriage a woman goes to live in her husband's village. In this case patriarchal norms guide a married woman's access to land and it is mediated through her husband. Much research on matrilineal organization has pointed out that the greater autonomy of women in these societies is due to their control over land (Peters, 1997; Dondeyne et al., 2003).

Numerous studies point to gradual but major changes in matrilineal social organization such that in some cases that virilocality has replaced uxorilocality (e.g. Phiri, 1983; Lovett,1997). These processes of change have been going on over more than half a century and have proceeded unevenly, such that certain features of matriliny have endured and others have declined. However, there appears to be a general consensus among these research findings that a change in residence upon marriage has largely undermined women's authority, control of their labor and rights to land in affinal[3] villages (see Peters, 1997 for a review). Lancaster (1981), cited in Peters (1997), in his study of the matrilineal Goba people in the Zambezi Valley, describes how commercialization of agriculture and male migration led to a reduction in uxorilocal marriage, resulting in an improvement in men's independence as compared to women. He feared that the intensification of these trends would lead to women becoming helpful wives of market-oriented peasants rather than the more independent women of traditional villages.

[3] Affinal means related to by marriage ties.

While these studies give an account of progressive loss of women's authority and control over labor as virilocal wives, they do not shed light on the status of these women as owners of land in their natal villages. As members of a matrilineage these women have rights to land in their natal villages as sisters and daughters. It is important to understand how the land rights of such daughters and sisters have undergone changes. Lovett (1997) describes that traditionally, compared to virilocally married women, Tonga women as sisters held superior authority in their matrilocal villages as "owners of villages'. However, by the1950s there were moves away from matrilineal practices, and uxorilocal residence was replaced by virilocal residence. The practical consequence for women of adoption of these aspects of patriliny was the diminution of socio-political authority and economic security as land owners. Stripped of her identity as a sister who exercised authority and owned land, a woman who resided as a virilocal wife became just a wife and a daughter-in-law.

These social and cultural changes in matrilineal organization and the rise of patriarchal organization enhanced men's position as fathers and husbands. At the same time, women lost the status and authority associated with their role as sisters, and they were repositioned to the subordinate status of wives who had little control over land and their labor.

3.3. Methods

The field research for this paper was conducted in the Uluguru Mountains in Tanzania. The Uluguru Mountains are an important center of floral and faunal diversity (Polhill, 1968) and among Africa's ten most important conservation sites (Burgess *et al*., 2002). The Ulugurus are inhabited by the Waluguru, a matrilineal community.

The research was conducted during 2008-2009 in five villages in the eastern part of the Ulugurus. Another round of follow-up field work to triangulate and validate findings was conducted in late 2010 and early 2011. The five villages in the study area are located in the wards (administrative sub-unit of the district) Kinole, Lundi, Matombo. During discussions with government officials in Morogoro town, the administrative headquarters for the district, it was found that villages in wards Kinole and Matombo are considered as the hub of Uluguru culture and society. Thus, these wards were selected purposively to understand gender roles in a matrilineal community. Ward Lundi was selected through a snowball approach after discussions with village elders in Matombo and Kinole.

Qualitative methods, including interview and focus groups were used to collect data for this research. Qualitative data are non-numeric, textual and visual data derived from interviews, observations, documents or records, gathered from a small number of informants (Chung, 2000). Qualitative methods were chosen because the research topic entailed understanding the meanings and nuances of gendered dynamics around land. Qualitative methods are useful for exploring processes and meanings of phenomena under study, and accessing participants' ideas, thoughts and memories in their own words rather than the words of the researcher (Reinharz, 1992).

Interviews: Qualitative interviews are conversations in which the researcher guides the informants to elicit details and depth about the research topic (Rubin & Rubin, 2005). Rubin & Rubin (2005) justify the use of open-ended interviewing methods in research topics that require capturing the details and nuances of the social phenomenon under study. Interviews yield direct

quotations from people about their experiences, opinions and knowledge (Patton, 2001). These interviews involve the use of an open-ended interview guide that outlines a set of issues to be explored with the informant before the start of the interview (Patton, 2001). Topical interviews are used to study research problems that are highly visible at the beginning of the study, and the researcher interviews several informants to gather facts about events and piece together a coherent explanation. Accordingly informants with a variety of perspectives are chosen who have experience and knowledge about the problem (Rubin & Rubin, 2005).

Semi-structured, topical interviews were conducted with key informants such as village elders, village government representatives, and individual women and men at various phases of the research. The informants were selected purposively to include narratives of people who have knowledge about gendered access to land in a matrilineal community and the changes that have come about. A total of eleven open-ended interviews were conducted. All interviews were conducted in Swahili. While a few of these interviews were tape-recorded the others involved note taking.

Focus group discussions: A focus group consists of a small group of individuals from a well-defined target population in order to generate discussion focused on pre-selected topics of interest to the researcher (Knodel, et. al., 1990). The main feature of the focus groups is the explicit use of the group interaction to produce data and insights that would be less accessible without the interaction found in the group (Morgan, 1988).

Ten focus groups were conducted with groups of men and women in the study villages. Nine focus groups were with either men or women and one was with both women and men together. The participants of the interviews and focus groups were purposively recruited after conducting key informant interviews with village elders across the selected villages to include informants who have knowledge about matrilineal social and cultural organization and gendered land rights.

Each focus group discussion had six members. Each focus group discussion followed a similar question guide which consisted of a number of open-ended questions around themes related to traditional social and cultural organization, traditional and current gender disaggregated land inheritance patterns, relationships between trees and land rights and household division of labor. All focus group discussions were conducted in the local language Kiswahili, audio recorded and transcribed verbatim.

Phases of research: The study was conducted in two phases. The objective of the first phase was to gain an in-depth understanding of the traditional and current gendered patterns of resource management and control. This was achieved through focus groups and interviews with key informants (such as school teachers, ward executives) and village elders (including men and women) in Kinole and Matombo. This information was consolidated in the form of field memos and was used to design questions for the second phase of the study. The objective of the second phase was to get an in-depth understanding of the changes in gendered patterns of land management through in-depth individual cases. Thus, in-depth interviews were conducted with individual men and women to get details of land management and any contentions that occur over women's land. During the triangulation phase in 2010-2011, focus group discussions were

conducted where findings from the first two phases was shared with the respondents to get their feedback on the validity of narratives collected.

Data analysis: The original data set from focus groups and interviews discussions consisted of audio-recorded tapes. In case of interviews that were not recorded, interview notes were reconstructed. All audio-data were transcribed in Kiswahili, and translated in English to produce the textual data for the purpose of analysis. This resulted in a rich set of data that were analyzed using Carney's ladder of analytical abstraction for qualitative data. The ladder has three steps: (i) summarizing and packing the data, (ii) repackaging and aggregating the data and (iii) developing an exploratory framework to address the research questions (Miles and Huberman, 1994). This ladder follows three levels:-

Summarizing and packing the data: The aim of this step is to create a text to work upon. Transcription of recorded data from discussions and reconstruction of written notes was done at this stage, using a word processor. At this stage, the transcripts of the initial data set were read with an eye to look for codes. Codes are tags or labels used for assigning units of meaning to the descriptive information gathered during a research (Miles & Huberman, 1994). A provisional list of codes thus emerged from this early coding. These first rounds of codes were descriptive in nature (Miles & Huberman, 1994) and entailed little interpretation, and related directly to the topics covered in the group discussions. These descriptive codes were later applied to the data to look for relationships among codes and to arrive at a revised and enlarged code list. These second order codes were recorded in a memo.

Repackaging and aggregating the data: The aim of this step along the analytical ladder is to search for relationships in the data and find out the areas of emphases and gaps. At this stage, the transcriptions from all sets of data were searched for relationships and patterns among codes. Definitions and operational rules for application of codes were developed for each of these codes, to help in the process of standardization and cross-comparison of the data (refer to table 3.1 for code book). Upon completion of coding a final family of inferential codes emerged, termed as a structure. The final structure thus contained "larger" (more conceptually inclusive) and "smaller" (more differentiated instances) codes (Miles & Huberman, 1994). This final structure thus tied related codes or themes into a pattern or a meta-code. These meta-codes elaborate upon explanations for the research problem (Miles & Huberman, 1994).

After the entire data had been coded, case summaries were prepared for each theme or concept that emerged from the list of codes. For instance, case summaries were prepared for the themes traditional land management, women's land rights as daughters, wives, widows etc. These case summaries were then combined in order to have an overall summary statement for each major theme or concept. This step resulted in reduction of the entire transcribed data, into three-four line summaries around major themes and concepts in the data.

Developing and testing hypotheses to construct an exploratory framework: The aim of this level of analysis is to cross-check findings through matrix-analysis of major themes in data and finally integration of data into an exploratory framework. At this stage, the summary statements developed in the previous step are sorted and organized as per important concepts that emerge from the data. These summary statements are organized in form of matrices or grids, and can

take many forms, depending upon the nature of relationships and patterns among themes. For instance, matrix diagram was prepared to compare and contrast various examples in data that illustrate how women have lost their land rights (refer table 3.2 for matrix on women's land rights) .

3.4. Study Area

The Uluguru Mountains are part of the Eastern Arc Mountain range, an important center of floral and faunal diversity and endemism (Polhill, 1968). The Ulugurus are home to at least 16 endemic vertebrate and 135 endemic plant taxa, a degree of endemism exceptional in tropical Africa that puts these mountains among the continent's ten most important conservation sites (Burgess *et al*., 2002). The Ulugurus also form the most important water catchment in Tanzania as the source of the Ruvu River, which supplies water to Dar-es-Salaam, the largest city. The forest reserves in the Uluguru mountains have been ranked at the highest level of importance in terms of their water catchment and biological value. However, recent surveys across the range report a decline in forest area and potential disappearance of a few endemic faunal species. They point to conversion of forest to agriculture as the major reason for forest loss (Burgess et al, 2002).

3.4.1. PES and smallholder carbon and tree planting projects in the Ulugurus

PES is being explored as an instrument to promote landscape conservation in these mountains. Several pilot PES projects are being implemented, including projects that pay people to conserve existing forests and plant trees on their agricultural land to provide carbon sequestration and hydrologic services (Katoomba Group, 2007). Valuing the Arc is a Cambridge University project

that aims to create an inventory of important environmental services that the mountains provide and use this information for project design and implementation (www.valuingthearc.org). A pilot project by Sokoine University of Agriculture pays communities to protect existing forests against deforestation and associated carbon emissions (Zahabu, 2008). CARE is implementing the Equitable Payments for Watershed Services (EPWS) project, which aims to compensate farmers for investing in new land use practices such as tree-planting to reduce the flow of silt into the Ruvu River. Another active PES project in the region is the Pro-poor Rewards for Environmental Services in Africa (PRESA) project, initiated by the World Agroforestry Centre (ICRAF). EPWS and PRESA promote agroforestry and farm forestry on farmlands to provide both national environmental benefits in the form of reduced silt loads in the Ruvu River and carbon sequestration as a global environmental service. The CARE and ICRAF projects are already underway, with tree planting having been introduced.

3.4.2. Social organization among the Waluguru

Traditionally the Waluguru were a matrilineal society, differentiated by clan and lineage (Young and Fosbrook,1960). Among the matrilineal Waluguru, marriages were uxorilocal, i.e. in the locus of the wife. Traditionally under matriliny, all land belonged to the matrilineage and was referred to as *lukolo*. The maternal uncle, the *mjomba,* was the custodian of this land. Membership in a lineage ensured rights to *lukolo* lands. There was no concept of individual ownership for *lukolo* land; only usufruct rights were granted to this land and the land could revert back to the lineage if the occupants did not use it.

Both male and female members of the lineage were eligible for allocation of *lukolo* land in the first generation. However, in the second generation the land could be inherited by heirs on the female side only (as they remained full clan members) as opposed to the heirs on the male side (since they belonged to the matriclan of their mother). This meant that while a male member in the first generation may be entitled to *lukolo* land, his share of this land would be inherited by his nieces and nephews (on his sister's side) and not by his own children. In this way, the *mjomba* as custodian of the interest of the lineage land and as a facilitator of its inheritance to his nephews and nieces exerted a greater authority over his nieces and nephews as compared to his own children (Young and Fosbrook, 1960).

Traditionally it was not permitted to plant trees on lineage land. This is because when trees are planted and they mature they become the property of the planter. Thus, even while the land belonged to the lineage the trees would belong to the planter. During the 1950s with the introduction of plantation crops such as coffee, and tree-planting to produce timber or control soil erosion, this distinction between ownership of land and ownership of trees was lost. Even though technically the land belonged to the lineage, since it was covered with trees that the planter controlled and the lineage group was not in a position to buy back the trees, the rights over land were de facto associated with the planter (Young and Fosbrook, 1960).

As with other matrilineal systems, the Waluguru society has undergone a social transition, in part due to inroads from colonialism, Islam and Christianity that brought pressure against matriliny (Maack, 1992). Over the years, *lukolo* land has been privatized. According to historical accounts of the area, the privatization of *lukolo* land occurred under a complex set of social and

environmental factors. Land scarcity emerged with population growth and became pronounced during the 1960s and has continued since. Around the same time, colonial policies curtailed the authority of the institution of *mjomba* (Young and Fosbrook, 1960, Maack, 1992).

Lukolo lands once allocated were not returned to the lineage pool under the reversionary right. Simultaneously, there was a rise in awareness among Waluguru men about fathers' rights. Fathers used tree planting on *lukolo* lands to express their investment in land and eventually to bequeath this land to their children. Thus, more and more men started bequeathing their share of *lukolo* land to their own children rather than to their nieces and nephews. The *mjomba*, having lost his power and operating in a context of land scarcity, could do little to safeguard the common pool of lineage lands (Maack, 1992).

This movement of fathers' rights to children and subsequent substitution of individual rights of ownership for clan ownership were more pronounced in the eastern part of the mountains where the villages in this study are located (Maack, 1992). These transitions have hybridized the Waluguru social structure with elements of both matriliny and patriliny. As a result, there a rise in patriliny along with a redefinition of rules of inheritance, locus of marriage and access and control over land, with significant implications for women's social status and control over land.

3.5. Findings

3.5.1 Matriliny, Patriliny and women's land rights

Currently, the Waluguru social organization can be described as being on the crossroads of matriliny and patriliny. While elements of patriliny such as virilocal marriages (in the man's

village) and land inheritance from the father as opposed to the mother are dominant, at the same time matrilineal tendencies such as children inheriting the clan identity from their mother are also practiced. The decline of matrilineal traditions in the realm of land inheritance has had an effect on women's rights to access resources as daughters in their natal and as wives in affinal villages.

As discussed in the previous section, women as daughters in their natal villages traditionally inherited clan lands or *lukolo*. The presence of *lukolo* land was a kind of security for a woman, as her rights to this land were not subject to any challenge. She could maintain her rights to this land and they would be upheld by the matrilineal custom. However, over time the *lukolo* has been privatized. As a result, *lukolo* land as a category is non-existent as corroborated by a majority of respondents in the study villages. Of all the respondents in the present study, only a small percentage report to have inherited *lukolo* land from their mother. The loss of *lukolo* has meant that women's land rights as daughters and full members of the matriclan are diluted.

A woman from Tambuu explains what the loss of *lukolo* lands signifies for women:

> *"On lukolo, it is from your mother's clan and so mjomba had decision [about its allocation]. But now mjomba is not powerful and this land is not there. So you cannot get this land."*

The privatization of *lukolo* has meant that most land is now inherited from the father. Both male and female children are entitled to this and. The inheritance usually follows Islamic law, according to which daughters receive half the share of a son. Increasing land scarcity and Islamic

inheritance rules have meant that women's shares of these family lands are smaller as compared to their male kin.

In principal, the rights of women to *lukolo* land are inalienable. So if a woman is married within her natal village, she maintains her rights to such land by cultivating it. And if a woman is married virilocally and stays in another village or town far from her natal village, her share of *lukolo* land is held in the custody of the male members of her family. As per the focus group discussions, the rights of virilocally married women to this land must be upheld by their male relatives. Should a woman get divorced and return to her natal village, she can claim this land as the only land over which she has exclusive rights to. An elder man from of Ngongolo explains how inheritance of lands from the father works:

> *"Yes, the children will inherit the land [from father]. They also inherit some land from her mother's side. But mostly it is from her father where they inherit land. The son would look after land that was for her sister."*

With a change in the locus of marriage from uxorilocal to virilocal, there is another category of land over which women have rights. Referred to as *lima*, this is the land on which a woman has rights as a wife in her husband's village. However, as opposed to *lukolo* or the land inherited from the father where women have exclusive rights of ownership, rights over *lima* do not translate into ownership. Women as virilocal wives have usufruct rights to *lima*. As wives they invest labor to produce subsistence food crops, cash crops, and permanent tree crops.

The rights of women to *lima* are tenuous and they do not own it upon widowhood or upon divorce. In the event of widowhood, the woman holds the land in custody for her children. In no case does the widow own this land. Should a man die without leaving hiers, conflicts among his kin and his widow over the custody of land are common with the widowed woman often forced out of her husband's land. To avoid such conflicts and secure the claims of his wife a number of respondents in the study villages mentioned that a husband may buy a piece of land for his wife so that her rights are not extinguished in the event of widowhood. However, such cases where men buy land for their wives are still quite uncommon.

While widowed women hold use rights to lands as their children's custodians, the land rights of divorced women are non-existent. In the event of a divorce, a woman is not entitled to any parcels of land from the husband. In principal, divorced women are entitled to a share of land or cash value of permanent tree crops that she helped plant on the *lima*. However, in practice it is difficult for women to enforce their claims.

A divorced woman in Tandai explains this situation:

> *"I am tired and I have not gotten anything so far. Its been so long, I was supposed to get a share in two shambas, I have left trying now"*

A change in the availability of clan lands along with a shift in the locus of marriage among the matrilineal Waluguru has resulted in a diminished status for women in terms of their authority, control of land in natal villages and rights to their labor in affinal villages. Since *lukolo* as a land category is non-existent, their rights as daughters in a matrilineal system are largely extinct. As daughters, their rights to land in natal villages extend to land that they inherit from their father.

However, their rightful share of these lands is diminishing under the influence of Islamic inheritance rules. Finally, as virilocal wives, not only do they have no rights to own land, but in the event of divorce the labor they invest in planting and maintaining permanent crops and trees on their husband's farm remains inadequately compensated. Thus, changes in socio-cultural organization among the Waluguru have resulted in women losing control over resources in both natal and affinal villages.

3.5.2 Contestations on women's lands

Contestations around land remain common in the study villages. Often they have to do with the land of absent owners. It is in this context of absentee ownership that contestations around women's land are happening. Study respondents agree that more and more marriages in the study villages are virilocal, wherein women move away from their natal village to their husband's village. These respondents also mention that the rights of virilocally married women to the lands inherited from their father in their natal villages are customarily protected by their male relatives. Interviews with older men suggest that women's rights to these lands are secure; however, in reality there are conflicts around this issue.

Discussions with virilocally married women reveal that these women are aware of their rights to lands that they inherit from their father and expect that their rights will be upheld. However, their responses also suggest a sense of despair in that they know that it would be difficult for them to claim their rights from their male relatives. A woman in village Tambuu discusses the divide between what women think are their rights, their expectation about the fulfillment of these rights and the current status.

"I have inherited land from my father. After I married I moved to my husband's place and the land that I inherited from my father is currently being used by my brother. [The rule is] The lands belonging to daughters (if used by sons) are to be handed to daughters. I think that I can claim it [my land] but I think that it will be difficult."

The lands that virilocally married women inherit from their father in their natal villages are the locus of conflict. These conflicts revolve around the fact that the male relatives who are supposed to be custodians of women's land are unable to honor women's rights. Interviews and discussions with men on the issue of rights of virilocally married daughters revealed a general sentiment that women have rights to land from their father and that these should be upheld. But at the same time, men also expressed a sentiment that virilocally married daughters should farm with their husbands and thus their hold over rights to land in their natal villages should be allowed to lapse. While women expect that they might be able to claim their lands, men express their inability to honor women's claims. Male respondents express these mixed feelings and place them in the context of land scarcity and the fact that land needs to be bequeathed to children as they do not inherit anything from their mother's side. A quote by a man from Tandai village resonates these sentiments:

"The land from father is divided among my brothers and sisters. The sisters are entitled to rightful claim on this [paternal land]. However, I might not be able to honor their claims as I have children and she [sister] is farming in her husband's village just like my wife… My children are entitled to land from my wife's clan but they cannot get it as it is finished."

3.5.3. Tree planting and dispossessions

As evident from historical accounts of the area there have been ongoing struggles among the Walgurus to consolidate claims to land. These struggles have been driven by both material exigencies to own land in face of acute land scarcity as well as for symbolic reasons as land ownership confers a sense of belonging. As discussed in earlier sections, tree planting in the area is a step towards ownership of the land where trees are planted. Maack (1992) describes that men as fathers planted trees on clan lands to secure these material and symbolic aspects.

Historically, tree planting on *lukolo* lands has been used to privatize lineage lands and prevent their reversion to the lineage. Currently, men have used tree planting as a means to claim lands that their virilocally married sisters have inherited from their father.

While it is clear to men that tree planting on these lands confers ownership and may dispossess their sisters of rights to land, men's narratives do not reflect this. They explain that they have planted trees on behalf of their sister and leaving this land unclaimed and thus unplanted may invite contestations from strangers. Another explanation that men provide is that they are planting trees on the land of their sister so that she may not be able to bequeath this land to her children. This is because as per matrilineal inheritance, children are entitled to land that their mother owns, and thus men as brothers perceive that their nephews and nieces may make claims to their mother's land. These men as fathers are also aware that their children may not get any land from their maternal clan, so they need to secure land to bequeath to their children.

Interviews with men reveal this concern for their children when they say that they have used tree planting on their sisters' land not as a way to dispossess them, but for the benefit of their children. A man from Tandai explains that he has planted trees on his sister's land so that in future his children may have land.

> *"My sisters they have a share in father's land. But I might not be able to honor their claims as I have planted trees on this land. My children need land. There is no clan land; brothers take over the sister's land."*

Women's narratives on the other hand allude to a sense of dispossession. As daughters in natal villages, their rights to lands that they inherit from their father are coming under threat as male relatives fail to uphold their rights and in many cases attempt to control their land through planting of trees. A woman from Tandai explains,

> *"And now if she [a woman] has to leave on marriage, this land that she can get from her father, she does not get it. Brothers take care of sister's land, use it but do not return [it]. Now there are conflicts, when brothers are taking care of sisters' land and they [sisters] stay far but cannot get their land back. Yes and I know of women where brothers have conflicts on land of their sisters"*

There are numerous such examples in the study villages where men have used tree planting to appropriate women's land. Many of these cases pre-date the PES based tree planting projects that have been introduced in the area. In order to ascertain the incidence of such cases among the local farmers who were allocated PES contracts under the PRESA project, we planned to launch a survey of these farmers. However, during the focus group discussions organized before

designing the survey, two local key informants who had helped organize the distribution of tree-planting contracts objected to the survey as being too sensitive and obstructive. They suggested that asking about land rights would make it difficult to get any answers from the farmers about other aspects of the PES project. At the same time, one of these same key informants admitted having planted trees on the lands of their own sisters, albeit not under the PES project (in which they were not awarded contracts). When asked about the potential of the project in accelerating these dispossessions they were dismissive of such a possibility, explaining that they had ensured that only those farmers with clear land tenure be supplied trees. In fact, given the method of contract allocation, it would have been impossible for them to impose such restrictions. To date, under the PRESA project there is no procedure to ensure that the project awards contracts only to farmers with clear, uncontested land tenure, so it is likely to unintentionally lead to more contestations.

3.6. Implications for PES

While tree planting and the resultant dispossession of women's lands are ongoing, there is reason to expect that the tree-planting PES projects may accelerate the situation. This might happen as the incentives offered under PES projects create new opportunities for men to adopt tree planting and in the process make claims to lands of their female relatives. This scenario of dispossession of women from their lands is plausible because such dispossession is already happening, and because people in the study villages are attracted by the idea of receiving money to plant and maintain trees. The ongoing PES projects are specifically designed to be pro-poor and have invested effort in understanding the conditions under which poor people can participate in them, but they operate on the incorrect assumption that land rights are stable and well defined. At the

same time, they have not focused attention on the issue of gendered land rights and gendered division of labor, the underlying link between tree planting and land rights, and the changing social and cultural context. While some of the PES literature has suggested the need to account for multiple, competing claims to land, in practice such contextual factors tend not to be accounted for. The analysis presented here has addressed this critical gap in the literature and provided field evidence of what can be expected if PES projects continue to neglect social dynamics surrounding landscape conservation and production of environmental services.

New PES projects need to better account for the social context of the places in which they aim to work, including power asymmetries and the politics around natural resources that emerge when monetary incentives for conservation are introduced into complex and changing social and environmental contexts. The social conditions found in the Ulugurus related to the transition from matriliny to patriliny and the interlinkage between land and tree rights also exist in many other parts of sub-Saharan Africa, so the findings of this paper are directly applicable to such places. More generally for PES programs that specifically aim to help the poor, it is important that they go beyond simply targeting poor households and try to understand and address the subtle intra-household relationships that further influence the welfare impacts of a project intervention. It is not too late for conservation projects operating in the area to take these issues into consideration, and it is important that new projects elsewhere work harder to gain an understanding of the social context that could help anticipate problems that may arise when insecure land rights, power asymmetries and monetary incentives cross paths.

Appendices

Table 3.1: Code Book: Matriliny, Tree tenure, and Women's land rights

Theme	Code	Code name	Definition	Rule
Traditional matriliny practices	Traditional cultural and social practices of matrilineal organization	TRDMAT	Description of any social or cultural practices associated with matrilineal social organization	Direct reference to specific cultural and social practices
Changes in matriliny practices	Changes in social and cultural practices of matrilineal organization	CHNMAT	Description of changes in traditional matrilineal organization	Direct reference to changes that have occurred in cultural and social practices
Women's land rights	Traditional land rights under matriliny	LRTS MATRI	Description of ways in which women could own/use land in matrilineal social order	Direct mention of specific rights to specific lands (for instance, clan land) that women had under matriliny
	Current land rights	LRTS CURENT	Description of women's rights to own/use land as they stand now.	Direct reference to the rights of access/control that women have over specific lands (such as clan, inherited from father, mother or husband's land)
	Land rights of daughters		Description of how brothers are responsible to look after the share of sisters land in father's estate	
	Current rights as wife	LRTS WIFE	Description of rights to own/use land as a wife as of today	Direct reference to the kinds of rights women have to own/use specific lands (such as clan, inherited from father, husband's land) marriage
	Current rights as widow	LRTS WIDW	Description of rights to own/use land as a widow as of today	Direct reference to the kinds rights women have to own/use specific lands (such as clan, inherited from father, husband's land) as a widow.

Table 3.1 (cont'd)				
	Current rights as divorcee	LRTS DIVORC	Description of rights to own/use land as a divorcee as of today	Direct reference to the kinds rights women have to own/use specific lands (such as clan, inherited from father, husband's land) as a divorcee.
Categories of Land over which women had rights	Traditional categories	LNDINH CATEG	Description of various categories of land that women could hold rights to in natal and patrilocal villages.	Direct reference to various categories of lands that women could have rights over- clan lands, lands from father, lands from husbands
Change in women's land rights	Examples of changes	CHNG EXMPL	Description of changes (whether weakening or strengthening) in women's rights to land as owners or under conflicts around these.	A record of specific cases or conflicts where women's rights to land as owners have changed are under contestation
Reasons for changes in women's land rights	Patrilocality of marriage	RSN PATRIMARG	Descriptions of patrilocality of marriage as a reason of change in women's land rights	Direct reference to patrilocality of marriage as being a reason for a change/contestation in women's land rights.
	Tree planting	RSN TREEPLTG	Description of tree planting as a reason through which women lose control of land	Direct reference to tree planting as being a reason for a change/contestation in women's land rights.
	Scarcity of lands	RSN LNDSCRCE	Description of land scarcity as a reason for loss or change in women's land rights	Direct reference to decline in clan lands or land in general as being a reason for a change/contestation in women's land rights.
	Religion	RSN RLGION	Description of religion as a reason for loss or change in women's land rights	Direct reference to religious influence as being a reason for a change/contestation in women's land rights.

Table 3.1 (cont'd)				
Tree tenure-Land tenure links	Trees and land rights relations	TREELANDRTS	Description of land rights and their relationship with tree planting	Direct reference to tree planting influencing/altering land rights as being a
Women's strategies to cope with dilution of land rights	Strategies to address loss of land rights or changes in land rights	STRCOPWOM	Description of how women cope with loss or change in land rights	Direct reference to strategies or mechanisms that women adopt to deal with loss in land rights

Table 3.2: Matrix: Women's land rights

Traditional rights under matriliny	Rights as wives	Rights as daughters	Rights as widows	Rights upon divorce	Grand Summary
Under a matrilineal system of social organization all land belonged to the clan (s. Ukoo). The clan elders/maternal uncle was responsible for allocation of these lands. This land is called the *lukolo.* The women and their children were entitled to a share in this *lukolo* land. The maternal uncle facilitated access of rightful heirs to these lands. Permanent crops could not be planted on this land and this land reverted back to the clan in case it was not being used by the owners. Another category of land is the *lima* which women farm at their husband's house. Women may (if jointly acquired) or	The women get land rights as daughters and also as wives. As daughters they inherit land from their father (or mother) and thus have ownership rights on it. Upon marriage, they farm the lands that are owned by their husbands. The women have usfructuary rights over farms and homestead gardens at her husband's place. In some	Nowadays, women as a rule get land from their fathers. This is the gani land. They may also inherit from their mother if land is available. However, as pr Islamic law the women's share is half of what a man receives. So in many cases, it is the brothers who inherit more than sisters. In case the women are married locally, they maintain rights over this land. It is this land that they claim when they get a divorce.	The rights of widowed women are mediated through their children. They do not own any land of the deceased husband but are considered custodian of these lands for their children. A husband can buy a piece of land for his wife as it is possible that upon his death the husband's kin may take back the land that belonged to him and the wife may remain landless, especially if she does not have children. If she	Upon divorce, a woman has to leave her husband's house. She is not entitled to any land from her husband except in the case if it was acquired jointly. If any permanent crops were planted she may or may not be entitled to them or collect fruits. The trees belong to the children. She goes to her father's house with her young children and starts a life with land from her father.	Lukolo lands were clan lands which were allocated to men and women. However, this land could not be owned. Women as virilocal wives also gained rights to lima, land from their husbands. Whereas widows hold rights to lima, divorced wives' rights to lima do not exist. With changes in land ownership, lukolo was privatized and lands started to be inherited from father. Sons and daughters were both given land. Daughters' land is called the gani. With virilocal marriages, gani lands are contested.

Table 3.2 (cont'd) may not (if it is inherited by the man from his family) have ownership to it. If divorced, women cannot claim this category of land unless it was acquired jointly. A third category of land is the *gani*, which it seems as a category has come up with the individualization of land and inheritance to ones own children rather than to one's nieces or nephews. This *gani* is the category of land that a women inherits from her parents (mostly father) and is her exclusive property. Upon divorce, this is the land that she can claim (neither lukolo nor lima). Since most of lukolo land has become individualized and there is hardly any land	cases, the husband can buy a separate piece of land for the wife so that she owns it and in the event of widowhood that land is not claimed by the husband's kin. In case a daughter is married locally, she has the land from her father and her husband's lands in the same village. If a new piece of land is to be acquired, it is the man who approaches the village government. This new land belongs to the husband and he		marries again, then she has to leave everything for her children. If there are no children from the marriage, the land is divided between the widow and the deceased husband's kin.		

Table 3.2 (cont'd) in this category left for allocation to women. At the same time, with the scarcity of this land, the social institution of the maternal uncle or mjomba has also become weak so that lukolo land inheritance to women has declined. Thus, land inheritance of lukolo lands on which women had rightful claims has come to a decline because of social change and material scarcity of land. Since marriages are virilocal distant, it is the gani land which has come under contestation.	may decide to apportion a part of it to his wife. Thus, while in the past a wife could own land independently (as clan lands) now her land rights are mediated through a man as a husband or father.				

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CHAPTER 4: PRO-SOCIAL BEHAVIOR AND INCENTIVES: EXPERIMENTAL EVIDENCE FROM THE ULUGURU MOUNTAINS, TANZANIA

4.1. Introduction

In the past decade many payment for environmental services (PES) projects have been established in developing countries (Wunder *et al.* 2008, Swallow *et al.* 2009). In most of these projects payments are made to individual landholders who make individual land-use decisions, but increasingly they are being introduced for environmental services that are provided collectively by a group of natural resource managers. A group of users may jointly manage a common pool resource (CPR) or separately manage individual parcels that are bundled together in a PES contract to minimize transaction costs (Kerr and Vardhan 2010, Swallow and Meinzen-Dick 2009). The prevalence of CPRs in developing countries (e.g. Baland and Platteau 1996, Agrawal 2007) makes it likely that group PES contracts will continue to spread. For example, PES is being explored as a way to compensate communities all across the tropics under the new Reduced Emissions from Deforestation and Forest Degradation (REDD) regimes (Miles and Kapos 2008).

The PES literature has given little attention to the question of how introduction of incentive payments influences collective action to manage a common pool resource that provides an environmental service. The explicit assumption underlying PES is that offering sufficient payment will motivate users to adopt conservation practices (Ferraro and Kiss 2002; Wunder 2005); where contracts are collective there is an implied assumption that collective action will take care of itself. However, a long line of literature on common property resource management

makes it clear that eliciting such collective action can be difficult (e.g. Baland and Platteau 1996, Ostrom 2002). This literature also documents that rural areas of developing countries often have longstanding traditions of norm-based collective action that govern various aspects of civic life (Cleaver 2000, Jodha 1985). Meanwhile, research from social psychology and behavioral economics shows that where collective action is driven by social, non-pecuniary norms, introduction of monetary incentives can undermine these social norms and thus weaken instead of strengthen collective action (e.g. Fehr and Falk 2002). To the extent that natural resource protection requires collective action, such perverse outcomes of incentive payments could undermine environmental service provision.

It becomes important to examine the incentive structures under which PES promotes rather than undermines collective action to deliver environment conservation, and whether alternative, noncash payment types could have better properties for collective action (Kerr and Vardhan 2010). Interaction between payments and social norms, and the incentive types that local actors might prefer are critical areas for research with strong implications for PES and REDD. In this paper we investigate the effect of different levels and types of payment or reward, whether individual or group and cash or kind, on individual decisions to contribute to manage a common pool resource. We also examine contextual factors that can affect these relationships and preferences.

We undertake this work through survey and experimental methods carried out in six communities in the Uluguru mountains in Tanzania. Our main findings are that a high percentage of people contribute to communal tasks regardless of the compensation regime; high payments

can increase participation but low payments can reduce participation relative to when no payment is made; payments can reduce the satisfaction people derive from participating; social approval incentives play a strong role in motivating participation; and people express preference for collective rewards in the form of infrastructure rather than cash payments made either to individuals or groups.

4.2. Human motivation, incentives and collective action

Sources of motivation to cooperate

The literature describes two perspectives on the sources of human motivation to cooperate: individual rational utility maximization and social utility maximization (Vatn 2008). Models of individual rational utility maximization assume self-regarding individuals, who perform actions based on some internal cost-benefit calculations (eg. von Neumann and Morganstern 1947). When faced the decision of whether to contribute to a public good, this model assumes that the best option for self-interested, rational individuals is either to free-ride or to contribute only when they can obtain private gains from doing so or face sanctions if they do not. Thus, within this viewpoint, human motivations are extrinsically determined through incentives, whether rewards or sanctions. Based on these models, early theorists like Olson (1965) and Hardin (1968) were sharply pessimistic regarding the prospects for collective action among independent actors.

Social rationality implies behaving in a way that supports what is best for a group that one is part of, even if it involves foregoing some specific personal gains or opportunities (Vatn 2008). Literature on management of common pool resources (CPRs) (Ostrom 2002) and experimental economics (see Vatn, 2008 for a review) supports the social rationality viewpoint and shows that

individuals exhibit a much stronger propensity to cooperate for provision of a common good than expected under the rational actor paradigm.

People might be intrinsically motivated and contribute effort without any expectation of a reward (Deci 1971), or they might be acting out of "impure altruism," deriving a "warm glow" and improved self-image as a byproduct of their own contribution to a public good (Andreoni 1990). Reciprocity has been explained as another source of motivation for cooperation (Fehr and Gachter, 2000). Experimental evidence from behavioral economics shows that people are strong reciprocators who tend to cooperate voluntarily, responding to cooperative behavior by maintaining or increasing cooperation and are willing to punish those who do not cooperate, even at some personal cost (Gintis 2000, Gachter and Fehr 1999).

Similarly, social norms are seen as strong motivators for cooperative behavior. Social norms are informal rules of behavior and are enforced by social sanctions (Coleman 1987) that can take the form of approval or disapproval from others, and related feelings of pride and shame (Lindbeck 1997). Gachter and Fehr (1999) provide experimental evidence that the desire for social approval gives rise to a large and significant reduction in free-riding among groups that share social ties.

Effects of monetary incentives on individual effort and pro-social behavior

A positive response to a monetary incentive is fundamental to economic theory and easy to envision in daily life, where people work in exchange for payment and search for bargains while shopping. On the other hand, in situations where intrinsic motivation exists to supply a good or service, research shows that raising monetary incentives may reduce rather than increase the

supply of the good or service, as extrinsic motivation displaces or "crowds out" intrinsic motivation (Frey and Jegen 2001, Mellstrom and Johannesson 2008, Deci 1971). In a meta-analysis of 128 related studies, Deci *et al.* (1999) found broad support for the argument that extrinsic incentives undermine intrinsic motivation and as a consequence of rewards, people take less responsibility of motivating themselves. Gneezy and Rustichini (2000a) found in experimental work that subjects who were paid performed better the more they were paid, but that on the whole, those who were paid performed poorly compared to those who were not paid.

Solow (1971) and Arrow (1972) assumed that monetary incentives were complementary to altruistic incentives, so that offering payment would expand behavior that was otherwise driven by the desire to help others. On the other hand, a range of recent literature shows monetary and altruistic motivations can compete with each other – that introducing payment can actually reduce pro-social behavior (e.g. Frey and Oberholzer-Gee 1997, Gneezy & Rustichini 2000b, Frey and Goette 1999). Bowles (1998) reviews literature suggesting that socially embedded other-regarding norms related to performance of and contribution to collective tasks decline as a consequence of integration of traditional societies with markets. Heyman and Ariely (2004) found that people are sensitive to price when they operate in monetary market situations but not when they are in social situations, where altruistic motives and social norms guide behavior. They found that when monetary market signals are imposed on social situations, people begin to behave in a way that more resembles monetary markets.

Gaps in the literature and contributions of this study

The above discussion shows conflicting paradigms regarding the likely effects of monetary incentives on collective action to undertake conservation. Individual rationality and in turn PES implies that external payments will have a positive effect on conservation. Conversely, studies of pro-social behavior driven by social norms suggest that payments could crowd out intrinsic motivation to contribute towards a public good, thus possibly hampering the performance of PES. Resolving this dichotomy has strong theoretical and practical implications for designing PES projects in settings where contracts are undertaken with groups.

Evidence of crowding-out of pro-social behavior emerges mainly from experimental work done with student subjects in laboratory settings in western or developed country contexts that are far removed from natural resource management. While these insights remain useful, much remains unknown about their applicability to natural resource management settings in developing countries. Further, in the latter domain, evidence for crowding out comes mostly about the effects of sanctions or regulations (Cardenas *et al.* 2000, Vollan 2008) rather than on the effects of rewards.

This research addresses these gaps and explores the relationship between economic incentives and pro-social behavior in the context of collective resource management in rural Tanzania through a choice experiment and a field experiment that examine people's willingness to participate in communal tasks for different types and levels of reward. Building on evidence described above that people respond differently to "social market" and "money market" situations (Heyman and Ariely 2004), we assess the extent to which payment affects people's

contribution to collective tasks. Further, we assess people's preferences for different types of payment or reward, whether individual or group payment and whether cash or kind. Following Gneezy and Rustichini (2000a), we measure the possible differences between the effects of small payments from those of high payments for the same task. Finally, following Gachter and Fehr (1999), we assess the strength of social approval incentives among community members with close social ties and the extent to which they curb free riding.

4.3. Study context

The experimental work in this study was conducted in six villages in the Uluguru mountains in Tanzania. The six villages were chosen because they participate in decentralized forest management arrangements and they have a school. Three of the villages had been purposively selected for qualitative research conducted several months prior to the research reported here; the additional three were selected for this research because they met the selection criteria and were located near the other three villages. The Uluguru mountains form a part of the Eastern Arc Mountain range, an important center of floral and faunal diversity and endemism (Polhill 1968). The Ulugurus are home to at least 16 endemic vertebrate and 135 endemic plant taxa. This degree of endemism in the Ulugurus is exceptional in tropical Africa, putting these mountains among the continent's ten most important conservation sites (Burgess *et al*. 2002). The Ulugurus also form the most important water catchment in Tanzania as the source of the river Ruvu, which supplies water to Dar-es-Salaam, the country's largest city. However, recent surveys report a decline in forest area and potential disappearance of a few endemic faunal species, with conversion of forest to agriculture as the major reason for forest loss (Burgess *et al.* 2002).

Some endogenous forest conservation efforts exist, for example in the form of voluntary forest patrols. Voluntary behavior is also evident in some other tasks that community members undertake together such as planting trees to mark forest boundaries or contributing labor for construction and maintenance of village schools. In our field survey, 88 percent of respondents had participated in some collective task within the last three years, indicating the presence of strong social ties in the area. People mentioned having contributing labor, materials and/or cash to build a village school, dispensary, and village government office.

There is great interest in exploring alternate conservation approaches to address forest degradation in the Ulugurus. The Tanzanian government and NGOs have been exploring PES as an instrument to promote landscape conservation in these mountains. Several pilot PES projects are being implemented, including projects that pay people to conserve existing forests and plant new forests to provide carbon sequestration and hydrologic services (Katoomba Group 2007). Discussions are ongoing around the design of appropriate incentive structures under PES that are applicable to collective action settings for forest management under REDD.

4.4. Methods

This study used a survey and experimental methods including a survey-based choice experiment and a field experiment to elicit people's preferences and test their responses to different reward types and levels. The fieldwork began with focus groups exploring traditions of collective action around natural resources and other issues with village elders, schoolteachers and officials. These initial discussions laid the groundwork for a household survey that incorporated a choice

experiment about participation in communal tasks and guided the selection of the task in the field experiment.

Field experiments are increasingly used to understand decision-making in real world settings. Studies of populations of interest in field experiments potentially generate more relevant findings than do studies of a convenience sample of students in laboratory experiments (Harrison and List 2004). Based on the typology of field experiments proposed by Harrison and List (2004), our experiments correspond to the category of a framed field experiment using a nonstandard subject pool and a field context. The task structure of the experiment was designed to embed subjects in the experiment and it resembled closely the collective action situations they face in their daily lives.

Household survey to elicit preferences for group versus individual rewards

In a questionnaire survey respondents were asked what type of reward – individual cash, group cash, or group in-kind rewards – they would prefer in a hypothetical PES-type arrangement in which they would patrol the village forest to protect against fire and illegal logging. This question was asked of 194 respondents randomly selected from a village level listing of households across each of the four villages. The following three hypothetical payment options were offered to the survey respondents:

1. An individual payment of Tshs 2,000 (equivalent to wage for one day of casual work in the village, about US $1.50) for participating for one full day in a forest patrol.
2. No individual payment, but the Tshs 2,000 would be given to the village forest committee to be used for village forests on behalf of the respondent.

3. No individual payment, but investment in village infrastructure (roads, school) would be made on behalf of each participant.

Stated choice experiment: stated pro-social behavior under various reward types and levels

The household survey was also used to launch a choice experiment asking respondents to state their preference for different types and levels of cash and non-cash rewards. The choice experiment asked each respondent whether or not people in their village would participate in a collective task in return for a specific reward that was randomly assigned to the respondent from a list of five different options.

The hypothetical questions in the survey-based choice experiment made use of an inferred valuation method to elicit subjects' preference. This aims to counter the effects of a social desirability bias, which implies that in both real and hypothetical treatments to estimate people's values for public goods, respondents provide answers that they think will please the interviewer or be consistent with societal norms (Fisher 1993, Lusk and Norwood 2009). In general, people have the propensity to misrepresent their "true" preferences out of concern for how they are viewed by others. Inferred valuation entails asking a person how much another person would be willing to pay for a good. In our experimental work we asked whether the respondent's neighbor would be willing to engage in a pro-social behavior under various levels and types of rewards.

The hypothetical collective task involved a half day of work to slash grasses in the village school yard under different levels of cash and non-cash rewards. We designed five treatments representing different rewards:

1. Payment neither mentioned nor offered.
2. Mentioned that no payment would be made.
3. Low individual cash payment (Tshs 200).
4. High individual cash payment (Tshs 1000).
5. No individual payment, but group reward of Tshs 1000 per participant paid to the village school.

Each of the 194 survey respondent was randomly assigned to one of the five treatments, with all treatments conducted in each village. We found no differences in mean age, gender and number of years in school of the subjects assigned to the five treatments.

Field experiment: revealed pro-social behavior under various reward types and levels

A field experiment elicited people's actual decisions when invited to contribute to a communal task under different incentives. The experiment involved asking people to participate in a tree-planting activity in the schoolyard in four villages. The four villages included two where the survey and choice experiment were conducted, and two others. Individuals in each group were each asked to plant at least 4-5 plants. This included carrying the plants from a central location to the planting site, clearing the planting area of grasses and weeds, digging pits one cubic foot, planting the trees and refilling the pits, fetching water from the nearest water source and watering the plants. The activity would last about four hours, a half day of wage work in the area.

We chose tree planting as the experimental activity because it simulates a scenario that is real enough for people to think about contributing to a communal task, but not something that people normally do. So while this activity is good for testing the hypotheses, we were not concerned that it would interfere with people's motivation to participate in communal tasks that they currently perform without pay.

Logistical challenges in Tanzania made it impossible to randomly select participants and we stress that the interesting findings from the field experiments are not the participation rates under each treatment but the variation in exit interview responses by treatment. In most of rural Tanzania, people live in disbursed homesteads rather than clustered together in villages. For many people, going to the village schoolyard to plant trees involves walking a long distance and they would need to be notified earlier than just the previous evening. Notifying people earlier, however, would increase the likelihood that participants are not randomly selected and only those participants who are known to the village leaders who were used to recruit participants get invited. With help from village officials, we recruited 124 people across the four villages to participate in the activity. Each treatment was administered in each of the four villages, making a total of 12 groups. Comparison of mean age, gender, and number of years of school of subjects showed that there were no significant differences across treatment groups, nor were there any strong differences between groups in the field experiment and the groups in the choice experiment described above.

In the experiment we asked people to perform the activity under the following three randomly assigned treatments:

1. Participants would perform the activity on a voluntary basis, with compensation neither mentioned nor offered.
2. Participants would receive an individual cash payment of Tshs 1000 for successfully completing the task.
3. For each participant a payment of Tshs 1000 would be donated to the village school.

Once the subjects arrived at the school, they were randomly allocated to the treatments. The subjects in each treatment were seated in three different classrooms and could not interact with subjects in the other groups. A monitor accompanied each group to the planting site. Three separate experimental scripts were developed that detailed a common task but differed in the nature of reward offered. The script was read to each group in Kiswahili, the local language, and after a five-minute wait during which subjects could decide to participate or drop out, all participants were escorted by the monitor to a planting area in the school yard, which was sufficiently far from the planting areas assigned to the other two groups. The monitor stayed with his assigned group at all times and made sure that there was no inter-group communication. After the subjects declared that their task was over, the monitor escorted the group back to their classroom for individual exit interviews. Each exit interview was conducted privately and consisted of assessing the subject's satisfaction or dissatisfaction with the task and the incentive offered. After the interview, a show-up amount of Tshs 1000 was paid to each subject in every group. The subjects did not know of the show-up payment in advance; it aimed to achieved parity in the actual reward for subjects across all groups and thus avoid any conflicts.

4.5. Results and discussion

Preferences for group versus individual rewards

Responses to the survey question regarding preference for group versus individual rewards reveal that across all villages, respondents have a high preference for an investment in social infrastructure followed by individual cash payments and lastly payments to be shared among the group (Table 4.1). This suggests a high willingness among respondents to contribute to activities that result in collective rather than private benefits.

A high preference for an investment in social infrastructure as a reward for undertaking conservation is not surprising because in rural Tanzania it is common to pool village resources to help finance investments in village infrastructure. The particularly strong preference for public infrastructure as a reward in Kibangile and Ngongolo may be because these two villages are remotely located and lacking in infrastructure compared to the other two villages. The low preference for group-cash rewards to village forest protection committees probably reflects the low trust the people have in the abilities of these institutions. Focus group discussions in the study villages reveal that there are issues of local corruption and misuse of monies in at least three of the four study villages.

Stated choice experiment: stated pro-social behavior under various types and levels of reward

Table 4.2 presents the results of the stated choice experiment. For all treatments the majority of respondents indicated that their neighbor would participate in the communal work to maintain the village schoolyard. The response was highest at 97% in treatment 4 (high individual cash

payment equivalent to the prorated daily wage), and lowest in treatment 3 (low individual cash payment of about 20% of the prorated daily wage) at 64%. The positive response rate for treatment 1, with payment neither mentioned nor offered, is 82%. Treatment 1 is akin to what Heyman and Ariely (2004) call a social market situation and the subject's statement that his neighbor would be willing to participate can be interpreted as being driven by either altruistic motives or norms toward participation in collective tasks of social importance.

We used the non-parametric Mann-Whitney paired comparison test (Ott and Longnecker 2001) to compare the fraction of subjects across treatments agreeing to participate in the communal task. Two findings stand out. One is that the positive response rate with a high individual payment is statistically different from that in all other treatments, as shown in table 4.2. This indicates that participants in this experiment respond to monetary incentives, consistent with the rational utility maximization paradigm guiding PES. The other is that the positive response rate for a low payment is statistically significantly lower than when payment is neither mentioned nor offered. This finding is consistent with that of Gneezy and Rustichini (2000a) that low payments reduce effort relative to no payment, and with that of Heyman and Ariely (2004) that the introduction of payment changes people's mindset from operating in a "social market" to a "monetary market."

In treatment 5, where a social cash payment was offered in the form of a payment to the school, 76% of the subjects said that their neighbor would be willing to participate in the collective task. The response rates with the social reward are not statistically different from response rates in treatments 1 (82%) and 2 (74%), in which no payment was offered. This indicates that the

charity option has neither the positive effect of the high individual payment nor the negative effect of the low individual payment.

Field experiment: revealed pro-social behavior under various incentive types and levels

The results from the field experiment exhibit no variation in contribution levels across the three treatments. All 124 subjects decided to participate in the activity regardless of the absence or presence of an individual cash incentive or a social reward (Table 4.3). First, as mentioned above, there is reason to suspect that village officials may have recruited people whom they might expect to participate. Second, the long distance to school implies a huge sunk cost just to show up, in which case a subject might as well participate in the activity regardless of the incentive. Third, participation is consistent with the existence of a strong social norm for participation in communal tasks. And fourth, 100% participation rates could result from peer pressure or what Gachter and Fehr (1999) call an "expectation of social approval." The field experiment was set up to measure individuals' revealed behavior in a public situation. Therefore, not only did subjects know each other very well but it was possible for everyone to observe everyone else's contribution. This public setting likely triggered the subjects' desire to gain social approval and to be seen doing the right thing by people they know, and it might have motivated them to participate in the activity irrespective of the level of extrinsic rewards offered.

As mentioned above, the interesting findings from the field experiment come from the exit interviews, which revealed large differences in subjects' satisfaction levels across the three groups despite universally high participation in communal task. Table 4.4 shows that despite universal participation, subjects had very different opinions about their experience across

treatments. Subjects in treatment 1 (no individual payment) and treatment 3 (no individual cash payment but a donation to village school) had a high degree of satisfaction with the task performed and the payment offered. 90% of the subjects in treatment 1 and 86% of the subjects in treatment 3 stated that they were "happy" or "very happy" about the task. Many subjects in both treatments 1 and 3 also remarked that given a chance, they would gladly do this kind of activity again. However, only 43% of the subjects in treatment 2 (individual payment) stated that they felt happy, with the remainder saying that they were not satisfied or unhappy with the payment offered and grumbled that it was low for the amount of work they did (even though it was commensurate with the local market wage for casual work). These findings support the motivation crowding-out effect of monetary rewards as suggested by Deci (1971) and others. This result is similar to that in the choice experiment where the low payment offer yielded a significantly lower expression of willingness to participate than the no-payment offer.

4.6. Conclusion: implications for PES

The literature on PES makes a strong case for compensating farmers to conserve fragile ecosystems where they bear opportunity costs from doing so (e.g. Pagiola and Platais 2002, Wunder 2005). Where conservation comes at the expense of livelihood, it is understandable if livelihood receives priority, and the logic of raising the value of conservation to be economically competitive is sound. However, this paper has shown that the equation is more complicated due to the potentially ambiguous effects of monetary incentives on the kind of pro-social, collective behavior that often will be required in group-based PES. Further, it has shown that cash payments may not be the preferred incentive for motivating conservation behavior. These findings suggest the need for great care in designing incentives in PES.

As discussed above, despite environmental degradation in the study area, there is at least some evidence of social norms for environmental protection, in particular the voluntary forest patrols in which people participate. Thus in such a scenario, where people undertake collective action for environmental protection, it is important not to design incentive-based conservation programs that may undermine existing pro-conservation motivations people have for engaging in this work. Moreover, when funding for PES projects runs out (as would be the case for many publicly financed programs), there is a fear that if people become accustomed to payment they might stop conservation efforts altogether or demand to be paid for activities that they already undertake voluntarily. Conservation planners in Tanzania already express concern about this issues (Pers. Communication, Director, Eastern Arc Mountain Conservation Endowment Fund).

Interestingly, however, our results also suggest that payments will not necessarily have adverse impact on pro-social behavior in the presence of pre-existing norms favoring collective action among group members. In the choice experiment, the positive response was highest when a high payment was offered. In the field experiment, even though subjects grumbled about the payment they had received for planting trees in the school yard, they still went ahead and contributed the same level of effort as those who were not offered any payments. Going back to our original quest, these results suggest that the two dominant paradigms of individual rationality and social utility may both need some fine tuning to capture the complexity in human behavior. Payments may undermine the satisfaction that individuals derive from pro-social behavior, but in the presence of strong norms, they may just become embedded in the social approval incentives that

exist among group members. If as in this case there is a social norm in favor of participation in communal tasks, the desire for social approval may tip the scale in that direction.

Another important result is that payments can have non-monotonic effects on cooperation behavior. A trivial payment can significantly reduce willingness to cooperate, even below the level when the payments are mentioned but not provided (table 4.2). Even though PES theory stresses the need for payments to cover opportunity costs, in practice payments in some PES schemes may be lower than opportunity costs. Kosoy *et al.* (2007) document such cases but suggest that with the right design they can contribute to other counterbalancing measures, for example designing improved institutional arrangements for cooperation. Our research supports the importance of arrangements that strengthen social norms of cooperation, but suggests risks in tying them to low monetary payments.

Finally, the survey yielded a strong preference for group-level, in-kind rewards for environmental services but a very low preference for group-level cash payments, and the choice experiment revealed a statistically significantly lower preference for a cash payment to the school than for individual cash payments of the same value. The low preference for cash payments made to local institutions such as forest protection committees or the school reflect respondents' lack of confidence in these institutions and concerns about misuse of funds. On the other hand, there appears to be a stronger preference for group-based in-kind rewards. Heyman and Ariely (2004) found that responses to in-kind payments were not susceptible to the same potentially perverse outcomes as cash payments, whereby a low payment could yield a reduced level of effort compared to no payment. Similarly, Mellstrom and Johannesson (2008) found

that alternative reward types could counteract the tendency of cash incentives to crowd out intrinsic motivation. Kerr and Vardhan (2010) argue that in-kind payments can have favorable properties for promoting collective action, and they discuss ways to also make them consistent with conditionality. All of this suggests potential benefits in using in-kind rewards in group-based PES, especially since individual cash payments are not likely to be feasible in group-based PES due to high transaction costs.

The importance of social norms and social approval incentives in driving participation in communal tasks suggests value in designing conservation programs in ways that strengthen social norms and intrinsic motivations. This is not to suggest a return to the days of Integrated Conservation and Development Projects (ICDPs), which according to Brandon (1999) tended to rely on social norms and local institutions that in fact often did not exist, and relied on incentive structures that were not clearly linked to conservation (Ferraro 2001). The failure of ICDPs led to the emergence of PES. In its emphasis on conditional incentives and the importance of not relying on unfavorable social norms and institutional arrangements, PES appears to have neglected the potential benefits from developing social norms and intrinsic motivations that could work in favor of conservation. A logical next step is to work toward approaches that incorporate all of these potentially favorable components while avoiding possible perverse responses to monetary incentives. Recent literature has begun to address these issues (Reeson, 2008; van Noordwijk *et al.*, 2010) and it is likely to remain an area ripe for testing new ideas.

Appendices

Table 4.1: Village-wise preferences for group versus individual rewards for hypothetical work to patrol village forests (percentage of respondents)[†]

Village	Individual cash	Group cash	Social infrastructure	Other suggestions[‡]
Gwata	32.5	15	52.5	2.5
Kibangile	8.5	15.3	76.3	0
Muhungamkola	37.8	16.2	43.2	2.7
Ngongolo	24.6	1.8	68.4	5.2
Total (all villages)	23.6	11.2	62.8	2.5

[†]Source: authors' survey, 2009, n=194

[‡]Other suggestions was an open-ended response category.

Table 4.2: Results of stated choice experiment about participation in communal work to maintain the village school yard under various types and levels of reward[†]

Treatments	Willing to participate[‡]
1. Payment neither mentioned nor offered; n=39	32 (82%)
2. Mention that no payment will be made; n=39	29 (74%)
3. Individual payment of Tshs 200; n=39	25 (64%)
4. Individual payment of Tshs 1000; n=39	38 (97%)
5. No individual payment but Tshs 1000 for each participating individual awarded to the village school; n=38	29 (76%)
Hypothesis tests (*p*-value of difference)[§]	
Treatments 1 and 3	0.076
Treatments 4 and 1	0.026
Treatments 4 and 2	0.004
Treatments 4 and 3	0.000
Treatments 4 and 5	0.006

[†]Source: authors' survey, 2009. Total n=194

[‡]Chi-square = 13.96, 4 df, statistically significant at 1%.

[§]Comparisons between categories use the Mann-Whitney test. Only cases statistically significant at 10% probability or less are displayed

Table 4.3: Results of field experiment about participation in communal work to plant trees in village school yard under various types and levels of reward

		Treatments	
	1. No individual payment offered	2. Individual cash payment 1000 Tshs	3. Social payment to school
Number of subjects in the treatment	40	42	42
Number and % of subjects completing the task	40 (100%)	42 (100%)	42 (100%)

N=124, Source: authors' field experiments, 2009.

Table 4.4: Summary of exit interview responses under various treatments in the field experiment[†]

Treatment	Response to task under different payments[‡]	
	Happy or very happy	Unhappy
1. No individual payment	36 (90%)	4 (10%)
2. Individual cash payment	18 (43%)	24 (57%)
3. Social payment to the school	36 (86%)	6 (14%)
Hypothesis tests (*p*-value of difference)[§]		
Treatments 1 and 2	.000	
Treatments 1 and 3	.000	

[†]Source: authors' exit interview with field experiment subjects. Total N = 124

[‡]Chi-square = 28.16, 2 df (statistically significant at 1%).

[§]Treatments 1 and 3 are both statistically different from treatment 2 at 1% using the Mann-Whitney test.

Table 4.5: Record form for participants of field experiments

Part I

1. Group no_____ 2. Form number_____

3. Name_____

4. Gender (M/F)_____ 5. Age_____

6. Education status

(i). No schooling _____(ii) Primary School_____ (iii). Secondary school____

Part II

1. How many trees did you plant? _____

2. Compared to others in the group, how would you judge your performance?
   (i). I worked harder than others_____
   (ii). I worked just as hard as others _____
   (iii). I worked less hard than others _____

3. Were you satisfied with the payment offered in your group?
   (i). Completely satisfied _____
   (ii). Just satisfied _____
   (iii). Not satisfied _____

4. Why did you complete or not complete the activity?

_____

Table 4.6: Script for the experiment

Habari zenu!

Thank you all for coming today.

We have done a research in this village about environment protection. In this research, the people of this village have shown interest to plant trees to improve the village environment. People of this village have identified tree planting in the school-yard as an important activity.

You have been invited to plant trees in the school-yard. The tree planting activity will last for one hour only. We have three trees for each person. If you decide to plant trees, each one of you, can plant these three trees in one hour. Your decision to plant trees is completely voluntary. You can decide to leave the activity at any point in time and return to your home.

If you decide to participate in the tree planting activity today,

1. None of you will receive any payment.
2. You will each receive TSHs 1000 for one hour of work.
3. There will be no individual payments for any of you. Instead, TSHs 1000 for every person who participates in the activity will be contributed to the school for maintaining the classrooms.

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