Polycentric Governance and Social-Ecological Performance of Community Resource Management Areas in Ghana

by

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BSc., Kwame Nkrumah University of Science and Technology, 1987
MSc., International Institute for Aerospace Survey and Earth Sciences, 2000

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Supervisory Committee

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Abstract

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Biodiversity secures long term flows of benefits from nature by providing resilience to disturbance and environmental change. Nevertheless, climate change, fragmentation and habitat destruction among other anthropogenic drivers, are inadvertently, causing continued decline of global biodiversity, at a rate that is 100-1000 times more than what can be considered as natural, sending it virtually to the brink. Protected Areas (PAs) remain the core strategy for biodiversity conservation, but they have been challenged for "denying" local communities, the flow of their bona fide benefits and contributing to rural poverty, and compromising conservation as a result. Community Based Natural Resources Governance (CBNRG) responds to the challenge, but the challenge is exacerbated by the fact that a broad array of desired outcomes as well as a large range of unlinked and uncoordinated nodes of governance (actors) across multiple scales are involved in governance within the same social-ecological system. These result in failure to achieve desired conservation and development related outcomes.

Furthermore, many assessments of conservation and development outcomes have often concentrated on perceived outcomes, without much attention to the desired outcomes of actors. Additionally, many studies do not investigate variability between the desired and perceived outcomes of different actors in different CBNRG systems, and within the same CBNRG system. This masks differences among actors across and within CBNRG systems and makes it difficult to gauge governance effectiveness, and probably leads to incomplete assessments CBNRG systems, and simplistic conclusions that can affect the long term credibility of CBNRG.

This dissertation contributes to the discussions by focusing on five Community Resource Management Areas (CREMAs) in Ghana to address challenges of governance and social-ecological performance through analysis of the governance structure related to CREMAs at the local, district and regional levels. It assesses how the governance system encounters the issue of fragmentation, the problems associated with conservation and development, and weaknesses associated with measuring the viability of CBNRG systems

Data was collected through multiple methods. Document analysis and interviews were conducted to facilitate design of a survey, administered to 929 respondents across the five CREMAs. Three workshops that engaged a total of 50 participants were also conducted. Findings of the study are organized in three chapters (papers). Chapter One suggests that the form and content of multi actor linkages as presently constructed in Ghana have gaps and weaknesses such as *inter alia,* inadequate funding and attention to conservation and development as a distinct project. Therefore in its current configuration, CREMAs cannot achieve a balance between conservation and development. Chapter Two shows that based on a mix of factors that mediate CBNRG, significant variability in desired and perceived outcomes of actors can exist between and within different CBNRG systems. Chapter Three points to variability in the ratings of outcomes among actors in different communities within the same CBNRG system. Consequently, it is important that CBNRG considers the specific conservation and development perspectives of actors in different contexts, in order to customize Community Based Natural Resources Management strategies.

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Acknowledgments

One morning, while I was walking to my office in the Forestry commission, Mr. John Mason accosted me with a question: “Andrew would you like to do a PhD?” I wondered for a moment and responded: “Why not? If I get the opportunity.” “If you are interested,” he continued, “I will send you some documents to read and nominate you for a programme under the auspices of the Protected Area and Poverty Reduction Project”. What started like a “joke” has become reality. Many thanks, John, for that invaluable nomination and the confidence that you have shown in me.

The admission procedure came with its own challenges. First, I received a conditional offer of admission pending a successful completion of a Test of English as a Foreign Language (TOEFL). I took the test and did not make the “requisite grade”. Due to operational problems at the first center, I took the test again at a different center, and received an excellent grade, but this is where my first challenge emerged. Probably, someone at the graduate admission and records office of the University of Victoria could not reconcile the two headshots of me, taken at the two different TOEFL test centres. Consequently, I was accused of some misdeed, and my conditional offer of admission got severely threatened. I made my case with a copy of the headshot in my passport. Ultimately, the threat was dropped, and an unconditional admission was offered to me, but not before I had taken the test again and obtained the qualifying grade. Nonetheless, during those trying moments, Dr. Rollins stood by me. I learn that Dr. Dearden also did whatever possible, to get the two headshots reconciled. Ms. Jennifer Schofield and Madam Darlene Li also worked very hard for me. I am grateful to you all and everybody who helped.

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Andrew Kyei Agyare.

Chapter 1

Introduction

1.1 General Introduction to the Study

Biodiversity is essential to society. It also secures long term flows of benefits from nature by providing resilience to disturbance and environmental change (Rands et al., 2010). However, anthropogenic drivers such as over exploitation of species, introduction and invasion of alien species, pollution, climate change, degradation, fragmentation and destruction of habitat are causing unintended and continuing decline of the earth's biodiversity at a rate that is 100 to 1000 times more than what can be considered natural, sending it virtually to a tipping point (Rockstrom et al., 2009; Rands et al., 2010; Butchart et al., 2010; Young, 2012). Currently, conservation of terrestrial biodiversity is confined to fragmented patches (e.g. national parks) separated by expanding agricultural production, infrastructure and residential and industrial developments (Rands et al., 2010). In 2002, world leaders committed to achieving a significant reduction in the rates, of biodiversity loss by 2010. Nevertheless, a review of the state of biodiversity shows no reductions in declining rates over the past four decades, whereas indicators of pressures on biodiversity continue to show increases (Butchart et al., 2010).

Protected Areas (PAs) are a main tool, for biodiversity conservation, but current PA networks have considerable gaps (Rands et al., 2010). Therefore, the 2010 Nagoya conference of the Convention on Biodiversity 2010 set a target of 17% of terrestrial areas and inland waters to be set aside as PAs by 2020 (Noss et al., 2012). Achieving this target, which some argue is insufficient (Butchart et al., 2010), is a difficult enterprise. PAs have been criticized in many regions, particularly in the developing world, for alienating local communities and contributing to rural poverty and, in some cases, compromising conservation as a result (Adams et al., 2004; Hutton et al., 2005; Adams and Hutton, 2007). Despite the weaknesses of PAs, they remain the core element of biodiversity.

One example of such difficulties is the Kyabobo National Park that was officially declared a protected area in the northern part of the Volta Region of Ghana in 1993, to conserve representative samples of the montane forest biodiversity of the Kyabobo mountain range. Since its "acquisition" there have been five amendments to the boundary line due to protests by some communities, necessitating shifts in the boundary alignment. The protests generated antagonism within some of the local communities, leading to the ambush and murder of two field staff in 2005. The last boundary realignment was in 1999, and although these boundary realignments compromise the ecological integrity of the PA, the process of concluding its establishment with a legislative Instrument by the Parliament of the Republic of Ghana is yet to be achieved.

There are many such examples, and given the development pressures around PAs and the importance of meeting the livelihood needs of local people, there is a growing, and at the same time contested (for fear that development may hasten rather than prevent the destruction of biodiversity) belief among both conservationists and development practitioners that conservation and development should go hand in hand (Oates, J.F, 1995; Kellert et al., 2000; Schwartzman et al., 2000; Dearden, 2002; Baird and Dearden 2003; Roe and Elliot, 2004; Sunderland et al., 2008; Zimmerer, 2006).

In Ghana and elsewhere, conservation and development practitioners face the challenge of forging a balance between conservation and development (Koziell and McNeill, 2002). A growing literature on Community Based Natural Resource Governance (CBNRG) has focused on how the challenge of balancing conservation and development can potentially be addressed, for example by engaging local communities more effectively in the management of natural resources, or linking them effectively to other *nodes of governance* (Lea. M. Scherl et al., 2004; Jentoft and Chuenpagdee, 2009; Lepper and Goebel, 2010; Sheppard, D. J. et al., 2010; Rands et al., 2010).

In keeping with current thinking, one of the strategies in Ghana to balance conservation and development toward achieving the global target of PA coverage is through the establishment of Community Resource Management Areas (CREMAs). However, in Ghana and elsewhere, balancing conservation and development is made more challenging by the fact that, a broad range of desired outcomes (i.e. those related to conservation and development), as well as a large range of nodes of governance (actors)

across multiple scales (e.g. local, district and regional) are involved (Robinson et al., 2010). These nodes do not necessarily function in a coordinated and effective manner, resulting in functional fragmentation and failure to achieve desired conservation and development related outcomes. (Hoon, 2004; Young, 2012; http://www.iasc-commons.org). In other words, gaps remain in designing and implementing appropriate *linkages* among local, district, and regional nodes of governance that result in positive social-ecological outcomes. Achieving "Polycentric" governance (where nodes are effectively linked) may help to accommodate the diverse range of actors, and improve outcomes through the development and coordination of systems involving different nodes (Gregory et al. 2005; von Braun, 2009).

Assessments of outcomes have also often concentrated on *perceived* outcomes of stakeholders (Berkes, 2007) without much attention to the *desired* outcomes of stakeholders. However, assessing perceived and desired outcomes separately is not effective in gauging whether or not CBNRG is delivering on desired outcomes (Barrett et al., 2001; Abalo et al., 2007; Ziegler et al., 2011). Assessing both the desired and perceived outcomes in the same study has so far found limited application in CBNRG, due perhaps, to inadequate familiarity with the tools for such assessments (Wade and Eagles 2003). This study adopts the Importance–Satisfaction (IP) analysis approach to address this issue.

A related issue is the *variability* in terms of both desired and perceived outcomes at the PA and community levels. Studies on CBNRG often do not address differences between CBNRG systems within the same national system, or the differences in perceptions among individual communities involved in CBNRG systems. This can create or reinforce the unfortunate impression that local communities are homogeneous collectives with similar values and expectations (Gibson and Koontz, 1998; Brosius et al., 1998; Agrawal and Gibson, 1999; Belsky, 1999), rather than seeing communities as aggregates of diverse ethnic groups in many cases, with variable interests, who are adapted to the unique socio economic, cultural and ecological dynamics that shape their value orientations (Lockwood, 2005). The unique socio economic, cultural and ecological dynamics and value orientations of local communities lead to questions about differences in terms of desired and perceived outcomes among actors, the factors that create these

differences, and the often sidestepped issue of who is gaining and who is losing when decisions are made (Gibson and Koontz 1998; Barrett et al., 2001; Randall and Rollins; 2009; Vaske et al., 2009).

In short, without a better understanding of the wide range of desired outcomes, the large array of nodes of governance at multiple scales and the linkages between them, the relationships between desired and perceived outcomes, and the variability among systems and communities, general assessments of CBNRG systems may be incomplete, and may even damage the long term credibility of CBNRG (Gibson and Koontz, 1998; Vaske et al., 2009).

1.1.1 Study Objectives

This study addresses these challenges of governance and social-ecological outcomes with a focus on five Community Resource Management Areas (CREMAs) across different landscapes in Ghana.[1]Four specific objectives include:

1. To examine the governance system in Ghana in regard to CREMAs at the regional, district and local levels, including *institutions*, important actors (centers of power), and the multiple, cross-scale linkages between them (or lack thereof).
2. To characterize the desired and perceived outcomes of CREMAs, the relationships between them, and the relationship of those outcomes to the governance system.
3. To assess variability in desired and perceived outcomes both between different CREMAs and between communities within the same CREMA, and
4. To make recommendations for improved governance.

1.1.2. Summary of the Contents of this Dissertation

This dissertation provides three related but separate studies relevant to governance and outcomes of CREMAs in Ghana. The three studies have been organized in three discrete chapters and the dissertation is organized in five chapters. Chapter One provides a general overview of the study, discusses the problem, the purpose of the study, the

[1]This research is nested within the Protected Areas and Poverty Reduction (PAPR) Project PAPR which seeks to address challenges of reducing rural poverty and ensuring environmental sustainability by focusing on protected areas governance, human wildlife interactions, cost and benefits of living in and around protected areas and knowledge mobilization in Ghana, Tanzania and Canada

concepts employed, describes the study sites, outlines data gathering methods and analysis, and presents the structure of the thesis.

Chapters Two through Four discuss the major aspects of the research and are structured as manuscripts intended for journal publication. Accordingly, each has a separate introduction with literature review, study sites description, methods, results, discussion, (the results and discussion are merged in Chapter Two) and conclusions and recommendations (in some cases). Chapter Two is entitled "Polycentric Governance and the Performance of Community Based Natural Resources Management in Ghana: Assessing Structures, Effectiveness and Outcomes." The chapter argues that, the form and content of multi actor linkages as presently structured have gaps and weaknesses such as inadequate nodes in the CEC, weak links between CREMAs and the DMTDP, gaps and weak horizontal linkages among the Departments of District Assemblies inadequate funding, and a lack of attention to conservation and development as a distinct project. It suggests that polycentric governance could be the key to achieving a balance between conservation and development in Ghana.

Chapter Three is entitled "Variability in Desired and Perceived Outcomes of Community Based Natural Resources Governance in Ghana." This Chapter observes that statistically significant differences exist between CBNRG systems within the same national system in terms of desired and perceived outcomes of actors, and their conservation and development perspectives. Consequently, it is important that CBNRG considers the specific conservation and development perspectives of actors in different contexts in order to customize CBNRM strategies.

The fourth chapter is a case study and is entitled "Perceived Social-Ecological Performance of Avu Lagoon CREMA Governance: Do Constituent Communities Differ?" The Chapter shows that among communities within the same governance system (CREMA), significant variability can exist both in desired and perceived outcomes and in the gaps between them. It suggests that in general terms, communities exhibit higher variability with respect to perceived outcomes, and lower variability with respect to desired outcomes. Therefore, deeper assessments and better understanding of the relationships between desired and perceived outcomes and the variability between

communities can help to address the challenges of community based natural resource governance.

- Chapter Five provides an overview of findings, summarizes recommendations that have been made, and suggests areas for further research. This chapter encapsulates six central points in regard to contribution to the concept of CBNRG. For example, the chapter sums up that, a broad range of actors are involved in community based natural resources governance across multiple scales, but who do not necessarily function in a coordinated and effective manner. Hence, gaps remain in designing and implementing CBNRG system leading to functional fragmentation and inability to achieve desire outcomes. Studies and evaluation of CBNRG systems need to examine linkages at the same scale (horizontal) and between scales (vertical). It anchors the point that, effective CBNRG systems require that conservation and development are treated as a cross cutting enterprise in national institutions of governance. Therefore, to balance conservation and development, important nodes of governance for governance effectiveness should include both conservation and development actors. This chapter provides some methodological insights as well.

1.2 Explanation of Key Constructs in this Dissertation

This section discusses nine key constructs that have been employed in this study. They include: governance; independent nodes of governance; linkages; institutions; polycentricity; development; Community Based Natural Resource Governance (CBRNG), outcomes and land tenure system. These concepts help to illuminate the viability or otherwise of the prevailing governance system for balancing conservation and development.

Governance

Governance refers to "the interactions among structures, processes and traditions that determine how power and responsibilities are exercised, how decisions are taken, and how citizens or other stakeholders have their say." It is a social function involving the establishment and administration of rights, rules and decision-making procedures to direct social-ecological systems along pathways that are collectively desirable. It is

designed to *inter alia*, generate social capital needed to solve a variety of collective-action problems (Graham et al., 2003; Delmas and Young, 2009; Young, 2012).

Independent nodes of governance

Independent nodes of governance are different actors or organizations across and within local, district and regional levels that make natural resources management decisions within the same social-ecological system (McGinnis, 2005; Dedeurwaerdere, 2005; Provan and Kenis, 2007).

Linkages

Linkages are direct interactive social networks that mediate the relationships between otherwise independent nodes of governance through contractual and cooperative undertakings to provide information and resources related to conservation and development (Salafsky and Wollenberg, 2000; Adger et al., 2005; Naughton-Treves et al., 2005; and McGinnis, 2005)). Linkages can be described as vertical (between scales), horizontal (at the same scale), cooperative and/or interactive (when the independent actors consult each other or take into consideration what each other does) (Jentoft and Chuenpagdee, 2009). Some authors have pointed to the importance of institutions that facilitate linkages between the different nodes of governance for a long-term management and coordination of human–environment interactions **(**Dietz et al., 2003; Ostrom and Nagendra, 2006; Young, 2013**).**

Institutions

Institutions are a system of rights, rules, decision-making procedures, and programmes that give rise to social practices, assign roles to nodes of governance and guide interactions among the actors of the relevant nodes (Young, 2005). In their most generic form institutions provide regularities, reduce uncertainties, and shape the interactions of nodes of governance by creating an enabling or controlling environment needed to facilitate legitimate and effective governance (Kooiman et al., 2005; Chuenpagdee and Song, 2012).

Polycentricity

"Polycentric" connotes situations when multiple centers of decision making that are formally independent of each other, take each other into account through various contractual and cooperative undertakings or have recourse to central mechanisms to resolve conflicts (McGinnis, 2005; Dedeurwaerdere, 2005; Provan and Kenis, 2007). In other words, there are linkages between them. These linkages result in the distribution of management powers and resources among interacting nodes of governance that operate at different levels (Chapin III et al., 2009). Polycentric governance is crucial to effective management because in times of budget shortfalls or shifting priorities for example, the overlapping activities of other nodes can sustain actions. However, effective governance requires effective leadership to provide vision, functional and social cohesion, and action, reconceptualising issues to reflect real time, generating ideas and solutions and communicating across levels of governance (Chapin III et al., 2009).

Development

Development largely refers to livelihood, making a living, meeting needs, coping with uncertainties and responding to opportunities (Salafsky and Wollenberg, 2000). It also relates to stocks and flows of food and cash to meet basic needs and security, as well as secure ownership of, or access to, resources and income generating activities to offset risk, ease shocks and to meet contingencies (Chambers, 1988). Furthermore, development is a process by which households construct a diverse portfolio of activities and social support capabilities such as activities, assets and the access that jointly determine the living gained by an individual or households for survival, in order to improve their standard of living (Ellis, 1999). Access to, and the flow of these assets, attests to governance effectiveness, and demonstrates the ability of CBNRG systems to achieve desired outcomes (Jones, 2000).

Community based natural resource governance

The primary purpose of Community Based Natural Resources Governance (CBNRG) is conservation of biodiversity within traditional land use systems through polycentric governance to balance conservation and development. Conservation refers to the management of human use of organisms or ecosystems to ensure sustainable use of

natural resources. It includes; (a) protection; (b) maintenance; (c) rehabilitation; (d) restoration; and (e) enhancement of populations and ecosystems (Jones, 2004a). These are important in sustaining ecosystem processes that lead to production of ecological goods and services and other life support systems. Therefore, conservation of biodiversity must be a central focus of CBNRG.

Community based natural resource governance concept revolves around empowered communal systems of resource management that entails natural resource management activities on land(s) belonging to a community, clan or individuals, acting alone or in concert with others for the purpose of managing natural resources, primarily, for their own direct benefits (Muphree, 1994; Jones 2004). The concept seeks to ensure involvement of local communities in governance to generate desirable conservation outcomes that advance rural development (Muphree, 1994; Jones 2004). Involvement of local actors in biodiversity conservation in ways that support their livelihoods increases the likelihood of compliance with governance institutions (Chapin III et al., 2009). Therefore, CBNRG aims to devolve governing functions and systems to local communities to ensure collective community decision making in close proximity to the problem, and to reach out to other actors at multiple scales, to deal with the conservation and development problems with which communities may be grappling (Kellert et al., 2000; Jones, 2004; Senyk J, 2005: Baliant and Mashinya 2005; Tacconi, 2007; Lepper and Goebel, 2010). Embedded in local institutions, community demands, and other social-ecological and welfare considerations, CBNRG responds better to the challenges of balancing conservation and development than centralized initiatives from afar (Murphree, 2005; Jentoft and Chuenpagdee, 2009).While CBNRG is, by definition, local people centred, it can be initiated by the actors themselves or it can be initiated through outside intervention such as by Governmental and Non Governmental Organisations (NGO). Either way, the role of external agent/experts in providing technical expertise, logistical and networking and other related supports is imperative in assuring positive impacts (Marks, 2001). The role of external agents should be determined by: (a) the community demands and other social-ecological and welfare considerations relevant to the underlying principles and philosophies of CBNRM; and (b) financial, technical, administrative and logistical support needed by the community (local actors) (Murphree, 2005).

Outcomes

In order to understand the role and effectiveness of a governance system, it is also necessary to consider the range of outcomes that a governance system is intended to produce. This study focuses on desired and perceived outcomes. Desired outcomes are long term views or objectives that people consider as important and would like to be achieved. These may be related to present use or opportunities for future uses (Lockwood, 2005). On the other hand, perceived outcomes are those that, in the estimation of actors, have been achieved. Both desired and perceived outcomes include a diverse portfolio of activities and factors that include: socioeconomic, ecosystem goods and services; ecological conservation; and provisioning services factors.

Socioeconomic factors examined in this study include increased income; capacity building in income generating enterprises; collective community action and unity. Ecosystem goods and services factors include native wildlife return; more and better quality traditional medicines; more and better quality grass. Ecological conservation factors include better farmland and increased food production; reduced bushfires; and ecologically sensitive areas being protected and well managed. Provisioning services factors include bushmeat, fish, improved supply of firewood and charcoal; and others that jointly determine whether conservation and development are balancing out (Chapter Three; Ellis, 1999).

1.3 Study Site Descriptions

1.3.1 Ghana's Parallel Governance Structure

In order to understand the role of governance in conservation and development in Ghana, it is important to know that Ghana runs a parallel system of governance. The parallel system involves the traditional system (informal) and the statist system (formal).

The traditional system of governance centres on chieftaincy which has a very elaborate hierarchical structure that encompasses a number of levels depending on which part of the country one is looking at. Fundamentally, there are four to five levels of traditional governance system including the paramouncy (headed by a paramount chief) which is the highest level in many cases, except in Asante where a King administers at

the highest level. A paramouncy is divided into many divisions each of which is headed by a divisional chief, followed by a number of local chiefs at each of the many constituent local community levels within each division. In some cases, a local chief may also have sub chiefs within his area of jurisdiction. In this context, the traditional system of administration is mostly about land management with delegated authority running down from the paramouncy through to the sub chief level. In other words, the sub chiefs govern land under their jurisdiction for and on behalf of the chief at the immediate higher level and are therefore, answerable or accountable to him. The chief also governs land for and on behalf of the divisional chief, and this arrangement continues up to the paramouncy level or to the kingdom level as the case may be.

In Ghana, lands are owned by stools and skins (discussed in more detail below) that are occupied by the chiefs at different levels but mostly by paramount or divisional chiefs. In other areas, such as in the Volta Region in particular, lands are owned by clans and individual families. Paramount chiefs within each of the ten regions of Ghana form the ten regional houses of chiefs. Above the regional houses of chiefs, there is a national house of chiefs that constitute a very powerful force in the governance of lands and general development of Ghana. In theory, the state does not own land except that which has been appropriated by law and adequately recompensed (e.g. national parks and other areas for national development). Consequently, no land can be taken for any purpose by the state or any agency without recourse to the appropriate stool, skin, family or clan who has allodial tile to the land. Additionally, chiefs form the basis for all local development at the social-ecological production (local) level. Therefore, a CREMA cannot be established anywhere without prior consultation, the support, and cooperation of the relevant chief. Chiefs also play important roles in the district development planning system through consultations and engagement with the district assemblies (District Planning Coordinating Unit). Thus, they play very critical roles in the governance system right from the local through the district to the national level. They can therefore leverage particular conservation and development activities for their various communities and can consequently affect variability in the value orientation of local communities and governance performance (perceived outcomes). This is because communities generally show a lot of respect for the views of chiefs and may side with their (chiefs) inclinations.

The statist system of governance focuses on decentralization that is administered at several nodes from the national through regional, district to the local through legislation, delegation and devolution of function. The District Assembly serves as the pivot of development and exercises political and administrative authority within the district. The district assemblies have sub structures from urban/zonal councils through town/area councils to the unit committee level as the lowest arm of formal administration. Among other functions, the unit committee mobilizes and monitors members of the unit to implement self help and development projects and make recommendations to the district assembly where necessary (Chapter Two). Tensions may arise between the formal (unit committee) and the informal (traditional structure) systems at the local level of operation where proper consultation with the traditional authority is not done. There is therefore, a critical need for collaboration between the formal and informal systems of governance in attempts to achieve a balance between conservation and development

1.3.2 Ghanaian Conservation and CREMAs

In Ghana, the main objective of wildlife conservation outside of protected areas is to protect wild animals and regulate their human use through restrictions and acquisition of licenses to hunt, trade in, or export any wild animals and flora within and from Ghana. By and large, the strategy is preservationist and "criminalizes" utilization without license (Wildlife Conservation Regulations 1971, L.I. 685; Ayivor et al., 2013).

The regulatory and prohibitive measures coupled with drought, bushfires, food shortages and the general economic hardships of the 1980s created public alienation to the extent that public support diminished greatly, and poaching was rampant both outside of PAs and on many reserves. Additionally, over-exploitation by concessionaires, illegal felling, and extraction of fuelwood among other practices became widespread **(**Wildlife Development Plan 1996-2020).

To counter these challenges, major institutional, policy and governance reforms were required in order to ensure improved and enduring forms of social organization, establish legal frameworks and enforcement mechanisms, manage public alienation from previous conservation efforts, and move more toward a balance between conservation and development **(**Wildlife Development Plan 1996-2020). One of the products of the reforms was formulation of the Community Resource Management Area

(CREMA) concept **(**Wildlife Development Plan 1996-2020). The concept has received policy approval by the Cabinet of the Government of Ghana, and a new supportive legislation is pending parliamentary approval (Asare et al., 2013). Currently, CREMAs operate at the approval of the Minister responsible for wildlife as provided for under article 1(1) of the Wildlife Preservation Act 1961 ACT 43.

The CREMA concept aims at strengthening local governance capacity and enabling engagement with other actors at multiple scales to articulate local interests and aspirations with the aim of achieving linked conservation and development as a key goal. The concept is modeled around the local land tenure systems which are at the core of decision-making around lands in Ghana. This is because different families, clans, stools and skins and tindanas [2] across Ghana hold the allodial titles to land (i.e. "land held absolutely in one's own right and not subject to any property taxes or by-laws) (http://www.economicreason.com/canada). The different families, clans, stools, skins and tindanas may make decisions about land differently from each other, depending on their interests and systems of accountability (Osafo, 2010). Drawing from Ollennu (1962) Djokoto and Opoku (2010) indicate that stools and skins are the embodiment of the collective authority of all the members of the community and hold the allodial title to all the lands of the village, town or tribe. This embodiment can be more illusory than real and may exclude key constituencies in the community (Ann Stahl, 2011 pers.com).[3] Land tenure system is nevertheless a key determinant of governance effectiveness and can influence the balance between conservation and development outcomes in Ghana. The land tenure systems of the study sites are discussed in more detail under each study site below.

A CREMA can straddle more than one "native land owning and administrative jurisdiction" otherwise known as a traditional area. Although the land tenure system may be the same for a traditional area, different actors such as chiefs, clans or family heads manage them; hence attitudes, approaches and decisions about land may differ among actors. Therefore, to leverage adequate representative participation, CREMAs develop a

[2] Stools and skins and tindanas are the heritage of specific clans and families in certain parts of Ghana. They symbolize the collective stewardship and ownership of lands and in theory, all the natural resources on the land.

[3] Prof Ann Stahl is a professor and chair of the Dept of Anthropology in the University of Victoria, BC Canada

governance structure for the target area by strengthening existing local institutions and seeking to devolve resource management authority and responsibility to groups of farmers/communities who organize for collective action. It encourages these groups to integrate sustainable resource management principles into their land use. The purpose is to enable "local managers'" to link up, through effective interplay[4] to governance at other levels in the spirit of polycentric governance, to achieve higher governance effectiveness. Governance is mediated by local institutions and policies such as the CREMA constitution formulated by the communities led by the CREMA Executive Committees (CECs), and shaped by the by laws of the District Assembly.

Each CREMA is managed by a CEC and also has Community Resource Management Committees (CRMC) at the community level. The CRMCs are formed through community meetings that are facilitated by the Wildlife Division or its accredited agent(s). Each CREMA community (or sometimes two neighbouring communities) may come together to form a CRMC. At the meetings, the objectives and functions of the CRMC are described, after which nominations are called for voting in public. Those selected form the CRMC for the community(s). Each CRMC nominates one member to serve on the CEC. As presently constructed, membership of each CEC differs between CREMAs, but the core and voting membership of CEC(s) is composed of local people only. This includes chiefs who may serve as chairmen or presidents of CECs in many cases per the collective decision of the CEC. By the social position and influence of chiefs their involvement in and commitment to conservation and development issues enables easier linkages with higher level actors such as the district assemblies and other conservation and development civil society organisations for the necessary support for CREMAs. However, provision is made for representatives of the Wildlife Division, the District Assembly, any other agencies, and individuals that the CEC may deem necessary to be asked to advise where needed and chiefs are in a good position to invite them. This provision is important and leverages opportunities for strengthening the weak vertical and horizontal linkages that currently occasion the tenuous balance between conservation and development in Ghana and the CREMAs in particular.

[4]Direct social networks to provide information or tangible resources related to the management system (Adger et al., 2006)

The Wildlife Division is the primary agent for CREMA development in Ghana[5]. It is a conservation oriented organization without a rural development mandate, and therefore, the Division only provides for the conservation side of CREMAs. To balance conservation and development, there is a need for links to other nodes of governance with a development focus, particularly the District Assembly, and the District Development Facility (DDF) (Chapter Two).

Currently, there are 27 CREMAs located within ten districts in three administrative regions, 19 of which have received their final certificate of devolution. 'Certificate of devolution' is a document issued by the Minister responsible for wildlife. It certifies CREMAs, and provides evidence of devolvement of rights, responsibility and authority over wildlife within CREMAs to constituent communities, and aims to provide economic incentives for sustainable use of wildlife and its habitat. The Western Region has 15 CREMAs in six districts; the Northern Region has two in two districts; and the Upper West Region has two in two districts. Eight other CREMAs are at various stages of creation in other regions.

Four out of five CREMAs focused on in this study, namely Zukpiri, River, Asuopiri, Amokwasuazo and Wechiau, were randomly selected from the 19 certified CREMAs (Figure 1). The 19 CREMAs were first stratified into two groups: those located in northern Ghana and those in southern Ghana. (Land tenure systems affect governance of social-ecological production, and therefore, the stratification follows two of the three major land tenure systems (north and south)) in Ghana. Subsequently, the name of each CREMA in each group was written on paper and folded. Two of the papers were randomly selected from each group to select the four CREMAs for this study. Avu Lagoon was selected purposively from the third major land tenure system area where currently, there are not certified CREMAs because it is one of the official research sites of the Protected Areas and Poverty Reduction project (PAPR). This CREMA has yet to receive its certificate of devolution.

[5] The researcher is an employee of the Wildlife Division, which is an agency under the Forestry Commission of the Ministry of Lands and Natural Resources of Ghana.

The five study sites focused on here are: Avu Lagoon CREMA in the coastal guinea savanna zone in the Volta Region; Zukpiri CREMA in the guinea savanna woodland zone in the Upper West Region; River Asuopiri CREMA in the moist evergreen forest zone in the Western Region; Amokwawsuaso CREMA in the wet evergreen forest zone in the Western Region; and Wechiau CREMA, also in the guinea savanna woodland zone of the Upper West Region (Figure 1). Each is described in turn below.

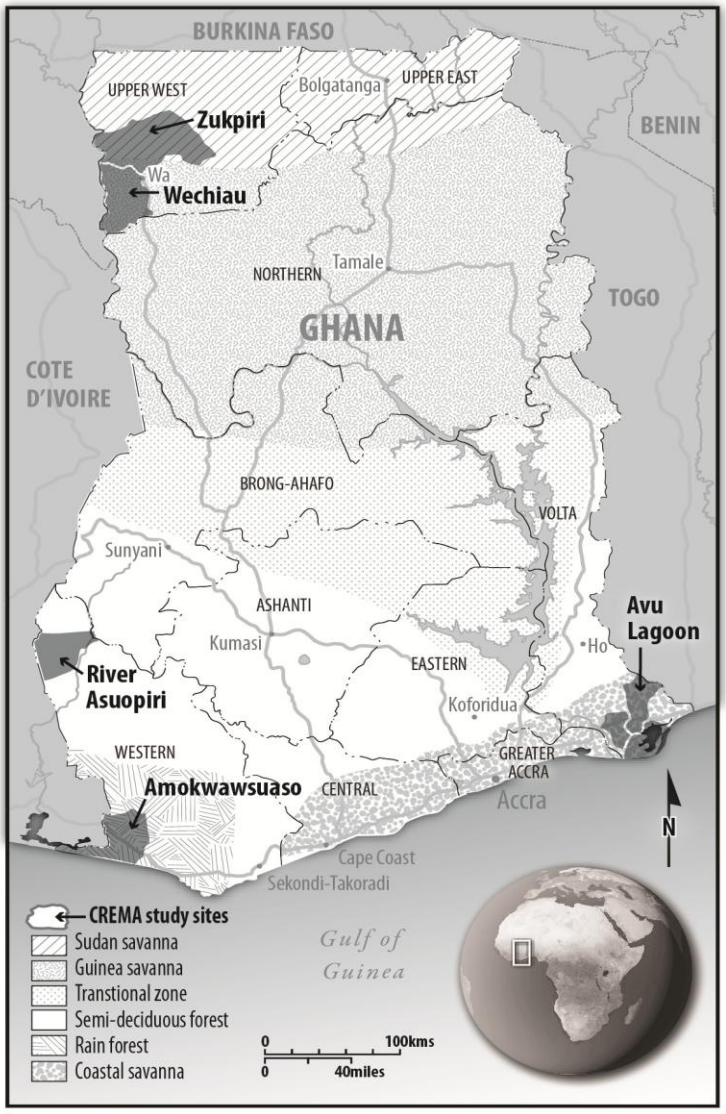


Figure 1: Location of Study Sites in Ghana

1.3.2.1 Avu Lagoon CREMA

Avu Lagoon is part of the Keta Lagoon Complex (a nationally designated Ramsar site[6]) in the Volta Region of Ghana. It covers an area of about 300km^2 straddling the districts[7] of Keta, South Tongu and Akatsi. The climate[8] is typical of the rest of the country; it is tropical with temperatures ranging between 21-32° Celsius (70 - 90°F) for most of the year (Ghana Statistical Services, 2005). There are two rainfall seasons in a year, the main season runs from March to July and a second shorter season occurs from mid-August to October. Rainfall figures vary throughout the region with highest levels in the central highland

[6] Ramsar sites are designated wetlands of international importance

[7] Ghana practices a decentralized system of governance that is administered at several nodes from the national to local (district) through legislation and delegation of functions. A district serves as the fulcrum of development where political and administrative authority within it jurisdictional area are exercised (Chapter Two)

[8] This information was taken from Muruvi 2011.

areas and in the forest zone and lowest further north in the sahel-savannah zone. The maximum and minimum average annual rainfall figures are 2,103mm and 1,168mm, respectively. Due to the prevalence of swampland and the regular flooding of surrounding lands, the Avu Lagoon area is sparsely populated. In all, 15 communities including Agorbledokui, Avuto, Akutukope, Bekpo, Blemeazado, Bludo, Tsawoeme, Wenu, Adutor, Agbagorme, Bayive, Gui, Suipe, Tosukpo, Xavi, and Agbogbla are associated with the lagoon ecosystem (NCRC, 2008). Land in Avu Lagoon area is owned by various clans and subdivided into individual family holdings. The lagoon itself belongs to two main clans: Seviawo (East side); and Anyigbewo (West side). Each clan has its own chief with rules and community gods to worship, with some villages having multiple clans (Suipe, Bayive, Xavi and Adutor) (NCRC, 2008).

The Avu Lagoon communities fall under three traditional areas including Agave, Avenor, and Anlo traditional areas. The Avu Lagoon ecosystem is an important resource to the people living around it, serving as their major livelihood source. They farm, fish, collect firewood, and use the lagoon ecosystem as a source of drinking water and other domestic and construction enterprises. Grass is collected for weaving purposes. Products from the lagoon resources are sold at local and distant markets to provide some income to the local people (NCRC, 2008). Avu Lagoon CREMA was founded through collaborative efforts of the Wildlife Division and the Nature Conservation Research Center. A CREMA board chaired by a local chief and supported by two persons from each of the 15 communities augmented by representatives of the Wildlife Division, the District Assemblies and NCRC as ex officio members manages the CREMA.

1.3.2.2 Zukpiri CREMA

Zukpri Community Resource Management Area is 420 km^2 located in the guinea savanna woodland and extends from latitude 10.00 to 10.20 degrees north and longitude 2.30 to 2.50 degrees west. The area is situated about 30 km south of Nadowli, a district capital in the Upper West Region, and is situated immediately east of the Black Volta River, which forms the Ghana–Burkina Faso international border in this area. It is surrounded by 15 communities: Takpo, Meguo, Siiru, Zukpiri, Namvili, Mantari, Gudori, Kuuri, Saan, Kolpeni, Puni, Namuo, Oli, Sukpere and Dabo, in the Takpo and Meguo traditional areas. Members of the local communities are subsistence farmers who also

rear livestock, hunt, and gather wild fruits and other Non Timber Forest Products (NTFPs). The NTFPs vary from food items, medicinal plants, building materials and implements (Zintang Healers Association, 2009). The establishment of Zukpiri CREMA was initiated by the Zintang Healers Association, a local traditional healers association, primarily to conserve and improve their traditional medicine sources. It received its certificate of devolution on August 19, 2011. It is managed by a CREMA Executive Committee made up of representatives of the CRMCs and chaired by a local chief. Technical, logistical and governance support is provided by the Zintang Healers Association, Global Environment Facility/Small Grants Programme, and the Nadowli District Assembly, as and when solicited by the CREMA Executive Committee.

1.3.2.3 Wechiau CREMA

Wechiau CREMA consists of a 40-kilometre stretch of riverine forest and guinea savannah woodland running along the Black Volta River which forms the Upper West Region's boundary with Burkina Faso. The CREMA contains about 17 communities, some peri-urban (i.e rural communities that are transitioning into urban communities), but mostly rural and with varied ethnic backgrounds in the Wa West District of the Upper West Region. Communities are comprised predominantly of local people along with a minority immigrant population, and people are primarily farmers and cattle grazers. Fishing, hunting, and gathering of grasses, sheanut and dawadawa, and oyster are also done (Sheppard et al., 2010). Wechiau was initially founded as a Hippotamous Sanctuary in 1998 by the Paramount Chief of the Wechiau Traditional Area, his sub chiefs and local opinion leaders (Sheppard et al., 2010). However, its establishment as a CREMA was facilitated by the Nature Conservation Research Center (NCRC) to promote the conservation of hippos in the Black Volta River section around the CREMA for ecotourism and community development. Wechiau CREMA received its certificate of devolution on May 5, 2011. It is managed by a CREMA board headed by a local chief with support from representatives of CRMC across the CREMA. The NCRC, the Wa West District Assembly, and the Ghana Tourist Board provide technical, logistical, and managerial support.

Lands in and around the Zukpiri and Wechiau CREMA are communally owned although individual families and clans manage small tracts directly. A land priest known

as the *tindana* or 'earth priest' holds all the land in trust for the people whose rights include the collection of Non Timber Forest Products (NTFPs) such as thatch for roofing, wild fruits, poles, firewood and fish. They also have rights to access the sacred places in the CREMA. Land is not commercialized or sold and an individual wanting a piece of land for cultivation or other purposes would have to approach the tindana for permission to use the land. In theory, all wildlife and commercial trees on community lands are customarily owned by the tindana, and it is only through his permission that these resources could be exploited by other people (Zukpiri Management Plan, 2010).

The Zukpiri and Wechiau areas are characterized by a comparatively low rainfall. The dry season is characterized by the harmattan wind blowing from the Sahara Desert which prevails from December to March. Rainfall in the area is about 1,100 mm per annum, falling mainly between April and October. Annual average temperature is about 30° C with the hottest months spanning February to April when maximum temperatures reach 45° C. Humidity varies from below 20% during December and January to 90% in July through September (Zukpiri Management Plan, 2010).

1.3.2.4 River Asuopiri CREMA

The River Asuopiri CREMA covers an area of about 61.33km^2 and is located within the guinean rainforest. The climate within which the River Asuopiri CREMA operates is typical of the moist evergreen forest type, characterised by a distinctive bi-modal rainfall pattern with major rainfall peaks occurring in May to June and to a lesser extent in September to October. The average annual rainfall is 1,500 to 1,800 mm. Mean monthly temperatures are typical of tropical lowland forest that is 24^{o}C to 28^{o}C. Relative humidity is generally high throughout the year, being about 90% during the night falling to 75% in early afternoon. In the dry season, December to early March, the desiccating winds of the Harmattan, blowing off the Sahara, prevail from the Northeast. The CREMA is constituted by a mix of four urban and peri-urban communities with satellite rural communities in the Bia District of the Western Region. The main occupation is predominantly cocoa and oil palm farming, as well as some trading and processing of agricultural produce, beekeeping, subsistence hunting, and government employment. Sustainable bushmeat production, increased income, and employment are local people's primary interests in the CREMA. Establishment of the River Asuopiri CREMA was

facilitated by the Wildlife Division to primarily promote sustainable bushmeat production. The River Asuopiri CREMA received its certificate of devolution on May 5, 2011. It is managed by a CREMA Executive Committee currently chaired by a local person with support from representatives of the CRMCs within the CREMA. The Wildlife Division and the Protected Area Management Advisory Board of the Bia National Park provide additional advisory support services where necessary.

1.3.2.5 Amokwawsuazo CREMA

Amokwawsuzo CREMA covers about 32km^2 within the wet evergreen forest belt. The climate of the Amokwawsuaso Area is characterised by a distinctive bi-modal rainfall pattern occurring from April to July and September to November. The average annual rainfall is 1,700 to 2,000mm. Mean monthly temperatures are typical of tropical lowland forest and range from 24^{o}C to 28^{o}C. Relative humidity is generally high throughout the year, being about 90% during the night falling to 75% in early afternoon. The CREMA is occupied by small-scale farmers and landholders operating within the Jomoro District of the Western Region. It has nine rural communities of persons from different ethnic and cultural backgrounds. Farming is the major economic activity with cocoa, rubber, and oil palm plantations as the predominant crops. Small scale enterprises include edible oil production, hunting and gathering of canes, rattan, chew sticks and building materials. Like River Asuopiri, sustainable bushmeat production, increased income, employment and tourism motivate interests in the CREMA. Its establishment was facilitated by the Wildlife Division under the Protected Areas Development Programme I (PADPI). The certificate of devolution for Amokwawsuaso was given in the year 2003. Amokwawsuaso CREMA was the first CREMA in Ghana to be issued with a certificate of devolution, therefore, it is technically the oldest but also the most challenged CREMA in Ghana by virtue of leadership paralysis, occasioned by the death of the local chief who initially accepted and championed the establishment of the CREMA. Currently it is managed by a CREMA Executive Committee that is headed by a sub chief with support from representatives of the constituent CRMCs. It receives some technical, logistical and managerial support from the Wildlife Division. The Global Environment Facility/Small Grants Programme, the French Embassy in Ghana, the West African Primate Conservation Action (WAPCA) an international NGO that operates in Ghana, have also provided some support in the past.

Lands in southern Ghana, particularly in the Akan areas where River Asuopiri and Amokwawsuaso CREMAs are located, are owned by ‘stools’ whose occupants hold the land in trust for the people. Portions of these lands are dedicated to clans, families and local chiefs who are associated with the stools. Family members can use any family land allocated for farming, provided that the portion one intends to cultivate is not already being cultivated by another person. Use of land by family members may be done with the approval of either the family head or the chief of the community.

Both the "Abunu" and the "Abusa" systems are extensively practiced in all the communities where land is offered to tenant farmers who share their farm produce with the "landowners" in return for the use of the land. In the case of the "Abunu" system, the tenant farmer shares the farm (usually cash crops after successfully cultivating it) equally with the landowner, while in the case of “Abusa" system, the produce is divided into three: a third for the tenant (mostly non natives) and the other two for the landlord. With the “Abunu” system, if the tenant fails to cultivate the land in time, as agreed, the land may be taken back. The notion is that *uncleared land is unused*. In the "Abusa" system the land will already have been cultivated by the landlord. Another form of land tenure is acquisition of land on long term leasehold.

1.4 Methods

The study uses a mixed methods approach including document analysis; interviews; household surveys; and workshops. Document analysis was carried out for information on the study areas in regard to the customs and habitual practices of the people, the social setting, appropriate rural protocols, and any prior research findings on the sites. Government policies and regulations on natural resources management, consultant evaluation and mission reports by development partners, field reports on CREMAs, the Millennium Ecosystem Assessment Report (2002) the International Institute for Sustainable Development (IISD)’s Country Scoping Studies on Connecting Poverty and Ecosystem Services were also analysed. These provided insights into the interview guides used for the key informant and focus groups interviews and the design of the household survey instrument. The research processes were subject to the University of Victoria’s Human Research Ethics procedures. Recruitment of respondents was by verbal consent. Nevertheless, a consent note was attached to each survey instrument and read out to each

respondent before any interviews or surveys were conducted. Key issues in the consent note included; absolutely voluntary participation, assurance of no risk to the respondent and that at any time during the research if a respondent felt at risk the exercise would be terminated, or, a respondent could withdraw from an interview/survey at any time for any reason without explanation and penalty. Assurances of observance of anonymity and confidentiality were also explained to each recruit (Appendix A).

1.4.1 Key Informant Interviews

A total of 60 key informants comprising 17 non-local senior personnel in policy and practice from government agencies, non-governmental organizations, enterprise development practitioners, other Community Based Organizations, volunteers, and researchers were engaged at the regional and district levels (Appendix: B). At the local level, 43 key informants selected from chiefs, opinion leaders and other local champions were interviewed across four out of the five sites (Table 1). No key informant and focus group interviews were conducted at Wechiau due to some difficulties in recruiting "able and willing" research assistants at the time of the interviews. However an "other" question was provided on the survey instrument to provide opportunity for respondents to add additional information. The "other" question was not answered despite specific attention being drawn to it in the survey.

Table 1: Number of Local Key Informants Interviewed per Study Area

Gender	Avu Lagoon	Zukpiri	River Asuopiri	Amokwawsuaso	Wechiau	Total
Male	4	13	6	6	0	29
Female	4	0	7	3	0	14
Total	8	13	13	9	0	43

The first few key informants were selected through expert advice from researchers or persons who had worked in the study sites before and were familiar with important actors and knowledge holders in governance and social-ecological production, or individuals who had extensive knowledge about the site. The rest were selected through referrals. The interviews were done from November 2011 to March 2012. The interviews sought to elicit personal demographic data, such as age, gender, ethnicity, educational levels and occupation. Questions about respondent's knowledge of the CREMA, its history, the governance processes, desired and perceived outcomes as well

as linkages were also asked. Participants were assured that no names will accompany any of the results, analysis and documentation except in cases where prior consent has been given by the participant in the case of photographs and other illustrations or direct quotes. (The same interview guide was used for both local key informants and the focus groups Appendix: C). Key informant interviews were conducted until the saturation point where no new information was emerging from new recruits.

Eight (8) "able and willing to help" research assistants were identified through expert advice and were trained and used in this study to carry out the local key informant interviews across four of the five CREMAs. They included Avu Lagoon (3), River Asuopiri (2), Zukpiri (1), and Amokwawsuaso (2). After training, the interview guides were pretested with the trainees themselves to gauge their readiness for the interviews. Corrections and clarifications were made where necessary. The trainees were then deployed in the communities to interview two persons each and submit the responses for vetting. A few responses were not clear particularly in the Zukpiri CREMA due to difficulties of interpretation from English to the local dialect. As a result, paid assistance was sought from a local Community Based Organisation (Amasaachina) to help clarify the questions. The research assistants had to pretest again for vetting and adjustment of the semi-structured questionnaire. The researcher carried out all the non-local key informant interviews and helped the research assistants in areas where he understands and speaks the local dialect or where the key informant could communicate in English. Interviews were both written in field note books and recorded with the permission of the respondents.

1.4.2 Focus Group Interviews

Assessment of public goods from the aggregation of separately measured individual preferences only may not be enough for informed judgment (Wilson and Howarth, 2002; De Groot et al 2002). Therefore, focus groups were used to verify, illuminate and complement findings obtained from key informants. Drawing from Fishki (1991); Blamey and James (1999) and several other authors, Wilson and Howarth (2002) suggest that by implementing a fair and openly structured procedure for deliberation, small groups of people can render informed judgments in terms of widely held views. Twenty (20) focus groups comprising nine different informal groupings composed of six

to eight persons each, around whom the local economy revolves, were also interviewed across four of the five CREMAs. As summarized in Table 2, focus groups included: five enterprise development groups; one farmer group; two fishermen groups; two fishmonger groups; two hunter groups; two youth groups; one CREMA Executive Committee (CEC); two Non Timber Forest Products (NTFP) gatherers; and three women's groups. One mixed group of purposively selected palm oil producers and beekeepers who had not participated in any of the previous focus group discussions was also conducted to gauge the differences if any in the data sets between single interest groups and mixed groups. These were also interviewed across four of the five CREMAs from November 2011 to March 2012.

Table 2: Statistics of Focus Group Interviews per Study Area

Focus group	Avu Lagoon	Zukpiri	River Asuopiri	Amokwawsuaso	Wechiau	Total
Enterprise development group	1	2	1 + 1 mixed group	0	0	5
Farmers	1	0	0	0	0	1
Fishermen	1	1	0	0	0	2
Fishmongers	1	1	0	0	0	2
Hunters	2	0	0	0	0	2
Youth	2	0	0	0	0	2
CREMA committee	0	0	1	0	0	1
NTFP gatherers	0	1	0	1	0	2
Women	1			2	0	3
Total	9	5	3	3	0	20

1.4.3 Household Surveys

The information generated through the previous methods was used to design a structured questionnaire for a comprehensive household survey. Individuals in randomly selected households including male and female household heads and youth were alternately surveyed across each CREMA to generate more comprehensive data. To select the households, an inventory of all the households in the randomly selected communities was taken, and a list of all household heads generated. The names of the household heads were written on paper (one per household) and the sample selected randomly for each community. A list of the selected households for each target community was prepared for the research assistants to guide the recruitment of the respondents. The recruitment procedure followed was to interview male and female, adult and youth respondents alternately in each household to complete a cycle of surveys.

Another cycle was done until the agreed number of households had been sampled. If in a target household, a male was to be surveyed and there was no male present, a female was recruited and the necessary adjustments made in subsequent recruitments. In cases where for example, females were not available the survey continued with males and therefore, there were discrepancies in the total number of male and female respondents recruited.

The survey was administered over a five month period (April - August 2012) to 929 respondents in 37 communities as detailed in Table 3. Selection of the communities was done through stratified (traditional areas) random sampling. The intention of the survey was to sample as many accessible communities as possible to ensure that most communities were covered in the survey. The number of sampled communities was dependent on the number of willing and able research assistants available for the survey, and the number of communities they were willing to cover. Once the number of research assistants and the number of communities that they were willing to cover were known, the names of the communities in each traditional area were written on paper and a random selection of the number of communities that could be covered in a traditional area carried out. At Avu Lagoon, for example, seven communities were initially selected from the three traditional areas but none of the land-owning communities got selected. Some CREMA executives suggested the inclusion of the three land-owning communities. Therefore, the three communities were included purposively to bring the number of samples communities to ten. The 929 surveys involved 17 trained research assistants (RAs) who were mostly local teachers.

Table 3: Statistics on Survey of CREMAs

CREMA Name	Number of Surveys Administered	Number of communities		Number of RAs Deployed
		In CREMA	Surveyed	
Avu Lagoon	232	15	10	5
Zukpiri	247	16	7	4
Asuopiri	161	4	4	2
Amokwawsuaso	139	13+satellite	11	4
Wechiau	150	17	5	2
Total	**929**	**65**	**37**	**17**

In the Wechiau and Zukpiri areas, a university lecturer who hails from the Zukpiri area was contracted to do the training in the local dialect and to take the RAs through corrections after the pretesting. After training, the RAs themselves completed the instrument for vetting. They were then deployed into the communities to pretest the

instrument with five persons each before submitting the surveys again for vetting and adjustment. Any corrections were done through the lecturer by phone and email before submitting them to me for final verification, and the go-ahead to conduct the surveys. The surveys were done face to face.

The questionnaire (Appendix: D) was designed to collect 12 types of information in relation to the study objectives listed above as follows

- Awareness and performance of CREMA governance (objective 1)
- Views about important nodes of governance and which actors should be part of CREMA governance (objective 1)
- Suggestions about the three most important nodes of governance for higher governance effectiveness (objective 1)
- Views about desired/expected outcomes of CREMA (objective 1, 2, and 3)
- Suggestions about the five most desired/expected outcomes of CREMA (objective 1, 2, and 3)
- Perceptions about outcomes of governance (objective 1, 2, and 3)
- Perceptions about whether perceived outcomes can be attributed directly to CREMA governance (objective 1, 2, and 3)
- Perceptions about unexpected consequences of CREMA (objective 1, 2, and 3)
- Views about whether unexpected consequences can be attributed to CREMA governance (objective 1, 2, and 3)
- Overall satisfaction with achievement of CREMA (Objective 1)
- Overall satisfaction with CREMA governance in regard to benefits (objective 1)
- Overall satisfaction with effectiveness of CREMA in increasing welfare (objectives 2 and 3)

Some demographic data on respondents were also taken in addition to the 12 questions.

Six questions in the survey pertaining to a) awareness and performance of CREMA governance (i.e., objective 1), b) views about important nodes of governance and which actors should be part of CREMA governance (i.e., objective 1), and c) governance effectiveness in relation to desired and perceived outcomes (i.e., objectives 1,

2, and 3) partly form the basis for the analysis presented in the three papers in the dissertation.

1.4.4 Workshops

Three workshops involving 50 participants were organized from July to August 2012 in Amokwawsuaso (17 participants), River Asuopiri, (15 participants) and Avu Lagoon (18 participants). The workshops allowed for the participation of a wider array of participants from the local and district levels as opposed to the focus group interviews where all the participants were from the local communities. The purpose of the workshops was to secure more nuanced and detailed information about the structures and processes of decision making, the linkages needed for effective CREMA governance, and a chance to elicit recommendations. The participants included representatives of CRMCs, the Wildlife Division, District Assemblies, Chiefs, Assembly members and Unit Committee members from each CREMA. These represent the critical nodes of governance needed to strengthen the vertical and horizontal linkages for governance effectiveness (Chapter Two). Some local workshop participants were identified and told about the workshop during the interviews while others were recruited upon consultation with CREMA executives.

In Zukpiri and Wechiau areas, workshops could not be organized at the time because of a religious festival (Ramadan) and the respondents preferred to be interviewed individually at places of their choice. Hence, 12 key informants, seven for Wechiau, and five for Zukpiri were interviewed in addition to the 43 local key informants, using the same question sets that were used for the workshops (Appendix: E). The interviews in Wechiau provided an opportunity (albeit belated) to collect more key informant information that was missed during the initial interviews.

Three questions in the workshops pertaining to a) CREMA governance in Ghana, b) governance in Ghana and relationships to local-level development planning; and c) structures in place at the three levels of governance, the key institutions and the roles of important actors at the district level form additional basis for the analysis presented in this dissertation.

1.5 Analysis

Survey data were entered into SPSS and frequency tables in Excel spreadsheet were generated to show the percentages of respondents for each questionnaire item, the mean scores of the variables and their standard deviations. Factor analysis was used to characterize the outcomes of governance. Prior to factor analysis, Kaiser –Meyer Olkin (KMO), Bartlett's test of sphericity, and Cronbach's alpha were carried out to test the viability of the outcomes. A Kaiser–Meyer Olkin (KMO) measure of sampling adequacy compares the size of the observed coefficient with the magnitude of the partial correlation coefficient and is calculated as a value from 0-1. The closer the value is to 1 the larger the number of correlations among the variables (Debra and O'Cass; 2004). Bartlett's test of sphericity is also used to test statistical probability of significant correlation among at least some of the variables (Hair et al., 1998). The desired outcomes were subjected to Principal Component Analysis (PCA) Rotation method with Varimax. The desired outcomes loaded onto four factors in Chapter Three (data from all the five CREMA) and three principal factors in Chapter Four (focus on Avu Lagoon only). Each of the factors discussed in Chapters Three and Four was subjected to Cronbach's alpha test to gauge their internal consistency. Some experts argue that data generated through Likert scales are non parametric and that the data may not be normally distributed. If so, parametric tests such as ANOVA, independent and paired sample student t test may be invalid. Therefore, a test for normal distribution was carried out and the curves showed that the mean scores of the outcomes were well within or skewed toward the modal scores and therefore representative of the population. Consequently, parametric tests were applied.

Importance – Performance (IP) analysis was used to analyse some of the data. IP is a simple graphical approach that is designed to compare importance (desired) mean scores with their corresponding performance (perceived satisfaction) mean scores using a two – dimensional grid. In some cases, cross hairs are placed in the grid to partition the mean scores into four quadrants to aid data interpretation and assess governance and management priorities. However, the method works with relative measures of importance and therefore the placement of the cross hairs in demarcating the quadrants is subjective (Martilla and James, 1977). An option is to place the cross hairs at 4 on a 5 point likert scales that depict high importance and satisfaction. (Wade and Eagles, 2003; Tonge and Moore 2007; and Randall and Rollins, 2009;) thus delineating the quadrant as "keep up

the good work" "concentrate here', "low priority" and "possible overkill". This allows management to identify areas of highest concern for more attention and perhaps guide the use of limited resources.

On the other hand, some researchers prefer an upward diagonal or iso-rating line model that divides the grid into two great areas at 45 degrees representing points where ratings of importance and satisfaction are equal (see.Hawes and Rao, 1985 Dearden and Harron 1994; Slack 1994; Sampson and Showalter, 1999; Bacon 2003; Abola *et al*, 2007). Consequently, items below the line are judged to have higher satisfaction scores than importance scores indicating that perceived outcomes are meeting the desired outcomes. Conversely, items above that line show where perceived outcomes are probably not matching the desired outcomes. An items distance above the iso-line mirrors the magnitude of the disequilibrium between the desired outcome and its perceived counterpart. The greater the distance above the iso-line the greater the gap and, in some cases, the more urgent the need is for management attention.

This study uses the iso - rating line alternative as a more sensitive way of identifying areas of dissatisfaction because it focuses on differences in the mean scores of importance and satisfaction rather than the subjective cross hairs placements (Ziegler *et al*, 2011). The emphasis on mean scores, although contested, is important because of the tendency of respondents to inflate importance ratings (Martila and James 1977; Abola *et al*, 2007; Deng, W. 2007).

1.6 Structure of the Dissertation

The results of this research are presented in three journal-sized articles that follow this introduction. Four overall objectives are engaged in the three articles spanning Chapters Two through Four. Chapter Two discusses three specific objectives including: a) perceived governance effectiveness in terms of outcomes at the CREMA level; b) important nodes/actors and key institutions/linkages for conservation and development at the district and local levels; and c) recommendations on how to improve linkages and/or the involvement of critical nodes of governance in the CREMAs. Its focus relates to overall objectives one and four of this dissertation as outlined earlier in this chapter. Chapter Three characterizes the desired and perceived outcomes of five CREMAs. It also assesses the gaps between perceived and desired outcomes. Next, it examines variability

between CREMAs, and assesses what might account for variability. These relate to overall dissertation objectives two and three as outlined earlier in this chapter.

Chapter Four takes a more in-depth look at community differences in the specific case of Avu Lagoon CREMA. The paper focuses on four communities in the Avu Lagoon CREMA. The objectives and structure of this paper are similar to those of Chapter Three.

Assessing variability among and within CREMAs was not originally one of the objectives of the research and therefore, questions pertaining to variability *per se* were not asked. Variability emerged as an important element of the research during data analysis. Therefore, accounting for variability in this dissertation as discussed in Chapters Three and Four, depends more on the researcher's familiarity with the CREMA processes and other data from the workshops.

Chapter Five summarises the findings of Chapters Two through Four, offers recommendations based on analysis, and identifies areas for future research. It also highlights the contribution of this research to the concept of CBNRG and provides some methodological insights.

Chapter 2

Polycentric Governance and the Performance of Community Based Natural Resource Management in Ghana: Assessing Structures, Effectiveness and Outcomes

Abstract

In Ghana and elsewhere, conservation and development practitioners face the challenge of forging a balance between conservation and development. The challenge is made more difficult by the fact that a broad range of desired outcomes, as well as a large range of unlinked and uncoordinated *nodes of governance* (actors) across multiple scales are involved in making decisions within the same social-ecological system. Therefore, gaps remain in designing and implementing appropriate *linkages* among local, district, and regional nodes of governance, resulting in fragmented approaches that often fail to achieve positive social-ecological outcomes. This paper contributes to the discussion by focusing on a form of PA, known as Community Resource Management Area (CREMA) in Ghana. Interviews with 60 key informants and 20 focus groups as well as three workshops involving 50 participants were used for data collection. The paper found gaps, weak horizontal, and vertical linkages due to fragmented approaches among key actors, and a lack of attention to conservation and development as a binary enterprise, as key challenges of balancing conservation and development. However, there is scope for building and strengthening the requisite linkages once the decentralization process in Ghana is fully implemented.

Key Words: Nodes of Governance, Linkages, Outcomes and CREMA

2.1 Introduction

Protected areas (PAs) are established primarily to conserve representative samples of biodiversity. However, given the development pressures around PAs and the importance of meeting the livelihood needs of local people, there is a growing, though contested, belief among both conservationists and development practitioners that conservation and development should go hand in hand (Oates, J.F, 1995; Kellert et al., 2000; Schwartzman et al., 2000; Dearden, 2002; Baird and Dearden 2003; Roe and Elliot, 2004; Adams et al., 2004; Hutton et al., 2005; Zimmerer, 2006; Adams and Hutton, 2007; Sunderland et al., 2008).

This paper contributes to the discussion by focusing on a form of PA known as Community Resource Management Area (CREMA) in Ghana. CREMAs aim to mobilize multiple *nodes of governance* to strengthen local governance capacity and enable engagement with other nodes of governance at district and regional levels to articulate and achieve their interests with respect to conservation and development (Jones, 2004).

In Ghana and elsewhere, conservation and development practitioners face the challenge of forging a balance between conservation and development (Koziell and McNeill, 2002). A growing literature on Community Based Natural Resource Management (CBNRM) has focused on how this challenge can potentially be addressed by more effectively engaging local communities in the management of natural resources and linking them effectively to other nodes of governance (Scherl, L.M., et al., 2004; Jentoft and Chuenpagdee, 2009; Lepper and Goebel, 2010; Sheppard, D. J.et al., 2010). However, this is made more challenging by the fact that a broad range of desired outcomes (i.e. those related to conservation and development) as well as a large range of nodes of governance (actors) across multiple scales (e.g. local, district and regional) are involved in making decisions within the same social-ecological system (Robinson, et al., 2012). These nodes do not necessarily function in a coordinated and effective manner resulting in fragmented approaches that fail to achieve desired conservation and development-related outcomes. (Hoon, 2004; see http://www.iasc-commons.org). Consequently, there has been a growing interest in how governance systems can best be designed to accommodate the diverse range of desired outcomes of the large array of conservation and development actors (Plummer and Fitzgibbon, 2006; Buizer et al., 2011) because problems arise when they are not well linked. In other words, gaps remain in designing and implementing appropriate *linkages* among local, district, and regional nodes of governance that result in positive social-ecological outcomes (Gregory et al., 2005; von Braun, 2009). Specifically, different nodes of governance can lack sufficient horizontal (at the same scale) and vertical (between scales) "linkages" that enable them to coordinate governance processes and share information.

Linkages are direct interactive social networks that mediate the relationships between the otherwise independent nodes of governance through contractual and cooperative undertakings to provide information and resources related to (in this case)

conservation and development (Salafsky and Wollenberg, 2000; Adger et al., 2005; Naughton-Treves et al., 2005; and McGinnis, 2005. Dedeurwaerdere, 2005; Provan and Kenis, 2007; Jentoft and Chuenpagdee, 2009). Linkages can also be described in terms of attributes such as trust, reciprocity, accountability, transparency; adequacy (of resources) and others (Lockwood, 2010).

Institutions are a system of rights rules, decision making procedures, and programmes that give rise to social practices, assign roles to nodes of governance, facilitate linkages and guide interactions among the actors of the relevant nodes **(**Dietz et al., 2003; Young, 2005; Ostrom and Nagendra, 2006)**.** At the generic level, institutions provide regularities, reduce uncertainties and shape the interactions among nodes of governance by creating an enabling or controlling environment needed to facilitate legitimate and effective governance (Kooiman, 2005; Chuenpagdee and Song, 2012). Achieving "Polycentric" governance may help to accommodate the diverse range of actors, improve outcomes and solve the governance gap related to conservation and development by developing and coordinating systems of governance at the different nodes.

This chapter (paper) addresses the challenges of governance and social-ecological performance of CBNRM through analysis of the viability of the governance structures related to CREMAs at local, district and regional levels in Ghana in balancing conservation and development. The CREMA concept is one of Ghana's responses to the challenges of linked conservation and development. It is a variant of CBNRM in that responsibility and authority for management are devolved to the local level. It is a product of major institutional, policy and governance reforms by the Wildlife Division in the late 1980s to assure improved and enduring forms of social organization, legal frameworks and enforcement mechanisms to manage public alienation from previous conservation efforts and move toward a better balance between conservation and development (Wildlife Development Plan 1996-2020). The concept received policy approval by the Cabinet of the Government of Ghana and a new supportive legislation is pending parliamentary approval. Currently, CREMAs operate under the Wildlife Preservation Act 1961 ACT 43.

In order to understand the role of governance, the paper begins by considering the range of desired outcomes for CREMAs in relation to governance *effectiveness* defined as

the extent to which an activity fulfils its intended purpose or function or the extent to which objectives are met (icorp.ca www.icorp.ca/governance). The paper assesses how the governance system encounters issues of fragmentation and the attendant problems associated with conservation and development. Specifically, the objectives are to: a) assess perceived governance effectiveness in terms of outcomes at the CREMA level; b) characterize the important nodes/actors and key institutions/linkages for conservation and development at the district and local levels; and c) make recommendations on improving linkages and/or the involvement of critical nodes of governance in the CREMAs.[9]

The following section describes the methods including document analysis, semi structured interviews, household surveys and interviews employed in the study before presentation and discussion of the results. The paper ends with conclusions and recommendations and concludes that CREMAs respond to the challenges of conservation and development but are based at the local level and not adequately linked to the District Medium Term Development Plan (DMTDP). The Unit Committee concept provides a possible foundation for influencing the development planning processes at the local level to link CREMAs to the DMTDP but it is also functionally weak due to the absence of Unit Committees in many places, a lack of operational funds where they exist, and tensions with local traditional authorities.

2.2 Methods

Currently, Ghana has 27 CREMAs located within ten districts in three administrative regions, 19 of which have received their final certificate of devolution. The Western Region has 15 in six districts; the Northern Region two in two districts; and the Upper West Region has two in two districts. Eight other CREMAs are at various stages of creation in other regions. Five CREMAs were selected to address the study objectives. Four out of the five - Zukpiri, River Asuopiri, Amokwasuazo and Wechiau were randomly selected from the 19 certified CREMAs (Figure 2). The 19 CREMAs were grouped into two (northern and southern Ghana) and the name of each CREMA in each group was written on paper and folded. Two of the papers were randomly selected from

[9] The goal of this paper is nested within a broader goal of the Protected Area and Poverty Reduction (PAPR) Project. PAPR seeks to address challenges of reducing rural poverty and ensuring environmental sustainability by focusing on PA governance, human wildlife interactions, cost and benefits of living in and around PAs and knowledge mobilization in Ghana, Tanzania and Canada.

each group to select the four CREMAs. Avu Lagoon was selected purposively because it is one of the official research sites of the Protected Areas and Poverty Reduction project (PAPR). This CREMA has yet to receive its certificate of devolution.

The five CREMAs for this study are located in three social-ecological zones where the 19 CREMAs with devolved authority and responsibility for wildlife occur. The results show variability among the CREMAs to the extent that it is difficult to say whether or not the five study sites are representative of all CREMAs in Ghana.

A mixed methods approach including document analysis, semi-structured interviews, household surveys, and workshops was used. Document analysis was carried out to gather background information on all study sites to document the governance structures in place as a guide to the design of the semi-structured interview questions.

Figure 2: Location of CREMAs in Ghana

A total of 60 semi-structured interviews with key informants were conducted. The first few key informants were selected through expert advice from researchers or persons familiar with important actors and knowledge holders in governance at the study sites.

The rest were selected through referrals. The interviews were conducted from November 2011 to March 2012. This included 17 senior personnel at the regional and district levels who are in policy and practice from government agencies, non-governmental organizations, enterprise development practitioners, other Community Based Organizations, volunteers, and researchers. The other 43 informants were selected at the local level, from chiefs, opinion leaders and other local champions from Avu Lagoon (n=8); Zukpiri (n=14); River Asuopiri (n=11); and Amokwawsuaso (n=10).

Twenty (20) focus groups comprised of people around whom the local economy revolves were also interviewed across four of the five CREMAs (Wechiau not included). Each group included six to eight people. Focus groups were composed of nine different informal groupings including five enterprise development groups; one farmer group; two fishermen groups; two fishmonger groups; two hunter groups; two youth groups; one CREMA Executive Committee (CEC); two Non Timber Forest Products (NTFP) gatherers; and three women's groups. One mixed group of purposively selected palm oil producers and beekeepers who had not participated in any of the previous focus group discussions was also conducted to gauge the differences if any in the data sets between single interest groups and mixed groups.

Eight persons were trained to carry out the local key informant and focus group interviews across the four CREMAs. The researcher carried out all the non-local, key informant interviews and helped the research assistants at the local level. Interviews were recorded with the permission of the respondents and notes were taken in field note books by the interviewer.

The information generated through the interviews and document analysis was used to design a household survey instrument. A total of 929 individuals including household heads and youth were surveyed from April-August 2012 across 37 communities in the five CREMAs. The households were selected at random in each community. Selection of respondents was done alternately to include adult males and females and the youth[10]. The survey involved 17 trained research assistants (RAs). Each

[10] There are no statistically significant differences between gender and age.

of them was involved in survey design before being deployed into the communities to pretest the instrument to resolve any difficulties that may have been encountered.

Finally, three workshops were organized from July to August 2012 in Amokwawsuaso (17 participants), River Asuopiri, (15 participants) and Avu Lagoon (18 participants) to generate more nuanced and detailed information about the structures and processes of decision making, the linkages for effective CREMA governance, and to tease out recommendations. The participants included representatives of CRMCs, Wildlife Division, District Assemblies, Chiefs, as well as Assembly members and Unit Committee members from each CREMA. Six out of 12 questions in the survey and three in the workshops pertaining to 1) governance effectiveness in relation to outcomes; 2) CREMA governance in Ghana 3) governance in Ghana and relationships to local-level development planning; 4) structures in place at the three levels of governance, the key institutions and the roles of important actors at the district level; 5) awareness and performance in CREMA governance; and 6) views about important nodes of governance and which actors should be part of CREMA governance. The analysis that follows builds insights in relation to each of these topics in turn.

2.3 Results and Discussion

2.3.1 Governance Effectiveness in Terms of Outcomes at the CREMA Level

In the survey, respondents were asked to rate the level of importance that they attach to each of 29 desirable outcomes of CREMAs on a five point Likert scales as follows: (1) “no importance” (2) “low importance” (3) “medium importance” (4) “high importance” or (5) “very high importance”. The outcomes were grouped by factor analysis into four broad categories (Chapter Three) and mean scores computed (Table 4). Outcomes were grouped in relation to a variety of factors as summarized in Table 4: The factors included: Socioeconomic (SE); Ecosystem Goods and Services (EGS); Ecological Conservation (EC); and Provisioning Services (PS) factors. Factor analysis was also carried out to reduce the number of outcomes to be discussed and provide a clearer understanding of the inter relationships between the outcomes.

Table 4: Important (Desired) Outcomes of CREMA

Desired Outcomes*	Percentage of Respondents						
	1	2	3	4	5	4 & 5	Mean
Socio Economic (SE) Factors							**4.4**
Tourism	2.5	2.4	6.8	18.4	69.8	88.2	4.5
Increased Employment	4.1	3.0	5.5	12.9	74.2	87.1	4.4
Increased income	3.6	4.1	5.4	15.2	71.4	86.6	4.3
Improved social infrastructure	3.9	3.1	5.9	29.2	57.4	86.6	4.4
Educational scholarships	4.4	4.7	5.2	13.5	72.1	85.6	4.4
Capacity building and training in income generating enterprises]	3.7	3.1	7.5	29.6	55.9	85.5	4.5
Collective community action and unity	3.3	3.4	7.4	29.0	56.3	85.3	4.5
International recognition and pride	3.3	3.3	7.6	20.1	65.1	85.2	4.3
Constancy of kids school attendance	4.3	3.0	7.0	18.3	66.7	85.0	4.4
Access to credit/financial assistance	5.4	3.7	7.3	22.5	60.6	83.1	4.3
Ecosystem Goods and Services (EGS)							**4.2**
Increased conservation awareness	2.9	2.6	4.8	16.5	73.2	89.7	4.5
More and better quality traditional medicines	3.8	5.7	8.2	22.2	59.7	81.9	4.3
Native wildlife return	3.6	4.0	10.2	20.8	61.1	81.9	4.3
Purification and provision of clean air	2.9	8.5	10.7	22.5	55.0	77.5	4.2
Religious, cultural and historical uses	5.3	5.2	11.6	28.6	48.9	77.5	4.1
More poles and construction materials	3.8	7.0	18.6	18.4	51.5	69.9	4.1
More and better quality grass	3.8	10.4	11.0	16.8	37.9	54.7	3.9
Fodder for livestock	3.4	8.7	17.9	20.1	29.6	49.7	3.8
Ecological logical Conservation (EC)							**4.3**
Ecologically sensitive areas being protected and well managed	3.4	3.7	7.3	22.1	63.1	85.2	4.4
Improved water supply and quality	3.1	4.7	8.5	18.2	64.5	82.7	4.4
No chemical contamination of water	4.7	5.4	7.3	22.8	59.2	82.0	4.3
Better farmlands increased food production	5.2	5.4	6.9	18.4	63.5	81.9	4.3
Reduced bush fires	2.7	6.1	9.1	15.0	66.7	81.7	4.4
More rain	3.0	7.3	12.4	26.4	50.5	76.9	4.1
Wind break	5.3	10.4	10.0	19.6	53.7	73.3	4.1
Provisioning Services (PS)							**3.5**
More fish	7.1	8.4	15.0	22.2	47.0	69.2	3.9
More bushmeat	14.3	14.1	13.6	15.0	42.6	57.6	3.6
Improved supply and quality of firewood and charcoal	9.4	19.8	19.4	18.0	33.3	51.3	3.5
More shea nut/dawadawa	27.0	5.5	4.3	13.8	22.0	35.8	3.0

*Likert scale of importance: 1=no; 2=low; 3=medium; 4=high; 5=very high

Table 4 shows that overall, the highest importance was given to socioeconomic (SE) factors (mean=4.4), This result runs contrary to findings by Heck et al., (2011) in a similar study of desired community outcomes from a proposed conservation area in Canada, where environmental values and goals were the most important outcomes. In a poverty-challenged economy such as Ghana, it is not surprising that socio-economic

outcomes appear to be the most important to stakeholders. The SE factors are followed by Ecological Conservation (EC) (mean=4.3), Ecosystem Goods and Services (EGS) (mean=4.2) and finally Provisioning Services (PS) (mean=3.5) as the least important. Although, the differences between the mean scores are not large, they are significant (Table 5).

Table 5: Paired Sample T Test of Desired Outcomes

Paired Outcomes		Mean Scores of Importance		T Value	Df	Sig
Socioeconomic	Ecosystem Goods and Services	4.4	4.3	7.603	701	.000
Socioeconomic	Ecological Conservation	4.4	4.2	6.219	872	.000
Socioeconomic	Provisioning Services	4.4	3.5	22.176	646	.000
Ecosystem Goods and Services	Ecological Conservation	4.3	4.2	2.856	696	.004
Ecosystem Goods and Services	Ecological conservation	4.3	3.5	18.780	649	.000
Ecological Conservation	Provisioning services	4.2	3.5	20.290	640	.000

The sum total of the results of the Likert scale responses for high importance and very high importance (Table 4) suggests in respect of SE factors that 88% of respondents consider tourism (mean= 4.5) as the most important (desired) outcome and access to credit/financial assistance (4.3) as the least important. For EGS, 90% of respondents point to increased conservation awareness (4.5) as the most important, and 50% consider fodder for livestock (3.8) as least important. Eighty five percent (85%) of respondents suggest that the most important EC outcome is ecologically sensitive areas being protected and well managed (4.4), while 73% see windbreak (4.1) as the least important. Finally, 69% of respondents rate more fish (3.9) as the most important PS outcome, while 36% rate access to sheanut and dawadawa (3.0) as the least important. Overall, the desired outcome rated highest in importance was increased conservation awareness (an EGS outcome) and that rated least important was access to sheanut and dawa dawa (a PS outcome).

In another question respondents were asked to rate their satisfaction with the achievement of 29 desirable outcomes of CREMAs on a five point Likert scales as follows: (1) “very unsatisfied;” (2) “somewhat unsatisfied;” (3) “not sure;” (4) “somewhat satisfied;” or (5) “very satisfied.” To analyse the results, the outcomes were

also grouped by factor analysis into four broad categories (Chapter Three) and their mean scores computed (Table 6).

Table 6: Satisfactory (Perceived) Outcomes of CREMA

Perceived Outcomes	Percentage of Respondents						
	1	2	3	4	5	4 & 5	Mean
Socioeconomic outcomes (SE)							**3.3**
Collective community action and unity	10.3	10.2	8.9	38.3	31.8	70.1	3.7
Tourism	14.3	8.4	9.0	29.4	38.4	67.8	3.7
International recognition and pride	18.8	9.4	11.1	25.3	34.9	60.2	3.5
Capacity building and training in income generating enterprises	18.4	9.9	11.7	33.4	26.0	59.4	3.4
Constancy of kids school attendance	20.9	12.7	9.7	26.6	29.7	56.3	3.3
Increased Employment	22.6	14.7	11.3	16.4	34.3	50.7	3.3
Improved social infrastructure	29.4	11.6	9.7	25.7	23.4	49.1	3.0
Increased income	27.7	12.8	11.6	16.5	31.2	47.7	3.1
Access to credit/financial assistance	31.6	14.9	10.0	18.4	24.5	42.9	2.9
Educational scholarships	32.4	15.1	12.6	12.7	26.9	39.6	2.9
Ecosystem Goods and Services (EGS)							**3.5**
Increased conservation awareness	8.0	13.1	6.4	27.6	44.8	72.4	3.9
Purification and provision of clean air	11.5	5.8	14.6	31.4	36.4	67.8	3.8
Native wildlife return	6.2	10.1	15.6	33.5	33.8	67.3	3.8
More and better quality grass	9.8	8.4	16.9	32.5	32.1	64.6	3.7
Religious, cultural and historical uses	11.1	16.7	9.8	24.7	37.0	61.7	3.6
More and better quality traditional medicines **[4]**	5.7	11.6	11.0	19.9	30.8	50.7	3.7
Fodder for livestock	15.3	21.5	12.2	23.6	26.8	50.4	2.3
More poles and construction materials	8.7	10.5	12.6	26.7	20.8	47.5	3.5
Ecological Conservation (EC)							**3.7**
Ecologically sensitive areas being protected and well managed	9.0	7.4	7.0	36.4	39.8	76.2	3.9
Reduced bush fires	6.8	10.2	11.0	26.6	45.0	71.6	3.9
No chemical contamination of water	8.8	9.8	9.0	32.3	39.3	71.6	3.8
More rain	9.6	12.1	14.4	32.8	30.8	63.6	3.6
Wind break	9.9	14.1	15.8	31.6	28.1	59.7	3.5
Improved water supply and quality	15.1	14.7	10.4	28.8	30.2	59.0	3.5
Better farmlands and increased food production	13.9	19.6	8.7	27.9	28.6	56.5	3.4
Provisioning Services (PS)							**3.2**
More fish**]**	23.5	16.7	10.4	28.5	20.6	49.1	3.1
Improved supply and quality of firewood and charcoal	19.8	22.5	16.0	20.9	20.1	41.0	3.0
More bushmeat	31.5	20.0	10.0	15.4	22.4	37.8	2.8
More shea nut/dawadawa	5.6	5.1	8.3	11.3	19.5	30.8	3.7

Likert scale of satisfaction: 1=very unsatisfied; 2=somewhat unsatisfied; 3=not sure; 4=somewhat satisfied; 5=very satisfied.

Table 6 shows that overall, perceived highest satisfaction with the factors was given to EC (mean=3.7) followed by EGS (mean=3.5), SE (3.3) and finally PS (mean=3.2).

Although the differences between these aggregated scores are not large they are significant, except in the case between ecosystem goods and services and ecological conservation (Table 7).

Table 7: Paired Sample T Test of Factors

Paired Outcomes		Mean Scores of Satisfaction		T Value	Df	Sig
Socioeconomic	Ecosystem Goods and Services	3.3	3.5	7.338	685	.000
Socioeconomic	Ecological Conservation	3.3	3.7	14.143	871	.000
Socioeconomic	Provisioning Services	3.3	3.2	9.343	440	.000
Ecosystem Goods and Services	Ecological Conservation	3.5	3.7	1.296	691	.195
Ecosystem Goods and Services	Provisioning Services	3.5	3.2	11.362	473	.000
Ecological Conservation	Provisioning Services	3.7	3.2	10.687	439	.000

Table 6 suggests that overall, governance has probably been less effective in delivering on SE factors and weakest in PS.

Comparing Table 4 importance (desired factors) and Table 6 perceived (satisfactory factors) the results show that actors rate SE factors as the most important but that the SE factor has the biggest gap between importance and satisfaction. On the other hand, the EGS scores are somewhat lower in terms of importance, but also have smaller gaps between importance and satisfaction. The differences between the mean importance and satisfaction ratings for the four factors are significant overall, although variable between CREMAs (Chapter Three). This suggests that meeting development-related goals remains a principal challenge for CREMAs. This is where linkages with the District Medium Term Development Plan (DMTDP) of the District Assembly and other development actors should be strengthened to create the needed balance and the conditions for higher governance effectiveness (section 2.3.6). Ecotourism is widely recognized as the most likely vehicle for simultaneously achieving conservation and some level of development (i.e. income and employment) (Hoon, 2004; Swatuk, 2005). Given the fact that CREMAs ranked tourism as a most desired SE outcome (Table 4), development of ecotourism facilities and allied socioeconomic outcomes in CREMAs should be given more attention by the District Assembly and its allied development actors.

2.3.2. CREMA Governance in Ghana

CREMAs develop on the extant local governance arrangement by strengthening existing nodes and levels of interaction of the actors who organize for collective action. A CREMA may occur within or beyond one Unit Committee level depending on the number and spatial distribution of its constituent communities. A Unit Committee is composed of an Assembly member of the electoral areas within which the communities are located and at most five elected members of the area. It is normally a settlement or a group of settlements with a population of 500–1000 persons.

Each CREMA is managed by a CREMA Executive Committee (CEC) but also has Community Resource Management Committee (CRMC) at the individual community levels. The CRMCs are formed through community meetings facilitated by the Wildlife Division. Each CREMA community (or sometimes two neighbouring communities) may come together to form a CRMC. At the meetings, the objectives and functions of the CRMC are described after which nominations for membership are called for through a public voting process. Those selected form the CRMC for that community(s).

Each CRMC nominates one member to serve on the CEC. As presently constructed the core and voting membership of CEC(s) is composed of local people only. However, provision is made for representatives of the Wildlife Division, the District Assembly and any other agencies that the CEC may deem necessary to be asked to advise where needed. Membership of CEC varies between CREMAs. Governance is mediated by local policies and institutions such as the CREMA constitution formulated by the communities led by the CECs and shaped by the bylaws of the District Assembly.

The Wildlife Division is the primary agent for CREMA development in Ghana. However, it is a conservation-oriented organization without a rural development mandate and therefore the Division only provides for the conservation side of CREMAs. To balance conservation and development there is a need for links to other nodes of governance with a development focus. As discussed below (section 2 3.3), this includes the District Assembly and the District Development Facility (DDF). The guidelines for the preparation of the District Medium Term Development Plan (DMTDP) and related planning processes are therefore critical in providing those links. CREMAs may benefit from the DDF by way of infrastructural development projects if linked conservation-

development is captured as a specific cross cutting issue in the guidelines for developing the DMTDP and as one of the indicators in the Functional Organisational Assessment Tool (FOAT)[11].

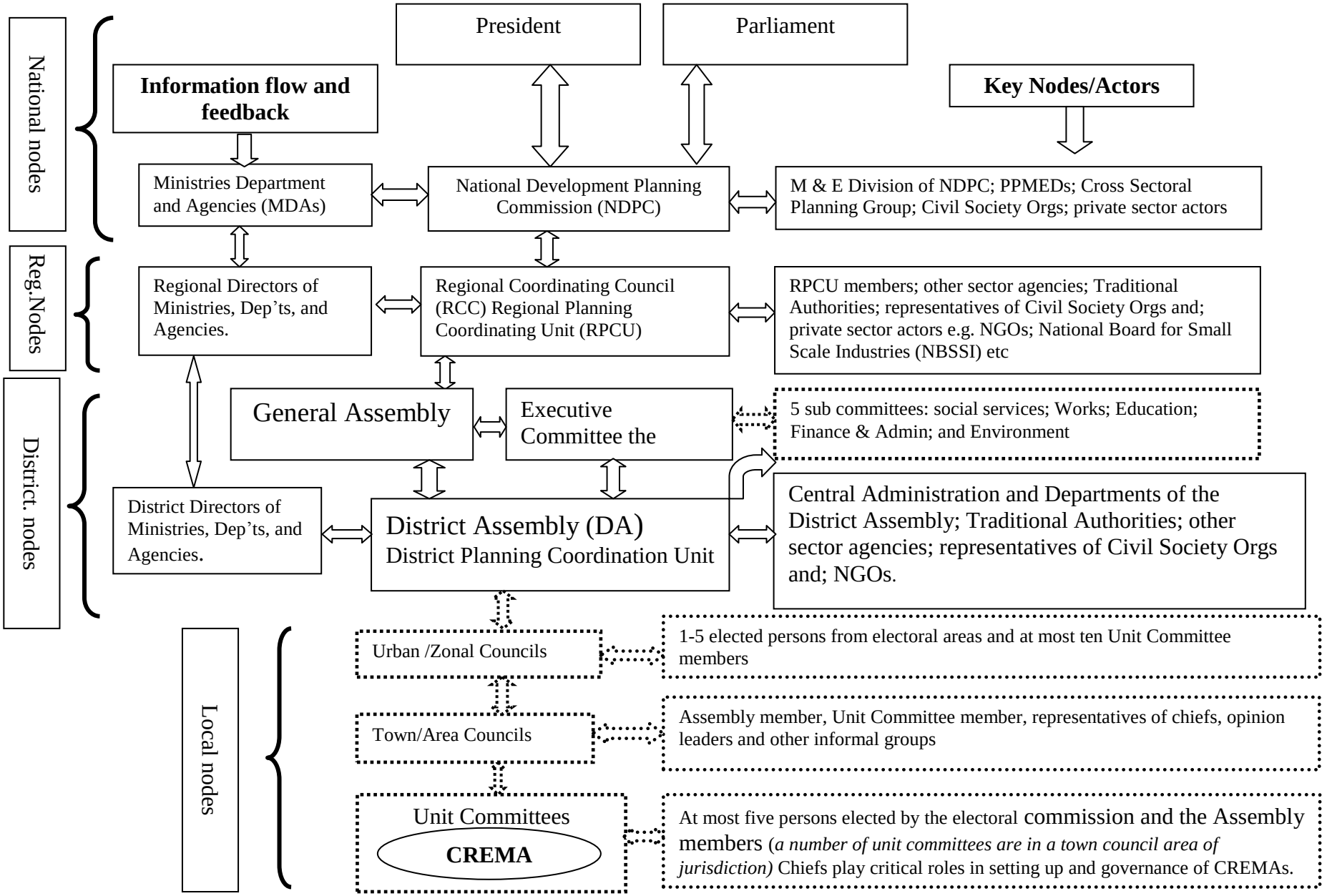
2.3.3 Governance in Ghana and Relationships to Local Level Development Planning

Administratively, Ghana is divided into four levels of governance including the national, regional, and district/municipal/metropolitan assemblies and their sub structures to facilitate a decentralized system of governance (that takes cognizance of the traditional administration) that is administered at several nodes from the national to local through legislation, delegation and devolution of functions (Figure 3). The District Assembly serves as the fulcrum of development and exercises political and administrative authority within the district. Among other responsibilities it ensures the preparation and submission through the Regional Coordinating Council (RCC) of (i) DMTDPs for the district to the National Development Planning Commission (NDPC), and (ii) the district budget related to the approved plans to the Minister responsible for finance. Therefore, it has some functional and fiscal linkages with higher and lower nodes of governance.

The District Assembly is mandated to take the necessary measures to guide, encourage and support sub-district local nodes of governance, public agencies and local communities to discharge their roles in the execution of approved development plans. The assembly follows a vertical governance relationship in the formulation of a DMTDP by a District Planning Coordinating Unit (DPCU). In preparing the DMTDP, other agencies such as traditional authorities and civil society groups may be invited to submit proposals.

The RCC receives guidelines for the preparation of the DMTDP from the NDPC and passes it down to the District Assembly. Using these guidelines the assembly directs its sub-structures to produce and submit action plans hierarchically with the support of the District Planning Unit.

[11] FOAT is a set of predetermined indicators for assessing actual performance of District Assemblies to ensure efficient provision of basic infrastructure and service delivery within the district.



Adapted from Ghana Shared Growth and Development Agenda 2010-2013. Sub structures in broken lines have been added from interviews with district authorities.

Figure 3: Decision Making Structure and Roles of Nodes in Ghana

The district development planning process begins with a community Needs Assessment at each Unit Committee node..

Through participatory action planning, the needs are developed into Community Action Plans (CAPs). The CAPs are sent to the immediate higher node (Town Council) for harmonisation into a "Town Council Action Plan" (TCAP). The collation and harmonisation continue upward through the Zonal/Area Council, to the District Assembly and the DPCU.

When the DPCU receives the Actions Plans it incorporates inputs from other agencies (Key informants, 2012, pers. com) and harmonises them into the DMTDP. Portion(s), if any, of the action plans from the lower nodes that are not clear are referred to the appropriate subcommittee of the assembly for discussion, amendment and onward submission through the Executive Committee of the Assembly to the General Assembly for approval and incorporation into the draft DMTDP.

In theory two public hearings must precede the final draft of a DMTDP, but, in practice this is rarely done for want of funds, according to several key informants. The final drafts from all district assemblies are approved by the respective General Assembly and submitted to the respective Regional Planning Coordinating Unit (RPCU) for collation and harmonization into a "Regional Action Plan" for the planning period and transmitted to the NDPC. The NDPC harmonises them into the Ghana Shared Growth and Development Agenda (GSGDA).

By way of implementation of the DMTDPs, the departments of the Assembly led by the District Planning Officer (or the DPCU) and the District Budget Officer (or the District Budget Committee) prepare annual action plans and a composite budget for approval by the District Assembly.

One of the pillars of decentralisation is Fiscal Decentralisation, an arrangement to resource the District Assemblies. The District Assembly Common Fund (DACF) is a mandatory 7.5% of central government transfer from the Consolidated Fund. The disbursement of the Fund is based on a formula approved by the Parliament of Ghana. The District Assemblies also collect Internally Generated Fund (IGF) and an annual fee

fixing is a routine activity toward budgeting. Development Partners (DPs) with isolated interests also send funds to the district. In addition to these, a District Development Facility (DDF) Secretariat that is located in the Ministry of Local Government and Rural Development (MLGRD) supports district assemblies as part of government's efforts to improve efficiency, transparency and accountability. It aims to ensure efficient provision of basic community infrastructure and service delivery through judicious use of resources. Its resource allocation is based upon actual performance which is verified against predetermined, agreed-upon indicators in an annual evaluation called the Functional Organisation Assessment Tool (FOAT) (http://www.afd.fr).

2.3.4. Governance Structures, the Key Institutions at the Three Levels and, the Roles of Important Actors at the District Level

Assessment of the structures at the three levels of governance with respect to their viability for balancing conservation and development in this paper is based on key policies and institutions such as the guidelines for the preparation of the DMTDPs, the Legislative Instruments of the Assembly, and identification and explanation of the nodes within the District Assembly.

DMTDP guidelines provide a broad framework for the preparation of the DMTDP that emphasise relevance to local needs and the integration of cross-cutting issues such as climate change, vulnerability, and environment (socio-cultural, economic and natural resources). Conservation and development, as a cross cutting objective, appears to be provided for under the category “environment” in the guidelines.

The most important actors at the district level and their roles are identified from the Local Government (Departments of the District Assemblies) (Commencement) Instrument, 2009 L.I. 1961). The roles of the RCC/RPCU were taken from the guidelines for the preparation of the DMTDP. Table 8 details the role of the important nodes related to the DMTDP.

Table 8: Roles of the Most Significant Nodes in Conservation and Development at the Regional, District and Local Levels of Governance in Ghana

Nodes of governance	Roles with Respect to Conservation and Development in the District
Regional level actors	
Regional Coordinating Council/RDPC	• Prepares Regional MTDPs and monitor its implementation • Guides district to develop and implement Monitoring and Evaluation Plans • Coordinates district activities
District level actors	•
General Assembly	• Approves draft DMTDP and submit them to the RPCU
Executive committee	• Co-ordinates plans and programmes of the sub-committees and submit these as comprehensive plans of action to the General Assembly
District Planning Coordinating Unit (DPCU)	• Collects and prioritses Area Council Plans • Prepares District Medium Term Development Plans (DMTDP) • Conducts public hearings on draft DMTDP • Prepares composite budget • Prepares and implement monitoring and evaluation plans
Department of Health	• assists in the preparation and maintenance of all health facilities assists in health education, family immunization and nutrition programmes promotes and encourage good health and sanitation helps educate and inform residents on sanitation and hygiene
Department of Agriculture	Provides extension services around natural resources management, rural infrastructure and small scale irrigation assists in the formulation and implementation of national agricultural policies adopts and disseminate improved soil and water conservation methods promotes agroforestry development to reduce the incidence of bushfires facilitates sustained pasture and forage production and act as out grower to farmers • promotes agro- processing and storage
Department of Trade and industry	• assists in the formulation of policies and data collection on trade and tourism and help to promote and implement them • facilitates private sector participation in tourism development • facilitates the promotion and development of small scale industries • advises on the provision of credit for micro, small and medium scale enterprises
Department Social development	• assists in provision of community care services such as personal social and hospital welfare services of families • assists and organize community development programmes and provision of water, schools, library, community centres etc
Natural Resources Conservation Department, Forestry Game and Wildlife Division (**not yet established) it is in second schedule (regulation 1 (b) of LI 1961**	• assists the Assembly in the formulation of policies for the conservation of natural resources in the district and report on implementation to the District Assembly • assists in developing collaborative mechanisms for the sustainable management and utilization of timber and non-timber products and • protects forests and water resources from bushfires, illegal harvesting, agricultural encroachment and pollution • assists the Assembly in mapping out areas for natural environment preservation and protection.
Local level actors	•
Assembly member	• Maintains close contact with and consult the people of the electoral area on issues to be discussed in the DA and collate their views and proposals and present them to the DA • Meets electorate before each assembly meeting and feed them back after the meeting with action to be taken or taken to address their issues and take part in communal and other development activities
Unit Committee	• mobilizes and monitor members of the unit to implement self help and development projects • provides a focal point to discuss local problems and take remedial action where necessary • makes recommendations to the assembly where appropriate. and • arranges revenue contracts with the district assembly and collect revenues due to the assembly. • **NB** recommendations may also be sent through the assembly member of the electoral area(s) within which the unit committee may be located (pers.com)
Traditional authorities	• serve as basis for local development and so are very much involved in or consulted on local development processes. • provide vital linkages with higher level actors such as the district assemblies and other conservation and development civil society organisations for the necessary support for CREMAs

Before elaborating on table 8, it is important to note that the Local Government (Departments of District Assemblies) (Commencement) Instrument, 2009 (L.I. 1961) provides for a Natural Resources Conservation Department, Forestry Game and Wildlife Division for sustainable development in the district. However, this node is in the Second Schedule Regulation 1 (b) and it is yet to be established as a Department of the Assembly. The necessary legal frameworks to establish the Departments in the second schedule as Departments of the District are currently under review (Oppong Aboagye, 2013 pers. Com)[12].

Examining the roles of the district nodes in Table 8, it appears that, apart from the yet to be established Natural Resources Conservation Department (NRCD) (see below), the nodes are mostly development oriented. The DMTDP process could therefore provide a strong platform for integrating conservation and development if CREMAs were linked to this process. This would be particularly true if the NRCD is established. For example, agriculture is the main livelihood strategy of all the CREMA constituents and therefore the CREMAs would need the extension services and other technical expertise of the Department of Agriculture to improve those outcomes. Likewise, the Department of Trade and Industry can help promote tourism which is one of the most desired outcomes of CREMA governance. Although not mentioned as an outcome in Tables 4 and 6, there are clearly other important nodes in the DMTDP process that could play a role in the conservation and development agenda. For example, the Department of Health may provide reproductive health education and allied services to bring down fertility rate to check population growth and the Department of Social Development can also facilitate provision of community care service and social welfare.

The roles of these important nodes (Departments of the District Assembly) make strong horizontal linkages an imperative. However, the funding mechanisms are weak because these nodes still rely largely on their regional, (mother) ministries for funding their programmes even though the funds pass through the Assembly's accounting system. In other words, they maintain vertical linkages with their regional nodes of governance and are strongly influenced by their sector bureaucracies and priorities, rather than

[12] Mr. Edward Oppong Aboagye is an official of Ghana's Local Government Service

collaborating among themselves to coordinate and integrate their programme implementation (Key informant interviews 2012). Hence, horizontal linkages within the DPCU for balancing conservation and development are weak and ineffective, particularly in the absence of the NRCD. Several key informants also indicated that the district nodes with direct links to their regional nodes submit quarterly reports to their regional directors for the quarterly meetings of the RPCU, but there is some reluctance to submit correct expenditure returns to the Assembly. Therefore, there is a lack of transparency and accountability which makes the requisite linkages even weaker. The lack of "ownership" of the District Directors of the decentralised departments of the District Assembly is a drawback to the decentralisation process. Consequently, implementation of a Local Government Service Act 2003 Act 565 is on-going to make all decentralised departments become departments of the District Assembly. This is in order that the District Directors will be under the direct supervision of the District Assembly, to strengthen the weak linkages, and be answerable directly to the District Chief Executive through the District Coordinating Director.

With the necessary support of chiefs, the Unit Committee could provide a foundation for implementing the CREMA concept and linking it with the DMTDP, but it is functionally weak. Several key factors, including: it's "absence" in many places, a lack of operational funds, tensions with the local traditional authority, and inadequate enthusiasm, account for the weaknesses (personal observation and key informant interviews 2012). If these weaknesses are addressed, Unit Committees and their allied Assembly members could play vital roles in balancing conservation and development. For example, one of the roles of Unit Committees is to arrange revenue contracts with the District Assembly and collect revenues due to the Assembly at the unit level in return for retention of part of the revenue (Table 8). Furthermore, Unit Committees can also influence the planning process at the local level to bring conservation and development together.

2.3.5 Awareness and Performance, and Attitudes of CEC and CRMC Actors in Governance

This section discusses awareness and perceived governance performance at the CREMA level and how these factors may affect governance effectiveness. Several survey

questions gauged the views of respondents about their awareness of activities of the CECs and the CRMC nodes of governance and the institutions governing the CREMA as well as their perceived performance. Questions about awareness were asked in order to gauge whether local nodes of governance were active and viable (Table 9). Furthermore, whether rural people will find conservation related restrictions sufficiently attractive to incorporate them into their livelihood activities and behavior may depend on their (rural people) level of awareness and performance (IIED 1994).

Table 9: Linkages in CREMA Governance

Awareness and Performance	**Percentage of Respondents**						
	1	**2**	**3**	**4**	**5**	**4 & 5**	**Mean**
I have heard about the CREMA(**A**)	4.3	2.8	3.7	11.9	77.2	89.1	4.6
The CEC needs more organizations and actors to make it more effective(**P**)	4.6	1.9	7.1	23.7	62.6	86.3	4.4
I am aware of the CREMA Executive Committee (CEC)(**A**)	9.0	2.3	8.4	16.6	63.4	80.0	4.2
I am aware of the Community Resource Management Committee (CRMC) in my community(**A**)	9.8	2.6	9.1	17.1	61.0	78.1	4.2
I know the functions of the CEC(**A**)	14.3	3.1	15.2	25.7	41.4	67.1	3.8
I know the rules and regulations of the CREMA(**A**)	13.6	5.0	16.0	20.1	45.1	65.2	3.8
I know its functions(**A**)	15.2	4.3	16.6	27.9	36.0	63.9	3.7
The CEC has been successful in resolving natural resource management conflicts(**P**)	9.5	4.7	22.5	27.0	35.7	62.7	3.8
I am aware of the constitution of the CREMA(**A**)	14.6	5.2	18.4	17.9	43.8	61.7	3.7
Decisions of the CEC reflect the most important benefits and concerns of the community(**P**)	9.1	9.8	19.5	22.8	38.5	61.3	3.7
Composition of the CEC is enough to assure effective management of the CREMA(**P**)	17.7	8.9	13.8	24.1	35.0	59.1	3.5
I am satisfied with the provisions of the constitution(**P**)	11.6	5.7	24.3	19.9	37.6	57.5	3.7
The community is briefed fully on the decisions of the CEC(**P**)	14.2	8.5	19.3	21.3	36.1	57.4	3.6
The CEC meets regularly(P)	8.1	9.1	27.3	17.5	37.1	54.6	3.7
I am aware of the CREMA by law from the District Assembly(**A**)	21.4	6.0	20.0	15.4	36.9	52.3	3.4
The CRMC consults the general community and meet before attending CEC meetings(**P**)	16.0	6.6	25.9	19.2	30.7	49.9	3.4
The CRMC meets regularly(**P**)	11.9	6.0	32.4	17.1	31.9	49.0	3.5
I or a member of my family is a member of the CRMC(**P**)	33.3	5.8	13.9	11.5	34.7	46.2	3.1

Likert scale of agree: 1=strongly disagree; 2=somewhat disagree; 3=not sure; 4=somewhat agree; 5=strongly agree

Discussion of this table will be augmented with information from the workshops. The results show high awareness of CREMA nodes across the CREMAs. For example, over 75% of respondents agreed that they had heard of the CREMA and were aware of the CRMC in their respective communities. They were also aware of the CEC. Between 60 to 65 percent of respondents agreed that they knew the functions of the CEC, the rules and regulations of the CREMA, and its functions, and were aware of the CREMA constitution. Fewer than 60% of respondents agreed that they were satisfied with the provisions of the constitution, were aware of the District Assembly by-laws on CREMA and its provisions and saw themselves as fully briefed on the decisions of the CEC.

In terms of performance, 61% of respondents agreed that decisions of the CEC reflected the most important desired outcomes (benefits and concerns) for the community and 63% agreed that the CEC had been successful in resolving natural resource management conflicts. These results imply that the constituents agree that governance is delivering on their most desired outcomes. However, the results depict weaker performance in other areas as reflected in low agreement on those items. For example, fewer than 50% of the respondents agree that the CRMC consults the general community and meets before attending CEC meetings. Only 49% of respondents agree that the CRMC meets regularly, while 55% agree that the CECs meet regularly. Regarding the composition of the CEC about 59% of the respondents agree that the constituent nodes are enough to assure governance effectiveness of the CREMA. Therefore, the CEC itself needs to be strengthened by bringing in more diverse array of actors either from the local level or beyond. This is reflected in the 86.3% of respondent's agreement that the CEC needs more actors to enhance governance effectiveness.

Participants at the workshops including ordinary CREMA members and some CRMC members confirmed the inability of the CRMCs to meet regularly due to lack of funds to service their meetings although the CRMC members attend CEC meetings. This affects the ability of the CRMCs to take and articulate the interest and concerns of the community adequately for the appropriate decisions to be made at the CEC. Additionally, participants in the workshop explained that members of the CRMCs do not always feel accountable to the general community and do not report back adequately (as evidenced by the relatively low agreement on the question about briefing the community on CEC

decisions). The attitude of the CRMCs was blamed on the mode of selection of the CRMC actors which is done through nomination and voting at community meetings. It was therefore agreed that a more effective alternative would be to get the local informal nodes such as farmer, and youth groups, traditional authorities, landowners to nominate their representatives to strengthen accountability and information exchange.

2.3.6 Important Nodes of Governance for Conservation and Development at the District and Local Levels

This section explores the important nodes of CREMA governance needed to assure governance effectiveness. Table 10 assesses the important nodes of governance needed to improve effectiveness. In this assessment, respondents were asked to indicate through a five point Likert scales if they (1) “strongly disagree” (2) somewhat disagree” (3) “not sure” (4) “somewhat agree” or (5) “strongly agree” on the participation of each of the nodes in the list in the decision making structures and processes of the CREMA to achieve their desired outcomes.

Table 10: Important Nodes of Governance needed to Improve Linkages and Effectiveness as Perceived by CREMA Community Members

Important Nodes of Governance at Local, District and Regional Levels for Conservation and Development	Percentage of Respondents							
	1	2	3	4	5	4 & 5	Level of node	Rank order position
Chiefs	1.6	1.0	4.4	7.3	85.6	92.9	Local	1
Landowners	2.3	1.1	5.2	14.9	76.4	91.3	Local	2
District assembly	2.9	1.5	4.3	16.7	74.0	90.7	District	3
Assembly members	1.7	1.0	7.2	18.6	71.3	89.9	Local	4
National Board for Small Scale Industries	1.7	1.0	7.2	18.6	71.3	89.9	Regional	5
Forest Services Division	2.9	1.6	5.3	18.2	71.6	89.8	District	6
Youth groups	2.7	1.5	5.7	16.9	72.8	89.7	Local	7
NGOs	4.3	1.1	4.4	19.9	69.8	89.7	District	8
Opinion leaders	3.0	3.0	6.8	20.7	66.0	86.7	Local	9
Wildlife Division	3.1	1.5	8.2	14.6	72.1	86.7	Regional	10
Environmental Protection Agency	2.3	2.5	8.5	21.5	64.5	86.0	Regional	11
Unit Committee Members	3.0	1.7	8.9	20.6	65.0	85.6	Local	12
Farmers	4.7	1.2	8.0	16.5	69.0	85.5	Local	13
Research institutions	3.7	2.0	8.1	26.0	59.4	85.4	Regional	14
Women's groups	4.7	2.7	7.1	24.2	60.8	85.0	Local	15
Ghana National Fire Service	3.6	3.1	7.5	22.3	62.6	84.9	District	16
Ministry of Agric	3.6	3.2	8.1	20.2	64.4	84.6	District	17
Financial institutions	5.1	1.7	8.6	24.0	60.2	84.2	Regional	18
Community based organization	2.8	2.4	10.2	26.9	57.3	84.2	Local	19
Religious leaders	4.3	3.7	8.0	19.9	63.4	83.3	Local	20
Teachers	5.2	3.3	9.6	22.5	58.8	81.3	Local	21
Police	4.8	3.7	10.9	24.5	55.9	80.4	District	22
Regional Coordinating Council	4.7	3.8	15.2	25.5	50.2	75.7	Regional	23
Hunters	13.6	5.2	7.3	18.1	55.3	73.4	Local	24
Charcoal burners	19.1	6.9	9.9	15.2	48.4	63.6	local	25

Likert scale of agree: 1=strongly disagree; 2=somewhat disagree; 3=not sure; 4=somewhat agree; 5=strongly agree

The results show that with the exception of Regional Coordinating Council (75.7% agree), hunters (73.4% agree) and charcoal burners (63.6% agree), over 80% of respondents agree that all the other nodes from the local, district and regional levels are highly important and may be included on the CEC. However, currently, core membership of CECs is composed of representatives of CRMCs only. CRMC representatives serve as nominees of the constituent communities and not as members or representatives of any informal community groups. Other nodes from the local and district levels may be invited as non-voting members.

In another question, respondents were asked to select, from the list in Table 10, the three most important nodes of governance. The results are shown in Table 11.

Table 11: Important Nodes of Governance at Local District and Regional Levels

Important Nodes of Governance	1st Choice in %	2nd Choice in %	Third Choice in %	Total in %	Rank Order Position	Rank from Table 8
Chiefs	49.7	12.2	8.7	70.6	1	1
Landowners	6.8	13.0	7.9	27.7	2	2
Wildlife Division	8.8	8.6	8.6	26	3	10
Assembly members	3.3	10.2	7.4	20.9	4	4
Farmers	3.2	6.4	7.6	17.2	5	13
Hunters	2.4	8.3	3.2	13.9	6	
Youth groups	1.8	4.0	6.4	12.2	7	7
District assembly	2.2	3.7	6.1	12	8	3
NGOs	2.9	3.7	5.4	12	9	8
Unit Committee Members	1.7	4.0	5.6	11.3	10	12
Police	2.5	2.9	4.1	9.5	11	
Ghana National Fire Service	1.4	2.8	3.9	8.1	12	
Teachers	1.1	2.7	3.3	7.1	13	
Religious leaders	1.0	3.4	1.7	6.1	14	
Financial institutions	1.4	1.4	3.1	5.9	15	
Opinion leaders	0.9	1.5	3.0	5.4	16	
Ministry of Agric	1.3	1.6	2.2	5.1	17	
Forest Services Division	1.1	1.9	2.0	5.0	18	
Environmental Protection Agency	0.6	0.6	1.9	3.1	19	
Women's groups	0.6	1.0	1.3	2.9	20	
Research institutions	0.9	1.2	0.8	2.9	21	
Charcoal burners	0.5	0.6	1.3	2.4	22	
Community based organization	0.2	1.0	0.8	2.0	23	
National Board for Small Scale Industries	0.6	0.7	0.6	1.9	24	
Regional Coordinating Council	0.7	0.3	0.9	1.9	25	

Core membership of CEC is not more than 15 persons. When the first 15 most important nodes from Tables 10 and 11 are compared, respondents share consensus on nine important nodes. They include a) six from the local level i.e. Chiefs; Land owners; Assembly members; Unit Committees; Farmers; and Youth groups. It also includes three from the district level including District Assembly, Non Governmental Organizations (NGOs), and Wildlife Division.

The inclusion of representatives from a variety of levels including the Unit Committee, District Assembly, the Assembly members and NGOs is instructive because these can provide important multiple scale linkages to assure joint and more effective outcomes. On the other hand, it is curious why others have been left out because, as illustrated in Table 8, they are key nodes of governance that can perform crucial roles

toward conservation and development. It is also curious why hunters and the National Board for Small Scale Industries (NBSSI) exhibit large discrepancies in their positions when Tables 10 and 11 are compared. The large discrepancy in the positions of hunters in Tables 10 and 11 is probably because, respondents' first reaction about the importance of hunters in conservation and development, is not very positive. This is because, the current populations of wildlife are low and respondents probably feel that activities of hunters are inimical to wildlife population rebound. However, respondents consider hunters as very important actors in governance who are needed to control hunting. Regarding the NBSSI, respondents see it as a very important node of governance to facilitate capacity building in income-generating enterprises, but the NBSSI is not well known at the local level, due to its absence in many districts. This is probably the reason why it is not considered as one of the potential key actors for effective CREMA governance.

2.4 Conclusions and Recommendations

This study shows that actors rate the SE factor as the most desired outcome followed by EC, EGS and finally PS. The analysis also shows that the largest gaps between scores for importance and satisfaction are for the SE factor. The inference is that CREMA governance is performing less well on the development side than the conservation side. The situation might improve if the actors in conservation and development forged more effective linkages within and across the scales of local and district levels of governance.

As an example, the DMTDP development process faces several challenges. Although the District Assembly concept mobilizes otherwise independent nodes into the center through the decentralization policy of the state, horizontal linkages for conservation and development are practically missing for a number of reasons. These include the fact that issues relating to conservation and development are fragmented across a number of independent nodes at the district level that are rather maintaining strong vertical linkages with their regional nodes and hence keep to their bureaucratic allegiances and priorities, thus undermining the purpose of the decentralization programme. Conservation and development can probably be achieved only when the

fragmented approaches that have characterized conservation and development are improved through integrated and effective horizontal and vertical linkages at the District Assembly. This would be facilitated if a Natural Resources Conservation Department, Forestry Game and Wildlife Division of the District Assembly is established to provide stronger linkages that will mobilize the collective efforts of the other nodes within the District Assembly and beyond. Additionally, CREMA should be emphasized as a distinct cross cutting "project" in the NDPC guidelines to provide impetus for it as a national endeavour. Moreover, the District Development Facility needs to be entreated to include CREMA or conservation and development issues in the indicators of the Functional Organisational Assessment Tool (FOAT) to provide stimulus for them as a joint objective.

CREMAs respond to the challenges of conservation and development but are based at the local level and not adequately linked to the DMTDP. The Unit Committee concept provides a possible foundation for influencing the development planning processes at the local level to link CREMAs to the DMTDP but it is also functionally weak due to the absence of Unit Committees in many places, a lack of operational funds where they exist, and tensions with local traditional authorities.

The governing body of the CREMA is functionally weak due to inadequate representation of some critical nodes that could assist in coordinating the governance processes, sharing information and providing strong links to the DMTDP and other development oriented agencies. The CEC could be strengthened by enlisting the participation of other nodes at the local and district levels to leverage enough influence for CREMAs in the DMTDP process to attract resources for conservation and development. Important nodes to assure governance effectiveness of CREMAs may include chiefs, land owners, Assembly members, Unit Committee members, farmers, youth groups, and representatives of the District Assembly, Non Governmental Organisations and the Wildlife Division. These should be made integral part of the core membership of CREMAs.

Clearly, other issues related to governance beyond those discussed in this paper will be important to consider and address. For example, critical attributes such as

collective decision making, accountability, transparency, local traditions, and funding among others have become critical issues for governance effectiveness (Dearden, Bennett, and Johnston, 2005). These are imperative for CREMAs to attract adequate funding and logistics. Beyond this, capacity building for CRMCs in group and intercultural dynamics, communication, facilitation and conflict resolution skills should also be carried out to improve awareness and performance.

Polycentric governance could be the key to helping CREMAs forge a balance between conservation and development in Ghana but presently linkages are weak. In summation, the form and content of multi actor linkages as presently structured have gaps and weaknesses such as inadequate nodes in the CEC, weak links between CREMAs and the DMTDP, gaps and weak horizontal linkages among the departments of District Assemblies that are largely influenced by vertical bureaucratic biases, inadequate funding, and attention to conservation and development as a distinct project. There is scope for building and strengthening the requisite nodes of governance, by enlisting other critical nodes at the local and district levels into the CEC, and the linkages at the district level once the decentralization process in Ghana is fully implemented. Until then, the relevant nodes of governance within the District Assembly in particular should be encouraged to abstain from their bureaucratic biases, and strengthen their horizontal linkages to make polycentric governance and performance of CBNRM practically effective and rewarding.

Chapter 3

Variability in Desired and Perceived Outcomes of Community Based Natural Resources Governance in Ghana

Abstract

In Ghana and elsewhere, one response to the criticisms of Protected Areas (PAs) has been the emergence of Community Based Natural Resource Governance (CBNRG) systems aimed at promoting conservation through the active participation of local communities in PA governance in ways that improve the realization of locally desired outcomes, including those related to development. Due to a number of factors that mediate CBNRG, significant variability can exist between different CBNRG systems. Nonetheless, many assessments of CBNRG focus on the "big picture" without investigating variability between the desired and perceived outcomes of different actors in different CBNRG systems, thereby, masking differences among actors within diverse and dynamic socioeconomic, cultural and agro-ecological landscapes. This can lead to weak conclusions that can affect the long term integrity of CBNRG systems. This paper examines the desired outcomes and perceived effectiveness of CREMA, a form of CBNRG in Ghana. Data was collected through a survey of 929 respondents across five CREMAs. The study found gaps between perceived (satisfaction) and desired (importance) outcomes; that a large array of outcomes can be characterized into four factors through factor analysis, and outcomes vary between CREMAs.

Key words: Protected Areas, CBNRG systems, variability, conservation, development, outcomes, CREMA, and actors.

3.1 Introduction

Conservation of biodiversity is a global challenge. One significant strategy to meet this challenge is the establishment of Protected Areas (PAs) to conserve representative samples of biodiversity across the world. However, PAs have been criticized in many regions, particularly in the developing world, for sometimes alienating local communities and contributing to rural poverty and, in some cases, compromising conservation as a result (Adams et al., 2004; Hutton et al., 2005; Adams and Hutton, 2007). For example, in Ghana, PA resident communities have been removed from PAs.

They lost access to their traditional grounds, and routes linking them to sister communities, suffered detachment from their religio-spiritual inheritance, and lost access to valuable water supplies, fishing and hunting grounds (Ayivor et al., 2013). As a result, wildlife for affected communities is often no longer regarded as a resource but a liability to be tolerated with resignation, stolen or covertly destroyed (Murombedzi, 1996).

In Ghana and elsewhere, one response to these criticisms has been the emergence of Community Based Natural Resource Governance (CBNRG) systems aimed at promoting conservation through the active participation of local communities in PA governance in ways that improve the realization of locally desired outcomes, including those related to development (Senyk J, 2005: Baliant and Mashinya 2005; Tacconi, 2007; Lepper and Goebel, 2010; Kellert et al., 2000). Promoting conservation through the active participation of local communities in PA governance led to the development of the Community Resource Management Area (CREMA) concept in Ghana. However, in Ghana and elsewhere, this form of governance has become more complex, in that a wide array of actors with diverse value orientations and objectives have an interest in how governance systems deliver a broad spectrum of conservation and development related outcomes (Kellert et al., 2000; Vaske et al., 2009).

Many of the assessments of CBNRG focus on the "big picture" without investigating variability between the desired and perceived outcomes of different actors in CBNRG systems, thereby, masking possible differences among actors within diverse and dynamic socioeconomic, cultural and agro-ecological perspectives and perhaps, leading to simplistic conclusions that can affect the long term success of CBNRG (Gibson and Koontz 1998; Kellert et al., 2000; Barrett et al., 2001; Randall and Rollins; 2009; Vaske et al., 2009). Therefore, in order to improve governance effectiveness there is the need for a broader understanding of the variability among the varied actors in terms of their desired and perceived outcomes; as well as the factors that account for that variability (Tonge and More 2007; Heck et al., 2011).

Moreover, assessments of conservation and development outcomes often concentrate on *perceived* outcomes (Berkes, 2007) without much attention to the *desired* outcomes of actors (Abalo et al., 2007), making it difficult to gauge whether or not

CBNRG is delivering on the most desired outcomes (Ziegler et al., 2011). Assessing both the desired and perceived outcomes has so far found limited application in CBNRM perhaps due to a lack of tools for such assessments (Wade and Eagles, 2003).

This paper draws on Importance–Performance (IP) analysis to determine the match or gap between desired and perceived outcomes of five CREMAs in Ghana, as well as variability among these CREMAs. Specifically, this paper a) characterizes the desired and perceived outcomes of the CREMAs and the gaps between them, b) examines variability among five CREMAs located across Ghana; and c) assesses the factors that might account for such variability.

3.2. Study Sites and Methods

3.2.1 Study Sites

The CREMA concept is modeled around local land tenure systems and the decision making structures of the areas in question. CREMAs build on the governance structure of the target area by strengthening existing local *nodes of governance*[13] and i*nstitutions*[14] mobilizing communities to organize for collective action, and encouraging them to integrate sustainable resource management land use principles to pursue their desired outcomes.

[13] N*odes of governance* (actors) are different organizations such as the CREMA Executive Committee (CEC), the Community Resource Management Committees (CRMCs) etc; and individuals such as chiefs and opinion leaders and informal grouping such as farmers associations etc.

[14] *Institutions* are a system of rules, decision making procedures, and programmes that give rise to social practices, assign roles and guide interactions among the actors

Each CREMA is managed by a CREMA Executive Committee (CEC) and has Community Resource Management Committees (CRMC) at the individual community levels. Governance is mediated by local institutions and policies such as the CREMA constitution which are formulated by the communities themselves and supported by District Assembly[15] by-laws. Chapter two provides more detail on CREMA governance.

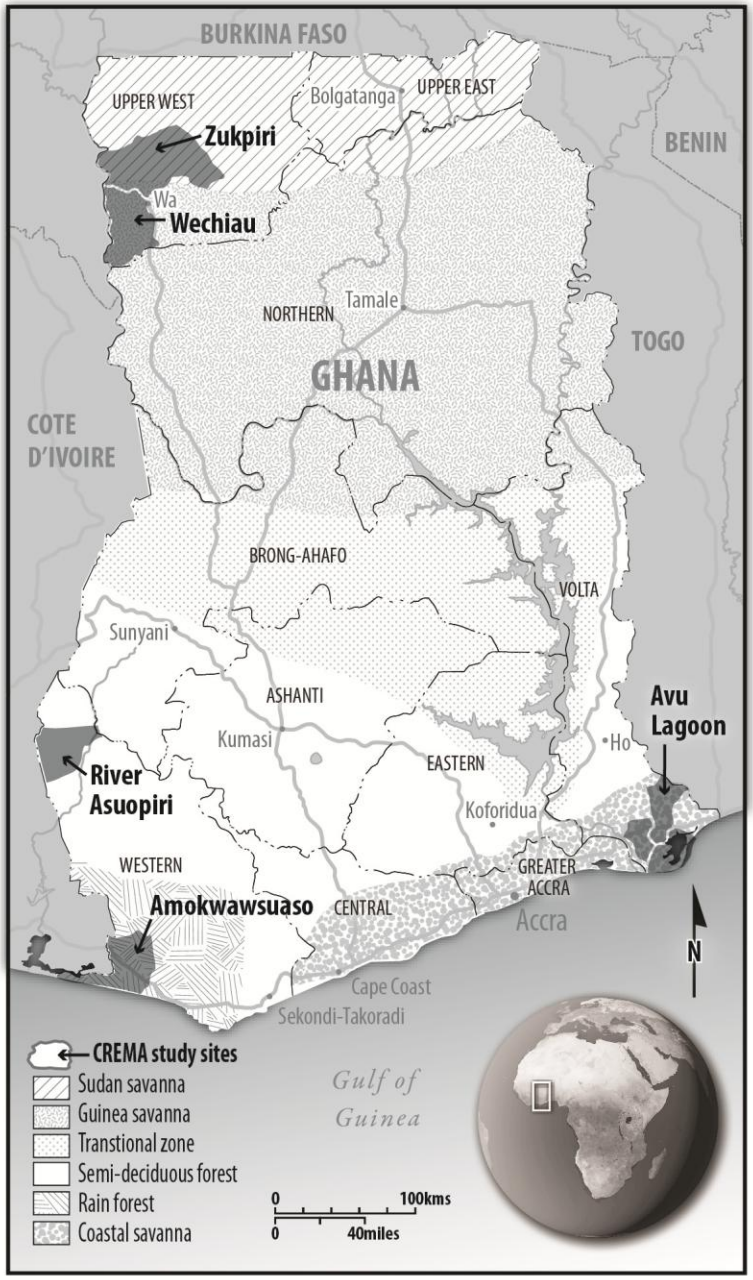


Figure 4: Location of Study Sites in Ghana

Four out of the five CREMAs for this study were randomly selected from two administrative regions in Ghana with certificated CREMAs (Figure 4). Avu Lagoon was selected purposively because it is one of the official research sites of the PAPR project[16].

[15] Ghana practices a decentralized system of governance that is administered at several nodes from the national to local through legislation and delegation of functions. The district assembly serves as the fulcrum of development and exercises political and administrative authority within the district

[16] The goal of this paper is nested within a broader goal of Protected Area and Poverty Reduction (PAPR) Project. PAPR seeks to address challenges of reducing rural poverty and ensuring environmental sustainability by focusing on PA

3.2.1.1 Avu Lagoon CREMA

Avu Lagoon covers an area of about 300km^2 and is part of the Keta Lagoon Complex (a nationally designated Ramsar site) in the Volta Region of Ghana. The lagoon straddles three districts (Keta, South Tongu, and Akatsi). In all, 15 communities are associated with the CREMA and lagoon ecosystem (NCRC[17], 2008). Some of the communities are peri-urban while others are rural. The main occupations are farming, fishing and the distillation of a local gin. The CREMA centers largely on the Western Sitatunga (*Tragelaphus spekei gratus*), an endangered marsh ungulate around which some of the communities hold strong religious, cultural and historical views.

3.2.1.2 Zupkiri CREMA

Zukpri CREMA covers 420km^2 with about 15 rural communities and is located in the guinea savanna woodland zone. It is situated about 30 km south of Nadowli, the district capital, lying immediately east of the Black Volta River, (the Ghana–Burkina Faso border) in the Upper West Region. Zukpiri CREMA was founded by Zintang Healers Association, a local traditional healers association. The main occupation of the people is farming while some fishing is done mostly by migrants. Conservation and the supply of quality traditional medicines is a major motivation for the local people to participate in the CREMA.

3.2.1.3 River Asuopiri CREMA

The River Asuopiri CREMA, which covers an area of 61.33km^2, is located within the guinean rainforest and includes four participating communities that are a mix of urban and peri urban with satellite rural communities in the Bia District of the Western Region. Its establishment was facilitated by the Wildlife Division of Ghana. The main occupations are cocoa and oil palm farming, as well as some trading and processing of agricultural produce, beekeeping, and government employment. Sustainable bushmeat production, increased income and employment are primary interests motivating local participation in the CREMA

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governance, human wildlife interactions, cost and benefits of living in and around PAs and knowledge mobilization in Ghana, Tanzania and Canada. PAPR benefits from grant aid support from IDRC and SSHRC of Canada.

[17] NCRC is Nature Conservation Research Centre

3.2.1.4 Amokwawsuazo CREMA

Amokwawsuaso CREMA is about 32km^2 and is located in the wet evergreen forest belt. It consists of small-scale farmers and landholders operating within the Jomoro District of the Western Region. It has nine rural multi-ethnic communities from different cultural backgrounds. Its creation was facilitated by the Wildlife Division of Ghana and was the first to be established. Farming is the major economic activity with cocoa, rubber, and oil palm as the predominant crops. Small scale enterprises include edible oil production and the gathering of canes, rattan, chewing sticks and building materials. Like River Asuopiri, sustainable bushmeat meat production, increased income, employment and tourism motivate local interests in the CREMA.

3.2.1.5 Wechiau CREMA

Wechiau CREMA consists of a 40-kilometre stretch of riverine forest and guinea savannah woodland running along the Black Volta River, which forms the Upper West Region's boundary with Burkina Faso. It contains 17 peri-urban and mostly rural communities with varied ethnic backgrounds in the Wa West District of the Upper West Region. Its establishment was facilitated by a Ghanaian NGO (Nature Conservation Research Center). The local people are mostly farmers and cattle grazers. Fishing, hunting and gathering of grasses, sheanut and dawadawa, and oyster shells is also done (Sheppard et al., 2010). Wechiau has benefited from more than ten years of financial, technical, management and logistical support from the NCRC (Sheppard et al., 2010) and is the only CREMA among the five that has had consistent support.

3.2.2. Methods

This study involved a mixed methods approach including document analysis, interviews, and household surveys. Document analysis and interviews were conducted to gather background information about the CREMAs as well as the desired outcomes. Documents consulted included CREMA management plans, socioeconomic, biological and ethno-biological survey reports, as well as consultants' evaluation and mission reports on CREMAs in Ghana. Forty three local key informant and 20 focus groups interviews were conducted across four of the five CREMAs. Information gathered through these means was used to develop a household survey instrument.

The survey instrument included close-ended questions centred on a list of 29 desired outcomes (covering social, economic and ecosystem goods and services) to cover the most likely desired outcomes for CREMAs. Outcomes include a diverse portfolio of activities and factors such as: a) socioeconomic outcomes including increased income, capacity building in income-generating enterprises, collective community action and unity; b) ecosystem goods and services, and ecological conservation factors such as native wildlife return, more and better quality traditional medicines, improved water supply, reduced bushfires, ecologically sensitive areas being protected and well managed; and c) provisioning services factors including improved supply of firewood and charcoal, sustainable supply of fish and others that jointly determine whether conservation and development are balancing out (Chapter two; Ellis, 1999).

Surveys were administered to 929 individuals from different households. The households were selected randomly but within the households the respondents were selected purposively to include male and female adults and youth. The respondents were alternately recruited in that if an adult male was selected from the first household, a female adult was selected in the second household. In the third household if a female youth was selected then in the fourth household a male youth would be selected to complete a cycle of recruitments. If for example, in a selected household, the required respondent was a male and there was no male respondent, a female was recruited and the necessary adjustments made in subsequent recruitments. Respondents were asked to assess the level of importance they attached to each of the 29 outcomes using a five point Likert scales as follows (1) “no importance at all” (2) low importance” (3) “medium importance” (4) “high importance” or (5) “very high importance”(Oh, 2001). In another question, respondents were asked to assess the same list of 29 outcomes in regard to how satisfied they were with the achievement of each of the outcomes, also using a five point Likert scales as follows: (1) “very unsatisfied;” (2) somewhat unsatisfied;” (3) “not sure;”(4) “somewhat satisfied;” or (5) “very satisfied.”

Seventeen trained research assistants were deployed into the communities to pretest the instrument for vetting and adjustment. The survey was administered from April - August 2012 across the five sites by the 17 Research Assistants. The surveys were

administered face to face and emphasis was placed on distinguishing between desired and perceived outcomes by the interviewer.

Importance–Performance (IP) analysis was used to examine the outcomes. IP analysis is a simple graphical approach that is designed to compare mean scores of the desired outcomes (Importance) with their corresponding perceived outcomes (Performance) using a two–dimensional grid, (Martilla and James, 1977; Tonge and Moore, 2007). The analysis employs a catalogue of social and ecological outcomes that actors consider as important and assesses them against the perceived levels of satisfaction that the actors assign to each of the desired outcomes.

An iso-line that divides the grid into two 45 degrees points where Importance and Satisfaction ratings are equal has been used as a way of identifying areas of dissatisfaction by concentrating on differences in the mean scores of importance and satisfaction (Dearden and Harron, 1994; Ziegler et al., 2011). The emphasis on mean scores, although contested, is important because of the tendency of some respondents to inflate importance ratings (Martila and James 1977; Abola et al., 2007; Deng, W. 2007). Items below the iso-line have higher satisfaction scores than importance scores indicating that perceived outcomes are probably matching the desired outcomes. Conversely, items above the iso-line show where perceived outcomes are probably not matching the desired outcomes. An item's distance above the iso-line reflects the magnitude of the discrepancy between a desired outcome and its perceived counterpart. The greater the distance the more urgent the need is for management attention. The implication is that if the stakeholders' assessments are understood, then managers can evaluate the desired outcomes and be able to adjust accordingly to resolve any disequilibrium between desired and perceived outcomes (Hornback and Eagles, 1999).

3.3. Results

3.3.1 Desired Outcomes of CREMAs

Table 12 presents the very high importance ratings ("5" on the Likert scales) in percentages of respondents. They are rank ordered by the responses for all CREMA sites (column 2).

Table 12: Desired Outcomes of CREMAs in Ghana

Desired Outcomes of CREMAs in Ghana	"Very High Importance" Scores in Percentages of Respondents					
	All CREMA Sites	**Avu Lagoon**	**Zukpiri**	**River Asuopiri**	**Amokwawsuaso**	**Wechiau**
Increased Employment	**74.2**	58.2	**77.7**	86.3	89.2	**66.0**
Increased conservation awareness	**73.2**	**62.9**	**91.3**	**91.9**	**95.7**	31.3
Educational scholarships	**72.1**	**61.2**	64.0	86.3	**94.2**	**72.0**
Increased income	71.4	54.7	72.1	82.6	94.2	62.7
Tourism	69.8	**64.7**	65.6	81.4	92.1	51.3
Constancy of children's school attendance	66.7	46.6	61.6	86.0	91.4	63.0
Reduced bush fires	66.7	54.7	73.3	87.0	71.2	48.7
International recognition and pride	65.1	57.3	50.6	75.8	87.8	**68.7**
Improved water supply and quality	64.5	41.8	63.2	**91.3**	92.8	46.7
Better farmlands increased food production	63.5	47.4	61.5	85.7	85.6	47.3
Ecologically sensitive areas being protected and well managed	63.1	53.0	61.1	80.7	85.6	42.0
Native wildlife return	61.1	55.6	72.1	72.0	83.5	19.3
Access to credit/financial assistance	60.6	46.6	57.1	85.1	86.3	38
More and better quality traditional medicines	59.7	47.8	**82.2**	72.0	72.7	16.0
No chemical contamination of water	59.2	40.5	60.3	83.2	88.5	33.3
Improved social infrastructure	57.4	48.3	53.0	**91.3**	73.4	27.3
Collective community action and unity	56.3	41.8	57.5	90.1	75.5	22.7
Capacity building and training in income generating enterprises	55.9	47.0	55.1	81.4	**97.9**	21.3
Purification and provision of clean air	55.0	44.8	53.4	82.6	79.1	21.3
Wind break	53.7	26.3	60.3	78.3	78.4	36.0
More poles and construction materials	51.5	45.3	61.1	59.0	77.0	13.3
More rain	50.5	31.5	61.5	71.4	68.3	22.7
Religious, cultural and historical uses	48.9	44.4	65.2	53.3	49.6	21.3
More fish	47.0	33.2	50.2	68.3	77.0	12.7
More bushmeat	42.6	16.4	58.3	58.4	74.1	11.3
More and better quality grass	37.9	46.6	73.3	32.4	1.4	16.7
Improved supply and quality of firewood and charcoal	33.3	23.3	47.4	26.1	59.7	8.7
Fodder for livestock	29.6	29.7	46.6	44.1	1.4	13.3
More shea nut/dawadawa	22.0	0.0	55.9	0.0	0.0	34.0

The results show (in column 2) that overall, increased employment, increased conservation awareness, and educational scholarships are the top three desired outcomes. The least three desired outcomes are improved supply and quality of firewood and charcoal, fodder for livestock, and more sheanut and dawadawa. The top three desired outcomes for each of the five CREMAs are highlighted in bold and the least important three outcomes are underlined. "More sheanut and dawadawa" has not been reported on for Avu Lagoon, River Asuopiri and Amokwawsuaso because they do not occur in those CREMAs.

3.3.2. Perceived Outcomes of CREMA.

Table 13 presents the "very satisfied" ratings ("5" on the Likert scales) in percentages of respondents. They are rank ordered by the responses for all CREMA sites (column 2).

Table 13: Perceived Outcomes of CREMA

Perceived Outcomes of CREMAs in Ghana	Very Satisfied Scores in Percentages of Respondents					
	All CREMA Sites	Avu Lagoon	Zukpiri	River Asuopiri	Amokwawsuaso	Wechiau
Reduced bush fires	**45.0**	**31.9**	**74.1**	**64.6**	23.7	16.0
Increased conservation awareness	**44.8**	29.3	**80.2**	52.8	21.6	23.3
Ecologically sensitive areas being protected and well managed	**39.8**	25.0	58.3	**57.8**	15.1	36.0
No chemical contamination of water	39.3	13.4	63.2	**57.1**	**25.2**	34.0
Tourism	38.4	29.7	63.2	28.6	16.5	**42.0**
More and better quality traditional medicines	37.0	18.1	**80.6**	37.3	10.1	19.3
Native wildlife return	36.4	**31.0**	61.1	46.0	12.2	16.0
International recognition and pride	34.9	27.6	53.4	26.1	20.9	**38.0**
Increased Employment	34.3	23.3	67.2	19.9	8.6	36.7
Purification and provision of clean air	33.8	22.0	52.2	41.0	**27.3**	20.0
Religious, cultural and historical uses	32.1	22.0	64.8	27.3	10.1	19.3
Collective community action and unity	31.8	15.1	60.3	41.0	15.1	16.0
Increased income	31.2	23.3	62.8	9.9	9.4	34.7
More and better quality grass	30.8	23.0	73.3	13.7	0.0	19.3
More rain	30.8	14.7	56.3	24.8	**24.5**	26.0
Improved water supply and quality	30.2	13.8	64.0	24.2	17.3	18.7
Constancy of children's school attendance	29.7	12.1	53.0	35.4	9.4	31.3
Better farmlands increased food production	28.6	22.4	52.6	24.8	7.9	22.0
Wind break	28.1	6.9	59.1	31.1	17.3	16.7
Educational scholarships	26.9	19.0	51.8	5.6	7.9	**38.7**
More poles and construction materials	26.8	19.4	56.3	20.5	6.5	15.3
Capacity building and training in income generating enterprises	26.0	15.1	49.4	28.0	10.1	17.3
Access to credit/financial assistance	24.5	15.9	50.6	8.1	7.9	28.0
Improved social infrastructure	23.4	17.2	47.4	6.8	8.6	24.7
More bushmeat	22.4	5.2	55.1	15.0	9.4	15.3
Fodder for livestock	20.8	10.3	43.7	21.7	5.0	16.7
More fish	20.6	**41.4**	48.2	16.8	7.9	14.0
Improved supply and quality of firewood and charcoal	20.1	3.4	51.4	8.1	11.5	15.3
More shea nut/dawadawa	19.5	0.0	51.4	2.5	0.0	33.3

The table shows (in column 2) that overall, reduced bushfires, increased conservation awareness, and ecologically sensitive areas being protected and well managed are the top three perceived outcomes. The bottom three outcomes are more fish, improved supply and quality of firewood and charcoal and more sheanut and dawadawa.

Inspection of the tables suggests considerable variability among CREMAs. To test for variability, an ANOVA test was ran for all the 29 outcomes by each CREMA and many significant differences were found. To facilitate discussion of variability, a factor analysis was also carried out to reduce the number of significant differences to be discussed. The desired outcomes were used for the factor analysis because they relate to the motivation for participation in CREMA. This also provided a clearer understanding of the inter relationships between the outcomes (i.e., the identification of general groups) and allowed for an easier way to test for differences between CREMAs.

As part of the factor analysis, Kaiser –Meyer Olkin (KMO); Bartlett's test of sphericity; and Cronbach's alpha were carried out to test the viability of the outcomes. The KMO for this study is 0.929. Bartlett's test of sphericity was < 0.000. Therefore, the 29 desired outcomes were subjected to Principal Component Analysis Rotation Method with Varimax. They loaded onto four components with a cumulative % (variance explained) of 68.2%. The mean scores of the four factors and their Cronbach's alpha test were also computed (Table 14).

Table 14: Factorised Desired Outcomes of CREMA

Factorised Desired Outcomes	Mean Scores	Factor Loading Components			
		1	2	3	4
Socio Economic (SE) Factors					
1. Increased income	4.5	**0.834**	0.165	0.221	0.206
2. Improved social infrastructure	4.4	**0.828**	0.297	0.165	0.156
3. Increased employment	4.5	**0.817**	0.208	0.227	0.168
4. Educational scholarships	4.4	**0.809**	0.073	0.238	0.076
5. Access to credit and financial assistance	4.3	**0.773**	0.206	0.250	0.156
6. Capacity building in income generating activities	4.3	**0.767**	0.290	0.142	0.150
7. Collective community action and unity	4.3	**0.751**	0.348	0.124	0.160
8. Constancy of school kids attendance	4.4	**0.750**	0.065	0.328	0.246
9. International recognition and pride	4.4	**0.718**	0.001	0.401	-0.005
10. Tourism	4.5	**0.667**	0.293	0.387	0.013
Average mean score of SE factors	**4.4**				
Variance explained %	**50.8**				
Cronbach's reliability alpha	**.951**				
Ecosystem Goods and Services (EGS) Factors					
1. More and better quality grass	3.9	0.065	**0.795**	0.073	0.128
2. More poles and construction materials	4.1	0.194	**0.717**	0.268	0.246
3. Purification and provision of clean air	4.2	0.282	**0.648**	0.445	-0.007
4. Increased conservation awareness	4.5	0.120	**0.615**	0.487	0.152
5. Religious cultural and historical uses	4.1	0.378	**0.604**	0.337	0.054
6. More and better quality traditional medicine	4.3	0.374	**0.573**	0.372	0.265
7. Fodder for livestock	3.8	0.219	**0.572**	0.418	0.170
8. Native wildlife return	4.3	0.450	**0.565**	0.396	0.040
Average mean score of EGS factors	**4.2**				
Variance explained (%)	**8.9**				
Cronbach's reliability Alpha	**.910**				
Ecological Conservation (EC) Factors					
1. Better farmlands and increased food production	4.3	0.247	0.225	**0.711**	0.152
2. Wind break	4.1	0.291	0.194	**0.657**	0.303
3. Reduced bushfires	4.4	0.328	0.345	**0.627**	0.095
4. More rain	4.1	0.322	0.374	**0.611**	0.213
5. Ecologically sensitive areas being protected and well managed	4.4	0.414	0.41	**0.607**	0.004
6. No chemical contamination of water	4.3	0.464	0.287	**0.597**	0.167
7. Improved water supply and quality	4.4	0.285	0.282	**0.549**	0.326
Average mean score of EC factors	**4.3**				
Variance explained (%)	**4.9**				
Cronbach's reliability alpha	**.898**				
Provisioning Services (PS) Factors					
1. More bushmeat	3.6	0.232	0.321	0.132	**0.749**
2. More sheanut and dawadawa	3.0	0.131	0.065	0.203	**0.735**
3. Improved supply of firewood and charcoal	3.5	0.086	0.474	0.103	**0.599**
4. More fish	3.9	0.314	0.506	0.200	**0.507**
Average mean score of PS factors	**3.5**				
Variance explained (%)	**3.7**				
Cronbach's reliability alpha	**.735**				

Table 14 shows that the first ten outcomes correlate very well with high internal consistency (Cronbach's reliability alpha of .951) all of which have been characterized[18] as Socioeconomic (SE) and yielding an average mean core of 4.4 (possible mean score range is 1.00-5.00). As such, these are outcomes of high importance. The results show that social outcomes such as international pride and recognition, constancy of school children's attendance, collective community action and unity and improved social infrastructure have been grouped with economic outcomes.

The second factor loadings have eight outcomes with an average mean score of 4.2 indicating that the outcomes are also very important and collectively show strong internal correlation (Cronbach's reliability alpha of .910). They have been characterized as Ecosystem Goods and Services (EGS). Increased conservation awareness and religious cultural and historical uses outcomes are included in this factor, a point that is discussed below.

Ecological Conservation (EC) constitutes the third factor loadings with an average mean score of 4.3. It has seven outcomes that collectively show strong internal correlation (Cronbach's reliability alpha of .898).

The fourth factor loadings produced an average mean score of 3.5. It is characterized as Provisioning Services (PS) and features outcomes that are for direct consumption. It is relatively the weakest in terms of importance but shows strong internal consistency with Cronbach's alpha of .735.

Next, the characterized outcomes were used for the Importance-Satisfaction analysis. In this analysis, desired outcomes are interpreted as "importance" and perceived outcomes as "satisfaction". The importance and the corresponding satisfaction mean scores and the iso-line method are used in order to get a better understanding of the perceived outcomes and to focus attention on areas that governance and management interventions might be needed. The results are shown in Figure.5. The diagram shows both factors and the raw variables and provides a visual representation of the

[18] Characterisation of the factors is by the by the authors of this paper.

relationships between importance (desired outcomes) and satisfaction (perceived outcomes).

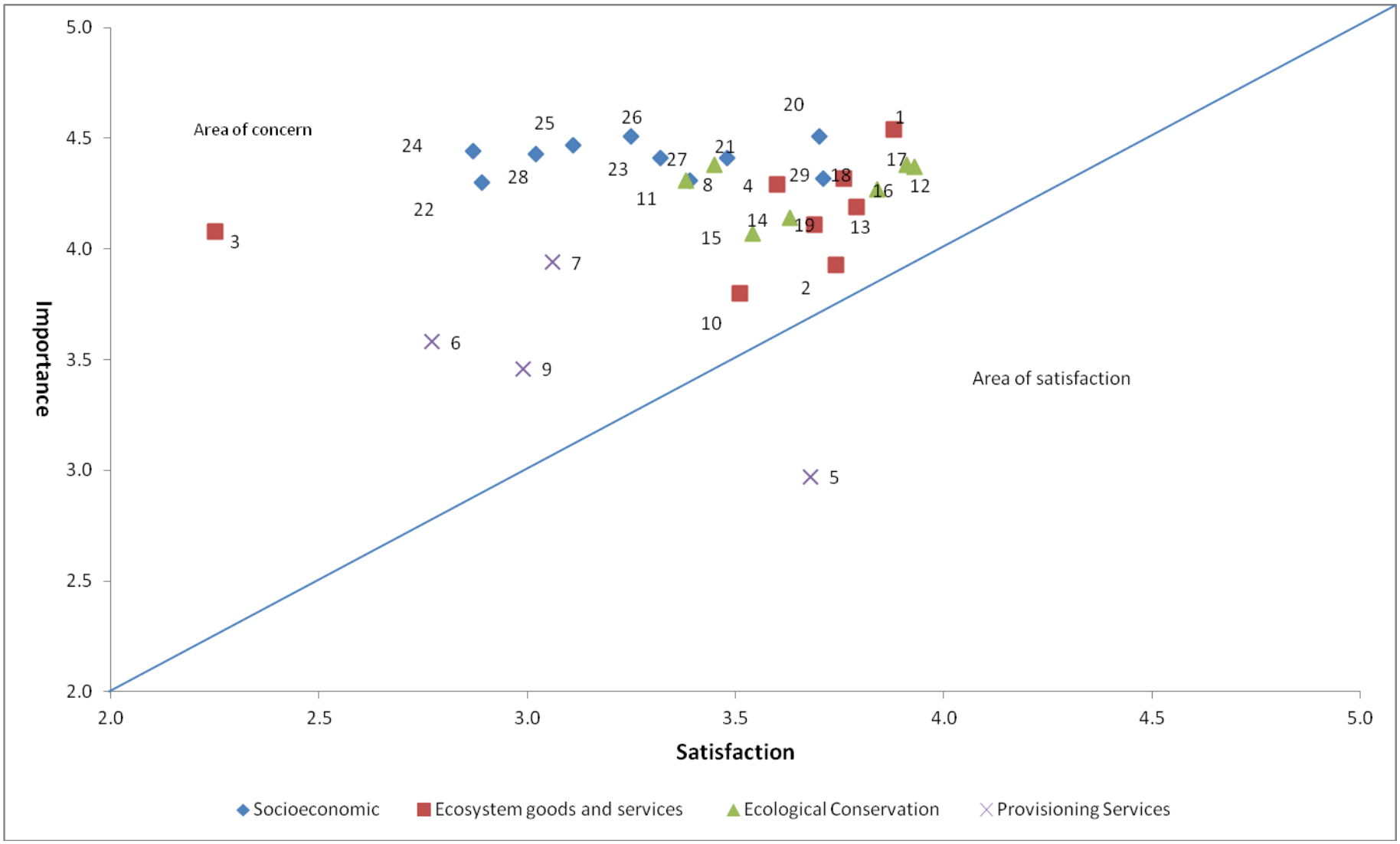

Figure 5: Importance-Satisfaction: Social-Ecological Perspective of Community Resource Management Areas in Ghana

With the exception of more sheanut and dawadawa (5), the scatter graph isolates all of the outcomes as areas of concern for management. It also shows that socioeconomic outcomes are relatively similar with respect to importance, but highly variable with respect to satisfaction. For example, the diamond shaped items labeled 20, 21, 22, 23, 24, 25, 26, 27, 28 and 29[19] score above 4 on the "importance" scale but scatter between the scores of 2.5 and 4 on the "satisfaction" scale. Nonetheless, where mean values are used, interpretation of the scatter graph should be done with care since variability among different CREMAs may not reflect in the display (Randall & Rollins, 2009) and thus may not necessarily represent the views of all CREMAs or respondents (Ziegler et al., 2011; Barrett et al., 2001). Moreover, the graph does not show whether the differences between importance and satisfaction scores are statistically significant.

Accordingly, an analysis of gaps was performed to identify outcomes with significant differences between mean importance and satisfaction scores. This method involves the subtraction of "satisfaction" mean scores from "importance" mean scores. The difference represents the size and direction of the relationship between these two measures (Ziegler et al., 2011). Positive values represent outcomes in which stakeholders' desired outcomes were probably not met. Negative values mean outcomes that are perceived to be satisfactory, with satisfaction increasing as magnitude of difference increases (Ziegler et al., 2011). The results of the gap analysis have been rank ordered by the gap (I-S) (Table 15). The differences between the importance and satisfaction values are all significant at $P < .05$, based on the paired sample t test.

[19] Table 15 explains the numbers, for example, 24 represents educational scholarships, and 22 stands for access to credit and financial assistance.

Table 15: Analysis of Gaps between Satisfaction and Importance Outcomes of CREMA in Ghana

Outcomes of CREMAs in Ghana	Mean of (I) (with SD)	Mean of (S) (with SD)	Gap (I – S)	T value	Df	Sig	Factor
Educational scholarships **[24]**	4.45 (1.08)	2.87 (1.63)	1.581	26.619	924	0.000	SE
Access to credit/financial assistance **[22]**	4.30 (1.11)	2.89 (1.61)	1.414	23.107	920	0.000	SE
Increased income **[25]**	4.47 (1.02)	3.11 (1.63)	1.367	23.518	922	0.000	SE
Improved social infrastructure **[28]**	4.34 (1.00)	3.02 (1.58)	1.316	22.209	922	0.000	SE
Increased Employment **[26]**	4.51 (1.01)	3.25 (1.60)	1.261	22.414	919	0.000	SE
Constancy of kids school attendance **[23]**	4.42 (1.03)	3.32 (1.53)	1.101	19.907	918	0.000	SE
International recognition and pride **[21]**	4.41 (1.00)	3.48 (1.51)	0.933	18.068	920	0.000	SE
Improved water supply and quality **[8]**	4.38 (1.04)	3.45 (1.43)	0.930	16.931	914	0.000	EC
Better farmlands increased food production **[11]**	4.31 (1.13)	3.38 (1.44)	0.928	15.987	911	0.000	EC
Capacity building and training in income generating enterprises **[27]**	4.31 (1.00)	3.39 (1.44)	0.925	17.653	922	0.000	SE
More fish **[7]**	3.94 (1.26)	3.06 (1.49)	0.884	14.727	922	0.000	PS
More poles and construction materials **[3]**	4.08 (1.15)	3.26 (1.45)	0.821	15.302	915	0.000	EGS
More bushmeat **[6]**	3.59 (1.50)	2.77 (1.58)	0.816	13.618	918	0.000	PS
Tourism **[20]**	4.51 (0.91)	3.70 (1.42)	0.814	16.635	922	0.000	SE
More and better quality traditional medicines **[4]**	4.30 (1.08)	3.61 (1.41)	0.690	14.31	917	0.000	EGS
Increased conservation awareness **[1]**	4.54 (0.92)	3.88 (1.32)	0.662	14.843	926	0.000	EGS
Collective community action and unity **[29]**	4.32 (0.99)	3.71 (1.30)	0.608	14.203	919	0.000	SE
Native wildlife return **[18]**	4.33 (1.04)	3.76 (1.31)	0.569	12.334	923	0.000	EGS
Wind break **[15]**	4.07 (1.24)	3.54 (1.31)	0.533	10.895	915	0.000	EC
More rain **[14]**	4.15 (1.09)	3.63 (1.29)	0.513	10.559	921	0.000	EC
Ecologically sensitive areas being protected and well managed **[17]**	4.38 (1.01)	3.91 (1.26)	0.474	10.477	921	0.000	EC
Improved supply and quality of firewood and charcoal **[9]**	3.47 (1.37)	2.99 (1.43)	0.474	8.188	920	0.000	PS
Reduced bush fires **[12]**	4.37 (1.05)	3.93 (1.26)	0.440	9.747	921	0.000	EC
No chemical contamination of water **[16]**	4.27 (1.12)	3.84 (1.29)	0.432	9.614	917	0.000	EC
Religious, cultural and historical uses **[19]**	4.11 (1.13)	3.69 (1.27)	0.425	9.543	921	0.000	EGS
Purification and provision of clean air **[13]**	4.19 (1.11)	3.79 (1.19)	0.400	8.954	917	0.000	EGS
Fodder for livestock **[10]**	3.82 (1.16)	3.52 (1.30)	0.309	6.276	728	0.000	EGS
More and better quality grass **[2]**	3.96 (1.23)	3.75 (1.30)	0.212	4.486	729	0.000	EGS
More shea nut/dawadawa **[5]**	3.87 (1.32)	3.69 (1.37)	0.179	2.738	456	0.006	PS

Whereas all the gap values are significant at $p < 0.05$, the positive values for all the outcomes suggests that none of them meets the overall expectations of the stakeholders. However, judging from the magnitude of the gaps more sheanut and dawadawa has the smallest gap (0.179). More and better quality grass has the second smallest gap (0.212) followed by fodder for livestock (0.309). Socioeconomic factors have the largest gaps with educational scholarships registering the largest gap value of (1.581) followed by access to credit/financial assistance (1.414), and increased income (1.367). Therefore, although socioeconomic factors are generally perceived to be of highest importance they are perceived to be the least satisfactory, with some variability, and perhaps the major area of concern as indicated in Figure 5.

3.3.3. Variability Among CREMAs

An Analysis of Variance (ANOVA) was conducted on the importance and satisfaction data to test whether the differences in the mean scores of the outcomes by CREMA were significant (Tables 16 and 17).

Table 16: Comparisons of Desired Factors (Importance) by CREMA

CREMA Site	Mean Scores Of Desired Outcomes			
	Socio Economic (SE)	Ecosystem Goods and Services (EGS)	Ecological Conservation (EC)	Provisioning Services (PS)
Overall CREMA Mean	4.4	4.1	4.3	3.4
Avu Lagoon	3.9	4.0	3.9	2.5
Zupkiri	4.5	4.6	4.5	4.1
River Asuopiri	4.8	4.6	4.8	4.0
Amokwawsuaso	4.8	3.5	4.7	3.2
Wechiau	4.2	3.1	3.7	2.9
ANOVA Scheffe Results (probability of significant difference between CREMAs)				
Avu Lagoon Vrs Zukpiri	.000	.000	.000	.000
Avu Lagoon Vrs River Asuopiri	.000	.000	.000	.000
Avu Lagoon Vrs Amokwawsuaso	.000	.599	.000	4.59
Avulagoon Vrs Wechiau	.007	.000	.157	.006
Zukpiri Vrs River Asuopiri	.001	.977	.001	.862
Zukpiri Vrs Amokwawsuaso	.001	.009	.010	.050
Zukpiri Vrs Wechiau	.107	.000	.000	.000
River Asuopiri Vrs Amokwawsuaso	1.000	.008	.996	.170
River Asuopiri Vrs Wechiau	.000	.000	.000	.000
Amokwawsuaso Vrs Wechiau	.000	.718	.000	.967
ANOVA Measures				
F Value	44.257	102.303	73.431	107.854
Df Between Groups	4	4	4	4
Df Within Groups	895	717	891	661
F, Sig	.000	.000	.000	.000

Table 16 suggests in regard to SE factor that all but one (River Asuopiri vrs. Amokwawsuaso) of the differences in the mean scores between CREMAs are significant. Regarding EGS factors, all but three of the differences are significant. Similarly, all but one of the differences are significant in regard to EC factor. Regarding PS factor, all but four of the differences are significant. Looking first at Avu Lagoon, it appears that EGS is rated as the most important with a mean score of (4.0), followed by EC and SE factors with a mean score of (3.9) each. PS is rated the least important (2.5). Similarly, Zukpiri rates EGS as the most important factor (4.6), followed by EC and SE factors with equal mean score of (4.5). PS is the least important (4.0).

In the case of River Asuopiri the SE (4.8), and EC (4.8) factors appear to be rated as equally important. These are followed by EGS (4.6) and PS (4.0) as the least important. On the other hand, Amokwawsuaso rates SE factor (4.8) as the most important followed by EC (4.7), EGS (3.5), and PS (3.2) in a descending order of importance. Wechiau exhibits the same pattern of importance with the most desired being SE factors (4.2); followed by EC (3.7), EGS (3.1), and PS (2.9).

The data show that there is statistically significant variability among the CREMAs, both in terms of the relative importance of each factor, and how each factor was rated in each CREMA. The results, summarized in table 16 show that the most desired factors for River Asuopiri, Amokwawsuaso and Wechiau CREMAs are SE and these are congruent with the overall CREMA results. On the other hand, Avu Lagoon and Zukpiri CREMAs returned EGS factor as the most desired. The second most desired factor for all CREMA sites is EC and this agrees with Zukpiri, River Asuopiri, Amokwawsuaso and Wechiau CREMAs. Conversely, Avu Lagoon returned SE and EC factors as equally the second most desired.

A closer scan of the factors shows that the results for River Asuopiri, Amokwawsuaso and Wechiau CREMAs are largely consistent with the overall CREMA results, although the mean scores suggest some variability among them particularly in regard to EGS factor. The next section focuses on variability in the perceived factors (satisfaction scores).

Table 17: Comparison of Perceived Factors (Satisfaction) by CREMA

CREMA Study Site	Mean Scores of Perceived Factors			
	Socio Economic Outcomes (SE)	Ecosystem Goods And Services (EGS)	Ecological Conservation (EC)	Provisioning Services (PS)
Overall CREMA Mean	3.3	3.8	3.7	3.6
Avu Lagoon	3.0	3.5	3.5	3.3
Zupkiri	4.4	4.5	4.5	4.1
River Asuopiri	2.8	3.9	3.8	2.7
Amokwawsuaso	1.9	2.2	2.6	1.6
Wechiau	3.7	3.2	3.4	3.0
ANOVA Scheffe Results (probability of significant differences by CREMA)				
Avu Lagoon Vrs Zukpiri	.000	.000	.000	.623
Avu Lagoon Vrs River Asuopiri	.086	.000	.001	.896
Avu Lagoon Vrs Amokwawsuaso	.000	.231	.000	.310
Avulagoon Vrs Wechiau	.000	.022	.999	.997
Zukpiri Vrs River Asuopiri	.000	.000	.000	.000
Zukpiri Vrs Amokwawsuaso	.000	.001	.000	.000
Zukpiri Vrs Wechiau	.000	.000	.000	.000
River Asuopiri Vrs Amokwawsuaso	.000	.045	.000	.416
River Asuopiri Vrs Wechiau	.000	.000	.002	.161
Amokwawsuaso Vrs Wechiau	.000	.489	.000	.127
ANOVA Measures				
F Value	174.298	97.509	119.792	50.771
Df Between Groups	892	4	4	4
Df Within Groups	896	706	892	449
F, Sig	.000	.000	.000	.000

Table 17 indicates that all but one of the differences in satisfaction mean scores within the SE factor are significant. Regarding EGS factor all but three of the differences are significant. Regarding EC factor all but one of the differences are significant. On the other hand, only three of the differences with respect to the PS factor are significant. Table shows also that there is variability in terms of the relative satisfaction between the factors. It appears that with a mean score each of (3.5), EGS and EC factors are perceived to be the most satisfactory at Avu Lagoon. These are followed by PS (3.3) and SE factors (3.0) as least satisfactory.

Amokwawsuaso perceives EC (2.6) as the most satisfactory, followed by EGS (2.2), SE (1.9), and PS (1.6) as the least perceived satisfactory. Conversely, Wechiau rates SE

factors (3.7) as the perceived most satisfactory followed by EC (3.4), EGS (3.2), and PS (3.0) as the perceived least satisfactory.

The next section compares Tables 16 and 17 by subtracting the mean scores of the "perceived" factors from the mean scores of "desired" factors. A positive value suggests that expectations of actors are not being met while negative values suggest cases where perceived factors are meeting expectations of actors (Table 18). The bigger the positive value is, the wider the divergence between desired and perceived factors. The more negative the values, the more the expectations of actors are met. A T-test on the "desired" and "perceived" factors on the CREMAs suggests the existence of statistically significant differences between the mean scores of some of the factors at $P < 0.05$.

Table 18: Gaps in Desired and Perceived Factors of CREMA in Ghana

CREMA Name	Desired-Perceived (Mean Scores of Factors)			
	Socioeconomic (SE)	**Ecosystem Goods and Services (EGS)**	**Ecological Conservation (EC)**	**Provisioning Services (PS)**
All CREMA sites	(4.4 - 3.3) = **1.1***	(4.1 - 3.8) = **0.3***	(4.4 – 3.7) = **0.7***	(3.4 - 3.6) = **- 0.2***
Avu Lagoon	(3.9 - 3.0) = **0.9***	(4.0 – 3.5) = **0.5***	(3.9 – 3.5) = **0.4***	(2.5 – 3.3) = **- 0.8***
Zukpiri	(4.5 - 4.4) = **0.1***	(4.6 – 4.5) = **0.1**	(4.5 – 4.5) = **0.0**	(4.1 – 4.1) = **0.0**
River Asuopiri	(4.8 - 2.8) = **2.0***	(4.6 – 3.9) = **0.7***	(4.8 – 3.8) = **1.0***	(4.0 – 2.7) = **1.3***
Amokwawsuaso	(4.8 - 1.9) = **2.9***	(3.5 – 2.2) = **1.3**	(4.7 – 2.6) = **2.1***	(3.2 – 1.6) = **1.6***
Wechiau	(4.2 - 3.7) = **0.5***	(3.1 – 3.2) = **- 0.1**	(3.7 – 3.4) = **0.3***	(2.9 – 3.0) = **- 0.1**

NB: * indicates where the differences in the mean scores of the desired and perceived factors are significant

In examining the difference between "desired" and "perceived" factors of CREMAs, Table 18 shows that all CREMAs show positive values for SE factors. Zukpiri, yielded the lowest positive score and Amokwawsuaso the highest.

Regarding EGS factors only Wechiau registers a negative value. Amokwawsuaso shows the highest value, followed by River Asuopiri, Avu Lagoon and Zukpiri in a descending order of magnitude. With respect to EC Zukpiri is at Zero (0). All the other CREMAs show positive values. Amokwawsuaso shows the highest value, followed by River Asuopiri, Avu Lagoon, and Wechiau in a descending order of magnitude. Regarding PS factor Avu Lagoon, and Wechiau show negative values. Zukpiri is zero (0)

while River Asuopiri and Amokwasuaso post positive values. All the CREMAs together also register a negative value for PS factors.

3.4. Discussion

This study found several interesting issues with respect to desired and perceived outcomes and perhaps most importantly, variability in the desired and perceived outcomes of different CREMAs. A number of factors mediate CBNRG and therefore, significant variability can also exist among and within different CBNRG systems. For example, overall, respondents from all the CREMAs together, rate increased employment as the first most important desired outcome but no individual CREMA rates it as such. Avu Lagoon identified tourism, Zukpiri and River Asuopiri point to increased conservation awareness, Amokwasuaso shows capacity building and training in income generating enterprises and Wechiau suggests international pride and recognition as the first most important desired outcomes. Similarly, all CREMAs together indicate that the most perceived satisfactory outcome overall, is reduced bush fires, an outcome with which River Asuopiri agrees. Respondents from all the other CREMAs vary in their perceived most satisfactory outcomes. While Avu Lagoon suggests more fish, Zukpiri points to more and better quality traditional medicines, Amokwasuaso shows purification and provision of clean air, and Wechiau registers tourism as the perceived most satisfactory outcomes. These results also point to the fact that the most desired outcomes of actors are probably socioeconomic, but governance has largely been effective in delivering on ecological factors. The exception is Wechiau which appears to show satisfaction in socio economic factors. It is also instructive to note that while all the CREMAs but Wechiau consider increased conservation awareness as one of the three most important desired outcomes, only Zukpiri perceive it to be one of the most satisfactory. These observations appear to confirm the assertion by Plummer and Fizgibbons (2006); Buizer et al. (2011); and (Heck et al. 2011) that performance of CBNRG varies widely among actors who may be making decisions that affect conservation and development.

In terms of interpreting the broad range of desired outcomes involved in CBNRG, it is useful to understand how they group together coherently (i.e. how they load onto

factors). For example, the factor analysis loaded the outcomes onto four factors and social outcomes such as international pride and recognition, constancy of children's school attendance, collective community action and unity, and improved social infrastructure loaded with economic outcomes in the first factor with high internal consistency. These suggest that social and economic factors link together quite well.

Similarly, the second factor loadings grouped increased conservation awareness, and religious, cultural and historical uses with EGS factors. Religious, cultural and historical uses tie in well, particularly with native wildlife return and traditional medicines. For example, the Sitatunga is a sacrificial animal used by the Agorbledokui community in Avu Lagoon, valued for its religious and cultural purposes (Husuke and Sheppard 2012, pers com). Similarly, one of the main interests of the Zukpiri CREMA constituents is conservation of better quality traditional medicines. Traditional medicine practitioners in rural Ghana for example, mostly inherit their "trade" from their ancestors through oral, religious and cultural edification, and so the practice is shrouded largely in religious, cultural and historical foundations. Hence, the two outcomes fit into this factor quite well.

The third factor loadings appear to group outcomes needed to enhance the integrity of wildlife habitat and the major livelihood strategies of the CREMA constituents which are farming and fishing. For example, it is in the interest of wildlife conservation and attainment of provisioning services such as more fish that ecologically sensitive areas are protected and well managed. This is because ecologically sensitive areas such as inlets of the Sene arm of the Volta River and mangroves serve as spawning grounds for fish and provide healthy habitat for native wildlife. This is also related to the need to curtail chemical contamination of water to improve water supply and quality for healthy fishery, wildlife habitat, safe drinking and farming (Danso and Agyare, 1995; Heck et al., 2011).

The fourth factor loadings have the lowest mean score and feature outcomes such as more bushmeat, more fish, improved supply of firewood and charcoal, and sheanut and dawadawa that appear to be for direct consumption. In discussing the low score,

workshop respondents explained that bushmeat was not a priority because wildlife resources were depleted and therefore there was the need to safeguard the residual population to allow for population rebound. Besides, "we cannot hunt wildlife for example when we need the animals as tourist attraction and for posterity, and without healthy vegetation wildlife cannot survive, so there is the need to look for other sources of energy such as gas in order to give respite to the habitat for wildlife" (workshop participant, 2012). This statement expresses sentiments by the participants when asked about their low importance rating of otherwise very important livelihood assets such as bushmeat. In the case of sheanut and dawadawa, the weak importance is probably attributed to the fact that, unlike cocoa which has a robust marketing system with guaranteed prices, sheanut features more, in a subsistence economy at the local level. It is only recently that some very serious national attention is being given by government to promote its large scale processing as an export commodity. The NCRC has been able to secure premium prices for organic sheanuts for the people of the Wechiau CREMA.

When the desired outcomes are compared with perceived outcomes none of the perceived outcomes meet actors' expectation. PS shows the smallest gap while SE factors show the largest. Significant differences among CREMAs occur in both desired and perceived objectives as shown by the mean scores of the factors in Tables 16 and 17 and the standard deviations of the factors and the individual outcomes in Table 15. Table 18 also shows variability in the relationship between desired and perceived factors among CREMAs as demonstrated by the gap values.

Variability appears to be a function of many factors[20]. Factors that explain variability in "desired" outcomes could be different from those that explain "perceived" outcomes. In this paper, variability in desired outcomes of CBNRM appears to depend on different combinations of a) how and who introduced the CBNRG concept to the local communities and the message and communication strategies used to obtain buy in by the

[20] Explaining variability was not a central focus of the research and therefore questions pertaining to variability per se were not asked. Variability emerged as important when the data were being analysed. Therefore, accounting for variability depends more on personal experience with the CREMA processes and other bits of data gathered though the workshops.

communities and b) the existing socio-economic, cultural and ecological contexts and dynamics of the communities; and c) whether the communities are in a rural, or a peri-urban setting. These factors appear to influence peoples' value orientation which is the position taken where a particular set of outcomes are more important than others (Axelrod, 1994**)**.

On the other hand, variability in perceived outcomes seems to depend on a different set of factors. These include a) the level and length of external financial, technical, administrative and logistical support, b) strong, focused and dynamic, leadership and c) increased conservation awareness and performance.

In Avu Lagoon, the CREMA concept was introduced by the Nature Conservation Research Centre and the motivation for it was mainly to help conserve the Sitantuga and its habitat. The message to the people was that the Sitatunga is an endangered species globally and therefore if it is properly conserved it will attract tourist visitation and infrastructural development, employment, and income (Togbe Allega III[21], 2012 pers com; also see Muruvi, 2011). Working with the local people, the CREMA governance structures were set up, an Environmental Education Team (EET) made up of persons from the community was trained to educate the communities to protect the ecologically sensitive areas of the Sitatunga and to encourage its return among other native wildlife in the area. This message influenced buy in by the local people whose collective value orientation therefore focuses on improving the environment for wildlife to encourage tourism and the associated perceived development benefits.

Regarding variability in perceived outcomes, Avu Lagoon perceives EGS factors as more satisfactory than SE factors overall. This performance is due to strong, dynamic, and focused leadership and increased conservation awareness and performance (Chapter Four). These factors influence observance of local institutions and engender positive attitudes and behavior of local people. On the other hand, Avu Lagoon has not had enough privilege of long term financial, administrative and logistical support from the

[21] Togbe Allega III is currently the chairman of Avu Lagoon CREMA Executive Committee (CREMA Board)

District Assemblies and other development oriented actors as have Wechiau and Zukpiri (Personal observation). This may explain why SE factors are lagging behind.

Wechiau considers educational scholarships, international recognition and pride, and increased employment as the three top most desired outcomes. Like Avu Lagoon, Wechiau CREMA adopted the CREMA concept through the intervention of the NCRC that had helped to mobilize the community, strengthen local governance and facilitate development of some tourism infrastructure around the common hippopotamus (*Hippopotamus amphibious*) (Sheppard et al., 2010). With relatively longer-term support from within Ghana and abroad, a number of social infrastructural development projects like schools, health post, etc., have been provided to the Wechiau CREMA communities. Scholarships have also been instituted, and some local people have had access to higher education as a result. Others have also benefited from employment locally and further afield (Sheppard et al., 2010). Some local people in leadership positions have been sent abroad and have been given meritorious awards for conservation, and Wechiau has gained some international recognition and pride as well. These have probably influenced their value orientation for the CREMA.

With respect to perceived outcomes Wechiau has enjoyed additional external support from other benevolent individuals and organizations continuously for more than ten years through focused leadership backed by NCRC (Sheppard et al., 2010). It is therefore possible for Wechiau to go through systematic planning and implementation of activities to achieve their desired outcomes. The query therefore is why there is variability between Avu Lagoon and Wechiau CREMAs, despite the fact that motivation for introducing the CBNRG concept for both CREMAs was similar. The simple answer could be that Wechiau has enjoyed more long term technical, financial and logistical support than Avu Lagoon. Hence, the depth and period of external support can also account for variability. This is similar to Jones's work (2004) who found that the CAMPFIRE program has been successful in areas where there has been sustained financial, logistical and administrative support for more than a decade. On the other, hand increased conservation awareness is much higher in Avu Lagoon than in Wechiau and therefore Avu Lagoon perceives EGS as more satisfactory than Wechiau.

Zukpiri suggests increased conservation awareness, more and better quality traditional medicines, and increased employment as the three top most desired outcomes. In Zukpiri, the CREMA idea was adopted by a Community Based Organization (CBO) known as the Zintang Healers Association whose major interest was to protect the indigenous biodiversity of the area to sustain their traditional medicine and healing enterprises (Zintang,[22] 2012 pers.com). Therefore, the development of the CREMA was initiated from within. In view of that, the most desired outcomes are consistent with the initial objectives for its establishment. However, to achieve the desired outcomes, increased conservation awareness to reduce incidence of fire has been carried out with an eye on tourism. Hence, overall Zukpiri has been able to keep bushfires out of the area for more than a decade (Nantiera,[23] 2012 pers.com). The most desired outcomes of the Zukpiri CREMA are therefore EGS factors.

Regarding variability in perceived outcomes Zukpiri, like Wechiau, has been able to garner some financial and logistical support from external agencies and the District Assembly for a considerable length of time to implement their conservation and development programmes (Yakubu,[24] 2012 pers com). For example, the Global Environment Facility Small Grants Programmes (GEF/SGP) provided small grant funding, and technical support, and also facilitated training of six local women in solar engineering in India through sponsorship by the Indian government. The women are back home and are helping with installation and maintenance of solar panels in the local communities as employment avenues. Capacity building programmes in alternative income generating activities have also been carried out for the youth of Zukpiri.

Wechiau falls in a similar socio economic and agro ecological zone as Zukpiri but the orientation of Wechiau is more toward socioeconomic outcomes. As opposed to the Zukpiri CREMA communities that are all rural, some of the Wechiau CREMA communities like the Wechiau community itself that host the Wa West District capital are more peri-urban. In Ghana, peri-urban settings are normally associated with sharp

[22] Zintang Mohammed is the coordinator of the Zintang Healers Association

[23] Nantiera Cosmos is the Assembly member for the Zukpiri CREMA

[24] Mr. David Yakubu is a retired Regional Coordinating Director of the Upper West Region of Ghana

population increases (largely through influx by people from urban areas) without a commensurate increase in the provision of social infrastructure. The already weak rural social infrastructure can rapidly break down and trigger a dire need for more social infrastructure. Consequently, the Wechiau community and its immediate allies probably show more preference for SE factors.

River Asuopiri considers increased conservation awareness, improved water supply and quality, and improved social infrastructure as the top three desired outcomes. Amokwawsuaso also indicates capacity building in income generating enterprises, increased conservation awareness, and educational scholarships, as the three top most desired outcomes. The River Asuopiri and Amokwasuaso CREMAs are located next to Protected Areas (PAs) and the CREMA concept was introduced to the local communities by the Wildlife Division. The primary intention was to "reengineer" the relationship between the PAs and the local communities, in order to reduce poaching both on and off the PAs, and to encourage sustainable bushmeat production.

The key conservation messages used to engage these communities have been the devolution of responsibility and authority for wildlife in their CREMAs. Local communities have been told that they can raise their own wildlife on their farms and benefit directly from it. The policy is that even if wildlife from the park enters the CREMA the communities can assume ownership, stewardship and authority for it as long as they make responsible uses of it and remain accountable. The communities cautiously accepted the message and embraced the CREMA idea. However, the Amokwawsuaso CEC also decided that since wildlife numbers were low, they would mobilize and ensure that the numbers increased to enable them to take advantage of tourism associated with PAs. Due to the unsuitable soils for cocoa production which is one of the leading crops cultivated in the Amokwawsuaso area, famers do not receive adequate returns (yield per unit area) on their investments. Therefore, one of the major preoccupations of the CREMA constituents is how to improve their socioeconomic well being. Hence, the value orientation of Amokwawsuaso is more a reaction to their environmental conditions and socio economic problems. In the case of River Asuopiri the communities are mostly peri-urban with satellite rural communities and therefore, SE outcomes that will improve

their economic base such as improved social infrastructure, improved water supply are their preferences.

Although at the aggregate level River Asuopiri, Amokwawsuaso, and Wechiau CREMA rate socioeconomic factors as the most desired, there is variability due to the specific circumstances of the different CREMAs and the messages that were used to mobilize collective action.

The other CREMAs have not been that successful in achieving SE outcomes as is the case of Zukpiri and Wechiau probably because support to the CREMAs has been sporadic and short term. This can partly be blamed on weak leadership. Amokwawsuaso for example, was doing very well until the chief who embraced the CREMA idea died (Murphree, 2005). Since then, the prospects of Amokwawsuaso CREMA have plummeted due to weak leadership (Workshop participants, 2012, pers. com). Similar lapses in local conservation stewardship have been reported elsewhere (e.g. Tang Hiplattiplakron and Dearden 2002) and point to the sometimes tenuous nature of local initiatives. The Amokwasuaso example show cases the powerful influence of chiefs in affecting governance effectiveness and confirms the fact that variability in perceived outcomes can be partly attributed to strong, dynamic, and focused local leadership.

Regarding variability in the gaps between desired and perceived outcomes, Wechiau registers two negative values and Zukpiri registers two Zeros (0) but not with the same factors. Avu Lagoon registers one negative value but River Asuopiri and Amokwawsuaao show positive values in all cases. Overall, Zukpiri appears to be the best performing CREMA followed by Wechiau and then River Asuopiri. Amokwawsuaso exhibits the worst performance.

3.5 Conclusion

This chapter (paper) characterized the desired and perceived outcomes of the CREMAs and the gaps between them. Next, it examined variability among CREMAs, and assessed what might account for variability.

Overall, the CREMAs consider increased employment as the top most desired outcome followed by increased conservation awareness and educational scholarships. On the other hand, the top most satisfactory perceived outcomes are reduced bush fires, followed by increased conservation awareness, and ecologically sensitive areas being protected and well managed. Based on Principal Component Analysis (PCA) four sets of outcomes of GBNRG were characterized. These included socio economic, and ecosystem goods and services, ecological conservation, and provisioning services factors. There was considerable variation in the magnitude of importance and the relative order of desirability assigned to them by different CREMAs.

Judging by the differences in the gaps between "perceived" and "desired" outcomes Zukpiri appears to be the best performing CREMA followed by Wechiau and then River Asuopiri. Amokwawsuaso exhibits the largest gap in "perceived" and "desired" outcomes.

Variability can be attributed to many factors including how and who introduces the concept of CBNRG to the communities, the message and communication strategies used to obtain buy in by the communities, and the social, economic, cultural and ecological contexts and dynamics of the communities. A combination of these factors interacts to influence the value orientation of the people regarding the most desired outcomes and hence their commission and omissions towards conservation and development. Variability in perceived outcomes is also a function of strong, focused and dynamic local leadership, the level and length of external financial, technical, administrative, and logistical support, and increased conservation awareness and performance. Factors that explain variability in perceived outcomes differ from (but may overlap) the factors that explain variability in terms of desired outcomes.

In short, because of a number of factors that mediate CBNRG, significant variability can exist between and within different CBNRG systems. Variability in perspectives of CREMAs is real and legitimate. Consequently, it appears important that CBNRG considers the specific conservation and development perspectives of both the

proximate and secondary actors in different contexts in order to customize CBNRM strategies.

Chapter 4

Perceived Socio Ecological Performance of Avu Lagoon CREMA Governance. Do the Constituent Communities Differ

Abstract

The performance of Community Based Natural Resources Governance (CBNRG) varies widely, and depends on satisfying a broad range of desired outcomes from a large range of actors in governance, that affect conservation and development related outcomes. The variable performance leads to questions about inter community differences in terms of desired outcomes among actors at the individual community levels, the factors that create these differences, and the often sidestepped issue of who is gaining and who is losing when decisions are made. Whereas, local communities are multi-ethnic aggregates with different value orientations, studies on CBNRG often do not incorporate rigorous data on the variable perceptions of individual communities, which can create the unfortunate impression that local communities are homogeneous collectives with similar values and expectations. This study examined Avu Lagoon Community Resource Management Area in Ghana by focusing on variability among four constituent communities. Data was collected through a survey of 232 households and an 18 participant workshop. The study found that significant variability exist in both the desired and perceived outcomes and that in general terms, communities are more heterogeneous with respect to perceived outcomes and more homogeneous with respect to desired outcomes.

Key Words: Avu Lagoon CREMA, CBNRG, Community, and Variability

4.1 Introduction

Protected Areas (PAs) contribute to conservation strategies around the world, but are not always effective in terms of the equitable distribution of benefits to local communities (Adams et al., 2004; Hutton et al., 2005; Adams and Hutton, 2007)**.** Community Based Natural Resources Governance (CBNRG) responds to this challenge by involving community level actors in decision-making to generate locally, appropriate development outcomes from sustainable resource management. The principle is that

when biodiversity is more valuable to local people they will do more to conserve it (Jones and Murphree, 2004; Armitage, 2005; Robinson et al., 2012). Development outcomes can be diverse and can include socio-cultural, economic, and ecological outcomes.

The performance of CBNRG varies widely and depends on satisfying a broad range of desired outcomes from a large range of actors who may be involved in making decisions that affect conservation and development related outcomes (Buizer et al., 2011; Plummer and Fitzgibbons 2006)**.** This leads to questions about differences in terms of desired outcomes among actors, the factors that create these differences, and the often sidestepped issue of who is gaining and who is losing when decisions are made (Barrett et al., 2001). The differences and the associated factors are also true in regard to the desired socioeconomic and ecosystem goods and services outcomes at the individual community level (Igoe, 2006). A related issue is whether or not perceived outcomes (i.e. those outcomes that are thought to have occurred) match the desired outcomes that motivate participation and activation of local actors (Barrett et al., 2001).

Perceived outcomes may be positive for one community and negative for another and also in respect of individuals within the same community. Therefore, there can be equity issues that are masked in overall, general assessments (Ashley and Hussein, 2000; Tungittiplakorn and Dearden 2002a). Furthermore, some communities and individuals within communities in a CBNRG enterprise are better able to take advantage of conservation benefits than others (Igoe, 2006). This can create social differentiation both within and between communities (Dearden et al., 1996; Barrett et al., 2001). Outcomes may also differ within and diverge between spatial scales, again creating variability among communities (Brown, 1998; Gibson and Koontz, 1998; Hoekstra et al., 1991; Gottret and White, 2001). Variability among communities can undermine successful governance when variability in outcomes creates the impression of inequity (Tompkin et al., 2000).

Studies of CBNRG often do not incorporate rigorous data on the variable perceptions of individual communities, which can create the unfortunate impression that local communities are homogeneous collectives with similar values and expectations

(Gibson and Koontz, 1998; Brosius et al., 1998; Agrawal and Gibson, 1999; Belsky, 1999). Nonetheless, communities often adapt to the socio economic, cultural and ecological dynamics and particularities that shape their value orientation (Lockwood, 2005). Additionally, assessment of outcomes has often been one sided without much attention to whether perceived outcomes are meeting the desired outcomes of stakeholders (Abalo et al., 2007; Berkes, 2007). This is partly because CBNRG actors lack the tools for analyzing desired and perceived outcomes in the same study. This is where recent work on Importance- Performance (IP) analysis can be useful.

This paper contributes to the discussion by focusing on Avu Lagoon Community Resource Management Area (CREMA) in Ghana. CREMAs are a variant of Community Based Natural Resources Governance (CBNRG) system which are designed, in part, to mobilize local communities within the same social-ecological landscape to engage with other non–local stakeholders to articulate their interests and aspirations and to achieve linked conservation and development goals (Jones, 2004). Specifically, this paper seeks to characterize and understand the differences in the desired and perceived outcomes of four communities that form part of the Avu Lagoon CREMA, and examine the factors that may create that variability.

4.2. Study Sites and Methods

4.2.1 Study Sites.

Avu Lagoon is part of the Keta Lagoon Complex (a designated Ramsar site[25]) in the Volta Region of Ghana. The lagoon is found between the Districts[26] of Keta, South Tongu, and Akatsi and encompasses 15 communities (Figure. 6).

[25] Ramsar sites are designated wetlands of international importance.

[26] Ghana practices a decentralized system of governance that is administered at several nodes from the national to local (district) through legislation, delegation and devolution of functions. A district serves as the fulcrum of development where political and administrative authority within it jurisdictional area are exercised (Chapter Two)

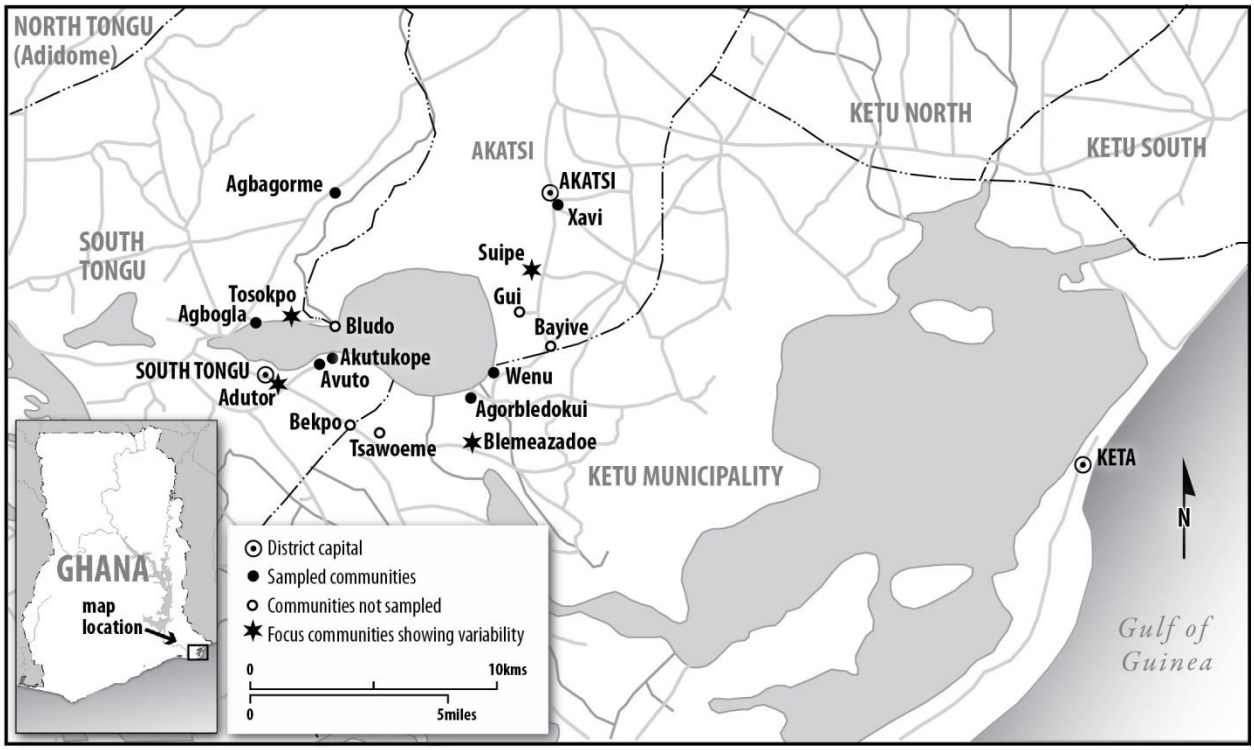

Figure 6: Map of Avu Lagoon Showing Sampled Research Communities and the Four Focus Communities

Avu Lagoon CREMA was initiated on the heels of the discovery in the Avu Lagoon area in 1995 of the Western Sitatunga, (*Tragelaphus spekei gratus*), an endangered marsh ungulate which was thought to be extinct in Ghana (Sheppard and Bowen, 2006; Muruvi, 2011). The Nature Conservation Research Center (NCRC), a Ghanaian NGO in collaboration with the Wildlife Division of Ghana's Forestry Commission initiated the CREMA process to conserve the animal and its habitat. The initiative also sought to improve the economic and social conditions of the participating communities through associated ecotourism development (Sheppard and Bowen, 2006).

A CREMA Executive Committee (Management Board) was created, comprising two persons from each of the 15 communities as core members as well as members from NCRC, the Wildlife Division, and representatives of the three District Assemblies as ex officio members.

Whereas data was collected from ten of the 15 communities, Adutor, Blemeadzado, Suipe and Tosokpo are the four communities that are the focus of this study. Analysis was focused on these four communities because they provided robust sample sizes critical for the statistical analysis and a good representation of the overall patterns of variability. As such, they help to illuminate many of the factors creating variability.

4.2.1.1 Adutor community

Adutor is a community of about 3,093 persons (2010[27]) and falls within the South Tongu District. It is one of the communities in the support zone[28] of the Avu Lagoon ecosystem where fishing is done during the dry season when the annual flooding recedes. Farming is done in the wet season and is the primary economic activity. Small-scale distilling of local gin is also carried out. It is the only community where some people have cattle. It is the most developed, populous and peri-urban[29] community among the 15 "Avu Lagoon communities." It is one of only two communities with a clinic, health post, public water supply, private schools in addition to public schools, and regular transport services for the area. It also hosts the only communication centre and post office in the area (Sheppard and Bowen, 2006).

4.2.1.2 Blemeadzado community

Blemeadzado is a community with an estimated population of 1,703 persons (2010). It lies within the Keta District and is one of the communities in the core zone of the Avu Lagoon ecosystem. Farming is the primary economic activity, followed by fishing, and the large-scale brewing of the local gin. It closely follows Adutor in terms of development and population and also provides regular transport services. It also has

[27] The population of the four communities was estimated by the writer using 2000 population figures by the Ghana Statistical Service for the locality and the district. Projection was made with 2010 district figures and the 2000 figures to arrive at this estimate

[28] The Core zone is the land surrounding the lagoon that serves as Sitatunga habitat and is characterized by floating vegetation, marshy grasses, patches of fig forest, and seasonal farms. Human activities are restricted

The support zone is farther away from the Sitatunga habitat and have less restrictions on human activity

[29] A community that is transitioning from rural to urban setting

public water supply and a private primary school in addition to public schools (Sheppard and Bowen, 2006). It is also a peri-urban community.

4.2.1.3 Suipe community

Suipe has an estimated population of about 306 persons (2010) and is located within the Akatsi District. It is also one of the communities in the support zone of the Avu Lagoon ecosystem where farming is the primary activity. Use of the lagoon by the village is indirect and low because it is farther away from the lagoon (fishing is carried out in tributaries of the lagoon). Small-scale distilling of the local gin is also done (Sheppard and Bowen, 2006). It appears to be one of the least developed communities within the Avu Lagoon ecosystem with just a primary school with the lowest enrollment of pupils in the area (NCRC, 2008). Access to Suipe is by an unpaved road which is unusable by motorized vehicles during the wet season (Muruvi, 2011). Traditional healers and birth attendants provide immediate health needs, and water supply is from tributaries of the lagoon (NCRC, 2008).

4.2.1.4 Tosokpo community

Tosokpo has an estimated population of about 684 persons and is situated in the South Tongu District. It also lies in the support zone of the Avu Lagoon ecosystem and serves as the "front desk" in terms of tourist visitation to the CREMA. It has a more diversified rural economy than the other three communities in this study. Farming is the major occupation but it also does more fishing than the other three due to proximity to the lagoon and access to two of its tributaries. Large-scale distilling of the local gin is also done. In terms of development, it is rural with a primary and a junior secondary school. Transport services can be obtained on market days only and Avu Lagoon and its tributaries are the source of drinking water. Traditional healers and birth attendants provide their immediate health needs (NCRC 2008).

4.2.2 Methods

A mixed methods approach including document analysis, interviews, household surveys and workshops was used. Interviews were conducted with eight key informants including chiefs, opinion leaders, and CREMA executives. In addition, nine focus groups

were conducted with youth, farmers, fishers, hunters, fishmongers, and enterprise development groups. The information gathered, together with that generated from the document analysis was used to develop a household survey instrument containing close ended questions of a list of 29 desired outcomes, administered across ten communities. Two hundred and thirty two (232) individuals including both male and female household heads and youth were asked to assess the level of importance (desired outcomes) that they and their community attach to each one of 29 identified possible outcomes using a five point Likert scales as follows (1) "no importance at all;" to (5) "very high importance". Outcomes are a diverse portfolio of activities and assets including both socio-economic and issues related to ecosystem goods and services that jointly determine whether conservation and development are balancing out (Chapter three; Ellis, 1999).

In another question respondents were requested to assess the same list of 29 outcomes but this time about how satisfied they were with the achievement of each of the outcomes (perceived outcomes) also using and five point Likert scales as follows 1) "very unsatisfied;" to (5) "very satisfied."

Additionally, respondents were requested to assess the level of awareness and performance of CREMA governance by indicating for each one of 17 variables on a five point Likert scales if they (1) "strongly disagree," to (5) "strongly agree.

The survey was administered from April - June 2012 by five trained Research Assistants (RAs) who are members of the Environmental Education Team and have previous training in research by NCRC. Each one of them was involved in the survey design before being deployed into the communities to pilot and adjust the instrument.

A workshop was held in July 2012 aimed to obtain more nuanced and detailed information and for clarification of emerging issues from the surveys. Eighteen representatives from the CRMCs, the Wildlife Division, District Assemblies, Chiefs and the EET participated. Information from this workshop was used to inform the analysis and discussion in this chapter

An Importance–Satisfaction (IP) approach was used to present and analyse the data. IP is an analytical tool that aims to facilitate simultaneous examination of desired and perceived outcomes (Abalo and Manzano 2007; Randall and Rollins 2009; Ziegler et al., 2011**).** Satisfaction represents the perceived outcomes, and importance represents desired outcomes. An iso-line that divides the grid into two 45 degrees, represents points where ratings of importance and satisfaction are equal. The graph identifies areas of dissatisfaction, by focusing on relationships between mean scores of (Likert scale responses) importance and satisfaction (Ziegler et al., 2011, Dearden and Harron 1994; Martilla and James, 1977; Wade and Eagles, 2003; Tonge and Moore 2007; and Randall and Rollins, 2009). The emphasis on mean scores, although contested, is important because of the tendency of respondents to inflate importance ratings (Martila and James 1977; Abola et al., 2007; Deng, W. 2007). Items below the iso-line have higher satisfaction scores than importance scores indicating that perceived outcomes are probably satisfactory. Conversely, items above the iso-line show where perceived outcomes are probably not satisfactory and may need management attention. An item's distance above the iso-line reflects the magnitude of the imbalance between a desired outcome and its perceived counterpart. The greater the distance the more urgent the need is for management attention. If the stakeholders' assessments are understood then managers can validate performance and be able to adjust accordingly (Hornback and Eagles, 1999).

4.3 Results

4.3.1. Desired Outcomes of Avu Lagoon CREMA and the Four Focal Communities.

Table 19 presents the "very high importance" ratings in percentages of respondents for each of the 28 outcomes[30] for overall Avu Lagoon CREMA and the four focal communities. The table has been rank ordered by the overall Avu Lagoon figures (column 2).

[30] More sheanut and dawadawa has not been reported on because it does not occur in the Avu Lagoon areas and therefore it is irrelevant for any analysis in this chapter

Table 19: Desired Outcomes of Avu Lagoon CREMA and the Four Focal Communities

Desired Outcomes of CREMAs in Ghana	Very High Importance Scores in Percentages of Respondents				
	Avu Lagoon	**Adutor**	**Blemeadzado**	**Suipe**	**Tosokpo**
Tourism [20]	**64.7**	**100.0**	65.0	10.8	**85.0**
Increased conservation awareness [1]	**62.9**	95.5	**67.5**	**13.5**	70.0
Educational scholarships [24]	**61.2**	95.5	50.0	5.4	**85.0**
Increased Employment [26]	58.2	**100.0**	32.5	10.8	**75.0**
International recognition and pride [21]	57.3	97.7	55.0	10.8	52.5
Native wildlife return [18]	55.6	95.5	**72.5**	5.4	52.5
Reduced bush fires [12]	54.7	95.5	27.5	10.8	75.0
Increased income [25]	54.7	97.7	32.5	10.8	62.5
Ecologically sensitive areas being protected and well managed [17]	53.0	97.7	**72.5**	8.1	37.5
Improved social infrastructure [28]	48.3	95.5	32.5	5.4	52.5
More and better quality traditional medicines [4]	47.8	81.8	22.5	5.4	67.5
Better farmlands increased food production [11]	47.4	93.2	42.5	8.1	35.0
Capacity building and training in income generating enterprises [27]	47.0	**100.0**	30.0	10.8	47.5
More and better quality grass [2]	46.6	84.1	35.0	10.8	40.0
Access to credit/financial assistance [22]	46.6	97.7	37.5	5.4	27.5
Constancy of children's school attendance [23]	46.6	**100.0**	32.5	8.1	35.0
More poles and construction materials [3]	45.3	88.6	25.0	10.8	42.5
Purification and provision of clean air [13]	44.8	**100.0**	20.0	10.8	37.5
Religious, cultural and historical uses [19]	44.4	75.0	50.0	5.4	52.5
Improved water supply and quality [8]	41.8	95.5	25.0	10.8	30.0
Collective community action and unity [29]	41.8	97.7	22.5	10.8	42.5
No chemical contamination of water [16]	40.5	95.5	35.0	8.1	30.0
More fish [7]	33.2	88.6	30.0	**16.2**	7.5
More rain [14]	31.5	84.1	20.0	10.8	15.0
Fodder for livestock [10]	29.7	84.1	22.5	5.4	12.5
Wind break [15]	26.3	72.7	20.0	8.1	15.0
Improved supply and quality of firewood and charcoal [9]	23.3	75.0	12.5	**13.5**	5.0
More bushmeat [6]	16.4	43.2	20.0	10.8	5.0

The table shows that overall, tourism, increased conservation awareness, and educational scholarships are the three top most (highlighted percentages) outcomes of very high importance. The bottom three (underlined percentages) outcomes are wind breaks, improved supply and quality of firewood and charcoal, and more bushmeat. Notably, tourism which has the highest score overall, is not the highest for Blemeadzado and Suipe.

Adutor community points to tourism, increased employment, capacity building and training in income generating enterprises, constancy of children's school attendance and purification and provision of clean air as equally the outcomes of very high importance. The bottom three are wind breaks, improve supply and quality of firewood and charcoal and religious, cultural and historical uses (equal importance), and more bushmeat. Blemeadzado community considers native wildlife return and ecologically sensitive areas being protected and well managed (equal importance) and increased conservation awareness as the three outcomes of very high importance. The bottom three outcomes include wind breaks and more bushmeat (equal importance) and improved supply and quality of firewood and charcoal. Suipe community sees more fish, increased conservation awareness and improved supply and quality of firewood and charcoal (equal importance) as the top most three outcomes of very high importance, and six outcomes including educational scholarships, native wildlife return, and improved infrastructure, among others as of least importance. Overall, scores for Suipe are much lower than the other communities. Tosokpo community suggests tourism and educational scholarships (equal importance), and increased employment as the top most three outcomes of very high importance and more fish, improved supply and quality of firewood and charcoal, and more bushmeat (equal importance) as the last three.

4.3.2. Perceived Outcomes of Overall Avu Lagoon CREMA and the Four Focal Communities

Table 20. presents the "very satisfied" ratings in percentages of respondents for overall Avu Lagoon CREMA and the four focal communities. The table has been rank ordered by the overall Avu Lagoon figures (Column 2).

Table 20: Perceived Outcomes of Avu Lagoon CREMA and the Four Focal Communities

Perceived Outcomes of Avu Lagoon CREMA	Very Satisfied Scores in Percentages of Respondents				
	Avu Lagoon	**Adutor**	**Blemeadzado**	**Suipe**	**Tosokpo**
More fish	**41.4**	0.0	10.0	**13.5**	5.0
Reduced bush fires	**31.9**	**25.0**	17.5	8.1	**62.5**
Native wildlife return	**31.0**	6.8	**45.0**	8.1	**62.5**
Tourism	29.7	2.3	**30.0**	**13.5**	**75.0**
Increased conservation awareness	29.3	4.5	25.0	**21.6**	55.0
International recognition and pride	27.6	4.5	27.5	10.8	57.5
Ecologically sensitive areas being protected and well managed	25.0	**25.0**	**45.0**	8.1	35.0
Increased income	23.3	2.3	20.0	2.7	55.0
Increased Employment	23.3	2.3	12.5	5.4	57.5
More and better quality grass	23.0	0.0	15.0	**24.3**	45.0
Better farmlands increased food production	22.4	2.3	25.0	8.1	42.5
Purification and provision of clean air	22.0	9.1	17.5	10.8	45.0
Religious, cultural and historical uses	22.0	0.0	27.5	5.4	50.0
More poles and construction materials	19.4	0.0	7.5	10.8	42.5
Educational scholarships	19.0	0.0	20.0	2.7	62.5
More and better quality traditional medicines	18.1	0.0	15.0	10.8	50.0
Improved social infrastructure	17.2	2.3	15.0	2.7	47.5
Access to credit/financial assistance	15.9	2.3	7.5	8.1	37.5
Capacity building and training in income generating enterprises	15.1	2.3	15.0	5.4	42.5
Collective community action and unity	15.1	4.5	15.0	5.4	47.5
More rain	14.7	0.0	12.5	10.8	20.0
Improved water supply and quality	13.8	0.0	17.5	5.4	22.5
No chemical contamination of water	13.4	**20.5**	22.5	5.4	15.0
Constancy of children's school attendance	12.1	0.0	12.5	5.4	22.5
Fodder for livestock	10.3	0.0	22.5	2.7	22.5
Wind break	6.9	2.3	17.5	8.1	10.0
More bushmeat	5.2	0.0	15.0	8.1	2.5
Improved supply and quality of firewood and charcoal	3.4	0.0	12.5	8.1	0.0

The table shows that overall, Avu Lagoon shows more fish, reduced bushfires and native wildlife return as the top three (highlighted percentages) perceived outcomes. The bottom three (underlined percentages) perceived outcomes are wind breaks, more bushmeat and improved supply and quality of firewood and charcoal.

Turning to individual communities, Adutor points to reduced bushfires and ecologically sensitive areas being protected (equal satisfaction), and no chemical contamination of water as the top three perceived outcomes. Twelve outcomes including more fish, more and better quality grass, religious cultural and historical uses among others scored zero satisfaction. Blemeadzado considers native wildlife return and

ecologically sensitive areas being protected and well managed (equal satisfaction), and tourism as the top three perceived outcomes. More fish, and more poles and construction materials and access to credit/financial assistance (equal satisfaction) are the bottom three. Suipe suggests more and better quality grass, increased conservation awareness, and tourism and more fish (equal satisfaction) as the top three perceived outcomes. Four outcomes of equal satisfaction including increased income, educational scholarships, improved social infrastructure, and fodder for livestock are the least perceive outcomes. Suipe shows much lower satisfaction in most outcomes than the other three communities. Tosokpo sees tourism, reduced bushfires and native wildlife return (equal satisfaction) as the top three perceived outcomes. The bottom three outcomes are more fish, more bushmeat, and improved supply and quality of firewood and charcoal.

The communities show variability in the assessment of desired and perceived outcomes. To test for variability, an ANOVA test was ran on all the outcomes by community and many significant differences were found as suggested by Tables 23 and 24. However, the resultant output was large and difficult to present, so a factor analysis was carried out, to enable analysis of variability between communities. Factor analysis also allowed for a clearer understanding of the inter relationships among the outcomes to facilitate their characterization.

Prior to factor analysis, Kaiser –Meyer Olkin (KMO) test, Bartlett's test of sphericity and Cronbach's alpha were carried out to test the viability of the outcomes. The KMO for this study is 0.960. Bartlett's test of sphericity is <.000. Consequently, the 28 desired outcomes were subjected to Principal Component Analysis Rotation Method with Varimax. The desired outcomes were used for the factors analysis because they relate to the motivation for participation in CREMA. The 28 outcomes loaded onto three components. The mean scores of the three factors and their Cronbach's alpha test were also computed (Table 21).

Table 21: Factorised Desired Outcomes of Avu Lagoon CREMA

Factorised Desired Outcomes of Avu Lagoon CREMA	Mean Scores	Factor Loading Components		
		1	2	3
Socioeconomic (SE) factors				
Tourism	4.22	**0.870**	0.287	0.172
International recognition and pride	4.13	**0.853**	0.289	0.193
Increased Employment	4.03	**0.817**	0.472	0.137
Ecologically sensitive areas being protected and well managed	4.15	**0.808**	0.220	0.340
Improved social infrastructure	3.90	**0.807**	0.143	0.252
Native wildlife return	4.07	**0.800**	0.365	0.168
Collective community action and unity	3.83	**0.799**	0.296	0.295
Educational scholarships	4.01	**0.787**	0.489	0.086
Increased income	3.95	**0.772**	0.510	0.164
Religious, cultural and historical uses	3.94	**0.765**	0.254	0.164
Capacity building and training in income generating enterprises	3.95	**0.743**	0.385	0.290
Access to credit/financial assistance	3.76	**0.729**	0.490	0.205
Constancy of kids school attendance	3.73	**0.665**	0.492	0.233
Increased conservation awareness	4.38	**0.574**	0.358	0.299
No chemical contamination of water	3.79	**0.558**	0.514	0.352
Average mean score of SE Factors	**3.99**			
Variance explained = 63.6%				
Cronbach's reliability alpha = 0.979				
Ecosystem Goods and Services (EGS)				
More poles and construction materials	3.97	0.340	**0.786**	0.200
More and better quality grass	4.03	0.313	**0.735**	0.052
Fodder for livestock	3.71	0.298	**0.708**	0.332
Purification and provision of clean air	4.03	0.513	**0.680**	0.237
More rain	3.69	0.369	**0.667**	0.395
Reduced bush fires	4.17	0.545	**0.662**	0.124
More and better quality traditional medicines	3.94	0.565	**0.587**	0.168
Better farmlands increased food production	4.15	0.461	**0.587**	0.288
Average mean score of EGS factors	**3.96**			
Variance explained = 6.9%				
Cronbach's reliability alpha = 0.932				
Provisioning Services (PS)				
Improved supply and quality of firewood and charcoal	3.19	0.029	0.111	**0.841**
More fish	3.56	0.429	0.210	**0.733**
More bushmeat	2.40	0.165	0.115	**0.730**
Wind break	3.30	0.253	0.410	**0.593**
Improved water supply and quality	4.01	0.464	0.443	**0.470**
Average mean score of PS factors	**3.29**			
Variance explained = 4.44%				
Cronbach's reliability alpha = 0.827				

Table 21 shows that the outcomes loaded onto three components with combined variance explained of 74.7%. The first component contains 15 outcomes that correlate very well with high internal consistency (Cronbach's reliability alpha of 0.979). These have been characterized as socioeconomic (SE) factors with an average mean score of

3.99. This includes no chemical contamination of water, ecologically sensitive areas being protected and well managed, and native wildlife return that are not 'socio-economic' per se. This point is returned to below.

The second component includes eight outcomes that also exhibit high internal consistency (Cronbach's alpha 0.932). These have been characterized as Ecosystem Goods and Services (EGS) factors with an average mean score of 3.96. The third component has five outcomes, also with high internal consistency (Cronbach's alpha of .827). They have also been characterized as Provisioning Services (PS) with an average mean score of 3.29.

The three components were used for the Importance-Satisfaction (IP) analysis to get a better understanding of the relationship between the desired and perceived outcomes. The results are shown in Figure.7. The numbers are unique tags to aid identification of the outcomes and interpretation of the graph. For example (24) denotes educational scholarships, (6) represents more bushmeat and (1) is increased conservation awareness (Table 22)

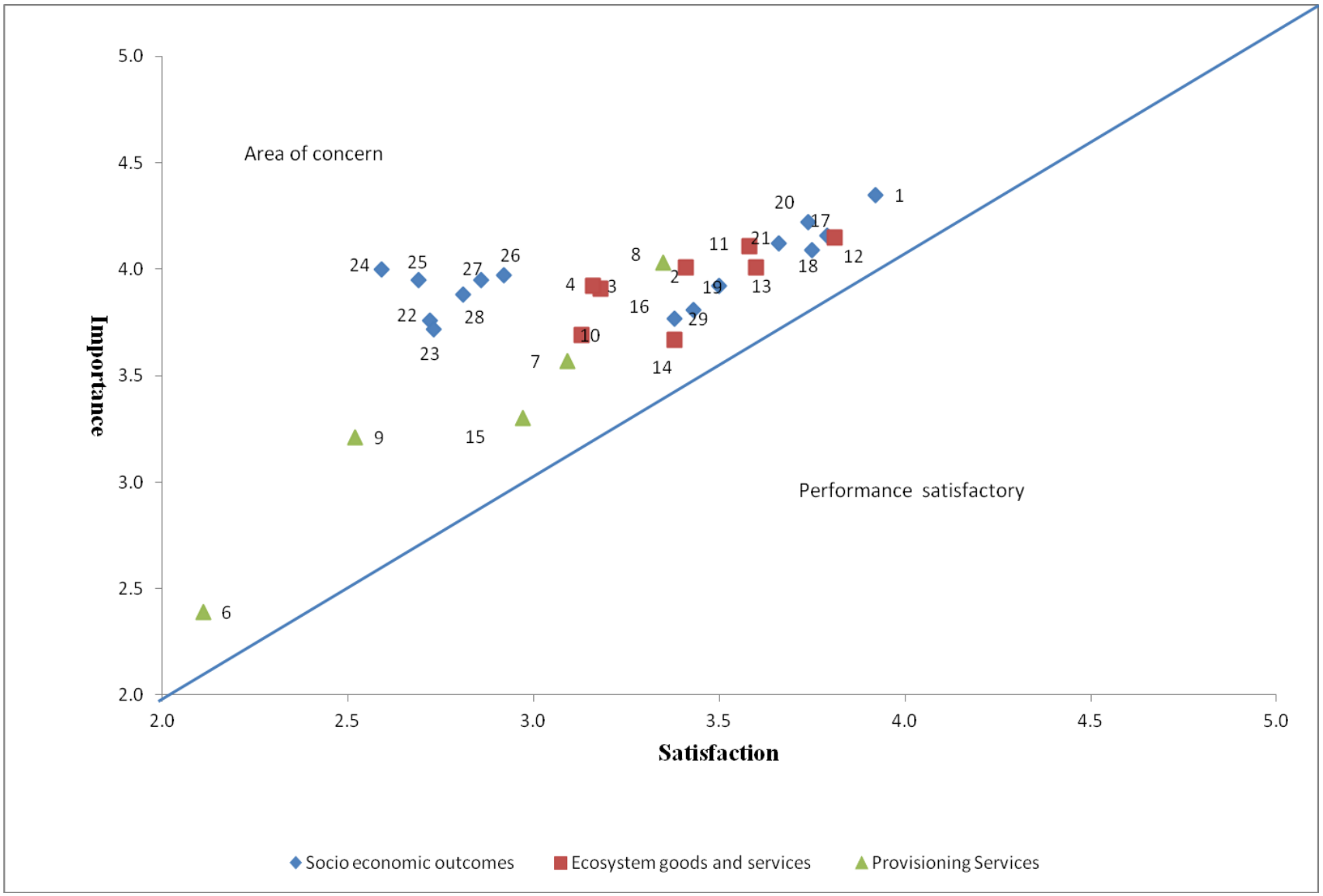

Figure 7: Importance-Performance: Social-Ecological Perspectives of Avu Lagoon CREMA

Figure 7 provides a visual representation of the relationships between importance (desired outcomes) and satisfaction (perceived outcomes). It depicts that all the outcomes are probable areas of concern. By the outcomes being farther away from the iso-line, the graph suggests that overall, the socioeconomic outcomes are perceived to be areas of greater concern (items 22 access to credit/financial assistance through item (28) improved social infrastructure). The graph also suggests that individual outcomes are uniformly of high importance (except in the case of provisioning services factors that show variable importance), but are variable in terms of satisfaction for all the three factors.

Where mean values are used, interpretation should be done with care since variability among different communities may not reflect in the display (Randall & Rollins, 2009) and therefore does not necessarily represent the views of all communities or respondents (Ziegler et al., 2011; Barrett et al., 2001). Moreover, the graph does not show whether the differences between importance and satisfaction scores are statistically significant. Therefore, an analysis of gaps was performed to identify the relationships between outcomes with significant mean importance and satisfaction scores. This method involves the subtraction of satisfaction mean scores from importance mean scores. Positive values represent cases where desired outcomes were perceived to be unsatisfactory. A negative value means an outcome that is perceived to be satisfactory with satisfaction increasing as magnitude of difference increases (Ziegler et al., 2011). The results of the analysis of gap have been ranked ordered by the gap (I-S) (Table 22).

Table 22: Analysis of Gaps between Satisfaction and Importance Outcomes for Avu Lagoon CREMA

Gap Analysis for Avu Lagoon CREMA (rank ordered by the gap)	Mean of (I) with SD	Mean of (S) (with SD)	Gap (I – S)	T value	Df	Sig	Factor
Educational scholarships **[24]**	4.01 (1.45)	2.59 (1.51)	1.42	12.282	230	0.000	SE
Increased income **[25]**	3.95 (1.44)	2.69 (1.58)	1.26	10.771	299	0.000	SE
Increased Employment **[26]**	4.03 (1.44)	2.92 (1.47)	1.11	9.808	230	0.000	SE
Improved social infrastructure **[28]**	3.9 0 (1.39)	2.81(1.47)	1.09	9.981	229	0.000	SE
Capacity building and training in income generating enterprises **[27]**	3.95 (1.32)	2.86 (1.41)	1.09	9.292	231	0.000	SE
Access to credit/financial assistance **[22]**	3.76 (1.49)	2.72 (1.48)	1.04	9.165	229	0.000	SE
Constancy of kids school attendance **[23]**	3.73 (1.46)	2.73 (1.40)	1.00	8.696	228	0.000	SE
More poles and construction materials **[3]**	3.97 (1.16)	3.18 (1.29)	0.79	7.548	229	0.000	EGS
More and better quality traditional medicines **[4]**	3.94 (1.26)	3.16 (1.31)	0.78	0.98	228	0.000	EGS
Improved water supply and quality **[8]**	4.01 (1.08)	3.35 (1.19)	0.66	7.649	229	0.000	PS
Improved supply and quality of firewood and charcoal **[9]**	3.19 (1.29)	2.53 (1.11)	0.66	6.609	228	0.000	PS
More and better quality grass **[2]**	4.03 (1.08)	3.41 (1.21)	0.62	6.299	231	0.000	EGS
Fodder for livestock **[10]**	3.71 (1.12)	3.13 (1.20)	0.58	6.378	228	0.000	EGS
Better farmlands increased food production **[11]**	4.15 (1.07)	3.57 (1.21)	0.58	5.963	227	0.000	EGS
Religious, cultural and historical uses **[19]**	3.94 (1.30)	3.45 (1.27)	0.49	6.367	231	0.000	SE
Tourism **[20]**	4.22 (1.27)	3.74 (1.23)	0.48	7.188	229	0.000	SE
International recognition and pride **[21]**	4.13 (1.29)	3.66 (1.26)	0.47	6.865	230	0.000	SE
More fish **[7]**	3.56 (1.31)	3.09 (1.15)	0.47	5.394	230	0.000	PS
Increased conservation awareness **[1]**	4.38 (1.01)	3.92 (1.01)	0.46	6.871	231	0.000	SE
No chemical contamination of water **[16]**	3.79 (1.31)	3.37 (1.20)	0.42	5.418	229	0.000	SE
Purification and provision of clean air **[13]**	4.03 (1.10)	3.61 (1.12)	0.42	5.366	227	0.000	EGS
Collective community action and unity **[29]**	3.83 (1.36)	3.43 (1.26)	0.40	5.469	228	0.000	SE
Ecologically sensitive areas being protected and well managed **[17]**	4.15 (1.17)	3.79 (1.15)	0.36	5.532	231	0.000	SE
Reduced bush fires **[12]**	4.17 (1.08)	3.81 (1.11)	0.36	5.326	229	0.000	EGS
Native wildlife return **[18]**	4.07 (1.26)	3.75 (1.22)	0.32	5.477	231	0.000	SE
More rain **[14]**	3.69 (1.16)	3.37 (1.13)	0.32	3.567	229	0.000	EGS
Wind break **[15]**	3.30 (1.35)	2.98 (1.07)	0.32	3.739	228	0.000	PS
More bushmeat **[6]**	2.40 (1.42)	2.11 (1.13)	0.29	2.691	231	0.008	PS

Table 22 shows that all gap values are statistically significant at $p < 0.05$. Column 3 (mean of (S)(with SD)) and figure 7 show two patterns of SE factors. One pattern shows seven outcomes with overall ratings for satisfaction that are less than three while the second pattern has eight outcomes with overall ratings for satisfaction that are more positive (i.e. greater than three). The outcomes with mean scores more than three include religious, cultural and historical uses (19); tourism (20); international recognition and pride (21); increased conservation awareness (1); no chemical contamination of water (16); collective community action and unity (29); ecologically sensitive areas being protected and well managed (17); and native wildlife return (18). It appears that these outcomes point to ecotourism and the factors that can make it viable in the Avu lagoon CREMA. The primary attraction of ecotourism in Avu lagoon is the Sitatunga and for the Sitatunga to thrive there is the need for increased conservation awareness to foster collective action and unity to conserve its sensitive habitat to encourage a rebound of the Sitatunga population. These factors enhance the viability of ecotourism. The pattern of outcomes with satisfaction scores less than three include: educational scholarships (24); increased income (25); increased employment (26); improved social infrastructure (28); capacity building and training in income generating activities (27); access to credit/financial assistance (22); and constancy of children's school attendance (23). These appear to be a set of secondary factors that communities expect to benefit from indirectly, as a result of a viable ecotourism enterprise (as will be discussed later).

The results indicate that all gap values are positive suggesting that all the outcomes failed to achieve the desired outcomes of the stakeholders. However, comparing the magnitude of the gaps, it appears that the SE factors pertaining to the set of secondary outcomes that communities expect to benefit from a viable ecotourism venture have the bigger gaps overall and thus, perceived as the less satisfactory. The smallest SE gaps were given to native wildlife return, ecologically sensitive areas being protected and well managed, and collective community action and unity. Overall, two PS factors including more bushmeat and windbreak posted the smallest gaps. The standard deviation values further highlight variability in both desired and perceived outcomes among the communities.

To determine variability an Analysis of Variance (ANOVA) was conducted on the importance and satisfaction data as shown in Tables 23 and 24.

Table 23: Comparison of Desired Factors of Avu Lagoon CREMA by Community

Avu Lagoon CREMA Community	Mean Scores of Desired Outcomes (Importance)		
	Socioeconomic (SE)	Ecosystem Goods and Services (EGS)	Provisioning Services (PS)
Overall CREMA Mean	3.99	3.96	3.29
Adutor	4.62	4.82	4.44
Blemeadzado	3.92	3.76	3.48
Suipe	1.96	2.82	2.55
Tosukpo	4.08	4.03	2.89
ANOVA Scheffe Results (probability of significant differences between communities)			
Adutor/ Blemeadzado	.000	.000	.000
Adutor/ Suipe	.000	.000	.000
Adutor/ Tosukpo	.002	.000	.000
Blemeadzado/ Suipe	.000	.000	.001
Blemeadzado/ Tosukpo	.997	.895	.188
Tosukpo/ Suipe	.000	.000	.910
ANOVA Measures			
F Value	73.807	38.565	22.406
Df Between Groups	9	9	9
Df Within Groups	217	214	261
F, Sig	.000	.000	.000

Table 23 shows that the differences in mean scores are significant in all but four cases. Regarding both the SE and EGS factors all but one (Blemeadzado vrs. Tosokpo) in each case are significant. Regarding the PS factor, all but two cases (Blemeadzado vrs. Tosokpo and Tosokpo vrs. Suipe) are significant. However, it appears that Adutor rates all the factors as relatively more important than the others but whereas Blemeadzado rates the three factors in the same order of importance as Tosokpo,-Tosokpo has higher mean scores in SE and EGS factors than Blemeadzado The table shows that Tosokpo and Blemeadzado rate SE factor as the most desired, while Adutor and Suipe suggest EGS as the most desired factor. In short, there is significant variability among the communities in regard to the level and the order of importance attached to the desired factors. The next section discusses variability in perceived factors (Table 24).

Table 24: Comparison of Perceived Factors of Avu Lagoon CREMA by Community

Avu Lagoon CREMA Community	Mean Scores of Perceived Outcomes (Satisfaction)		
	Socioecomomic	Ecosystem Goods and Services	Provisioning Services
Overall CREMA Mean	3.26	3.41	2.81
Adutor	2.96	3.26	2.80
Blemeadzado	3.49	3.34	3.16
Suipe	2.04	2.69	2.32
Tosukpo	4.25	4.16	2.81
ANOVA Scheffe Results (probability of significant differences between communities)			
Adutor/ Blemeadzado	.181	1.000	.776
Adutor/ Suipe	.000	.159	.462
Adutor/ Tosukpo	.000	.000	.795
Blemeadzado/ Suipe	.000	.159	.462
Blemeadzado/ Tosukpo	.003	.004	1.000
Tosukpo/ Suipe	.000	.000	.003
ANOVA Measures			
F Value	38.905	22.751	5.360
Df Between Groups	9	9	9
Df Within Groups	210	211	218
F, Sig	.000	.000	.000

The results suggest many significant differences between the mean scores of the perceived factors between communities except, notably, for the PS factor and that there are no statistical differences (at the p<0 .05 level) between Adutor and Blemeadzado. Regarding the SE factor, all but one comparison (Adutor vrs. Blemeadzado) are significant. Regarding the EGS factor, three of the six comparisons are significant. In respect of PS factor there is less variability, with the only significant difference between Suipe vrs. Tosokpo. It appears that Adutor community perceives EGS as the most satisfactory, followed by SE and PS factors. Both Blemeadzado and Tosokpo perceive SE factors as the most satisfactory followed by EGS and PS factors. On the other hand, Suipe perceives EGS as the most satisfactory followed by PS, and SE factors. Overall, Suipe records the lowest scores.

In summary, relative to the other CREMAs, Tosokpo shows the highest perceived satisfaction in the SE and EGS factors. Blemeadzado also shows the highest satisfaction in PS factor and the second highest satisfaction in SE factor. Overall, significant variability can be discerned among all the communities both in the magnitude and the order of ratings of perceived outcomes.

Table 25 compares tables 23 and 24 in terms of the relationships between desired and perceived factors by community using an analysis of gap approach involving the subtraction of the mean scores of the perceived factors from the mean scores of desired factors. A positive value suggests that the desired factor has been not achieved. A negative value represents cases where the perceived factor meets the stakeholders' expectations. The greater the positive value the wider is the discrepancy between desired and perceived factors. Likewise the more negative the negative value the more the perceived factors meet stakeholders' expectations.

Table 25: Gaps in Desired and Perceived Factors of Avu Lagoon CREMA Communities in Ghana

CREMA Name	**Desired –Perceived (Mean Scores of Factors)**		
	Socioeconomic	**Ecosystem Goods and Services**	**Provisioning Services**
Overall CREMA	(3.99 – 3.26) = 0.37*	(3.96 – 3.41) = 0.55*	(3.29 – 2.81) = 0.48*
Adutor	(4.95 – 2.96) = 1.99*	(4.82 – 3.26) = 1.56*	(4.44 – 2.80) = 1.64*
Blemeadzado	(4.19 – 3.49) = 0.70*	(3.76 – 3.34) = 0.42*	(3.48 – 3.16) = 0.32*
Suipe	(2.08 – 2.04) = 0.04	(2.78 – 2.69) = 0.09	(2.55 – 2.32) = 0.23
Tosokpo	(4.36 – 4.25) = 0.11	(4.03 – 4.16) = - 0.13	(2.88 – 3.15) = - 0.27*

NB * indicates that differences in the mean scores of perceived and desired factors are significant at $p < .05$

Table 25 shows that the differences between the mean scores of desired and perceived SE, EGS and PS factors for the overall CREMA outlook, Adutor and Blemeadzado are all significant. In regard to Suipe none of the differences is significant but Tosokpo registers one significant difference in respect of PS factors. Avu Lagoon CREMA overall showed positive values for all the three factors as did Adutor, Blemeadzado and Suipe. The discrepancies between desired and perceived factors in all three cases and particularly in respect to the SE factors were wider in the case of Adutor than the overall outlook and the other three focal communities. On the other hand, Tosokpo had negative values for EGS and PS factors with a more negative value for the PS factor.

4.3.3 Perceived Awareness and Governance Performance at the CREMA Level

This section analyses awareness and perceived governance performance at the CREMA level and how these factors may affect the perceptions of local communities about governance effectiveness. Several survey questions gauged the views of respondents about their awareness of activities of the CREMA governing body (CREMA Executive Committee) at the overall CREMA, and constituent community (Community Resource Management Committee) levels, the institutions governing the CREMA, as well as their perceived performance. Questions about awareness were asked in order to gauge whether local nodes of governance were active and viable. “Strongly agree” scores have been used in this analysis because they pertain to how strongly awareness and perceived performance of the CREMA affect the assessment of governance effectiveness by the local communities (Table 26). In the table (A) and (P) refer to awareness and performance respectively.

Table 26: Awareness of and Participation in Avu Lagoon CREMA Governance by Community

Awareness and Participation Outcomes	"Strongly agree" Scores in Percentages of Respondents				
	Avu Lagoon Overall	Adutor	Blemeadzado	Suipe	Tosokpo
I have heard about the CREMA **(A)**	51.7	90.9	50.0	13.5	37.5
I am aware of the CREMA Executive Committee (CEC) **(A)**	47.0	86.4	30.0	21.6	32.5
I am aware of the Community Resource Management Committee (CRMC) in my community **(A)**	44.0	75.0	37.5	10.8	35.0
The CEC needs more organizations and actors to make it more effective **(P)**	43.5	93.2	37.5	10.8	20.0
I know the rules and regulations of the CREMA **(A)**	32.8	90.9	15.0	5.4	17.5
Decisions of the CEC reflect the most important benefits and concerns of the community **(P)**	32.3	84.1	27.5	2.7	22.5
The community is briefed fully on the decisions of the CEC **(P)**	29.3	68.2	20.0	5.4	25.0
I am aware of the constitution of the CREMA **(A)**	27.2	75.0	10.0	8.1	17.5
I am satisfied with the provisions of the constitution **(P)**	27.2	79.5	10.0	10.8	12.5
The CEC has been successful in resolving natural resource management conflicts **(P)**	26.7	70.5	10.0	5.4	10.0
The CEC meets regularly **(P)**	25.4	81.8	12.5	5.4	2.5
Composition of the CEC is enough to assure effective management of the CREMA **(P)**	22.4	54.4	15.0	10.8	7.5
I know the functions of the CEC **(A)**	21.6	27.3	12.5	16.2	15.0
I know its functions **(A)**	16.4	22.7	12.5	5.4	12.5
I or a member of my family is a member of the CRMC **(P)**	14.2	6.8	30.0	5.4	12.5
The CRMC consults the general community and meet before attending CEC meetings **(P)**	13.4	11.4	20.0	10.8	17.5
The CRMC meets regularly **(P)**	12.5	31.8	10.0	2.7	5.0
I am aware of the CREMA bye law from the District Assembly **(A)**	7.8	0.0	17.5	5.4	12.5

The table shows that overall, about 52% of respondents agreed that they had heard about the CREMA, 47% were aware of the CREMA Executive Committee (CEC), and 33% knew the rules and regulations of the CREMA. Additionally, about 9-27% percent of respondents agreed that they were aware of the constitution of the CREMA, knew its functions and the functions of the CEC, and the CREMA by-law from the District Assembly.

In terms of performance, about 44% of respondents agreed that the CEC needs more organizations and actors to make it more effective, 32% agreed that the decisions of the CEC reflect the most important benefits and concern of the community although, about 29% of respondents agreed that the community is fully briefed about decisions of the CEC. About 22 – 27% of respondent also agreed that the CEC has been successful in resolving natural resource management conflicts, the composition of the CEC is enough to assure effective management of the CREMA, and the CEC meets regularly. Fewer than 15% of respondents agreed that they were members of the Community Resource Management Committee (CRMC), that the CRMC consults the general community before attending CEC meetings or meets regularly.

A scan through the responses by the four communities indicates that Suipe community shows lowest agreements in awareness and performance. Between 3 – 11% of respondents agreed that they knew the rules and regulations of the CREMA, were aware of the CREMA constitution, were satisfied with its provisions, or knew the functions of the CREMA, were aware of the CRMC or the CREMA by-law from the District Assembly. Fewer than 23% of respondents had heard about the CREMA, and were aware of the CEC and its functions.

In terms of performance, only 11% of the respondents agree that the composition of the CEC is enough to assure effective management of the CREMA, and the CEC needs more organizations and actors to make it more effective. Fewer than 6% agree that the decisions of the CEC reflect the most important benefits and concerns of the community, the CEC meets regularly, the community is fully briefed on the decisions of the CEC or the CEC has been successful in resolving natural resource management conflicts. Furthermore, only 3% of respondents agree that the CRMC meets regularly, consults the general community and meets before attending CEC meetings or are members of the CRMC.

4.4 Discussion

Overall, Avu Lagoon considers tourism as the topmost desired outcome followed by increased conservation awareness, and educational scholarships. Wind break, improved

supply and quality of firewood and charcoal and more bushmeat are of least importance overall. In terms of perceived outcomes, Avu Lagoon posts more fish, reduced bush fires and native wildlife return as the top three perceived outcomes. Wind break, improved supply and quality of firewood and charcoal and more bushmeat are perceived as the least satisfactory outcomes.

The results show that socioeconomic outcomes are the most desired but the CREMA has probably been more effective in delivering ecological conservation outcomes. Development of tourism, provision of educational scholarships and increased conservation awareness are usually externally driven, while achievement of ecological conservation outcomes are contingent on the extent to which actors from the local level demonstrate effective horizontal linkages and cooperate through community action and unity and self organize. Achievement of both conservation and development outcomes would therefore depend on effective vertical linkages which appear to be lacking between actors from the local and district levels.

The top and bottom three outcomes of Avu Lagoon overall are not the same for all the four focal communities. For example, more fish shows the highest performance overall, but Adutor and Blemeadzado show ecologically sensitive areas being protected and well managed. Suipe shows increased conservation awareness and Tosokpo suggest tourism as the highest performing outcomes. Overall, Suipe demonstrates the lowest levels of importance for desired outcomes as well as perceived outcomes in many cases. For example, while over 65% of respondents show that tourism is one of the most desired outcomes of the CREMA, fewer than 12% suggest same for Suipe. This is probably a reflection of Suipe's general low agreement on awareness and perceived performance of the CREMA (in section 4.3.3). Adutor shows the lowest levels of perceived satisfaction with CREMA outcomes in most cases although, it showed the strongest agreements on awareness and perceived performance of the CREMA. Whereas these results also demonstrate variability among the communities, the individual communities exhibit consistency in their assessments of perceived satisfaction with CREMA outcomes versus agreements on awareness and performance of the CREMA. Adutor is the only exception.

Tables 19 and 20, and Figure 7 show that in general terms, communities are more heterogeneous (exhibit higher variability) with respect to perceived outcomes, and more homogeneous (exhibit lower variability) with respect to desired outcomes. It appears that desired outcomes reflect stable values that are unlikely to change in the short to medium term. The homogeneity of the desired outcomes speaks to the collective aspirations of local communities which motivate participation in governance. These outcomes therefore tend to be more stable. However, perceived outcomes may be a reflection of different prevailing conditions such as the conditions attached to funding and logistical support for CBNRG that may generate certain outcomes across the constituent communities that may or may not align with the values (desired outcomes) of local communities. Therefore, it may be more efficient to measure (monitoring and evaluation) perceived outcomes and match them with the desired outcomes for a realistic assessment of the performance of CBNRG and to customise governance for real time effectiveness.

For Avu Lagoon, factor analysis loaded the outcomes into three factors as opposed to four factors for all CREMAs (Chapter Three)[31].

Several outcomes loaded onto the SE factor that might not immediately seem 'socioeconomic' in nature. These include increased conservation awareness, native wildlife return, religious, cultural and historical uses, no chemical contamination of water, and ecologically sensitive areas being protected and well managed. This may be connected to ecotourism development which is a major motivation for the creation of the Avu Lagoon CREMA. For example, the Sitatunga is a valued sacrificial animal used by the Agorbledokui community in Avu Lagoon for their religious and cultural purposes and is also a potential tourism attraction for the CREMA as a whole (Husuke and Sheppard 2012, pers. com). Therefore, religious, cultural and historical uses tie in well with increased conservation awareness, and native wildlife return which are imperative for

[31] Avu Lagoon loaded 15 outcomes under socioeconomic factors as against 10 for all CREMAs. Avu Lagoon loaded increased conservation awareness, native wildlife return, and religious cultural and historical uses onto SE factors but these loaded onto EGS for all CREMAs. The other two are no chemical contamination of water, and ecologically sensitive areas being protected and well managed from EC of the overall CREMA analysis.

ecotourism development and its potential increase in income and employment. No chemical contamination of water, and ecologically sensitive areas being protected and well managed also resonate quite well with each other to support native wildlife return and hence ecotourism and increased income.

At the time of the field data collection, some key informants indicated that special efforts were being made through increased conservation awareness and other targeted efforts to check the incessant use of agrochemicals and indiscriminate disposal of spent chemical containers. Indeed, special exercises had been instituted by the chiefs and elders of the communities to collect empty containers that were littering parts of the lagoon ecosystem. The contention was that the chemicals were probably the cause of the deteriorating health of the lagoon ecosystem which translates into reduction in fish sizes, fish harvests and loss of certain valued fish species in the lagoon (Sheppard and Bowen 2006).

When the results on desired and perceived outcomes are compared (Table 22) none of the outcomes meets the satisfaction of actors. The pattern of scores for SE factors shows two sets of perceived (satisfaction) outcomes i.e., a first set of seven and a second set of eight outcomes. The mean scores of the satisfaction outcomes in the first set of seven, range from 2.59 - 2.73, while the mean scores of those in the second set of eight are higher (3.43 - 3.92). When computed, the overall average mean score for SE factor is 3.26 which is less than the least mean score of the second set of eight outcomes. This scenario suggests caution about the use of average mean scores and factor analysis because variability among perceived outcomes can be masked. The second set of outcomes (those with higher satisfaction mean scores) are mostly social-economic that appears to support the viability of the ecotourism enterprise in Avu lagoon. These are factors that are probably within the “power” of the local actors to achieve through strong focused leadership by the CEC and support of all the chiefs that precipitates the necessary collective community action and unity. On the other hand, the pattern of SE outcomes with satisfaction scores less than three appear to be a set of ’indirect’ or longer term factors that communities expect to benefit as a result of ecotourism enterprise development. In most cases, these outcomes also depend on support from external actors

(agencies and individuals) and may not come as quickly as local communities may have been made to believe. It is therefore imperative that the expectations of the local communities are managed.

Referring to Table 23, Blemeadzado and Tosokpo show SE factors as the first most desired and this is congruent with the overall CREMA result. This is probably due to the fact that the CBNRG concept was introduced by an external agent with the key aim of conserving the Sitatunga for tourism purposes (Chapter Three). In collaboration with the Wildlife Division, NCRC suggested to the Avu Lagoon communities that ecotourism leverages local development with the implication that when the communities accepted the message and helped to conserve the Sitatunga, their long term socioeconomic prospects might be enhanced (focus group interviews; Togbe Allega III, 2012; pers. com). Issues of conservation and development impact on local practices through the presence of external agents promoting those ideas and practices (Marks, 2001). However, depending on the socio economic and cultural particularities, the development status and problems of each of the constituent communities, their development priorities differ. For example, Adutor, which is relatively the most developed peri-urban community, rates SE factor second highest but Suipe which is the most rural, rates SE factor as the least desired.

Table 25 shows discrepancies between perceived and desired factors in all three factors. Adutor shows wider discrepancies than the overall outlook and the other three communities. Generally, Suipe has the smallest gaps and Adutor shows the largest gaps. These results also show variability in the perceptions about governance effectiveness in different communities. But what accounts for variability?

Variability in satisfaction can also be a function of linkages (direct interactive social networks that foster collective community action and unity), such as increased awareness and performance that enable local representatives to participate in CREMA governance and assist in coordinating governance processes and sharing of information (McGinnis, 2005; Chapter Two). This is crucial because the foundation of conservation is extremely weak as long as no major effort is made to fill crucial knowledge gaps and

therefore interaction and communication among actors are keystones for success of conservation work (von Droste zu Hulshoff, 1982).

Variability may also be dependent on the presence or absence of strong community leadership (chiefs, CEC and other local elite), social relationships and community-level institutions (system of rights, rules that provide regularity, reduce uncertainty and shape human environment interactions by creating an enabling or controlling environment) that influence attitudes and behavior (Gibson and Koontz, 1998; Agrawal and Gibson, 1999, Naughton-Treves et al., 2005, Chuenpagdee and Song, 2012). For example, several key informants indicated that the CRMCs and the leadership of Suipe are inactive and apathetic and that probably accounts for the low scores for Suipe in the assessment of the performance of the CRMCs from that community. Furthermore, attitudes towards conservation, land and resources can differ depending on the background, tradition and degree of allegiance to a particular area (Heck et al., 2011). For example, land in the Avu Lagoon area is owned by various clans, and then subdivided into individual family holdings. The lagoon itself belongs to two main clans: the Seviawo (East side) and the Anyigbewo (West side) clans. Each clan has its own chief, institutions and community gods to worship, with some villages having multiple clans (Suipe and Adutor). Decisions about land can be different from one clan to another depending on the institutions governing land use. Hence, there is probably a real difference between people in relation to their response to the need to manage or protect the natural resources in the area (Dasmann, 1982).

Variability in satisfaction may also be attributed to different impacts on the local communities of a combination of development status and priorities, as well as strong, focused leadership with effective local institutions that animate community collective action and unity. For example, although Adutor and Blemeandzado are more developed than Tosokpo and Suipe they have relatively stronger and more dynamic leadership that ensures that the local institutions are effective (personal observation). Compared with Suipe (also a fully rural community) Tosokpo may be doing better. This is perhaps due to Tosokpo's positions as the gateway to Avu Lagoon in terms of tourism and therefore there is much more focus on its development by the local leadership and collectively by

the local people taking advantage of their privileged position. Suipe, however, is quite remote with difficult access and can be completely cut off during the wet season. Suipe is also somewhat limited in terms of access compared with the other communities to interact, communicate and increase awareness and governance effectiveness (Muruvi 2011). Several key informants also suggest that Suipe is quite far from the lagoon and therefore, the local people probably feel detached from, and inadequately concerned, about the CREMA. Moreover, many agriculturally based rural communities may accept development values attached to CBNRG, but other sources of security such as maintaining and consolidating significant social relations are core for the survival of communities in difficult environments (Anderson, 2001).

4.5 Conclusion

Assessments of community based natural resources governance concentrate more often on the broader picture and rarely consider the deeper issues of the relationships between perceived and desired outcomes; and variability (and the causes thereof) among communities. This study sought to determine the relationships between desired and perceived outcomes of four local communities, and to investigate variability and its causes between the four local communities in the Avu Lagoon CREMA.

At the individual community level, significant variability exists both in desired and perceived outcomes and in the gaps between them. The communities show variable levels of importance and perceived satisfaction of the desired outcomes and the match between perceived and desired outcomes. In general terms, communities are more heterogeneous (exhibit higher variability) with respect to perceived outcomes, and more homogeneous (lower variability) with respect to desired outcomes. It appears that desired outcomes are more stable long term values of local communities that are probably unlikely to change in the short to medium term. However, perceived outcomes may probably be a reflection of different prevailing conditions across the constituent communities that may or may not result in the achievement of those desired outcomes. Therefore, in the short to medium term, it may be more efficient to measure (monitoring and evaluation) perceived outcomes to match them with the desired outcomes for a more

realistic assessment of the performance of CBNRG and to customise governance for real time effectiveness.

When the results on desired and perceived outcomes are compared through an analysis of gaps, the pattern of scores for SE factors shows two sets of perceived outcomes. This suggests that mean scores of outcomes within a factor, can exhibit different patterns where more than one group of outcomes emerge. One group may exhibit a range of mean scores that are higher than that of another group and the overall average mean score. Caution should therefore be exercised about the use of average mean scores because variability among outcomes in the same factors can be masked.

The set of factors with higher satisfaction mean scores are mostly social-economic factors that appear to be within the "power" of the local actors to achieve through strong focused leadership of the chiefs and elders and the CEC in general which can serve to galvanise collective community action and unity. On the other hand, the pattern of outcomes with satisfaction scores less than three appear to be a set of secondary factors that are usually procured with support from or by external agencies and individuals may not come as quickly as local communities may have been made to believe. It is therefore imperative that the expectations of the local communities are carefully managed and commitment to procuring those outcomes adequately demonstrated to avert any possible return to any unhelpful pre CBNRG attitudes and behaviour of the local communities

Factors that explain variability in desired outcomes can be different from those that explain variability in perceived outcomes. In this case, variability in desired outcomes may be due to a combination of factors such as: a) how and who introduced the CBNRG concept to the local communities (Chapter Three); b) existing socioeconomic and cultural context (Vaske et al., 2009; Lockwood 2005; Chapter Three), and the development status and challenges of the community (Chapter Three). On the other hand, variability in perceived outcomes may be a function of awareness and performance in governance (Chapter Two), strong and dynamic community leadership, and social relationships and effective local institutions.

Overall, deeper assessments and better understanding of the relationships between desired and perceived outcomes and the variability between communities can help to address the challenges of community based natural resource governance.

Chapter 5

Conclusion and Recommendations

5.1. The Study Objectives Revisited

This dissertation is based on the argument that analyses of Community Based Natural Resource Governance (CBNRG) systems are incomplete without a better understanding of the wide range of desired outcomes, the relationship between desired and perceived outcomes, and the variability among CBNRG systems and communities (Gibson and Koontz, 1998; Vaske et al., 2009). The dissertation contributes to this discussion by focusing on three related studies relevant to governance and outcomes of five Community Resource Management Areas (CREMAs) in Ghana. Four objectives were investigated and each will be discussed in turn in the following sections.

5.1.1. Objective 1: To examine the governance system in Ghana in regard to CREMAs at the regional, district and local levels, including institutions, important actors (centers of power), and the multiple, cross-scale linkages between them (or lack thereof).

This study found that one of the key challenges in achieving development-related outcomes is related to linkages between key actors in conservation and development across the local and district levels of governance. For example, the District Medium Term Development Plan (DMTDP) implementation process faces several challenges including the fact that horizontal linkages at the district level for conservation and development are missing in practice for a number of reasons. The key reasons are that, issues relating to conservation and development are fragmented across a number of "independent nodes", for example, the decentralised Departments of Agriculture; Trade and Industries; and Social Development. These entities maintain strong vertical linkages with their regional nodes and often keep to their bureaucratic allegiances and priorities, thus undermining the purpose of the decentralization programme. Conservation and development can probably be achieved only when the fragmented approaches that have characterized conservation and development are improved through integrated and effective horizontal and vertical linkages in the development and implementation of the District Medium

Term Development Plan (with CREMA incorporated) of the District Assembly. Linkages are important among various conservation and development actors, in that, the prominent roles of the actors can heighten the importance of minimizing environmental impacts associated with development activities. Hence, linkages are *sine qua non* in addressing issues of governance to avoid strategies leading to functional fragmentation (Young, 2012). Strengthening the linkages can also be possible if the Natural Resources Conservation Department, Forestry Game and Wildlife Division of the District Assembly is established as an additional node to provide stronger linkages that will mobilize the collective efforts of the other nodes within the District Assembly and beyond. The collective efforts of the other nodes when mobilized, can also provide the degree of nimbleness needed to respond promptly to changing conditions in time and space and to make significant adjustments necessary to ensure higher governance effectiveness (Young, 2012).

This study also revealed that CREMAs respond to the challenges of conservation and development at the same time as face several governance challenges. CREMAs are not adequately linked to the DMTDP. The Unit Committee concept provides a possible foundation for influencing the development planning processes at the local level to link CREMAs to the DMTDP, but it is also functionally weak due to the absence of Unit Committees in many places, a lack of operational funds where they do exist, and tensions with local traditional authorities. Moreover, the CREMA Executive Committee (CEC) (the governing body of the CREMA) is also functionally weak due to inadequate representation of some critical nodes from the local and district levels, (a problem of weak horizontal and vertical linkages), that could assist in coordinating governance processes, sharing information and providing strong links to the DMTDP and other development-oriented agencies at the district level. CECs could be strengthened by enlisting the support and participation of other nodes-particularly chiefs-at the local and district levels to leverage enough influence for CREMAs in the DMTDP process to attract resources for conservation and development.

The study showed that important nodes to improve governance effectiveness of CREMAs may include chiefs, land owners, District Assembly members, Unit Committee

members, farmers, youth groups, and representatives of the District Assembly, Non Governmental Organisations and the Wildlife Division, depending on local circumstances. Courting the influence of other nodes from outside the CREMA (local level) is an important strategy for governing effectively in the long term (Young, 2012). Besides, linkages across multiple scales may also enhance the sense of legitimacy that the CREMA Executive Committee requires to produce social pressure on the larger constituent community members to abide by the rules applicable to all and sundry (Young et al., 2007). Therefore, nodes of governance from the district level should be made an integral part of the core membership of CREMAs, to provide the requisite linkages from the CREMA across multiple scales.

Clearly, other issues related to CREMA governance beyond those discussed in this study will be important to consider and address. For example, critical attributes such as collective decision making, coordination between different relevant systems of governance, accountability, transparency, local traditions, and funding among others have become critical issues for governance effectiveness (Dearden, Bennett, and Johnston, 2005). These are imperative for CREMAs to enhance governance effectiveness.

In summary, the form and content of multi-actor linkages as presently structured have gaps and weaknesses such as inadequate nodes in the CEC, weak links between CREMAs and the DMTDP, gaps and weak horizontal linkages among the departments of District Assemblies that are largely influenced by vertical bureaucratic biases, inadequate funding, and a lack of attention to conservation and development as a distinct project. Polycentric governance could be the key to achieving a balance between conservation and development in Ghana.

Polycentric governance results in the distribution of management powers and resources among interacting nodes of governance that operate at different levels (Chapin III et al., 2009). This is crucial because in times of budget shortfalls or shifting priorities for example, the overlapping activities of other nodes can sustain actions. However, effective leadership to provide vision, functional and social cohesion, and action, reconceptualising issues to reflect real time, generating ideas and solutions and

communicating across levels of governance is imperative for effective governance (Chapin III et al., 2009). This is where the support and participation of chiefs becomes crucial.

Implementation of Ghana's decentralisation programme is still on-going and therefore there is scope for building and strengthening the requisite nodes of governance, by enlisting other critical nodes at the local and district levels into the CEC, and enhancing linkages at the district level once the decentralization process is fully implemented. Until then, the decentralised nodes of governance (departments of the District Assembly) in particular should be encouraged to reduce their bureaucratic biases, and strengthen their horizontal linkages to make polycentric governance and performance of CBNRM practically effective and beneficial. The challenge may be how to devise effective incentive mechanisms to induce the relevant nodes of governance, to realize the inevitability of interdependencies and accept responsibility for contributing to activities that may not necessarily be part of their original mandate (Young, 2009).

5.1.2. Objective 2: To characterize the desired and perceived outcomes of CREMAs, the relationships between them, and the relationship of those outcomes to the governance system.

Factor analysis characterized a diverse portfolio of 29 desired and perceived outcomes into four factors including Socioeconomic (SE), Ecosystem Goods and Services (EGS), Ecological Conservation and Provisioning Services (PS) factors.

Socioeconomic factors include economic outcomes such as increased income, increased employment, access to credit/financial assistance, and capacity building in income generating enterprises. Social outcomes include international recognition and pride, collective community action and unity and constancy of school children's attendance. These variables suggest that social and economic factors link together quite well.

Ecosystem goods and services factors included increased conservation awareness, religious, cultural and historical uses, purification and provisions of clear air, more and

better quality traditional medicines, and native wildlife return. Religious, cultural and historical uses tie in well, particularly with native wildlife return and traditional medicines. For example, the Sitatunga is a sacrificial animal used by the Agorbledokui community in Avu Lagoon, valued for its religious and cultural purposes (Husuke and Sheppard 2012, pers com). Similarly, one of the main interests of the Zukpiri CREMA constituents is conservation of better quality traditional medicines. Traditional medicine practitioners in rural Ghana mostly inherit their "trade" from their ancestors through oral religious and cultural edification, and so the practice is shrouded largely in religious, cultural and historical foundations. Hence the two outcomes fit into this factor quite well.

Ecological conservation factors included better farmlands and increased food production, reduced bushfires, ecologically sensitive areas being protected and well managed, no chemical contamination of water and improved water supply and quality. Ecological conservation factors appear to group outcomes needed to enhance the integrity of wildlife habitat and the major livelihood strategies of the CREMA constituents which are farming and fishing. For example, it is in the interest of wildlife conservation and attainment of provisioning services such as more fish that ecologically sensitive areas are protected and well managed. This is because ecologically sensitive areas such as inlets of water bodies and mangroves serve as spawning grounds for fish and provide healthy habitat for native wildlife. This is also related to the need to curtail chemical contamination of water to improve water supply and quality for healthy fishery, wildlife habitat, safe drinking and farming (Danso and Agyare, 1995; Heck et al., 2011).

Provisioning services include: sustainable supplies of bushmeat; fish, sheanut and dawadawa and an improved supply of firewood and charcoal. These outcomes appear to be motivated by direct consumption. However, it is instructive that respondents rated this factor as the least important among the four factors. This is probably because provisioning service outcomes are depleted and respondents would like to see populations rebound. According to some workshop participants "we cannot hunt wildlife for example when we need the animals as tourist attraction and for posterity, and without healthy vegetation wildlife cannot survive, so there is the need to look for other sources

of energy such as gas in order to give respite to the habitat for wildlife" (workshop participant, 2012).

Overall, the study found that actors rate socioeconomic (SE) factor as the most important followed by Ecological Conservation (EC), Ecosystem Goods and Services (EGS) and finally Provisioning Services (PS) factors as the least important. This result runs contrary to findings by Heck et al., (2011) in a similar study of desired community outcomes from a proposed conservation area in Canada, where environmental values and goals were the most important outcomes. In a poverty-challenged economy such as Ghana, it is not surprising that socio-economic outcomes appear to be the most important to stakeholders. Nevertheless, socioeconomic factor was not the most important for Avu Lagoon and Zukpiri CREMAs where ecosystem goods and services factor was rated the most important. Hence, there is variability among the CREMAs. The finding that there is variability among CREMAs, supports the observation by King and Peralvo (2010), that variability among communities plays a role in shaping perceptions of governance, and it is real and legitimate. All CREMAs rated provisioning services factor as the least important. However, an analysis of gaps (i.e. when the mean scores of the "desired" factors are subtracted from the mean scores of "perceived" factors) shows highest perceived governance effectiveness in Provisioning Services followed by Ecosystem Goods and Services, Ecological Conservation and Socioeconomic. This suggests that meeting development-related goals remains a principal challenge for CREMAs.

5.1.3. Objective 3: To assess variability in desired and perceived outcomes both between different CREMAs and between communities within the same CREMA.

This study found several interesting issues with respect to desired and perceived outcomes and perhaps most importantly, variability in the desired and perceived outcomes of different CREMAs. For example, overall, respondents from all the CREMAs together, rate increased employment as the first most important desired outcome but no individual CREMA rates it as such. Avu Lagoon identifies tourism, Zukpiri and River Asuopiri point to increased conservation awareness, Amokwasuaso shows capacity

building and training in income generating enterprises and Wechiau suggests international pride and recognition as the most desired outcomes.

Similarly, all CREMAs together indicate that the most perceived satisfactory outcome overall is reduced bush fires, an outcome with which River Asuopiri agrees. Respondents from all the other CREMAs vary in their perceived most satisfactory outcomes. While Avu Lagoon suggests more fish, Zukpiri points to more and better quality traditional medicines, Amokwasuaso shows purification and provision of clean air, and Wechiau registers educational scholarships as the perceived most satisfactory outcomes. These results also point to the fact that the most desired outcomes of actors are probably socioeconomic for all CREMAs overall (Table 12), contrary to findings by Heck et al., (2011) where the most desired outcomes were given to environmental factors. On the other hand, Zukpiri and Avu Lagoon show environmental factors (ecosystem goods and services) as the most desired, similar to the findings by Heck et al., (2011). Generally, governance has probably been more effective in delivering on ecological factors. The exception is Wechiau which appears to show most perceived satisfaction in socio economic factors (Tables 13). It is also instructive to note that while all the CREMAs but Wechiau consider increased conservation awareness as one of the three most important outcomes, only Zukpiri perceived it to be one of the most satisfactory. These observations appear to confirm the assertion by Plummer and Fizgibbons (2006); Buizer et al., (2011); and Heck et al., (2011) that perception of the performance of CBNRG varies widely among actors who may be making decisions that affect conservation and development. Therefore, without a better understanding of the variability among CBNRG systems general assessments of CBNRG systems may be incomplete, and may even damage the long term credibility of CBNRG (Gibson and Koontz, 1998; Vaske et al., 2009).

The most desired outcome overall (i.e. increased employment), is not the most desired for any of the five individual CREMAs. This result may be due to different value orientations of actors, shaped by the unique socioeconomic, cultural, and ecological dynamics of the actors in the different CREMAs. For example, for Avu Lagoon the most desired outcome is tourism, while Zukpiri and River Asuopiri point to increased

conservation awareness. Amokwawsuaso shows capacity building in income generating enterprises and Wechiau suggests educational scholarships as the most desired outcome. Likewise, are the most perceived satisfactory outcome overall-reduced bushfires-is not the most satisfactory by any of the five CREMAs.

The study shows that among communities within the same CREMA, significant variability can exist both in desired and perceived outcomes and in the gaps between them. According to Igoe (2006) some communities and individuals within communities in a CBNRG enterprise are better able to take advantage of conservation benefits than others. The differential capacity of some communities and individuals to take advantage of conservation benefits may be due to complex land tenure systems, and the knowledge and skill endowment of individuals or clan within a community. These can create social differentiation both within and between communities (Dearden et al., 1996; Barrett et al., 2001). Outcomes may also differ within and diverge between spatial and temporal scales, again creating variability among communities (Brown, 1998; Gibson and Koontz, 1998; Hoekstra et al., 1991; Gottret and White, 2001). Variability among communities can undermine successful governance when variability in outcomes creates the impression of inequity (Tompkin et al., 2000).

The study found out that in general terms, communities are more heterogeneous (exhibit higher variability) with respect to perceived outcomes, and more homogeneous (show lower variability) with respect to desired outcomes. It appears that desired outcomes are more stable long term values of local communities that are probably unlikely to change in the short to medium term. However, perceived outcomes may be a reflection of different prevailing conditions across the constituent communities that may or may not align with the values (desired outcomes) of local communities. Therefore, in the short to medium term, it may be more efficient to measure (monitoring and evaluation) perceived outcomes to match them with the desired outcomes for a more realistic assessment of the performance of CBNRG and to customise governance for real time effectiveness. Monitoring and evaluation to match desired and perceived outcomes of local communities has the advantage of strengthening relationships between local communities and managers in relation to real time information (Heck et al., 2011).

The pattern of scores within a factor can show different sets of perceived outcomes. For example in the Avu Lagoon case, two sets of outcomes emerged in the SE factor- a first set of seven and a second set of eight. The mean scores of the outcomes in the first set of seven, range from 2.59 - 2.73, while those in the second set of eight are higher (3.43 - 3.92). When computed, the overall average mean score for SE factor is 3.26 which is less than the least mean score of the second set of eight outcomes. This scenario suggests caution about the use of average mean scores and factor analysis because variability among perceived outcomes in the same factor can be masked. The second set of outcomes with higher satisfaction mean scores are mostly social-ecological and appears to support the viability of ecotourism in Avu lagoon. These are factors that are probably within the "power" of the local actors to achieve through strong focused leadership and collective community action and unity. On the other hand, the pattern of outcomes with satisfaction scores less than three appears to be a set of secondary factors that communities expect to benefit from, consequent to a viable ecotourism enterprise. These outcomes are usually procured with support from or by external actors (agencies and individuals) depending on their commitments, long term interests and capabilities and may not come as quickly as local communities may have been made to believe. It is therefore imperative that the expectations of the local communities are professionally managed and commitment to procuring those outcomes adequately demonstrated to avert any possible return to any unhelpful pre CBNRG attitudes and behaviour of the local communities.

Based on data gathered from the workshops, and document analysis augmented by personal experience, the study shows that factors that explain variability in perceived outcomes differ from (but may overlap) the factors that explain variability in terms of desired outcomes. In this case, variability in desired outcomes can be attributed to many factors including: how and who introduces the concept of CBNRG to the communities (as discussed in Chapter Three); the message and communication strategies used to obtain buy-in by the communities; and the social, economic, cultural and ecological contexts and dynamics of the communities (Lockwood, 2005; Vaske et al., 2009; Heck et

al., 2011). A combination of these factors interacts to influence the value orientation of the people regarding the most desired outcomes.

Variability in perceived outcomes may be a function of differing levels of awareness and performance in governance, (as discussed in Chapter Two), the presence or absence of strong and dynamic community leadership, the nature of social relationships and local institutions, and the level and length of external financial, technical, administrative, and logistical support.

Variability in the perspectives of CREMAs is real and legitimate and therefore individual CBNRG systems may be unique. Therefore, deeper assessments for better understanding of the relationships between desired and perceived outcomes and the variability between communities can help to address the challenges of community based natural resource governance. (Gibson and Koontz, 1998; Vaske et al., 2009). Consequently, it is important that CBNRG considers the specific conservation and development perspectives of actors in different contexts in order to customize CBNRM strategies. The challenge may be how to secure a reasonable long term and adequate stream of financial, technical, administrative and logistical support to galvanise the collective decisions of actors and address the social-ecological and welfare considerations of the large array of actors and their diverse desired outcomes in the same CBNRG system.

5.2 Highlights of Contribution of this Dissertation to the Concept of Community Based Natural Resources Governance

- A broad range of actors are involved in community based natural resources governance across multiple scales who do not necessarily, function in a coordinated and effective manner. Hence, gaps remain in designing and implementing CBNRG system leading to functional fragmentation and inability to achieve desire outcomes. Studies and evaluation of CBNRG systems need to examine linkages at the same scale (horizontal) and between scales (vertical).
- The primary agents for developing CBNRG systems are usually conservation-related organizations without a rural development mandate who as a result can

only provide for the conservation side of governance. To balance conservation and development, important nodes of governance for governance effectiveness should include both conservation and development actors.

- Effective CBNRG systems require that conservation and development are treated as a cross-cutting enterprise in national institutions of governance. This will help in leveraging the necessary attention and incorporation of conservation and development in national development planning systems or linkages to viable development agenda at the districts within which CBNRG operates.
- Effective CBNRG system also requires dynamic and effective leadership to provide vision, foster social cohesion, reconceptualise issues to reflect real time, generate ideas and solutions and communicate across scales of governance.
- A more comprehensive assessment of both desired and perceived or actual outcomes in the same study provides a better outlook of governance effectiveness as compared to when only the perceived or actual outcomes are measured.
- Community based natural resource governance operates within unique and dynamic social-economic, cultural and ecological landscapes to which local communities are adapted. These unique and dynamic landscapes shape and can vary the value orientations of actors and create variable desired and perceived outcomes within or across CBNRG systems. Variability among communities can undermine successful governance when variability in outcomes creates the impression of inequity (Tompkin et al., 2000). Therefore, studies on CBNRG systems have to examine variability within and across the systems with due cognizance to temporal scales in order to customize governance.

5.3 Methodological Insights

There were also some methodological observations that emerged from this study. Factor analysis is a useful tool for reducing a large array of outcomes into factors that enable analysis of variability between and within CBNRG systems and also allow for a clearer understanding of the interrelationships among the outcomes. However, the study shows that mean scores of outcomes within a factor can exhibit different patterns where more than one group of outcomes emerge. One group may exhibit a range of mean scores

that are higher than both that of another group and the overall average mean score. Perceived outcomes may be positive for one community and negative for another and also in respect of individuals within the same community. Therefore, there can be equity issues that are masked in overall, general assessments (Ashley and Hussein, 2000; Tungittiplakorn and Dearden 2002). Caution should therefore be exercised about the use of average mean scores because variability between outcomes in the same factor can be masked.

Factor analysis was unable to group the outcome variables of Avu Lagoon into meaningful factors and the indication was that the 29 variables used for the analysis contained one variable with a lot of missing responses. That variable was identified as one that did not occur in Avu Lagoon. When that variable was taken out, factor analysis responded, but this time, it loaded the remaining 28 variables into three as opposed to four factors that were generated from the 29 variables for all the five CREMAs together. This probably shows that factor analysis may load outcomes differently for different governance systems, perhaps due to variability, and these differences should not be taken for granted.

Explaining variability was not originally one of the objectives/a central focus of the research, and therefore questions pertaining to variability per se were not asked. Variability emerged as important when the data were being analysed. Therefore, accounting for variability depends more on personal experience with the CREMA processes and information gathered though the workshops. The paucity of primary information pertaining to variability and the causes or sources thereof, and the loading together of social and economic outcomes; as well as social and ecosystem goods and services outcomes, speaks to the importance and appropriate sequencing of multiple methods in social research of this nature. The lesson is that after the household surveys, had serious preliminary analysis had been done variability among communities and the composition and the likely reasons for the loadings of the factors would probably have been identified. This would have allowed further probing in the workshops for some insights about the causes or sources of variability between governance systems and among local communities.

The study found out that, in general terms, communities within a governance system are more heterogeneous (exhibit higher variability) with respect to perceived outcomes, and more homogeneous (lower variability) with respect to desired outcomes. In view of the heterogeneity exhibited by communities in their perceived outcomes, a "full and faithful account" of the perceived outcomes of constituent communities will be imperative in determining real time governance effectiveness. Therefore, as many constituent communities as possible within a governance system should be surveyed when perceived outcomes are being investigated to match them with desired outcomes as a predictor of governance effectiveness. Likewise, monitoring and evaluation of perceived outcomes should involve as many communities as possible

5.4 Recommendations and Thoughts for Future Research

5.4.1. Recommendations

- The Community Resources Management Area concept seeks to balance conservation and development. However, in its current configuration, conservation and development cannot be achieved for a number of reasons: conservation and development are not specifically captured in the guidelines for the preparation of the District Medium Term Development Plan (DMTDP) as a cross cutting objective; therefore, they are not treated as such in the DMTDP formulation process. Consequently, conservation and development activities are fragmented across different nodes of governance at the district level. CREMA remains a Wildlife sub sector concept and does not attract the requisite national attention compared to other countries where CBNRG has a national character. Therefore, the CREMA concept should be emphasized as a distinct cross cutting "project" in the NDPC guidelines to provide impetus for it as a national endeavour.
- The District Development Facility should also include CREMAs and/or conservation and development issues in the indicators of the Functional Organisation Assessment Tool (FOAT) to provide a stimulus for them as a joint objective.

- Ecotourism is widely recognized as the most likely vehicle for simultaneously achieving conservation and some level of development. Therefore, given the fact that CREMAs ranked tourism as a most desired SE outcome, development of ecotourism facilities and allied socioeconomic outcomes in CREMAs should be given more attention by the District Assembly and its allied development actors. This is where linkages with the District Medium Term Development Plan (DMTDP) of the District Assembly and other development actors such as the Central Regional Development Commission (CEDECOM) that organizes an annual Pan African home coming and cultural festival, (Panafest), tour operators etc., should be strengthened to create the needed balance and the conditions for higher governance effectiveness.
- The value orientation of communities within a CBNRG system can partly be shaped by how and who introduces the concept to the local communities and the message and communication strategies used to obtain but-in of the local communities. Study shows that communities have high value orientation toward socioeconomic outcomes such as increased social infrastructure; educational scholarships; increased income and employment; and access to credit/financial assistance among others. These outcomes are sometimes procured with support from external actors (agencies and individuals) depending on their commitments, long term interests and capabilities and may not come as quickly as local communities may have been made to believe. Therefore, the expectations of the local communities should be carefully managed and commitment to procuring those outcomes should be adequately demonstrated to avert any possible return to any unhelpful pre CBNRG attitudes and behaviour of the local communities
- The relevant decentralised nodes of governance within District Assemblies in particular should be encouraged to reduce their bureaucratic biases and strengthen their horizontal linkages in order to enhance the effectiveness of polycentric governance. This is where the review of the legal frameworks toward the establishment of the schedule two departments of the District Assembly particularly the Natural Resources Conservation Department (NRCD) should be accelerated. The establishment of the NRCD will help to provide leadership in

mobilizing and mediating the necessary linkages within and without the District Assembly in order to facilitate and strengthen the weak linkage between CREMAs and the District Medium Term Development Plan (DMTDP), and to provide a strong platform for integrating conservation and development.

- The CREMA Executive Committee should be strengthened by enlisting the participation of other nodes at the local and district levels to leverage enough influence for CREMAs in the DMTDP process to attract resources for conservation and development.
- The capacity of Community Resource Management Committees (CRMCs) in group and intercultural dynamics, communication, facilitation and conflict resolution skills should also be built to enhance the dynamism, confidence, enthusiasm and the competence of CRMC members to improve awareness and performance of CREMAs.

5.4.2 Thoughts for Future Research

- Variability in desired and perceived outcomes of Community Based Natural Resource Governance (CBNRG) systems is an important phenomenon in assessments of the success of CBNRG. King and Peralvo (2010) noted that detailed empirical studies were needed to identify the specific factors that shape community perceptions. They intimated that local views were critical in understanding whether governance is leading to a match between social and ecological outcomes. Therefore, variability between and within different CBNRG systems should be investigated to illuminate real time governance effectiveness
- The findings of this study are based on perceptual responses and personal experience of the researcher. Perceptual information may not necessarily reflect the actual situation to determine the effectiveness or otherwise of governance systems. Therefore, actual data should be gathered to assess whether or not the desired outcomes of actors are being met, to enable a truer and more faithful assessment of governance effectiveness of community based natural resources governance systems.

- A combination of quantitative and qualitative methods helps reveal the interplay between factors that underlie variability and how variability helps in shaping governance (King and Peralvo, 2010). Appropriate sequencing of multiple methods in social research provides additional opportunities for triangulation with different respondents. It also allows for gathering additional data that may have been missed, to clarify unclear information, and or gather more information about related issues that were originally not a central focus of the research, but which emerge from initial analysis of the primary data as crucial in illuminating the subject matter. Therefore, primary data collection should begin with key informant interviews, followed by focus group interviews before a survey is carried out. After a survey, preliminary analysis should be carried out to determine trends and patterns of information, or to detect gaps and or emerging imperatives that were not previously intended for interrogation. The gaps and the emerging issues can then be filled in or interrogated in workshops for more nuanced and comprehensive information.
- This study focused on CREMA communities only without attention to non CREMAs as control, to gauge whether or not perceived outcomes can be attributed with some certainty to Community Based Natural Resource Governance. Given the fact that there are many differences between desired and perceived outcomes of CREMAs, future research should concentrate on a few CBNRG systems and include a non CBNRG system as control, to assist in establishing causality between outcomes and governance.

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Appendix A

Consent Note for Participants

My name is Andrew Kyei Agyare a student of the University of Victoria in Canada. My colleague with me here is Mr …… from……..We are here to carry out research about the Community Resource Management Area (CREMA). This research is an attempt to understand how traditional socio ecological values are integrated into governance systems. It is also to determine whether or not governance systems influence socioecological outcomes which reflect the conservation and welfare values and objectives of the actors. It aims to contribute to efforts to forge a balance between conservation and development by focusing on CREMA such as yours in Ghana.

The study will allow you to express your opinions, so that improvements can be made on CREMAs where required. I will provide your community a copy of my report when it is completed. The study will unearth information and knowledge and will provide you the opportunity to learn more about the CREMA, discuss potential welfare and conservation issues. It will provide you a better understanding of the challenges of conservation and development and generate confidence in the community's ability to find solutions to problems of conservation and development.

The research is primarily in fulfillment of my PhD thesis (academic requirement) of the University of Victoria in Canada. Secondly, it is part of a protected areas and poverty reduction (PAPR) Canada – Africa Alliance which focuses on how traditional conservation and welfare values are integrated into formal conservation policy in Ghana, Tanzania and Canada

We would like to assure you that there are absolutely no risks to you for participating in this research and that at any point in time during the research if you feel at risk we will terminate the exercise.

We are asking for your agreement to participate in the research through this interview/survey. Your participation is completely voluntary. You may withdraw from an interview/survey at any time for any reason without explanation and penalty. Anonymity and confidentiality will also be observed.

This interview will take about 45mins to complete. May we begin?

Appendix B

A guide for Non-Local Key Informant Interviews

Governance

1. Can you please tell me what you know about CREMAs in Ghana. Why are they formed. and how are they formed.
2. What are your views about them in terms conservation and poverty reduction
3. Can you please tell me who (individuals and organizations(actors)) that you think should be involved in the CREMA decision making processes in order that greater and efficient socio ecological performance/benefits can be achieved. *(list them under local, district and regional levels)*
4. What do you think their roles should be (*take them actor by actor*)
5. What linkages do you think should exist between them at local, district and regional levels. *Map connections/working relationships* (**current situation**)
6. What interactions or arrangements or working relationships should the actors engage in to assure greater and efficient socioecological benefits (**desirable situation**)
7. What factors (should) facilitate the interactions/ linkages between the different actors

   Institutional: policies, laws, MoUs, MoAs etc

   Operational: sharing information, expertise, field collaboration e.g. extension services etc

   Social capital: trust; reciprocity; collective action; social norms; commitment;etc.

   Logistical: sharing resources, equipment, transport, stationery etc

   Financial: funds

   Administrative

   Please explain

8. What factors constrain interactions/ linkages between the different actors

   Institutional

   Operational

   Logistical

   Financial

   Administrative

   Please explain

9. How should the linkages/relationships be structured to ensure that the decision making structures and processes reflect/deliver the most important or desirable socioecological benefits/things that the CREMA constituents and other actors cherish /see

Desired outcomes

10. What do think are the five most importance or desirable benefits/things of the CREMA that should inform decision making.
11. What decisions or actions should be taken to ensure that the most important or desirable benefits/things of the CREMA can be achieved to a large extent

Perceived Outcomes

12. In your view what benefits should be expected from managing CREMA in the Short (five years)

    Medium (ten years) and

    Long term (more than ten years)

13. As far as you know what benefits have been achieved from the CREMA to date

14. What potential concerns or problems do you think the CREMA can create or has created
15. What is likely to be the cause of the potential problems/concerns or what are the causes of the problems or concerns.
16. How can the concerns/problems be resolved
17. What factors do you think can work against the achievement of efficient socioecological benefits of the CREMA.
18. How should these factors be addressed
19. To what extent can you say that achievement of efficient socioecological benefits/things of the CREMA is as a direct result of the decisions about the CREMA. (*List the benefits in answer to question 13 that are as a direct result of CREMA decisions).*
20. What should be done to ensure that benefits/things from CREMA reflect the most important or desirable benefits/things that the CREMA constituents and other actors cherish

Questions on objective 3: Match between desired outcomes and governance; and desired and perceived outcomes

21. In your view what decisions about the CREMA do you think favour the achievement of the most important or desirable benefits/things that the CREMA constituents and other actors.
22. In what way do you think the CREMA has been disappointing or failed to live up to expectation

Questions on objective 4: Relationship between governance and outcomes

23. What factors account for the success and failures that you have seen in the CREMA. How so.
24. Do you think that the way decisions are made about the CREMA directly affect the benefits and concerns that you have seen. if so how, if not, why not.

25. In your view which benefits or concerns about the CREMA can you say are as a direct result of the way decisions about the CREMA has been made. (*List them. Refer to answers to question 13 and 14)*

26. Why do you think so
27. Apart from what we have discussed so far what else would you like me to know about the CREMA.
28. If you have any questions for me as a result of this interview you may ask them now

Thank you for your time; you have been very helpful and I am grateful

Appendix C

A guide for Local Key Informant Interviews

Introduction

A little about you

In order to better interpret your responses to this questionnaire we would like to ask a few questions about you. If that is okay with you.

Ques 1. What is your name please

Ques 2. What is your gender Male [M] Female [F]

Ques 3. About how old are you

Ques 4. In which community do you live

Ques 5. What is your ethnicity [ ]Native [ ]Non native Religion

Ques 6. How many years have you lived there

Ques 7. What is your educational level:

No school at all [ ]

Primary [ ]

JSS [ ]

SSS [ ] or form [1] [2] [3]

Teacher training [ ]

University [ ] Name of university Where

Other training Explain

Ques 8. How many people are in your household

Ques 9. Occupation

Ques 10. What is your position in the community

Ques 11. What is your position in the CREMA

Ques 12. Can you please tell me about the CREMA in terms of when it was formed

Ques 13. Who formed it

Ques. 14. Why it was formed ? What was the objective

Ques 15. How much you have been involved in its establishment processes. Why

How did you get involved

Questions on objective 1: Governance part one

16 Who (individuals and organizations) is involved with decisions making about the CREMA, within your community? (list them)

17 What individuals and organizations are involved with decision making about the CREMA but do not live within or around the CREMA? (list them)

18 Which of these individuals and organizations (mentioned under questions 16 and 17) do you think has influence on how decisions are made about the CREMA (list them) and why

19 What roles do they play (take them one by one) for example

What is the role of the tindana

What is the role of the chief

What is the role of the district assembly etc.

How is NCRC/Zukpiri Traditional healers association/Wildlife Division involved

20 What is the relationship(s) between the individuals and organizations that are involved in decision making?, is it good, is it bad? Explain

21 How do they collaborate to ensure that their decisions and activities do not generate conflict.

Do they exchange information,

Do they share resources

How open are they to each other

Does any of them try to dominate? Who and why

Which actors work closely with each other in regard to the CREMA. *Map the linkages*

22 How are their activities coordinated to ensure that they are not working at cross purposes within the CREMA

23 What is the process by which decisions are made

24 Can you please describe any factors that influence that process (*provide examples*) and how?

Funding,

Location of meetings,

Meeting times,

Structure of interactions

Convener

25 What do you think about the process by which decisions are made

26 Which individuals or organizations are not directly involved in the decision making process but still influence the way that the CREMA functions. If so, how does it happen

How does that affect the way that the CREMA functions, what is the result/effect.

Questions on objective 2: on desired benefits from the CREMA

27 I should be very grateful if you can tell me five or more important or desirable benefits/things that you and this community cherish/see about or expect from the CREMA land and its resources.

28 About five years before the CREMA was established what benefits were you deriving from the land. (*probe for at least 5 benefits*)

29 When the CREMA was being established what were some of the benefits that your community or household expected to realize from it. (*probe for at least 5 benefits*)

30 Ten years from now what benefits do you think will be derived from the CREMA (*perceived benefits*)

31 Ten years from now what benefits would you like to get out of the CREMA(*desirable benefits)*

32 What decisions do you think can be taken and implemented to ensure that what you consider as the most important or desirable benefit/thing about the CREMA can be improved or achieved to a large extent

Questions on objective 2: on perceived outcomes

33 In your view what benefits have you and or your community received/enjoyed since the CREMA was established. (*List at least 5 if possible)*

34 What are some of the benefits that you were not expecting from the CREMA but have been generated.

35 Are there individuals or organizations that are not already involved in the CREMA but should be involved in order for these or greater benefits to be achieved? (*If yes list them)*. Why do you think so.

36 What do you think their roles should be (*lets take the organizations one by one*).

37 What kinds of interactions/arrangements do you expect the organizations or individuals to engage in to bring about these benefits

38 Do you have any concerns/problems about the CREMA, what are they (*list them*) and if need be ask why

39 How should these concerns/problems be resolved

40 What challenges/difficulties is the CREMA facing

41 What do you think are the causes of these challenges/difficulties

42 How should the challenges/difficulties be addressed

43 In your view which benefits or concerns about the CREMA can you say are as a direct result of the way decisions about the CREMA have been made. (*List them. Refer to answers to questions 33 and 34)*

44 Why do you think so

45 Apart from what we have discussed so far what else would you like me to know about the CREMA.

46 If you have any questions for me as a result of this interview you may ask them now

NB: The same interview guide will be used for the focus group interviews to get the perspectives of groups**.**

Appendix D

The CREMA Survey Instrument

Ques 1. About the awareness and performance of CREMA governance.
First, I should like to know your views about the decision making structures and processes of the CREMA. As I read the following lists please indicate for each, if you "strongly disagree" somewhat disagree" "not sure" "somewhat agree" "strongly agree

What is your position on the following observations?	**STRONGLY DISAGREE**	**SOMEWHAT DISAGREE**	**NOT SURE**	**SOMEWHAT AGREE**	**STRONGLY AGREE**
A. I have heard about the CREMA	1	2	3	4	5
B. I am aware of the CREMA Executive Committee (CEC)	1	2	3	4	5
C. I know the functions of the CEC	1	2	3	4	5
D. Composition of the CEC is enough to assure effective management of the CREMA	1	2	3	4	5
E. The CEC needs more organizations and actors to make it more effective	1	2	3	4	5
F. I am aware of the Community Resource Management Committee (CRMC) in my community	1	2	3	4	5
G. I know its functions	1	2	3	4	5
H. I or a member of my family is a member of the CRMC	1	2	3	4	5
I. The CRMC meets regularly	1	2	3	4	5
J. The CRMC consults the general community and meet before attending CEC meetings	1	2	3	4	5
K. The CEC meets regularly	1	2	3	4	5
L. The community is briefed fully on the decisions of the CEC	1	2	3	4	5
M. I know the rules and regulations of the CREMA	1	2	3	4	5
N. I am aware of the CREMA bye law from the District Assembly	1	2	3	4	5
O. I am aware of the constitution of the CREMA	1	2	3	4	5
P. I am satisfied with the provisions of the constitution	1	2	3	4	5
Q. Decisions of the CEC reflect the most important benefits and concerns of the community	1	2	3	4	5
R. The CEC has been successful in resolving natural resource management conflicts	1	2	3	4	5

Ques 2. This question concerns your views about which **organizations and or actors should participate in the decision making structures and processes of the CREMA** to achieve you and your community's expected important benefits.

As I read the following list please indicate your view about the possible participation of each group in CREMA decision making. Please indicate in each case if you "strongly disagree" somewhat disagree" "not sure" "somewhat agree" "strongly agree".

Participation of this organization or actor in CREMA decision making is crucial to the achievement of you and your community's expected important benefits from the CREMA	**STRONGLY DISAGREE**	**SOMEWHAT DISAGREE**	**NOT SURE**	**SOMEWHAT AGREE**	**STRONGLY AGREE**
A. Chiefs	1	2	3	4	5
B. Hunters	1	2	3	4	5
C. Assembly members	1	2	3	4	5
D. Religious leaders	1	2	3	4	5
E. Farmers	1	2	3	4	5
F. Landowners	1	2	3	4	5
G. Youth groups	1	2	3	4	5
H. Teachers	1	2	3	4	5
I. Women's groups	1	2	3	4	5
J. Opinion leaders	1	2	3	4	5
K. Charcoal burners	1	2	3	4	5
L. Research institutions	1	2	3	4	5
M. Community based organization	1	2	3	4	5
N. Unit Committee Members	1	2	3	4	5
O. District assembly	1	2	3	4	5
P. Wildlife Division	1	2	3	4	5
Q. NGOs	1	2	3	4	5
R. Forest Services Division	1	2	3	4	5
S. Police	1	2	3	4	5
T. Ministry of Agric	1	2	3	4	5
U. Financial institutions	1	2	3	4	5
V. Ghana National Fire Service	1	2	3	4	5
W. Environmental Protection Agency	1	2	3	4	5
X. National Board for Small Scale Industries	1	2	3	4	5
Y. Regional Coordinating Council	1	2	3	4	5
Z. Other (s)	1	2	3	4	5

Ques. 3. From the above list please indicate the THREE MOST IMPORTANT groups that should be involved in CREMA decision making:

First Most Important: _____

Second Most Important: _____

Third Most Important: _____

Ques 4. Can we now have your assessment of the level of importance of the CREMA in regard to you and your community's **expected important benefits**. As I read the following lists please indicate for each, if you think that it is of "no importance at all" low importance" "medium importance" "high importance " "very high importance".

This expected benefit of the CREMA is important to me and my community	NO IMPORTANCE AT ALL	LOW IMPORTANCE	MEDIUM IMPORTANCE	HIGH IMPORTANCE	VERY HIGH IMPORTANCE
A. Increased conservation awareness	1	2	3	4	5
B. More and better quality grass	1	2	3	4	5
C. More poles and construction materials	1	2	3	4	5
D. More and better quality traditional medicines	1	2	3	4	5
E. More shea nut/dawadawa	1	2	3	4	5
F. More bushmeat	1	2	3	4	5
G. More fish	1	2	3	4	5
H. Improved water supply and quality	1	2	3	4	5
I. Improved supply and quality of firewood and charcoal	1	2	3	4	5
J. Fodder for livestock	1	2	3	4	5
K. Better farmlands increased food production	1	2	3	4	5
L. Reduced bush fires	1	2	3	4	5
M. Purification and provision of clean air	1	2	3	4	5
N. More rain	1	2	3	4	5
O. Wind break	1	2	3	4	5
P. No chemical contamination of water	1	2	3	4	5
Q. Ecologically sensitive areas being protected and well managed	1	2	3	4	5
R. Native wildlife return	1	2	3	4	5
S. Religious, cultural and historical uses	1	2	3	4	5
T. Tourism	1	2	3	4	5
U. International recognition and pride	1	2	3	4	5
V. Access to credit/financial assistance	1	2	3	4	5
W. Constancy of kids school attendance	1	2	3	4	5
X. Educational scholarships	1	2	3	4	5
Y. Increased income	1	2	3	4	5
Z. Increased Employment	1	2	3	4	5
AA. Capacity building and training in income generating enterprises	1	2	3	4	5
BB. Improved social infrastructure	1	2	3	4	5
CC. Collective community action and unity	1	2	3	4	5
DD. Other (s)	1	2	3	4	5

Ques. 5 From the above list please indicate the FIVE MOST IMPORTANT benefits of a CREMA

First Most Important Benefit: _____
Second Most important Benefit: _____
Third Most Important Benefit: _____
Forth Most Important Benefit: _____
Fifth Most Important Benefit: _____

Ques 6. Now, I am going to repeat the list in question 4 and ask you this time to indicate for each possible benefit your **level of satisfaction** with its achievement. As I read the list please indicate for each item, if you are "very unsatisfied" somewhat unsatisfied" "not sure" "somewhat satisfied" "very satisfied".

Me and my community's level of satisfaction of the achievement of the following expected important benefits of CREMA is	**VERY UNSATISFIED**	**SOMEWHAT UNSATISFIED**	**NOT SURE**	**SOMEWHAT SATISFIED**	**VERY SATISFIED**
A. Increased conservation awareness	1	2	3	4	5
B. More and better quality grass	1	2	3	4	5
C. More poles and construction materials	1	2	3	4	5
D. More and better quality traditional medicines	1	2	3	4	5
E. More shea nut/dawadawa	1	2	3	4	5
F. More bushmeat	1	2	3	4	5
G. More fish	1	2	3	4	5
H. Improved water supply and quality	1	2	3	4	5
I. Improved supply and quality of firewood and charcoal	1	2	3	4	5
J. Fodder for livestock	1	2	3	4	5
K. Better farmlands increased food production	1	2	3	4	5
L. Reduced bush fires	1	2	3	4	5
M. Purification and provision of clean air	1	2	3	4	5
N. More rain	1	2	3	4	5
O. Wind break	1	2	3	4	5
P. No chemical contamination of water	1	2	3	4	5
Q. Ecologically sensitive areas being protected and well managed	1	2	3	4	5
R. Native wildlife return	1	2	3	4	5
S. Religious, cultural and historical uses	1	2	3	4	5
T. Tourism	1	2	3	4	5
U. International recognition and pride	1	2	3	4	5
V. Access to credit/financial assistance	1	2	3	4	5
W. Constancy of kids school attendance	1	2	3	4	5
X. Educational scholarships	1	2	3	4	5
Y. Increased income	1	2	3	4	5
Z. Increased Employment	1	2	3	4	5
AA. Capacity building and training in income generating enterprises	1	2	3	4	5
BB. Improved social infrastructure	1	2	3	4	5
CC. Collective community action and unity	1	2	3	4	5
DD. Other (s)	1	2	3	4	5

Ques. 7. I am going to repeat the list in question 5 and ask you this time to indicate **for each possible benefit whether its achievement is as a result of the establishment and management of the CREMA**. As I read the following lists please indicate for each, if you "strongly disagree" somewhat disagree" "not sure" "somewhat agree" "strongly agree".

The achievement this benefit is because of the establishment and management CREMA	**STRONGLY DISAGREE**	**SOMEWHAT DISAGREE**	**NOT SURE**	**SOMEWHAT AGREE**	**STRONGLY AGREE**
A. Increased conservation awareness	1	2	3	4	5
B. More and better quality grass	1	2	3	4	5
C. More poles and construction materials	1	2	3	4	5
D. More and better quality traditional medicines	1	2	3	4	5
E. More shea nut/dawadawa	1	2	3	4	5
F. More bushmeat	1	2	3	4	5
G. More fish	1	2	3	4	5
H. Improved water supply and quality	1	2	3	4	5
I. Improved supply and quality of firewood and charcoal	1	2	3	4	5
J. Fodder for livestock	1	2	3	4	5
K. Better farmlands increased food production	1	2	3	4	5
L. Reduced bush fires	1	2	3	4	5
M. Purification and provision of clean air	1	2	3	4	5
N. More rain	1	2	3	4	5
O. Wind break	1	2	3	4	5
P. No chemical contamination of water	1	2	3	4	5
Q. Ecologically sensitive areas being protected and well managed	1	2	3	4	5
R. Native wildlife return	1	2	3	4	5
S. Religious, cultural and historical uses	1	2	3	4	5
T. Tourism	1	2	3	4	5
U. International recognition and pride	1	2	3	4	5
V. Access to credit/financial assistance	1	2	3	4	5
W. Constancy of kids school attendance	1	2	3	4	5
X. Educational scholarships	1	2	3	4	5
Y. Increased income	1	2	3	4	5
Z. Increased Employment	1	2	3	4	5
AA. Capacity building and training in income generating enterprises	1	2	3	4	5
BB. Improved social infrastructure	1	2	3	4	5
CC. Collective community action and unity	1	2	3	4	5
DD. Other (s)	1	2	3	4	5

Ques 8. About unexpected or other consequences of the CREMA
Please indicate **the level of improvement** or otherwise in the following situations since the CREMA was created. For each statement please indicate if you feel the conditions are "much worse" "somewhat worse" "no change" "somewhat better" or "much Better"

The level of improvement or otherwise in the following situations since the CREMA was created is	**MUCH WORSE**	**SOMEWHAT WORSE**	**NO CHANGE**	**SOMEWHAT BETTER**	**MUCH BETTER**
A. Availability of fertile land for farming	1	2	3	4	5
B. Restrictions on hunting	1	2	3	4	5
C. Access to fuelwood	1	2	3	4	5
D. Access to shea nuts,	1	2	3	4	5
E. Access to dawadawa	1	2	3	4	5
F. Availability of thatch grass	1	2	3	4	5
G. Availability of building poles and ropes	1	2	3	4	5
H. Availability of termites for fowls	1	2	3	4	5
I. Access to medicinal plants and animal parts	1	2	3	4	5
J. Access to good drinking water	1	2	3	4	5
K. Restrictions on fishing	1	2	3	4	5
L. Incidence of fire	1	2	3	4	5
M. Crop damage by wild animals	1	2	3	4	5
N. Wildlife attacks on livestock	1	2	3	4	5
O. Cultural insensitivity by strangers	1	2	3	4	5
P. Transparent decision making processes and structures within the community	1	2	3	4	5
Q. Involvement of ordinary local people in the decision making processes and structures	1	2	3	4	5
R. Ability to participate freely in decision making	1	2	3	4	5
S. Satisfaction with how views of the general populace are taken into account in decision making	1	2	3	4	5
T. Inequity in benefit sharing and distribution	1	2	3	4	5
U. Dominating influence of local elite	1	2	3	4	5
V. Youth emigration	1	2	3	4	5
W. Inadequate management of high CREMA expectations	1	2	3	4	5
X. Inadequate alternative income generation enterprises	1	2	3	4	5
Y. Impunity and disregard of local regulations	1	2	3	4	5
Z. Inadequate funding of CREMA	1	2	3	4	5
AA. Awareness and understanding of the CREMA concept	1	2	3	4	5
BB. Other (s)	1	2	3	4	5

Ques 9. I am going to repeat the list in question 8 and ask you this time to indicate for each possible concern/unintended consequence **whether its occurrence is as a result of the establishment and management of the CREMA**. As I read the following lists please indicate for each, if you "strongly disagree" somewhat disagree" "not sure" "somewhat agree" "strongly agree".

The occurrence of this situation is because of the establishment and management CREMA		**STRONGLY DISAGREE**	**SOMEWHAT DISAGREE**	**NOT SURE**	**SOMEWHAT AGREE**	**STRONGLY AGREE**
A.	Availability of fertile land for farming	1	2	3	4	5
A.	Restrictions on hunting	1	2	3	4	5
B.	Access to fuelwood	1	2	3	4	5
C.	Access to shea nuts,	1	2	3	4	5
D.	Access to dawadawa	1	2	3	4	5
E.	Availability of thatch grass	1	2	3	4	5
F.	Availability of building poles and ropes	1	2	3	4	5
G.	Availability of termites for fowls	1	2	3	4	5
H.	Access to medicinal plants and animal parts	1	2	3	4	5
I.	Access to good drinking water	1	2	3	4	5
J.	Restrictions on fishing	1	2	3	4	5
K.	Incidence of fire	1	2	3	4	5
L.	Crop damage by wild animals	1	2	3	4	5
M.	Wildlife attacks on livestock	1	2	3	4	5
N.	Cultural insensitivity by strangers	1	2	3	4	5
O.	Transparent decision making processes and structures within the community	1	2	3	4	5
P.	Involvement of ordinary local people in the decision making processes and structures	1	2	3	4	5
Q.	Ability to participate freely in decision making	1	2	3	4	5
R.	Satisfaction with how views of the general populace are taken into account in decision making	1	2	3	4	5
S.	Inequity in benefit sharing and distribution	1	2	3	4	5
T.	Dominating influence of local elite	1	2	3	4	5
U.	Youth emigration	1	2	3	4	5
V.	Inadequate management of high CREMA expectations	1	2	3	4	5
W.	Inadequate alternative income generation enterprises	1	2	3	4	5
X.	Impunity and disregard of local regulations	1	2	3	4	5
Y.	Inadequate funding of CREMA	1	2	3	4	5
Z.	Awareness and understanding of the CREMA concept	1	2	3	4	5
AA.	Other (s)	1	2	3	4	5

Ques 10. Over all how satisfied are you with the achievement of the CREMA

1. VERY UNSATISFIED
2. SOMEWHAT UNSATISFIED
3. NOT SURE
4. SOMEWHAT SATISFIED
5. VERY SATISFIED

Ques 11. Overall how satisfied are you with the CREMA decision making structure and processes in regard to the benefits of the CREMA

1. VERY UNSATISFIED
2. SOMEWHAT UNSATISFIED
3. NOT SURE
4. SOMEWHAT SATISFIED
5. VERY SATISFIED

Ques 12. How satisfied are you with the effectiveness of the CREMA in reducing poverty/increasing welfare in your community now and in the future.

1. VERY UNSATISFIED
2. SOMEWHAT UNSATISFIED
3. NOT SURE
4. SOMEWHAT SATISFIED
5. VERY SATISFIED

A little about you

In order to better interpret your responses to this questionnaire we would like to ask a few questions about you If that is okay with you.

Ques 13. What is your name please

Ques 14. What is your gender Male [M] Female [F]

Ques 15. About how old are you

Ques 16. In which community do you live

Ques 17. What is your ethnicity [ ]Native [ ]Non native Religion

Ques 18. How many years have you lived there

Ques 19. What is your educational level:

No school at all [ ]

Primary [ ]

JSS [ ]

SSS [ ] or form [1] [2] [3]

Teacher training [ ]

University [ ] Name of university Where

Other training Explain

Ques **20**. How many people are in your household

Ques 21. Occupation

Ques 22. What is your position in the community

Ques 23. What is your position in the CREMA

Thank you. If you have any further thoughts about the CREMA or the interview can you give them now.

Appendix E

The Workshop Session Guide

Local level

1. **Structures**: which individuals and organizations make/should make decisions
2. **Processes**: what decisions are/should be made and what determines those decisions
3. **By what processes** are/should decision be arrived at.
4. **How are decisions transmitted** to the target audience within the communities.
5. **How are decision that need to be addressed/implemented outside the communities** .e.g to the district assembly or other relevant agencies communicated for action
6. **Who communicates** the decisions and what happens thereafter.
7. What are the challenges with decision making
8. What are the challenges with transmission of decisions to outside the local communities
9. How can they be resolved
10. When, where and how many times do you meet to make decisions

District level

1. **Structures**: which individuals and/or organizations make/should make decisions
2. **Processes**: what decisions are/should be made and what determines the agenda
3. **By what processes** are/should decision be arrived at.
4. **How are decisions transmitted** to the target audience (implementation agencies; local communities and the RCC)
5. **Who communicates** the decisions and what happens thereafter.
6. What are the challenges with decision making
7. What are the challenges with transmission of decisions to outside the district assemblies e.g the local communities

8. How can they be resolved
9. When, where and how many times do you meet to make decisions
10. **What is the composition** of the District planning coordinating unit (DPCU).
11. How were they selected
12. What is the relationship between the DPCU and other non DPCU conservation and development agencies
13. How are the programmes of the non DPCU taken on board the district's activities or coordinated
14. How is the District Assembly's Medium Term Development Plan funded
15. What is the relationship between the DPCU and the regional coordinating council (RCC) or the Regional Planning Coordinating Unit (RPCU). What constitute the linkage between the DPCU and the RCC/RPCU.
16. Who constitute the RPCU .