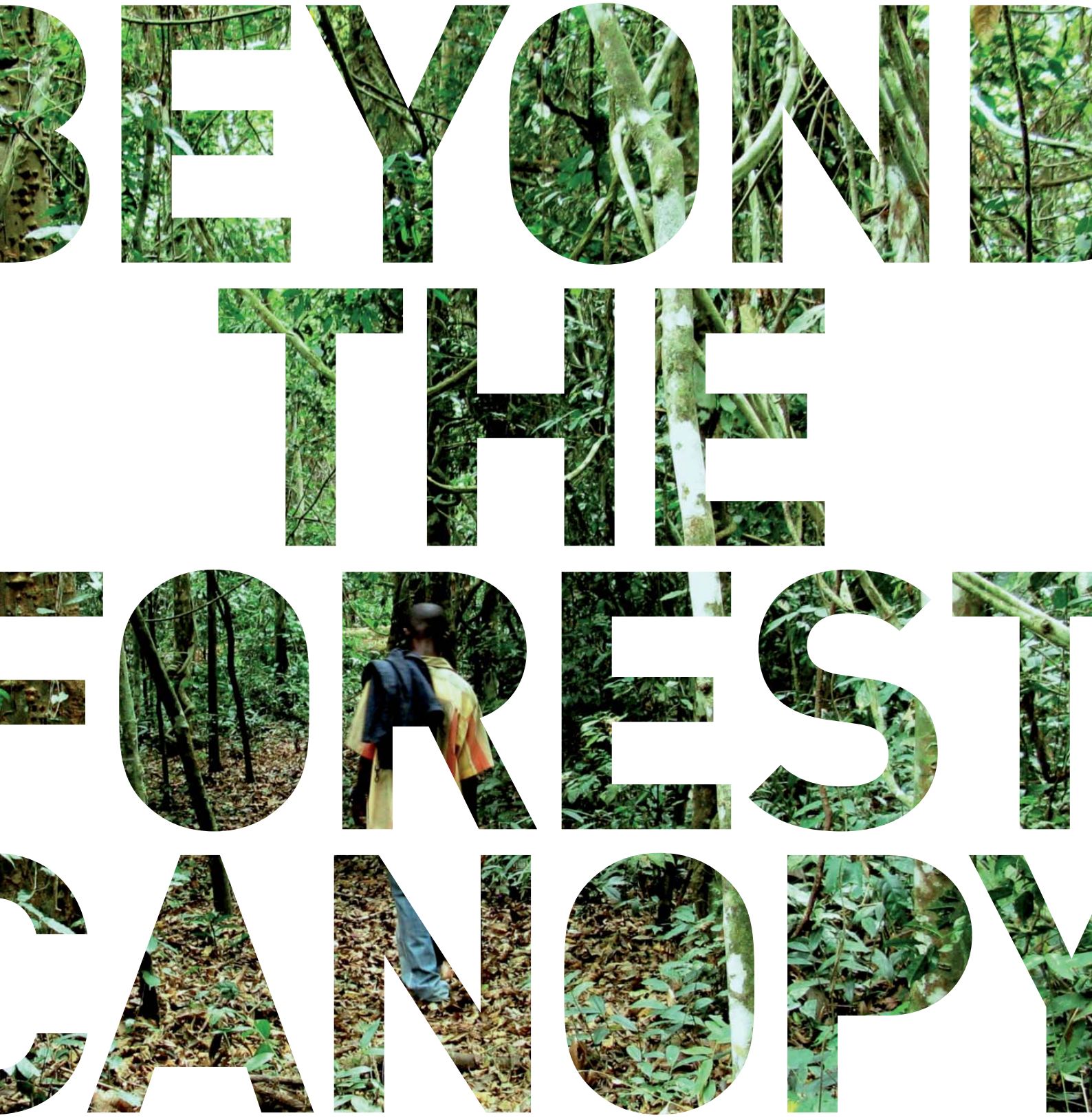

BEYOND THE FOREST CANOPY

The role of local knowledge in Community Resource Management Areas in Ghana's high forest zone

Jose Luis Pozo Gil | MSc Thesis | International Development Studies | University of Amsterdam (UvA)

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To Mónica and Iñaki,
For this thesis is somehow the result of long coffee (and tea) sessions under an avocado tree somewhere in Nairobi.

To Michel,
For having unintentionally anticipated all the emotions that would surge inside me while listening to the creatures of the rainforest at dusk.

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Abstract

Centrally-planned conservation and natural resource management has generated concerns about the exacerbation of poverty due to the restriction in people's access to crucial resources. Community-Based Natural Resource Management (CBNRM) was conceived as an approach to tackle both depletion of resources and poverty by incorporating full communal participation and local knowledge systems in management, regulatory and enforcement processes.

Local knowledge systems are believed to be crucial to the understanding of CBNRM schemes; its promotion can make conservation and development more relevant and socially acceptable by genuinely addressing local needs and procedures.

This research therefore aims at generating insight into the role of local knowledge in a particular CBNRM programme being implemented in Ghana and how it regulates the use and management of natural resources. This is the Community Resource Management Areas (CREMAs) whose overall objective is to curb the depletion of natural resources, especially wildlife, by devolving the natural resource management authority to user communities and by encouraging their participation through a series of economic incentives.

This thesis presents two case studies concerning two CREMAs located in Ghana's high forest zone. The data collected has been analysed by: (1) assessing the functioning of the CREMA in terms of devolution, participation and legitimisation, since these represent the main characteristics of the CBNRM approach; (2) focussing on the direct wildlife and other natural resource management systems identified and indirect management systems which can contribute to reduce the pressure on forests and natural resources; and (3) looking into any cultural considerations embedded in local knowledge in order to estimate whether and how the latter works.

I conclude that although local knowledge is used to some extent by local communities, it cannot be outlined as a pivotal point around which the CREMA functions.

Contents

List of boxes

List of figures

List of tables

Acronyms and abbreviations

CBNRM	*Community-Based Natural Resource Management*
CEC	*CREMA Executive Committee*
CREMA	*Community Resource Management Area*
CRMC	*Community Resource Management Committee*
FSD	*Forestry Services Division*
GEF	*Global Environmental Facility*
IK	*Indigenous Knowledge*
IUCN	*International Union for Conservation of Nature*
LEK	*Local Ecological Knowledge*
NGO	*Non-governmental organisation*
NTFP	*Non-timber forest product*
TBI	*Tropenbos International Ghana*
TEK	*Traditional Ecological Knowledge*
TKS	*Traditional Knowledge Systems*
UvA	*University of Amsterdam*
WWF	*World Wildlife Fund*

1. Introduction

Chapter 1 introduces the main research topic and the justification to undertake it. Likewise, it gives an account of the main research questions and sub-questions that are to be addressed in this study as well as a general description of the locations where the relevant data was collected.

1.1. Background to the study and problem statement

Conventional wisdom dictates that the establishment of protected areas to curb the depletion of natural resources has contributed to the marginalisation of rural communities (Brandon *et al.* 1998: 8). Natural resource management has radically changed over the last decades. Until the early 1980s, central governments had played the most prominent role in the use and access to those resources (Berkes 2007: 15188). In this light, governments were empowered to enforce laws forbidding or limiting humans' use of resources (Barret *et al.* 2001: 497). By enclosing areas away from human disturbance, many conservation programmes succeeded in their goals of preserving flora and fauna, curbing soil exhaustion and/or protecting water from overuse. However, the imposition of restrictions over natural resource use resulted many times in the exacerbation of poverty (Phuthengo and Chanda 2004: 60).

In the wake of the international awareness of what came to be known as "sustainable development", local-level solutions stemming from community initiatives were promoted (Leach *et al.* 1999: 225). These are embodied by the so-called Community-Based Natural Resources Management (CBNRM) approach, which seeks to achieve biological conservation and socioeconomic development goals simultaneously (Kellert *et al*. 2000: 705). Under this paradigm, it is assumed that by devolving management authority and responsibility for natural resources to the local level, communities will firmly protect them, manage them properly and benefit from them in a sustainable manner. CBNRM therefore intends to promote better resource management outcomes by incorporating full communal participation and local knowledge systems in management, regulatory and enforcement processes (Barrett *et al.* 2001: 498).

Local knowledge systems are believed to be crucial to the understanding of community-based natural resource management schemes. Local Ecological Knowledge (LEK), Indigenous Knowledge (IK), Traditional Ecological Knowledge (TEK), Traditional Knowledge Systems (TKS) are terms indistinctly used that refer to the "experience acquired over thousands of years of direct human contact with the environment" (Berkes 1993: 1). The study and documentation of local knowledge has become a topic of considerable interest within social sciences and

development studies since it represents an alternative to existing top-down natural resource management schemes (Davis and Wagner 2003: 463). Local knowledge is promoted to make conservation and development more relevant and socially acceptable (Donovan and Puri 2004). In this sense, shedding light on whether and how local knowledge can contribute to natural resource management is crucial because it places communities at the centre of the picture by genuinely addressing local needs and procedures, which after all is the essence underlying CBNRM schemes.

Ghana illustrates very well the shift mentioned above from the "fines and fence" approach to the more inclusive community-based natural resource management programmes. During the colonial era and post independence, the prevailing approach to biodiversity conservation in Ghana was that of establishing protected areas by formulating policies to secure wildlife and natural environments (Wildlife Division 2000: 3). However, with the advent of rapid human population growth and urbanisation, human migration and resettlement, deforestation, human encroachment in wild habitats, etc., the government of Ghana shifted in its previous approach to initiate considerable activity in the development of programmes in the wildlife sector which were more focussed on community involvement (*ibid.*).

During the 1990s, the central government took a series of measures, such as the enactment of the Forest and Wildlife Policy of 1994 that gave more relevance to the role of rural communities and local knowledge in the conservation of forests and wildlife resources (*ibid.*, p. 4). Later on, the Wildlife Division[1] took further steps and developed a Collaborative Wildlife Management Policy which gave more practical meaning to the 1994 Forest and Wildlife Policy by identifying various challenges that Ghana was facing in terms of biodiversity conservation (Wildlife Division 2004a: 6). This was followed by a course of action that ensured a more active participation of local communities, civil society groups and other stakeholders in wildlife management in Ghana (*ibid.*). This is how the Community Resource Management Area (CREMA), the CBNRM within which this research is framed, came into being. This policy "aims to enable the devolution of management authority to defined user communities and encourage the participation of other stakeholders, to ensure the conservation and sustainable use of the nation's wildlife for the maintenance of environmental quality and a perpetual flow of optimum benefits to all segments of society" (Wildlife Division 2000: 6).

Despite the promising prospects in terms of community involvement, especially with the current collaboration between local traditional authorities, Wildlife Division, NGOs and research institutions that the implementation of the CREMA concept promotes, there has been little research on whether and how local knowledge functions under this particular CBNRM scheme.

[1] The Wildlife Division is one of the three Divisions of the reconstituted Forestry Commission. It started as a branch of the then Forestry Department of the Ministry of Agriculture responsible for wildlife issues. In 1965, it became a full-fledged line agency of the Ministry of Forestry known as the Department of Game and Wildlife, which later changed to Wildlife Division after the adoption of the Forestry and Wildlife Policy of 1994. During the transformation, the Department moved from the Ministry of Forestry to the Ministry of Lands & Mineral Resources, Lands & Natural resources to the present Ministry of Lands and Natural Resources (MLNR). It is responsible for all wildlife in Ghana and administers 16 Wildlife-Protected Areas (PAs), 5 coastal Ramsar Sites and the Accra and Kumasi Zoos. It also assists with the running of two community-owned Wildlife Sanctuaries.

1.2. Research objectives, main research question and sub-questions

This research aims at generating insight into the role of local knowledge in a particular CBNRM scheme and how it regulates the use and management of natural resources. Although wildlife management is the primary objective of the CREMA process, it has to be acknowledged that it can apply to other natural resources where collective decisions are required (Wildlife Division 2004b: 12). Thus, my research will not only restrict to wildlife resources but it will also include plants or herbs and other non-timber products. In addition, local knowledge can be a relevant issue for policy consideration given the fact that CBNRM evolves around local knowledge and institutions about which Ghana's current policy is silent (Mercy Derkyi, Tropenbos International, pers. comm. February 2012).

Although the implementation of CREMAs occurs throughout Ghana, my study area is located in the high forest zone in the southwestern part of the country, where the CREMA concept is being put into practice in different communities. This research has been carried out under the auspices of Tropenbos International Ghana (TBI-Ghana and the University of Amsterdam) in an overall project with the Kwame Nkrumah University of Science and Technology, whose aim is to contribute knowledge for improved forest governance and forest-dependent livelihoods. Although TBI acts as the main collaborator institution in this research, the local supervision was carried out by the Wildlife Division in the figure of Mr Christian Fumey Nassah, responsible of the Wildlife Division of the Forestry Commission's main offices in Kumasi.

Against this background, the main question guiding this research is: *What role does local ecological knowledge play in a community-based natural resource management scheme like the CREMA in Ghana's high forest zone?*

In order to answer this main research question, the following three sub-questions are addressed:

1. What management practices and principles based on LEK can be identified in the CREMA?
2. How does LEK strengthen CBNRM (through enhancing participation and legitimisation)?
3. Does LEK enhance people's empowerment by strengthening their entitlements?

1.3. The study area

Ghana is situated on the Gulf of Guinea, neighbouring Côte d'Ivoire to the West, Togo to the East and Burkina Faso to the North. It has a total area of 239,500 km² and an approximate population of 24.7 million (CIA World Factbook 2011).

As Figure 1.1 shows, Ghana is divided into different vegetation zones which run approximately parallel to the equator, a phenomenon largely attributed to climatic factors, notably rainfall and temperature: the high forest zone, in the southern zone of Ghana, consists of forests ranging from wet evergreen to dry semi-deciduous; the Savannah in the North, which is the driest region; and the Transition zone, which falls in between the two. Finally, to a lesser extent, the coastal area of Ghana hosts a variety of wetlands (Treue 2001: 4).

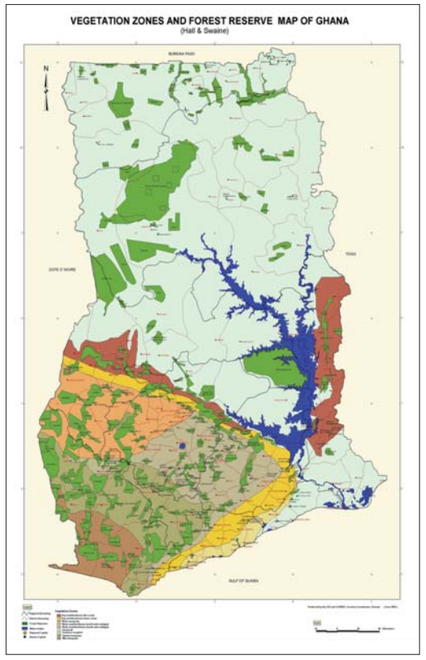

Figure 1.1. Ghana's vegetation zones (source: Forestry Commission of Ghana 2003).

The research location is the high forest zone, which is the region with the highest precipitation in the country, where rainfall may even reach 2,300 mm in the wettest parts (wet evergreen zone). The high forest zone falls within the Biodiversity Hotspot of the Guinean forests of West Africa, one of the 36 most important biodiversity areas in the world (Conservation International 2007).

Considering that the nature of this research is to assess how local knowledge works in different locations where the CREMA concept has been implemented, this research will have a clear comparative component between the selected research sites. Given that the length of the data collection period in Ghana is three months, it is only feasible to undertake the study in two locations. In order to make the comparison between the two CREMA sites more fruitful, the selection of the CREMA cluster communities has been based on the time frame since the CREMA was established in each location. Thus, the two research sites are the Kwamebikrom Stool Land Community Resource Management Area (CREMA site 1) in the Bia District and Akyekyere/Sureso/Pebaseman Community Resource Management Area (CREMA site 2) in the Wasa Amenfi District, both part of the Western Region of Ghana. In the first location the CREMA concept was brought for the first time in 2006 whereas in the second location it happened in 2004.

In terms of feasibility of the research and considering the time constrains, three communities were selected for each CREMA: Abrewakom, Kwamebikromm and New Wenchi in the Kwamebikrom Stool Land CREMA; and Gonokrum, Kamaso and Nkrankrom in the Akyekyere/Sureso/Pebaseman CREMA. These were chosen because of their mixed ethnical background and, in principle, because of the physical distance between them; by including people of different origins and by covering a larger area I would probably have more chances to witness different management systems and methods as well as relevant cultural issues. However, for the CREMA site 2, the communication by road was very limited and determined the selection of communities that are located closer to each other than in the case of the CREMA site 1.

Apart from these reasons, both CREMA sites border large portions of forested lands: the Bia Conservation Area in the Kwamebikrom CREMA and the Mamiri Forest Reserve in the Akyekyere/Sureso/Pebaseman CREMA. Considering their particular location, it would be interesting to look into whether and how community members resort to the forests when their livelihoods are depressed.

Beyond the fact that the CREMA scheme is being implemented in these two locations, the selected research sites are very suitable for the purpose of this study because it is acknowledged that community members are not only involved in wildlife management activities (CREMA's main focus) but also in other ecological and forest management practices such as forest conservation or tree planting, which after all is the habitat of the wildlife (Thomas Insaidoo, email comm.., 12 January 2012). In this regard, these activities will allow me to study local knowledge systems on both plant and animal non-timber forest products (NTFPs), tree products e.g. fruits that are naturally used for food by wildlife, as well as management and conservation of forest resources in the context of CREMA.

1.4. Thesis outline

This research has been structured in seven chapters.

The current one has served to present the main research topic and the area where the research has been undertaken as well as the justification that has motivated this study.

The second chapter focuses on the theoretical framework in which this research is embedded. The main issues addressed in the theory are the concepts of, firstly, community-based natural resource management and its overarching

characteristics of devolution, participation, legitimisation and empowerment; and, secondly, local ecological knowledge (LEK) with its main components and cultural considerations. The linkages that can be built between the two are another important issue that is addressed in this second chapter.

Chapter 3 proceeds with the methodological components of this research: a conceptual scheme revealing in a visual manner the relationships between CBNRM and LEK; the operationalisation of these major concepts, epistemology, unit of analysis, the research methods that have been used and the limitations experienced during the research.

The fourth chapter serves as a presentation of the context, that is, the CREMA concept in itself: the policies, how these unfold in practice and the governance arrangements that make the CREMA operational at the local level.

Chapter 5 and Chapter 6 represent the main outcomes of the analysis of the data collected in the field. Each of these chapters describes the research locations and elaborates on the functioning of the CREMA in terms of devolution, participation and legitimisation. They continue with the identification of wildlife and other natural resource management systems based on LEK and the description of income-generating activities as strategies to reduce pressure on forests and natural resources.

Finally, the analytical chapters address any cultural considerations embedded in LEK in order to better understand whether and how LEK works. Chapter 7 is the last part of this research and presents the main conclusions and findings as regards the three sub-questions and the main research question as well as recommendations for both further research and policymakers. In the last chapter, I also reflect on the theoretical implications and the way in which the study has been carried out.

2. Theoretical framework

Chapter 2 revolves around the theory from which this research stems. The main issues addressed in the theoretical framework are: community-based natural resource management and the major challenges related to it (devolution, participation, empowerment and legitimisation); and, as the second main concept, local ecological knowledge (LEK) with its main dimensions and cultural considerations. Finally, the chapter focuses con the main bridges that can be built between CBNRM and LEK.

2.1. Community-based natural resource management

The community-based natural resource management (CBNRM) approach has had a great impact on conservation and development projects since its inception in the early 1970s (Kellert *et al.* 2000: 706). This approach welcomes into its theoretical framework other expressions of CBNRM such as social and community forestry, community-based wildlife management, community-based conservation, strategies based on the commercial exploitation of non-timber forest products (NTFPs) and other approaches (Western and Wright 1994: 8; Ros-Tonen *et al.* 2005: 10).

Prior to the development of the CBNRM paradigm, the central state had played a prominent role in the control of natural resources (Worster 1993: 9). Although it is true that conservation efforts can be adopted through different models and encompasses distinct connotations, it is also true that, traditionally, the global response to the decline of biodiversity and transformation or destruction of habitats has been the creation of protected areas (Adams *et al.* 2004: 1146). The "fence and fine" approach to preserve nature has been characterised by an indifference to human needs and interests (Ros-Tonen *et al.* 2005: 7). This centrally-planned conservation inflicts severe damage on local communities in the form of evictions of harvesters, pastoralists or farmers, and the enforcement of coercive rules for those who dare to trespass the borders of the protected areas (Songorwa 2000: 604). Thus, the restriction of land and the resources that it includes has substantial negative impacts on local populations and consequently exacerbates poverty (Adams *et al.* 2004: 1146).

Yet, for two decades there have been many critical voices among conservationists about the social impacts derived from protected areas (Adams *et al.* 2004: 1146). In 1985, for instance, the World Wildlife Fund (WWF) initiated a programme called Wildlands & Human Needs which aimed at managing native forests and biological biodiversity by benefiting local people through "income

generation, land titling and enhanced access to wildland resources" (WWF 1988: 4). Although it is true that protected areas, reserves and national parks are still prominent instruments to fight loss of biodiversity, it is also true that new paradigms emerged in order to include the humans in the pursue of a lasting and effective solution. However, the inclusion of the human component as a prospect for socio-economic development in the complex equation of nature conservation is intricate.

In this direction, Adams *et al.* (2004: 1147) argue that "clarity over the choices between biodiversity conservation and poverty elimination goals is essential" when trying to understand the possible affinities between both. In order to do so, Adams *et al.* suggest a typology of four different ways of examining the relation between conservation and poverty reduction. The first category is that "poverty and conservation are separate policy realms" (*ibid.*), arguing that poverty reduction and conservation are different concerns with diverging objectives. Although there may be win-win opportunities such as protected-area tourism arrangements, high achievement of conservation will only be observed after the establishment of protected areas isolated from human disturbance. The second category defines poverty "as a critical constraint to conservation" (*ibid.*). In this case, poverty is seen as a limitation to the success of conservation, therefore the latter has to address the former by providing benefits to the communities neighbouring the protected areas in the form of employment opportunities or services funded by tourism revenues. The third one claims that "conservation should not compromise poverty reduction" (*ibid.*). Although it recognizes that conservation action can be sustained without local support, it shows moral and political obligations to take account of people's poverty. Thus, conservation strategies seek to generate positive economic benefits for the local people. The fourth and last category argues that "poverty reduction depends on living resources conservation" (*ibid.*) which means that poor people's livelihoods depend on biodiverse ecosystems. Poverty alleviation can therefore only be achieved by using conservation mechanisms. This position rejects the idea of "fortress conservation" and embraces a different approach in which local communities can manage common-pool resources out of the protected areas.

The foregoing arguably assures that numerous confrontations can be observed in the implementation of conservation projects. The first two categories, which argue that poverty and biodiversity loss are unrelated problems, call for separate approaches in order to find their respective solutions. However, the other two categories show signs that the two sides can move closer together by suggesting the emergence of participatory approaches, such as the already-mentioned CBNRM, in which local communities are granted full participation and devolved ownership of natural resources.

The revival of traditional resource management through CBNRM approaches (Worster 1993: 9) originates in the assumption that biodiversity conservation and poverty alleviation can be achieved simultaneously.

According to Kellert *et al.* (2000: 706), any given nature resource management approach to be genuinely qualified as "community-based" has to fulfil the following characteristics:

1. Exhibit assurance that local communities and institutions will be involved in the management of the resources.
2. Disposition in the decentralisation of wildlife ownership to local and/or indigenous institution.
3. Reconciliation of both socioeconomic development and biodiversity conservation goals.
4. Recognition of rural and/or indigenous property rights over the resources.
5. Prospects of "including values and ecological knowledge in modern response management" (*ibid.*).

Accomplishing the foregoing, nonetheless, implies great challenges related to devolution, participation, empowerment and legitimisation.

2.1.1. CBNRM and devolution

The process of devolution of natural resource management involves programmes that transfer responsibility and authority from the state to non-governmental bodies (Ribot 2004: 8). This process is part of related policy reforms in which the central state transfers rights and responsibilities to institutions at the local level. According to Meinzen-Dick and Knox (1999: 3), the devolution of resource management can be framed within the following:

- Deconcentration: decision-making authority is transferred to lower-level unit of a government line agency. Authority still remains with the same type of organisation and accountability is still responsibility of the central government.
- Delegation: decision-making authority and accountability are transferred to the local level, implying a stronger role for local bodies of government.
- Devolution: rights and responsibilities are assigned to user groups at the local level; they hold downwardly accountable to their members.

Decentralisation from central authorities to communities in the form of devolution of ownership of natural resources is considered the primary step to the success of any CBNRM project (Hackel 1999: 727). Brosius *et al.* (1998: n. pag.) suggest that CBNRM programmes "are based on the premises that local populations have a greater interest in the sustainable use of resources than does the state or distant corporate managers". The underlying reasons for central government to embark themselves in the process of devolution of natural resource

management are very diverse; yet, there are a few recurrent aspects (Meinzen-Dick and Knox 1999: 4):

- Recognition by the central government that its effectiveness is limited in managing natural resources at the local level. This limited effectiveness can be understood from two different angles. First, many governments face great challenges in monitoring and patrolling large areas to make sure rules are enforced. Considering natural resources are highly variable over space and time, local users have more advantages than state agencies in rule compliance since they live and work in the area. Secondly, governmental agencies often lack resources to maintain the centralised natural resource management programmes (salaries for displaced government employees, travel allowances, etc.). In addition, as Meinzen-Dick and Knox (*ibid.*, p. 5) note, if these financial restrictions *per se* do not force governments to adopt more localised management models, it can also happen that donors push governments for such reforms, "out of a belief that [local] users can be more effective managers, a commitment to participation, democratisation, or privatisation, or fiscal responsibility."
- Greater interest on public participation and democratisation. Promoting devolution processes has coincided with these trends aiming at involving citizens by programmes, at empowering them and improving their performance.

2.1.2. CBNRM and participation

Participation is crucial for rural community development. Wainwright and Wehrmeyer (1998: 934) state that participation represents the core of the CBNRM approach since "it enables communities to regain control over natural resources while at the same time strengthening their decision-making capabilities, advancing their involvement in project activities and improving their economic welfare".

Cohen and Uphoff (1980: 219) argue that the kinds of participation that warrant major concern are participation in decision-making, participation in implementation and participation in benefits. They also talk about participation in evaluation; however, due to the fact that the CBNRM scheme on which this research is based, the CREMA, is a recent initiative, evaluation would be premature. Participation in decision-making focuses on the generation of ideas as well as formulation and assessment of options, for which three kind of decisions are distinguished: initial decisions (identification of local needs and the way they will be approached), ongoing decisions (decisions made after the project's establishment); and operational decisions (membership composition, meeting procedures, leadership selection and influence of such organisations) (*ibid.*, p. 220). Participation in implementation refers to the way in which local communities take part in a given project: resource contributions (cash, donations, information, material goods), administration and coordination efforts (*ibid.*). Participation in benefits centres on the "outputs" of rural development leading to three kinds of possible benefits: material (private goods; more income and/or assets), social benefits (public goods in form of social services or amenities) and personal benefits (self-esteem, political power) (*ibid.*, p. 221).

In addition, Dietz (1996: 41) applies the concept of entitlements to natural resources and suggests putting the decision-making side of the latter at centre stage. Entitlements include three rights: right to own, right to use and right to intervene in the allocation and use of natural resources (*ibid.*). These rights are central to empowerment because their fulfilment implies a shift from a passive role to an active role (Campbell and Vainio-Mattila 2003: 417). Ownership titles refer to the right of possessing natural resources. This determines who can use it and in what way (Dietz 1996: 43). Claims to ownership titles are complex because they can be based upon different legal systems, widely varying from state laws to religious laws, from moral codes to indigenous laws (*ibid.*). The use rights relate to the exploitation of the resource in practice, as non-owners can be granted the right of access or to exploit a given natural resource as "tenants, share croppers, seasonal herders, collectors or hunters" (*ibid.*). Lastly, the right to own and to use natural resources has to be understood in connection with external forces or agents that deeply influence the relationship of local communities with the natural resources (*ibid.*, p. 44). In this sense, it is crucial that communities are given the right to have a say in the distribution and use of natural resources. In an era of changing networks of state and non-state arrangements, users of natural resources challenge each other with competing demands and "they have a differential access to a network of institutional agents and their intervention packages" (*ibid.*, p. 45).

Thus, CBNRM programmes emphasise productive activities that enable rural communities carry their own weight in the future rather than focus only on subsistence (Chambers and Conway 1992: 3).

2.1.3. CBNRM and empowerment

Another aspect that the CBNRM approach brings about is the empowerment of community actors in the definition and achievement of their own goals (Arnstein 1969: 222). In this sense, the concept of empowerment is conceived as the idea of power, specifically changing power: how it is gained, expended, diminished and lost (Page and Zuba 1999). Thus, and as Rowlands suggests (1997: 7), the definition of empowerment in the development field is not very precise, since the term is usually contextualised "to imply some recognition of the need for changes in the distribution of power."

In order to understand the meaning of empowerment, there are three basic issues to be taken into consideration (Hyung 2006: 524). Firstly, it has to be understood as a social process, as it takes places in relation to others, that is fluid and dynamic over time and space. Secondly, empowerment is also an outcome, measurable against expected accomplishments. Finally, empowerment is multidimensional in both horizontal and vertical scales. It can spread horizontally to the sociological, economic, political and psychological dimensions and it can also occur at various levels such as individual, group or community.

In the context of CBNRM, local communities develop similar capabilities than those of the central government after the latter hands over communities the natural resource management. The character of the devolution process depends upon what mix of rights and responsibilities is decentralised (Kull 2002: 62): if local users only achieve responsibilities and no or few rights, then state power grows; however, empowerment only takes place when rights grow proportionally to responsibilities. Thus, as Hordijk (2005: 220) notes, "people see themselves as shapers of governing structures", resulting in the authority over adjudication, decision-making, access to resources, control over finances and the ability to tax. Likewise, such rights or powers cover the distribution of benefits among the community members from the exploitation of resources by allocating funds to provide certain services through the construction of dispensaries, schools, etc. (Kellert *et al.* 2000: 707).

Yet, empowerment is not only about devolving responsibilities and granting rights to local communities but also about how they distribute the power and status to manage it and how participation is regulated (Roe *et al.* 1999: 91). When central governments embark on the decentralisation of a particular area to be under the control of a CBNRM scheme, one thing is to assure that ownership is delegated and another the effectiveness behind this transfer of ownership and control (Kellert *et al.* 2000: 709). In this direction, making community-based programmes legitimate in the eyes of the community is critical for the success of this kind of programmes.

2.1.4. CBNRM and legitimisation

Since CBNRM programmes can employ extant local institutions and promote the creation of new ones, the good accomplishment of the former greatly depends on whether and how local actors perceive those institutions (Kull 2002: 66).

Legitimisation is a process embedded in social relations, culture and regional contexts and it applies to institutions, leaders and rules (*ibid.*). CBNRM cannot simply empower local authorities, since this fact "does not automatically resolve issues of equity, representation and accountability, nor does it constitute community participation" (*ibid.*). Considering that, it is therefore necessary to be cautious when describing participation and empowerment within the community context as an arena in which seemingly prevails harmony and solidarity. In this direction, Cleaver (1999: 603) discusses what she calls "the myth of the community". In her own words, the role of the community in participatory development is "often conceptualized as some kind of natural, desirable social entity imbued with all sorts of desirable values and the simple manifestation of this in organizational form" (*ibid.*). However, this is not always the case for a number of reasons. Firstly, it is assumed that natural, social and administrative boundaries match at the community level, which does not occur most of the times and leads to overemphasise the delivery of goods and facilities of project goals over the contemplation of social grouping (*ibid.*). Secondly, participation is always embedded in relations of power. Although communities feature strong evidence of social stratification and conflict, in project approaches to community there is a tendency to oversimplification in order to establish a definable community that coincides with the administrative boundaries (*ibid.*). Thirdly, as far as culture is concerned, there are conflicting considerations about it in the development discourse, since culture is variously perceived as coercive sometimes (the restriction of women's participation) or cohesive in other occasions (the deployment of cultural practices that reinforce solidarity) (*ibid.*, p. 604). Lastly, whether communities can be motivated and willing to mobilise themselves, strong evidence has shown that severe limitations out of their control can jeopardise the achievement of some goals (*ibid.*).

All in all, CBNRM intends to promote better natural resource management processes and outcomes by devolving ownership of the resources to the local communities and by incorporating full communal participation and local knowledge systems in management, regulatory and enforcement processes (Barrett *et al.* 2001: 498). The following sub-section addresses separately the place of local knowledge within the CBNRM scheme.

2.2. Local Ecological Knowledge

Finding an adequate definition for LEK is complex, since there is no universally accepted definition. Even more, there is no agreement upon how it should be named; hence the interchangeable use of various terms: local knowledge, traditional knowledge or indigenous knowledge. In either case, choosing is *per se* controversial. "Indigenous" is not acceptable in China or South Africa (Croal and Darou 2002: 82) and "traditional" suggests timelessness, whereas knowledge is ever changing and dynamic (Sillitoe 2002: 109). Hence, for the purpose of this research, I am using the term "local".

Having said that, Berkes (1993: 3) suggests LEK is "a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment. Further [LEK] is an attribute of societies with historical continuity in resource use practices; by and large, there are non-industrial or less technologically advanced societies, many of them indigenous or tribal".

LEK is of great relevance to biodiversity conservation and natural resource management for several reasons (Berkes *et al.* 1995: 282). First, it offers new biological and ecological knowledge. Second, it can contribute with new models for sustainable natural resource management. Third, it has great implications for development planning. Finally, it can be used in environmental assessment (*ibid.*).

In this light, LEK has been very important in the discourse surrounding land and resource management and decision making for about 20 years (Stephen 2005: 66). There are two main sources for the incorporation of LEK into environmental decision making (*ibid.*, p. 67). Firstly, LEK is perceived to be a means of informing sustainable living and environmental management practices (Berkes *et al.* 2000: 1252). Considering the holistic understanding that LEK proposes of the relationships among living beings and their environments, it is said to contribute to environmental decision making from a broader scope of environmental values, practices and knowledge (Stephen 2000: 67). Secondly, with the promotion of LEK local communities are empowered in environmental governance (Agrawal 2002: 287) thanks to a greater capacity in exercising control over decision concerning their traditional lands (Stephen 2000: 67).

At this point, it is important to mention the role of customary authorities in all issues concerning natural resource management and land allocation. In this sense, there seems to be as many voices advocating for the inclusion of traditional or customary authorities such as chiefs, kings and other religious leaders, as voices calling for the opposite. The exclusion of customary authorities can result in conflict and delays (Shackelton and Campbell 2001: 9) but, on the contrary, there are examples of CBNRM programmes in Southern Africa where "chiefs exerted disproportional influence as wildlife management unit chairs diverting from the programmes they were participating in to build their power base" (*ibid.*, p. 8).

Yet, as Ellis (2005: 70) suggests, "the incorporation of LEK into environmental decision making is not an automatic result of aboriginal participation in these processes". In this regard, it has to be emphasised that environmental decision making has traditionally pertained to the scientific tradition, which has not paid much attention to the cultural context in which local communities live (Stephen 2000: 67). Johannes (1989: 5) observes that "the attitudes of many biological scientists and natural resource managers to traditional knowledge have frequently been dismissive".

The relationship between Western science and LEK is therefore troublesome. Yet, it is true that both are attempts to make sense of the world and "both are based on observations and on generalisations deriving from those observations" (Berkes *et al.* 1995: 282). In fact, Berkes (1993: 3) argues that both "are the result of the same general intellectual process of creating order out of disorder". However, although the two of them seek to render the world understandable to the human mind, there are major differences between them (Table 2.1.). Anyhow, it has to be emphasised that, as Knudtson and Suzuki (1992, in Berkes *et al.* 1995: 283) note, the promotion of local knowledge is not intended as a replacement for western science but as complementary. The challenge is how they can be integrated considering they are "rooted in different worldviews and unequal in political power base" (Berkes 1993: 6).

Table 2.1. Main differences between LEK and Western science

LEK	SCIENTIFIC KNOWLEDGE
Mainly qualitative	Quantitative
Intuitive	Rational
Holistic	Reductionist
Moral	Value-free
Spiritual	Mechanistic
Based on empirical observations and more reliance on trial-and-error	Based on experimentation and systematic accumulation of facts
Data generated by resource users themselves	Data generated by a specialised group of researchers
Based on diachronic data (restricted geographical scale of observations)	Based on synchronic data (larger areas)
Lack of interest in general principles	Focuses on theory-building

Source: Berkes (1993: 4); Berkes *et al.* (1995: 283)

The following subsection addresses the application and maintenance of local knowledge as well as the instruments and systems on which it is based and that represent the rules which regulate the access and use of natural resources.

2.2.1. Dimensions of LEK

The major characteristic of LEK is the large social context from which it stems (Berkes 1993: 5). This includes the symbolic meaning through oral history, place names and spiritual relationships referring to "stories, values and social relations that resides in places as contributing to the survival, reproduction and evolution of cultures and identities" (Houde 2007, n. pag.). This generic social dimension of

LEK also relates to a distinct cosmology, that is, to the assumptions and beliefs about how things work. This is the worldview that explains the way in which things are connected (Pierotti and Wildcat 2000). Berkes (1989, in Berkes 1993: 5) notes that these relations are based on reciprocity and obligations towards both other community members and other beings and communal resource management institutions based on shared knowledge and meaning. However, Berkes himself plus Folke and Gadgil (1995: 284) also remark that, by no stretch of imagination, by clinging to local knowledge systems, in a context of increasing globalisation, changing technologies or loss of indigenous control over areas and resources, societies will live in communion with their surroundings. In any case, it is thought that people with vast environmental knowledge are more likely to have developed natural resource management practices which led them to long-term survival (*ibid.*).

Local knowledge is represented by a series of aspects that help further understand the ways in which LEK functions in the field. In this light, one of the most understood aspects of LEK is the body of factual observations that LEK holders are able to generate to understand the dynamics of ecosystems as well as to describe their components (animals, plants, etc.) (Houde 2007). This type of empirical knowledge consists of a series of generalised observations carried out over a long period of time and represented by a joint account by many LEK holders (Usher 2000: 186).

Similarly, management systems are considered a major dimension within the realm of LEK in that it refers to the strategies for ensuring sustainable use of local natural resources "to manage species diversity, create habitat heterogeneity on the landscape scale, and manage intensity of use, thereby enhancing the diversity of biological resources available" (Berkes *et al.* 1995: 287). Yet, there are also strategies embodied in social restrains which ensure a restricting use of local natural resources and also serve as biological conservation practices, applicable to both animals and plants (*ibid.,* p. 285). These are mainly based on taboos and prohibition that determine human behaviour (Colding and Folke 2001: 584). These could be classified as (*ibid.*):

1. Segment taboos: the utilisation of particular species is prohibited for specific time periods for humans of a particular age, sex, or social status.
2. Temporal taboos: the access to natural resources is banned during certain time periods (sporadically, daily, weekly to seasonal basis).
3. Method taboos: the use of certain methods or techniques is not allowed.
4. Life history taboos: the use of certain vulnerable stages of a species' life history is prohibited (age, size, sex or reproductive status).
5. Specific-species taboos: the killing of particular species is strictly forbidden.
6. Habitat taboos: the use or access to natural resources is regulated in space and time.

Lastly, actual knowledge regarding past and current uses of the environment highlights the knowledge of historical patterns of land use, occupancy and harvest levels as well as the location of cultural sites (Houde 2007, n. pag.; Usher 2000: 186). These facts are based on a range of knowledge from personal experience and observation to oral history (Usher 2000: 186).

Altogether the foregoing dimensions and components of local knowledge assure that they can be of great importance in some contexts. It is embedded in community practices, institutions, relationships and rituals. Looking into local knowledge is therefore looking into the collective wisdom and resourcefulness of the community.

2.3 The connection between CBRNM and LEK

Local knowledge has evolved over time in direct response to the need to manage local ecological resources and conditions. Most of it is practical and ecologically sound, therefore it can have a role in the design of resource management programmes (Phuthego and Chanda 2004: 68).

LEK is embedded in its particular community; it is contextually bound and requires a commitment to the local context (Banuri and Apfell-Marglin 1993: 11). By combining this with the main characteristics of the CBNRM approach, it is possible to identify three main linkages between the latter and LEK.

According to Kellert *et al.* (2000: 706), the first attribute of CBNRM programmes is their "commitment to involve community members and local institutions in the management and conservation of natural resources". In this sense, a remarkable local institution to be taken into consideration is the customary or traditional authorities. They play at important role in decentralisation programmes, sometimes being identified as the actors to whom decentralised powers should be given (Ribot 2004: 31).

Secondly, CBNRM tends to defend and legitimise local and/or indigenous resource and property rights (Kellert *et al.* 2000: 706). Property rights play a central role in the management of natural resources. Attention to them is crucial because property rights offer incentives for management since the holder(s) of the rights will enjoy potential future benefits (but will also bear the possible losses); they give necessary authorization and control over the resources; and handing these rights over to local users demonstrate government commitment to the devolution process that CBNRM programmes precisely promote (Meizen-Dick and Knox 1999: 11).

The third bridge that can be built between CBNRM and LEK is that the former is open to include local values and ecological knowledge in modern resource management (Kellert *et al.* 2000: 706). CBNRM is often promoted as a way to better

connect local and modern/scientific ecological knowledge, as well as to more effectively utilise local understanding developed over generations of extended environmental relationship (*ibid.*, p. 710). However, many natural resource management programmes have opted not to include local knowledge, lumping it with superstition, irrationalism and tribalism (Scott 1998, in Mauro and Hardison 2000: 1263). Environmental decision-making has traditionally been framed within the scientific tradition, which has not paid much attention to the cultural context in which local communities live (Stephen 2000: 67). Therefore, if CBRNM programmes are to empower community members with rights and responsibilities over natural resources, understanding the cultural background from which values and knowledge stem is crucial. All in all, by incorporating local knowledge systems into CBNRM, it is believed that its implementation and functioning will be more meaningful and accessible to local people.

2.4. Conclusion

CBNRM intends to promote better natural resource management outcomes by devolving ownership of the resources to the local communities and by incorporating full communal participation and local knowledge systems in management, regulatory and enforcement processes (Barrett *et al.* 2001: 498). Therefore, natural resource management is legitimatised before both the central government after decentralising the control over natural resources to the local level and before community members as they are granted rights and responsibilities in the process. Finally, it is also necessary to outline local knowledge as vital to understand CBNRM schemes thanks to the contemplation of local needs and procedures, which in turn makes conservation and development more relevant and socially acceptable (Donovan and Puri 2004, n. pag.).

3. Methodology

Chapter 3 focuses on the methological components of this research. It firstly presents a conceptual scheme showing in a visual way the relationships between the two main concepts of this study, CBNRM and LEK. The chapter proceeds to the operationalisation of these main concepts and how they have been broken down into dimensions, variables and indicators. Chapter 3 then continues with the epistemology, unit of analysis, the research methods that have been used and the limitations encountered on the way.

3.1. Conceptual scheme

The main concepts in this research are local ecological knowledge (LEK) and community-based natural resource management (CBNRM). As Figure 3.1. shows, this section highlights in a visual fashion the relationships between the two.

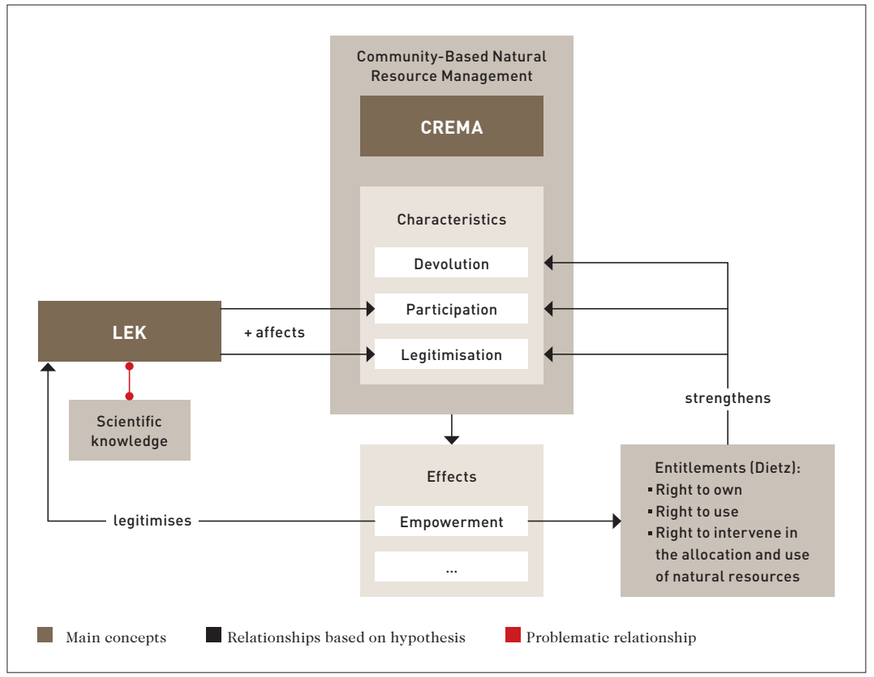

Figure 3.1. Conceptual scheme.

As indicated in the theoretical framework, the main characteristics of CBNRM are devolution, participation and legitimisation. As far as participation and legitimatisation are concerned, it is hypothetically assumed that LEK positively affects them. Participation is enhanced by LEK in the sense that CBNRM stems from local needs and follows local procedures. Legitimisation can be understood in the relationship between CBNRM and LEK in two ways: firstly, by reviving traditional values and institutions embodied in LEK, natural resource management is legitimatised in the eyes of the community – it is more socially acceptable among community members; secondly, by formulating policies that include LEK, it is legitimatised before the corresponding government agencies. Thus, more participation and legitimisation presumably strengthens CBNRM programmes.

Following this, one of the main hypothesised outcomes of CBNRM is that it positively affects people's empowerment, in the sense of stronger entitlements, through devolution of rights over natural resources, stronger participation and well-functioning CBNRM. Similarly, when LEK is promoted, local communities are empowered in resource management thanks to their involvement and capacity control over decisions related to their traditional lands (Stepthen 2000: 67).

However, as it has been introduced in the theoretical framework, the relationship between scientific knowledge and local knowledge is problematic with many natural resource managers being dismissive toward local knowledge (Johannes 1989: 5). Science-based knowledge is leading current forest-management planning (O'Flaherty 2008, n. pag.). In this sense, for the purpose of this research, it will be interesting to see how local communities can mobilise their own knowledge to support the management of their natural resources.

All in all, this conceptual scheme has intended to show the complexities underlying the hypothesis that embedded in the relationships between the main concepts as well as among other important components of this study.

3.2. Operationalisation of major concepts

This section presents the operationalisation scheme in which the two main concepts used in this study – CBNRM and LEK – are broken down into dimensions, variables and indicators, specifying for the latter where the information on them was collected.

Table 3.1. Operationalisation of major concepts

CONCEPTS	DIMENSIONS	VARIABLES	INDICATORS	INFO SOURCE
LEK	Factual observations of natural resources / classifications	Animal species / plant species	Habitat	CREMA members / Wildlife Division[2]
			Users	CREMA members / Wildlife Division
			Trends	CREMA members / Wildlife Division
			Spatial distribution	CREMA members / Wildlife Division
	Management systems	Management practices	Restricting use: taboos	CREMA members
			Tending: protecting biodiversity	CREMA members
			Enrichment: enhancing biodiversity	CREMA members
	Past and current uses	Land-use patterns	Farmland	CREMA members / Wildlife Division
			Protected areas	CREMA members / Wildlife Division
			Plantations	CREMA members / Wildlife Division
		Occupancy	Population growth	CREMA members
			Migration	Secondary source
		Harvest levels	Commercial use	CREMA members
			Domestic use	CREMA members
		Cultural sites	Sacred groves	CREMA members
			Other cultural sites	Secondary source
	Culture	Attitudes	Are taboos respected?	CREMA members
			Are sanctions imposed?	CREMA members
		Taboos	Knowledge principles behind taboos	CREMA members
		Sense of place	How the forest is perceived?	CREMA members / Wildlife Division
			What does the forest mean for you?	CREMA members
	Cosmology	Beliefs and spiritual relationships to the environment	Worldviews that explain the way in which things are connected	CREMA members
			Principles that regulate human-animal relations	CREMA members
CBNRM	Devolution	Government agencies	Effectiveness	Wildlife Division
		Rural communities	Interest in managing the resources	CREMA members
	Participation	Participation in decision-making	Initial decisions	CREMA members / Wildlife Division
			Ongoing decisions	CREMA members
			Operational decisions	CREMA members
		Participation in implementation	Resource contributions	CREMA members / Wildlife Division
			Administration	CREMA members / Wildlife Division
			Coordination	CREMA members / Wildlife Division
		Participation in benefits	Material benefits	CREMA members
			Social benefits	CREMA members
			Personal benefits	CREMA members
	Legitimisation	Rural communities	Satisfaction with outcomes	CREMA members
			Approval of procedures	CREMA members
			Overestimation of results	CREMA members
		Government agencies	Disposition to devolution	Wildlife Division
			Rejection to devolution	Wildlife Division
	Empowerment	Entitlements	Rights to own	CREMA members / Wildlife Division
			Rights to use	CREMA members / Wildlife Division
			Rights to intervene	CREMA members / Wildlife Division

[2] This info source includes policy documents by the Wildlife Division, interviews with experts of the Wildlife Division working with the communities in the implementation of the CREMA and other secondary sources of information such as working papers on nature conservation, wildlife baseline surveys, etc.

3.3. Epistemology

Constructivism is the theory of knowledge that is applied in this research since the role of local knowledge is the main issue for study. The production of local knowledge is contextually grounded through social constructivist approaches since humans generate knowledge and meaning from an interaction between their experiences and their ideas (Maila and Loubser 2003: 276). From this epistemology stems an interpretivism theoretical perspective and a subsequent ethnographic methodology, which suits best to the aim of this research of understanding the importance of local knowledge under CREMA. Ethnography seeks to understand cultural phenomena which reflect the knowledge and systems of meanings that guide the life of a given group (Geertz 1973: 2). Knowledge should not be divided into different subjects or compartments, but should be discovered as an integrated whole (McMahon 1997).

3.4. Unit of analysis

The unit of analysis – the analytical focus of this research – is the CREMA scheme.

The CREMA scheme was conceived as a strategy for ensuring the management of wildlife in areas outside wildlife protected areas in Ghana. In 1994, the Wildlife Division, one of the three divisions of the Forestry Commission under the Ministry of Lands & Mineral Resources, adopted the so-called Forest and Wildlife policy. This policy recognised the need to associate local communities with protected area management by generating benefits for the communities involved. Taking a step further, the Wildlife Division prepared in 2000 a policy called "Collaborative Wildlife Management and the Establishment of Community Resource Management Areas (CREMAs)" which culminated the integration the use of wildlife and other natural resources into the existing land practices (Wildlife Division 2000: 6).

The CREMA concept can contribute to sustainable rural economic development if properly implemented. The rationale behind this is that if rural communities benefit substantially directly from the resources, then the possibility of supporting their sustainability and for that matter biodiversity conservation will be high (Wildlife Division 2009: 1).

The establishment of a CREMA follows a normative process with the creation of various institutional bodies[3] at the community level after the Wildlife Authorities approves it (*ibid.*). However, the decentralisation of natural resource management to rural communities is based on traditional authority hierarchy, respecting therefore existing local relationships (Wildlife Division 2004a: 10) and therefore placing a great importance on traditional knowledge and local institutional mechanisms for natural resource management.

[3] A detailed presentation of these newly formed institutions, as well as their functions, is included in Chapter 4 which describes the context (CREMA) in which this study was carried out.

3.5. Research methods

Local knowledge is inherently qualitative and holistic (Berkes 1993: 4), therefore this research is based exclusively on qualitative methods. Below continues a detailed explanation of the methods that have been employed:

- Desk study

A remarkable part of this research is based on desk study of secondary sources such as academic articles and manuals focusing on the two main concepts presented in this research: CBNRM and local knowledge. This stage of desk study has also been very useful to get familiarised with the state of the question in Ghana regarding the above mentioned issues. Particular attention has been made to the policy documents that the Wildlife Division has prepared for the good implementation of the CREMA concept.

- In-depth semi-structured interviews with CREMA members and experts of the Wildlife Division

In order to unveil the role that local knowledge plays in the two CREMA sites under study, I conducted twenty in-depth semi-structured interviews with community members as well as four interviews with experts from the Wildlife Division who have been working with the communities in the implementation of the CREMA.

In general, the interviews lasted approximately between 45 min up to an hour and 15 min and were conducted in a semi-structured way to make it look like a conversation. This was particularly the case for the interviews with the villagers since I was warned that bringing an interview guide and listing questions would make them feel uncomfortable. Thus, I tried to always keep questions in the back of my mind as to guide the interviews but considering local knowledge is dynamic, I was open to gear to conversation towards new relevant issues that the interviewees may bring up. As a matter of fact, local knowledge holders rarely limit themselves to a specific topic but rather provide holistic analyses and broad statements (Roue and Nakashima 2002: 340). A primary task is identifying the holders of local knowledge. This is certainly an essential issue since local knowledge is not homogeneously spread at the community level (Davis and Wagner 2003: 466). In this sense, I resorted to a non-probability form of sampling, in particular, the snowballing technique, starting with the village chiefs and elders.

The experts interviewed hold different positions in the Wildlife Division. Considering that I intended to shed light on whether and how local knowledge can strengthen community-based natural resource management programmes and that this occurs thanks to a prior decentralisation of natural resource management to

the local communities, it was very interesting to meet Wildlife Authority officials in order to assess their point of view since this research may come up as an issue for policy consideration. Similar to the interviews with the villagers in the field, the interviews were open enough as to motivate the mention of new topics and issues related to local knowledge and the functioning of the CREMA. It has to be noted here that the relaxed nature of meetings with the experts facilitated the task and allowed me to direct the interview to particular issues of my interview guide that needed to be clear. Unlike the identification of knowledge holders at the community level, I did not follow a non-probability form of sampling in the selection of experts but I directly contacted them in consultation with my local supervisor.

Even though all the interviews were recorded with the approval of the interviewees, considering the cultural background in which local knowledge is embedded, even informal talks were of great use to try to shed light on the place that local knowledge has in the different research sites where I stayed.

▪ Focus groups

Several focus groups were organised in the two CREMA sites. Two focus groups were organised towards the end of my stay in the two CREMA sites, one group with only women and the other with only men. Each group comprised nine members of the same sex, that is, three members from each of the tree CREMA communities selected, so that there would be equal representation from all the communities. The reason for organising these gendered focus groups is that I had noticed during the course of some interviews to various women that they tended to quickly touch upon certain issues when a man was just passing by the interview spot or stopping for a few minutes in a fit of recurrent curiosity.

In many occasions, interviews that were meant to be individual turned into even large focus groups due to the spontaneous attendance of other community members who had in common with the initially-selected interviewee that they engaged in one of the income-generating activities that the CREMA intends to promote. Even though it was sometimes clear that some of the members dominated the discussion and others felt intimidated by the presence of more powerful community members, it was a very relevant way of getting information about local knowledge and the way the CREMA works since some participants would remind the speaker about details he or she might have forgotten.

▪ Participatory mapping and local stories

Participatory mapping was employed to show how the CREMA communities model the forest, watersheds, water sources, sacred groves, land-use patterns, changes in farming practices, the distribution of various resources, etc. (Grenier 1998: 58). In the beginning this was an exercise which I found very useful in order to find out whether the community members are knowledgeable about the natural resources that surround them. However, I ended up using it only in the first CREMA site, since I learnt that the outcome was limited and, most important, that the aforementioned information was already being provided during the interviews. Thus, I decided not to undertake this exercise in the second CREMA site. Anyhow, the logistics of the mapping exercise in the CREMA site 1 entailed the participation of twelve people, four from each CREMA community selected (two men and two women) to facilitate an equal membership representation.

As far as local histories are concerned, they consist of giving a detailed account of how things have changed or are changing (harvest levels, population changes, depletion of resources, etc.) (*ibid.* p. 59). I integrated this exercise into the focus groups in order to broaden the spectrum of opinions and histories but sometimes taking the chance an interviewee talked about how the landscape has changed with the dominance of the cocoa plantations, I would use it during the interviews.

▪ Transect walks

Transect walks refer to "a walking tour through areas of interest to observe, to listen, to identify different zones or conditions, and to ask questions to identify problems and possible solutions" (*ibid.*).

I made use of this tool in both CREMA communities and I was able to quickly learn about topography, land use, some forest uses and community assets. However, it had a great disadvantage: knowledge holders were usually elderly people and this exercise could sometimes be a physical challenge for them. This eventually resulted in a relatively-short walking tour not far from the village which did not allow me to fully witness first-hand the potential uses of the forest resources by the communities.

3.6. Limitations of research

This research has unavoidably suffered from some constraints and limitations, the most obvious and pressing, and common to the two research sites, being the language barrier. The main language in the research area is Twi, which I do not speak and the reason why I had to count on the assistance by an interpreter during my stay in each research site. Although translation is always a crucial issue in qualitative methods, in this research it was of great concern due to the nature of local knowledge. It occurred that some words that were being used to describe a local practice or to name a given plant species did not have a direct translation into English. Even if the interpreters understood these terms, translating them for my understanding proved to be extremely difficult in some occasions. Although

they always tried to find the closest word in English, some valuable nuances and connotations might have been missed. Anyhow, it has to be noted that, for the purpose of this research, the translations that both interpreters worked out were very satisfactory and allowed to me to find answers to all the questions that this research implied.

Another limitation that was common in the two CREMA sites is that individual interviews caused so much excitement among community members that it was very challenging to warranty some kind of privacy in case the interviewee raised sensitive issues. Although community life in Ghana is very public and all members are constantly interacting among themselves, I had the impression that sometimes some interviewees were feeling uncomfortable due to the kind of answers I felt they wanted to give, in particular women, in a context where there were many other listeners, mostly men.

I encountered other site-specific limitations. In the first CREMA site, Kwamebikrom, the main constraint to my research was that the organisation that facilitated my fieldwork was the Wildlife Division. Even though I witnessed that the relationship between the Wildlife Division and the communities was very good, there were some sensitive issues that I wanted to discuss which were a priori compromised. In addition, my interpreter was an official of the Wildlife Division and introduced himself as such; during one interview he even wore the uniform that guards use when patrolling the adjacent Bia Conservation Area. Under these circumstances it was very complex to create a relaxed atmosphere to discuss sensitive issues such as recurrent encroaching activities in the protected area when communities' livelihoods are depressed. Likewise, when discussing the villagers' opinions about the implementation of the CREMA, I had the impression they were not giving me genuine answers but the kind of information they felt the Wildlife Division would be satisfied with. In this sense, after the initial interviews I talked to my interpreter to discuss with him the precaution to be taken into account before interviewing more villagers. I asked him not to wear his uniform again and to refrain from announcing that he was a member of the Wildlife Division.

In addition to the foregoing, the issue of trust was of major concern during my stay with the Kwamebikrom CREMA (CREMA site 1), especially when I came to learn from any encroaching activity that might be carried out in the protected areas. This CREMA borders the Bia Conservation Area and the Wildlife Division informed me that illegal hunting was taking place within the park premises. Even though all the villagers consulted assured poaching was not practised, the transect walks revealed evident signs of poaching activities such as empty cartridges, footprints and other incriminating clues[4]. I understand that the combination of my being introduced by the Wildlife Division plus the fact that I was staying with the communities for a relatively short period of time, 20 days approximately, did not make it possible building a deeper trust as to discuss openly all these problematic issues.

In the CREMA site 2, the Akyekyere/Sureso/Pebaseman CREMA, the limitations came in the figure of a remarkable CREMA executive member. He was very enthusiastic about the research and helpful with the organisation of all the planned exercises. However, he resolved to be in most of the interviews I conducted; sometimes he would even interrupt the selected interviewees to give his own opinion on the matter, therefore biasing greatly the respondents' views. As his sudden interventions turned into a habit during subsequent interviews, I had to ask him to kindly refrain from participating in the interviews. Although he initially agreed upon that, he systematically continued doing it. This resulted in a frustrating situation in which I could not address important issues such as representation in the CREMA governing bodies with CREMA ordinary members. Hence, for the purpose of assessing representation, I exclusively relied on secondary data such as the Akyekyere/Sureso/Pebaseman CREMA constitution.

3.7. Ethical considerations

In accordance with cultural customs in Ghana, traditional chiefs must be informed of any outsider entering their communities so she or he can introduce the purpose benefitsmeetings it is customary to offer a bottle of gin to the chief as a token to thank him for allowing the outsider to enter the community to work with its members. Thus, I had to buy six bottles of gin for the chiefs of communities I worked with. In addition, following my local supervisor's recommendation, I bought two extra bottles for the two CREMA Executive Committees as a thanksgiving gift for allowing me to research on the functioning of their respective CREMA programmes.

As far as the interviews are concerned, all precautions were taken to safeguard respondent's anonymity, privacy and confidentiality. In addition, during the interviews I made sure to follow the protocol of asking whether interviewees approved to be recorded and of informing them that they were free to stop at any moment. It has to be noted here that only once a respondent refused to be recorded without claiming a particular reason.

The participatory methods that I used implied keeping villagers away from their work. Following the usual procedures by the Wildlife Division for this kind of exercises, I compensated the participants with 5 Ghana Cedis (~€ 2,25) for those from the same community where the exercise was being organised and 8 Ghana Cedis (~€ 3,60) for those who did need to pay for transport. Additionally, I provided sodas and snacks for everyone.

[4] For the untrained eye, the footprints could be easily attributed to any given person walking through the forest; however, considering the circumstances and signs left behind, my interpreter, an experienced park guide and patroller, assured they were poachers'.

Lastly, on a more personal note, since an early age I have always been very concerned about biodiversity conservation and the protection of nature. Taking this into account, I was very careful not to allow my own personal biases and opinions get in the way of my research.

3.8. Summary

This chapter has provided the outline of how this research has been conceived and the general rules that have made it possible.

With the conceptual scheme I have showed the outstanding concepts, CBNRM and LEK, which have shaped and organised the thoughts and hypothesis implicit to this study. In the operationalisation scheme I have intended to define the above mentioned concepts in order to make them distinguishable and measurable, that is, breaking them down into what is and is not part of those concepts. The sub-section on epistemology has served to briefly describe contructivism as the theory of knowledge that has been applied in this study and to introduce the subsequent ethnographic methodology that has been used to situate the role of local knowledge under the CREMA scheme. The latter has also been described in detail as the unit of analysis in this research with the chapter proceeding to the presentation of the research methods that have been employed. Given the holistic nature of local knowledge, the methods used have been exclusively qualitative: a desk study, in-depth interviews, focus groups, participatory mapping and local stories and transect walks. Likewise, this chapter has also addressed the main constrains encountered in this research and the ethical considerations which had to be taken into account. The most pressing limitations were the language barrier and the need of an interpreter during the fieldwork, the issue of privacy during interviews, my own neutrality being compromised by having the Wildlife Division as my gatekeeper and the potential biases caused by the intervention of a third person in the interviews. Lastly, as far as ethical considerations are concerned, this chapter has shown all the usual procedures that I had to follow in accordance with cultural customs in Ghana and to guarantee respondents' confidentiality. It has also summarised the compensations that I offered to participants in exchange of their time being kept away from their work.

4. The context: CREMA

This chapter serves to introduce the CREMA concept, which constitutes the context under which local knowledge will be been assessed in the subsequent chapters. It provides a detailed account of the inception of this version of community-based natural resource management. It does so from two different angles: the theory and the practice. Thus, the chapter introduces the policy which gave birth to the CREMA. Secondly, it describes the procedures and the set of rules and regulations that govern the CREMA. Next, it outlines how the CREMA functions in practice, both in terms of wildlife and natural resource management and in terms of creating income-generating activities aimed at reducing the pressure on wildlife habitats.

4.1. The CREMA policy

In 2000 the Wildlife Division, one of the three Divisions of the Forestry Commission under the Ministry of Lands and Natural Resources, prepared a policy for "Collaborative Wildlife Management and the Establishment of Community Resource Management Areas (CREMAs)" (Wildlife Division 2000). Following its considerations, a CREMA is understood as a geographical off-reserve area[5] with one or more communities that have agreed upon incorporating sustainable wildlife management into existing land use (Wildlife Division 2004b: 6). Areas bordering protected areas are prioritised for the establishment of CREMAs aiming at securing Ghana's network of protected areas by promoting wildlife management practices as a legitimate land-use option in neighbouring communities and at developing a partnership with the people living in and around the protected areas (Wildlife Division 2000: 6). Yet, the CREMA concept can also be adopted anywhere in Ghana with communities being encouraged to employ the CREMA approach on their own initiative (*ibid.* p. 8).

Box 4.1. Guiding principles of the CREMA policy

The policy for "Collaborative Wildlife Management and the Establishment of Community Resource Management Areas (CREMAs)" of 2000 is based on the following convictions (Wildlife Division 2000: 4-5):

1. Wildlife management is more effective when considering the value of those living with it.
2. The primary beneficiaries of wildlife management must be those who live with and bear the cost of wildlife.
3. Those individuals or communities living with wildlife must determine the control of access and benefits derived from it.
4. Wildlife should be included as an integral component of national land use policy.
5. Wildlife is a natural resource which offers opportunities for rural development and economic utilisation.
6. In order to promote incentives for wildlife management at community level community institutions must be empowered.
7. The role of traditional authorities, local knowledge and other cultural aspects in wildlife management should be encouraged and incorporated to wildlife management techniques.
8. Women must play a central role in the development and implementation of wildlife management at all levels.
9. Even if authority is devolved to communities, the Wildlife Division will remain as the national authority for wildlife acting when national interest is at risk.

[5] Ghana's high forest zone comprises 204 gazetted forest reserves spread over vegetation zones ranging from wet evergreen to dry semi-deciduous forests (Hall and Swaine 1976, cited in Derkyi 2012). Areas outside forest reserves are referred to as off-reserve areas. They include a mosaic of forest stands with agricultural land and naturally regenerated trees on farming land.

According to the Wildlife Division (2004a: 3), the principal reason to adopt the mentioned policy was a series of challenges that Ghana was facing. The most pressing one was the destruction of wildlife habitats due to the attitude among the Ghanaian rural population to perceive uncultivated land as unused land. Another important reason was that the wildlife legislation was outdated. Under the former legal framework, incentives to the rural population were not considered as a tool to motivate care for wildlife on their lands. Likewise, bushmeat consumption is an integral part of the Ghanaian culture and its trade flows were not properly managed or regulated[6].

In economic and social terms, wildlife has traditionally been important in Ghana. Over time, Ghanaian societies have employed systems certainly based on LEK to regulate and control the access and use of wildlife. Wildlife management practices such as the application of taboos or the protection of certain areas (sacred groves, religious sites) are nowadays still notable in Ghana. However, policy-making has not included these cultural aspects in wildlife management and the aforementioned policy encourages local institutions, knowledge and forms of management (Wildlife Division 2004a: 5).

Following the foregoing and taking the principles stated in the Box 4.1. into account, the CREMA policy aims at devolving management authority to user communities and promotes the participation of all community members and other stakeholders. Having said that, this policy recognises the role of women and highlights that in many cases they are more involved in the collection and use of wildlife (Wildlife Division 2000: 9). Thus, the CREMA policy encourages women to participate at all levels of decision-making in wildlife and other natural resource management, stressing the fact that men and traditional authorities need to be sensitive on the need to involve women.

In pursuing the foregoing objectives as well as others focussing on warranting the preservation and sustainable use of wildlife and on providing a continuous flow of benefits to all segments of society, the CREMA recognises the importance of developing a strong collaboration with ministries, government departments, district assemblies, traditional authorities, NGOs and development partners (Wildlife Division 2000: 6).

The rationale behind the CREMA is that people will manage wildlife and other off-reserve natural resources when they are provided incentives to do so, mainly in the form of economic and direct financial benefits. In addition, the CREMA makes people the primary beneficiaries of wildlife and other natural resources management effort. This contrasts the situation in the past when natural resources were in competition with agricultural resources because natural resources were "owned" by the state and benefits from the use of natural resources were not realised by those who live with them (*ibid.* p. 9)[7].

[6] The trade in wildlife as bushmeat in Ghana is estimated to be worth US $ 200 to 300 million per annum (Wildlife Division 2004a: 5).

[7] In Ghana jurisdiction over land is vested in the traditional authorities (the Stool), while the jurisdiction over wildlife and forest resources (including naturally regenerated trees on farming land) is vested in the State (i.e. the Forestry Commission and its subdivisions).

All in all, what the CREMA concept seeks is (A Rocha Ghana and Forestry Commission 2009: 2-3):

1. Supporting forest fringe communities to restore and manage habitat for the return of wildlife in the off-reserve areas.
2. Increasing forest-fringe communities' income from natural resources as an incentive for engaging in sustainable forest resource management practices.
3. Reducing communities' pressure on protected areas for their livelihood needs.

4.2. Governance arrangements

In order to develop the CREMA organisational structure to accomplish the foregoing, the primary institutional body to begin the process is the Collaborative Management Unit within the Wildlife Division, which has a network of Community Wildlife Officers in rural areas with locally selected Field Walkers in each community (Wildlife Division 2000: 8). The selection of an area to be under the CREMA scheme is the responsibility of the Collaborative Management Unit, which, through analysis and preliminary fieldwork, determines whether a selected community can be a potential CREMA site (Wildlife Division 2004b: 8). However, CREMAs are ideally demand driven, that is to say the establishment of a CREMA responds to local needs or problems (*ibid.*, p. 13). Following the guidelines by the Collaborative Management Unit (*ibid.*, p. 10), there is a set of variables that are taken under study when inhabitants of a given area request their area to become a CREMA:

- Nature and state of resource base: status of fauna and flora resources and habitat considerations.
- Nature and state of the community: community structure, land tenure status, land use and current use of natural resources.
- Social and political environment: level of support and cooperation by the District Assembly and Traditional Authority and political factors that could boost or jeopardise the programme.

When a given area is established under the CREMA scheme, it operates following a structure of three levels (*ibid.*, p. 7):

1. The CREMA Executive Committee (CEC), which corresponds with the operational part of the project and is integrated into the Community Resource Management Committees (CRMCs).
2. The CRMC, which is the local unit of organisation whose selection of members is done by the people at the village level.
3. The individual farmers and land holders, who are the members of the CREMA and establish their activities through the CRMCs.

This organisational scheme is based on traditional authority hierarchy (i.e. village chiefs (*odikro*), divisional chief (*ohene*) and paramount chief (*omanhene*) (Kendie and Guri 2007, cited in Ros-Tonen *et al.* 2010: 67) with the Administrator of Stool Lands being in charge of the management of stool lands on behalf of the communal land owners[8]. It is therefore consistent with local land tenure relationships (Wildlife Division 2004a: 10).

Once a given area comprising several communities is classed as fulfilling all the conditions to become a CREMA, the Wildlife Division collaborates with the communities involved in the implementation of the CREMA concept and, most important, the development of a constitution that defines the area, membership, access, rules and regulations that ultimately determine the governance arrangements concerning the CREMA (Wildlife Division 2000: 9). The CREMA constitution is backed by a District Assembly bye-law. Its arrangement is crucial since, on the one hand, it clearly establishes the rules and responsibilities of the CREMA members and, on the other, it provides the farmers and other members with a recognisable legal entity to which the Wildlife Division can devolve wildlife management and which can be hold accountable (Wildlife Division 2004a: 11). Although the authorship of the CREMA constitution is vested in the community members, the Wildlife Division advises them to include a series of rules and regulations to govern the CREMA[9]:

- Scope: the geographical area comprising the communities which have agreed to jointly establish the CREMA.
- Aims and objectives: what it expected to be delivered, which generally revolves around the improvement of farmers' livelihoods, environmental security and land-use practices as well as the generation of financial and technical incentives for biodiversity conservation.
- Legal status: CREMA constitutions are legally recognised by the local government bye-laws of the corresponding District Assembly.
- Duties and responsibilities: the establishment of rules to regulate the use of the natural resources within the CREMA land and the diligent management of funds after harvesting the resources.
- Organisation and governing structures: the CREMA Executive Committee (CEC), which is the highest governing organisation at the community level, with representatives from the various Community Resource Management Committees (CRMCs) of the respective communities in the CREMA area. The number of people integrating these two committees varies according to the CREMA involved.
- Membership and executive officers: any inhabitant within the CREMA land can become a member by paying a fee stated in the constitution, usually 10 Ghana Cedis (~ € 4,5). The executive positions are held by those members with responsibilities in the above mentioned committees. The number of executive officers can also differ depending on the CREMA but it generally includes a chairperson, vice-chairperson, secretary, treasurer and organising secretary for both the CEC and the CRMC. The customary functions attributed to there are as follows:

1. Chairperson: s/he shall convene and preside all meetings of the CEC/CRMC as well as general meetings with all CREMA members. S/he shall exercise supervision over CREMA affairs and encourage proper observation of the rules governing the CREMA.
2. Vice-chairperson: s/he shall mainly assist the chairperson in the performance of his/her duties and replaces him/her in his/her absence.
3. Secretary: s/he shall take minutes and keep all records of the proceedings at any meeting. S/he shall be responsible for safe keeping important documents such as the constitution and/or the certificate of devolution.
4. Treasurer: s/he shall hold all functions associated with accountancy.
5. Organising Secretary: s/he shall be responsible for making arrangements for meetings (dispatching of letters, etc.). In the absence of the Secretary, s/he shall replace him/her.

The tenure of office for these positions is rotational and subject to elections every few years, usually three, among the CREMA members.

- Meetings: the organisation of meetings widely depends on the CREMA communities. The Executive Committees shall meet a few times a year whereas the CRMCs shall do so every month. A meeting summoning all CREMA members shall be organised at least once a year and typically focuses on the functioning of the CREMA and the management of the CREMA income. Decision-making at meetings is usually based on voting by show of hands, although for other issues secret ballot may be used as well.
- Financial matters: this refers to fundraising (internal and external), the opening of bank accounts to deposit those funds and the mode of expenditure. Likewise, it includes all accountability measures created to monitor the use of the CREMA funds.
- Benefit sharing: for every non-timber forest product harvested for sale, animal hunted for sale or other resources harvested, usually 2% shall be paid into the CREMA bank account and between 2% and 5%, depending on the CREMA, to traditional authority (land owners). The remainder is to be kept by the cost bearer.
- General regulations concerning the protection of amenities and the right of access to wildlife and other natural resources in the CREMA: this refers to the enforcement of specific rules to protect wildlife and other natural resources in the CREMA land. It typically states the prohibition of hunting particular animal species or hunting others or collecting any NTFP without taking licensed permit from the CEC; of polluting water bodies within the CREMA or of illegally felling trees.

[8] Ghana Land Administration project: http://www.ghanalap.gov.gh/index1.php?linkid=88 accessed 9 July 2012.

[9] The selection of rules and regulations stems from the consultation of the study CREMA communities' constitutions. All the arrangements specified are commonly included in the formulation of new CREMA constitutions which determine how the programme functions in the practice.

- Offences: they are sanctions imposed to any person contravening the foregoing general regulations. These can be in the form of fines or even imprisonment.

The process of devolution of authority over the natural resources culminates with the issuance of the Certificate of Devolution of Authority for Wildlife Management by the Ministry of Lands and Natural Resources.

4.3. The CREMA in practice

The CREMA needs to develop and maintain an effective institutional capacity for wildlife management at the community level and to facilitate and create the enabling environment for the equitable access to wildlife and other natural resources and benefits by rural communities. Thus, the next two sub-sections deal with how the CREMA functions in practice by addressing, firstly, wildlife and other natural resource management efforts to restore habitats for the return of wildlife in the off-reserve areas and to manage wildlife populations through legal hunting; and secondly providing economic incentives through income-generating activities with a view to enhancing communities' livelihoods and reducing communities' pressure on forests in neighbouring protected areas for their livelihood needs.

4.3.1. Direct wildlife and other natural resource management under the CREMA

Wildlife and other natural resource management under the CREMA follow a zonation system which determines the kind of management activities that are allowed to be performed within the CREMA areas. Zonations include two main zones: the core zone and the buffer zone.

The core zone is the area within the CREMA where strict conservation and restocking management activities are concentrated due to the relatively intact conditions of the ecosystems and consist of riverine areas along water bodies and their tributaries (Christian Fumey Nassah, Wildlife Division, e-mail comm., 13 July 2012). These areas represent various habitat types that can be frequented by different species of animals; hence, management prescriptions in the core zone revolve around avoiding human disturbance as much as possible. Hunting is therefore not allowed in the core zone but there are some permitted activities in this area which are believed not to pose any risk to the continuous existence of animals, such as the performance of religious rites in sacred groves (Wildlife Division 2009: 11).

The buffer zone is the area within the CREMA where other land-use practices such as farming are concentrated (*ibid.*). This zone supports farming activities that is for both crop and livestock. The extraction of NTFPs and hunting activities are allowed in the buffer zone. Hunting licenses are not required from the Wildlife Division but issued by the CREMA communities themselves. The essence is to avoid over exploitation and the communities involved are advised through the licenses to give quotas to hunters so that game is harvested on a sustainable basis (Christian Fumey Nassah, Wildlife Division, e-mail comm., 13 July 2012). Quotas are then established annually after a wildlife census and their establishment should be based on a sound technical advice especially on the recruitment rate of the species concerned, which are subjected to the National Wildlife laws and international restrictions (Wildlife Division 2009: 10).

In addition, enrichment planting and reforestation are activities to be considered in buffer areas since the trees serve as a source of attraction to fauna.

4.3.2. Promotion of incentives through income-generating activities

The overall objective of the CREMA is to have its constituent communities to organise and to integrate wildlife and other natural resource management into their local land-use systems. Yet, this programme also provides economic incentives in the form of income-generating activities in order to reduce the pressure on forests and natural resources located in protected areas for people's livelihood needs (A Rocha Ghana and Forestry Commission 2009: 3).

These activities are exclusively undertaken in the buffer zone within the CREMA land. They are mostly based on natural resource use, such as seedling production or beekeeping, or are integrated in the current farming systems, such as vegetable growing or animal rearing. It is worth noting that being strictly related to natural resources or farming is not a prerequisite to the inception of income-generating activities. What these activities seek is to reduce human pressure on natural resources, therefore some activities can be unrelated to those and provide at the same time valuable economic incentives that keep people's attention away from forests and other natural resources when their livelihoods are depressed.

Furthermore, the income-generating activities can be based on previously-known activities at the community level. Yet, the Wildlife Division can also suggest the implementation of new ones for which community members can attend workshops where they learn how to carry them out.

4.4. Summary

This chapter has focused on how the CREMA was conceived and how it works in practice following a myriad of governance arrangements which make the CREMA operational at the local level.

The Wildlife Division developed the CREMA policy as a response to a series of challenges Ghana was confronting, the most remarkable being the destruction of wildlife habitats to convert them into farmland. In order to curb this tendency, the CREMA encourages rural communities to value wildlife and other natural resources and entitles them to manage it by providing economic incentives and, ultimately, devolving the authority over those resources to them. This process of decentralisation of natural resource management to the local level is based in the traditional authority hierarchy, therefore respecting local relationships, and follows a set of rules and regulations in the form of a constitution which has a legal status and is formulated by community members themselves in consultation with the Wildlife Division. The decentralisation is officially completed when the Ministry of Lands and Natural Resources grants the CREMA communities with the Certificate of Devolution for Authority of Wildlife Management. All in all, the CREMA structure emphasises devolution of wildlife management as a key system to providing incentives and bestowing responsibilities for wildlife preservation to its users and grantees (Braimah and Baah-Ennumh 2009: 129).

5. Local knowledge in CREMA site 1

This chapter presents the main outcomes of the analysis of the data collected in the first research site: the Kwamebikrom Stool Land CREMA. It begins with a general introduction to and description of the research site and continues expanding on the functioning of the CREMA in terms of devolution, participation and legitimisation. The last section of the chapter focuses on the CREMA management systems identified as well as on cultural considerations underlying LEK in order to assess whether and how the latter works.

5.1. Description and general characteristics of research site

The first CREMA site is the Kwamebikrom Stool Land CREMA. It covers an area of 7,227 hectares and is located in the Bia District of the Western Region of Ghana, close to the border with Côte d'Ivoire.

The CREMA concept was brought to this area in 2006 and involves nine communities (Figure 5.1.): Abrewakrom, Amoahshedkrom, Kwamena, EK Manukrom, King Solomon, Kwamebikrom, Kwasibadukrom, New Wenchi and Nkrabeakrom.

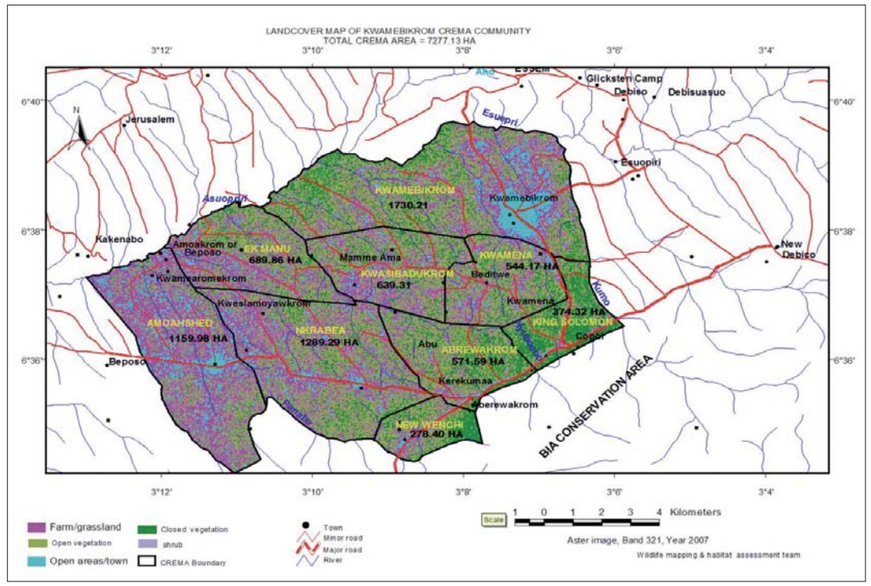

Figure 5.1. Land-cover map of the Kwamebikrom CREMA (source: Wildlife Division 2009).

The Kwamebikrom CREMA is located in Ghana's high forest zone and lies in an area made up of ranges hills, which consists mainly of moist semi-deciduous forest (Conservation International 2007). However, most of these forests have been converted into cocoa farms and other food crops. Rainfall is bimodal, peaking in June and October, and temperatures and relative humidity remain uniformly high throughout the year, with increased diurnal fluctuations on clear land (Wildlife Division 2009).

Evidence from a baseline faunal survey carried out by CARE International and the Wildlife Division in the Kwamebikrom CREMA in 2008 showed that wildlife is a relevant natural resource in the area. Various species[10] of mammals such as primates, ungulates and rodents as well as other reptiles and amphibians occur in different degrees. However, populations of all of animal species appear to be low due to hunting and habitat conversion into farmlands, especially cocoa (Wildlife Division 2009).

Box 5.1. The dominance of cocoa

Since its first introduction in the then Gold Coast in the beginning of the XIX century, the production of cocoa in Ghana has grown until turning the country into the world's second largest exporter, accounting for the 21% of the world production and representing 37% of the overall export earnings (Wiredu *et al.* 2011: 172).
This dramatic growth of the cocoa production has resulted from a combination of extension into new forest land and migration of cheap labour from poorer northern regions in search of better livelihood opportunities (Vigneri 2007).

Cocoa plantation in the Kwamebikrom CREMA.

Regarding the socio-economic background of the inhabitants in the Kwamebikrom CREMA, the main occupation is farming of which cocoa and other cash crops such as oil palm dominate. The Western Region, where the Kwamebikrom CREMA is located, is one of the current six cocoa-growing areas in Ghana[11]. Having said that, it is important to note that, especially in the 1970s, these areas witnessed a remarkable growth of immigrants from other regions who sought to work in the cocoa plantations (Vigneri 2007).

Against this context, the CREMA aims to empower its constituent communities to organise and integrate wildlife and other natural resource management into their local land-use practices. Following this primary objective, the CREMA also promotes in the study communities a series of income-generating activities which provide economic incentives to the CREMA members and keep them away from entering the Bia Conservation Area for the extraction of NTFPs and other products. This is particularly the case during the off-cocoa season, when community member's livelihoods are remarkable affected by the lack of sufficient income[12].

[10] Nineteen species of mammals were confirmed during baseline data survey in the CREMA land.

[11] The remaining cocoa-growing areas are: the Ashanti, Brong Ahafo, Eastern, Volta and Central Regions (Ghana Cocoa Board 2011).

[12] The cocoa harvesting season runs once a year from September to January, considered the period of good at the community level (Kwamebikrom chief, interview, March 2012).

The income-generating activities undertaken in Abrewakrom, Kwamebikrom and New Wenchi include beekeeping, palm oil extraction, soap making and vegetable growing[13]. These activities are not mutually exclusive and some community members combine them, since the harvesting seasons may not overlap.

5.2. Community-Based Natural Resource Management

In the theoretical chapter it was shown that there has been a trend to move away from strict regulatory conservation to adopt approaches that recognise the relevance of rural people in the conservation of natural resources. Ghana, in an effort to preserve wildlife and other natural resources through the empowerment of rural communities, adopted the CBNRM approach in the form of the CREMA concept. Thus, the development of the CREMA in this first research site applies the same CBNRM principles applied elsewhere to the Ghanaian conditions. The following subsections address the specificities in the development of the CREMA concept at the local level, particularly looking into the three main characteristics of any CBNRM programme: devolution, participation and legitimisation.

5.2.1. Devolution

Given the fact that in any process of devolution of natural resource management to the local level two main sides involved, the central government and the communities, this subsection will be addressed from these two perspectives, based on interviews with experts within the Wildlife Division and CREMA members respectively.

Central government – Wildlife Division

Prior to 2000, the approach to conservation of wildlife and other natural resources by the Ghanaian government had been a "fence and fine" approach with little involvement of rural communities. In adopting a policy for "Collaborative Wildlife Management and the Establishment of Community Resource Management Areas" (CREMAs), the Wildlife Division decidedly facilitated an enabling environment for the equitable access to natural resources and benefits by rural communities (Wildlife Division 2000: 6).

In the case of the Kwamebikrom CREMA land, it was not the communities who requested the establishment of the CREMA programme but the Wildlife Division which was concerned by various factors: conversion of forest land into mainly cocoa plantations and poaching and encroaching activities, which eventually were provoking the depletion of natural resources. As a prominent

[13] The Kwamebikrom Stool Land CREMA embraces more alternative income-generating activities across the nine communities involved. However, given that the research had to be restricted to the three aforementioned communities, only those carried out by the members of Abrewakrom, Kwamebikrom and New Wenchi have been assessed.

Wildlife Division officer of the Bia Conservation Area, puts it: *"Our ambition is to convince the communities around the park so that they manage the remaining resources around them, so the depletion that is going on will calm down"* (personal interview, 22 March 2012).

Against this background, in 2006 the Wildlife Division and CARE International, the NGO responsible for implementing the programme, approached the communities in the off-reserve areas around the Bia Conservation Area through awareness-raising and informative meetings in order to establish the CREMA concept. Being aware that the previous "fence and fine" approach had failed, the rationale behind this movement was that by devolving the ownership of the natural resources to the local level, rural communities would have a great incentive to preserve the natural resources on their lands. This is illustrated by another Wildlife Division officer working in the area: *"(…) when people are made to feel that the resources belong to them, they have the motivation to preserve and to conserve the resources"* (personal interview, 21 March 2012). In addition, and following another recurrent aspect that makes central governments embark on devolution processes is that Kwamebikrom CREMA communities had more advantages than the Wildlife Division in the sense that their members live and work in the area, which means they can monitor the resources in a more effective way (Wildlife Division Officer - Bia Conservation Area, personal interview, 21 March 2012).

Rural communities – Abrewakrom, Kwamebikrom, New Wenchi

The community members consulted did not know about the CREMA concept until the Wildlife Division approached them in order to raise concerns about the importance of curbing the depletion of natural resources. This is reflected by the words of a prominent Kwamebikrom CREMA executive who noted that *"the CREMA came when the Wildlife Division in conjunction with CARE International picked some areas that they wanted to organise to make the people aware and educate them to know the value of the natural resources"* (personal interview, 21 March 2012).

This process began by bringing together the chiefs and elders of the various communities with a view to explaining the purpose of the CREMA programme and to asking them for permission to do the same with other community members (women, youth, etc.).

Major issues in this first round of contacts were the land and the misconception of the people as why the CREMA was being implemented: there was a fear that the central government was going to take over people's land for permanent reserves or protected areas. This, after all, had been the strategy that had been employed in the past with the "fence and fine" approach. However, after several awareness-raising sessions and educational workshops, it was clarified that the implementation of the CREMA does not entail any change in the land tenure and/or status.

In this devolution process there were three clearly distinguishable stages:

1. Awareness-raising: the Wildlife Division informed the chiefs and elders about the CREMA objectives. The purpose of these initial meetings was basically persuading them of the good prospects of implementing the CREMA concept on their land. When the chiefs and elders gave the Wildlife Division their approval to continue working, the government agency proceeded to meet more people such as women and young members of the communities to explain the project and to answer all their questions.
2. Demarcation: community members were again approached by Wildlife Division officials to properly demarcate the CREMA land and to establish the core and buffer zones as these entail different wildlife and other natural resource management activities. This stage in the devolution process again raised concerns among some community members because it brought back memories of people being dispossessed of their land prior to the establishment of a protected area. Being aware of these concerns, the Wildlife Division made clear that land demarcation was just for management purposes and, what is more, it decided to use only GPS and GIS instead of land surveys with a view to avoiding disturbing community members.
3. Formulation of constitution: this is the most relevant stage because its success eventually determines that rights and responsibilities are genuinely assigned to the communities. Likewise, the incorporation of the CREMA constitution into the local government bye-laws of the Bia District Assembly guarantied the legal recognition of this new set of rules and regulations. This last stage also entailed the development of a management plan which is also vested in the community members. The purpose of the management plan was to set out the objectives for the CREMA, the actions necessary to accomplish them and the framework for decision-making by the CREMA Executive members and other stakeholders (Wildlife Division 2009).

After having confirmed that the Kwamebikrom Stool Land communities had properly formulated their constitution with all their Executive members properly elected, the Wildlife Division, on behalf of the Ministry of Lands and Natural Resources, granted the communities with the Certificate of Devolution of Authority for Wildlife Management, as shown in Figure 5.2., on 27 November 2009.


The Ministry of Lands and Natural Resources

REPUBLIC OF GHANA

CERTIFICATE OF DEVOLUTION OF AUTHORITY
FOR WILDLIFE MANAGEMENT

This Certificate devolves authority for the management and utilisation of wildlife to the Executive of

Kwamebikrom Stool Lands Community Resource Management Area

as defined by its Constitution and Section 43(1) of the Wildlife Resources Conservation Act 685 of 1961

Signature ..... on 27th November 2009

HON. ALHAJI COLLINS DAUDA
MINISTER
MINISTRY OF LANDS AND NATURAL RESOURCES

Figure 5.2. Certificate of devolution.

5.2.2. Participation

The variable of participation under CREMA is weighted up following the framework suggested by Cohen and Uphoff (1980): participation in decision-making, participation in implementation and participation in benefits.

Participation in decision-making

The process of decision-making, understood as the generation of ideas and the formulation and assessment of options (Cohen and Uphoff 1980: 219), has three stages: (1) initial decisions, (2) ongoing decisions, and (3) operational decisions.

As far as the first stage is concerned, the identification of local needs and the way they had to be met were issues discussed by the community members during the initial rounds of contacts with the Wildlife Division. In this context, the main concern among community members was how the CREMA was going to affect their livelihoods. Since the CREMA is a CBNRM programme none of the community members knew about, the level of guidance by the Wildlife Division was very high. In this sense, this stage can be pictured as a sort of forum where the Wildlife Division introduced what the CREMA does and how it generally works and delegated to the community members the decision as to what to include. A remarkable example to illustrate this initial stage was the formulation of the Kwamebikrom CREMA constitution, a process in which the Wildlife Division suggested the incorporation of governance arrangements common to all CREMAs but left it to the community members to define the content of each article in the constitution. Similarly, the inclusion of the specific income-generating activities under the CREMA was decided by the community members themselves among others that were suggested by the Wildlife Division.

Ongoing decisions refer to the decisions made after the complete establishment of the CREMA. By reaching this point the Certificate of Devolution for Authority over Wildlife Management was granted to the communities. Once the Kwamebikrom CREMA members were officially given the ownership over, indeed, their natural resources, it was their right and responsibility to take any decision concerning the functioning of the programme. This was the case, for instance, of soap-making, an activity that was incorporated to the CREMA after a year since the establishment of the programme (Patricia, 37 years old, New Wenchi community member, interview, 24 March 2012). Likewise, the Kwamebikrom CREMA constitution foresees constitutional amendments by any CREMA member, who has to address the CREMA Executive Committee in order to propose an amendment of any part(s) of the text.

The operational decisions focus on how the communities organised themselves to effectively govern the CREMA land. These decisions basically cover the governance arrangements specified in Chapter 4 and fully detailed in the constitution (Appendix 1). In order to facilitate the functioning of the CREMA, its members had to choose their leaders through elections and nominate the following leadership structure: the CREMA Executive Committee (CEC) and the Community Resources Management Committee (CRMC). The CEC is the highest decision-making body at the CREMA land level and is represented by two members (a CRMC member and a non-CRMC member) from each of the nine communities which are part of the Kwamebikrom CREMA, resulting in 18 Executive Committee members. The main responsibilities attributed to this governing body are settling disputes among CREMA members, monitoring the CREMA activities and ensuring transparency. The CRMC is a lower decision-making structure which is set at the village level. The CRMC members in Abrewakrom, Kwamebikrom and New Wenchi, as in the other six communities of the Kwamebikrom CREMA, are elected by the people at the village level. The main function of this governing structure is the organisation of meetings at the local level and awareness-raising activities to preserve the natural resources in the land. Both the CEC and the CRMCs in the Kwamebikrom CREMA have the following executive officers: chairman, vice-chairman, secretary, treasurer and organising secretary[14].

Participation in implementation

Participation in implementation refers to the way in which the communities of Kwamebikrom, Abrewakrom and New Wenchi take part in the CREMA. According to Cohen and Uphoff (1980: 219), this type of participation revolves around administration and coordination efforts as well as resource contribution (cash, donations, information, etc.).

Apart from the previously mentioned executive bodies that govern the Kwamebikrom CREMA, it is important to consider the level of administration and coordination at both direct natural resource management activities and income-generating activities levels. Beekeeping, soap-making (Figure 5.3.) and palm-oil extraction are organised in groups, whereas reforestation (tree planting) and vegetable growing are undertaken individually. But in any case, categorising them as such does not mean, for instance, that a vegetable grower does not get support from other community members if help is needed to spray the crops with insecticides (James, 43, Abrewakrom community member, interview, 30 March 2012).

As far as the group activities are concerned, it is remarkable how much pro-activeness these groups show in mobilising their members to smoothen the functioning of the group. Beekeepers, soap makers and palm oil extractors decided to form their own informal committees and arrange meetings where they discuss issues such as how to coordinate their activities during harvesting, etc. The palm

[14] For a detailed account of the duties of the executive officers, see Appendix 1, Article 7.4.

Figure 5.3. Women participating in soap making in New Wenchi.

oil extraction group in Kwamebikrom, for instance, went one step further and adopted the measure whereby each member must contribute to the group with a monthly donation of 1 Ghana cedi (~€ 0,45) to have cash available in case they need to purchase new materials (Agnes, 62, Kwamebikrom community member, interview, 27 March 2012).

Regarding this last point on resource contribution, community members do not only participate with cash donations but also with two compulsory payments (Appendix 1, Article 7.5.): for every product harvested for sale, 2% must be paid to the traditional authority (land owners) and another 2% to the CREMA[15]. In addition, the money for the CREMA can also be generated from fees of issuing hunting permits[16], penalties from offenders or sales of confiscated animals/NTFPs. These payments are collected and saved in a bank account especially opened for the CREMA programme and mainly used to support the right functioning of the income-generating activities but also to cover, for instance, CREMA executives' travel expenses to attend important meetings with the Wildlife Division or the District Assembly.

With respect to information sharing as part of resource contribution, it is worth highlighting the awareness-raising messages that some CREMA members assure they transmit when they encounter situations against the CREMA spirit, that is, valuing wildlife and other natural resources. During a group discussion with women from the three study communities, they assured they always try to persuade whom they identified as poachers not to hunt[17] (discussion group, 30 March 2012).

Participation in benefits

This kind of participation focuses on the "outputs" of the potential development qualities that can be attributed to the CREMA. As Cohen and Uphoff note (1980: 221), there are basically three main possible benefits: material (more income or assets), social benefits (public goods such as social services or amenities) and personal benefits (self-esteem, political power).

The promotion of the income-generating activities has brought some benefits to the community members' households in Abrewakrom, Kwamebikrom and New Wenchi. As stated in Section 5.1., these activities are conceived to provide an extra income during the off-cocoa season when the community members' incomes are extremely low. In this sense, as far as material benefits (private goods) are concerned, every single respondent consulted assured that the income-generating activities in which s/he takes part adds some money on top of the household income. However, they all stressed that it is not enough to cover important expenses such as school fees, medical care or interest payment from a loan, etc. and that they continue depending greatly on the remaining income from cocoa harvesting[18].

[15] The CREMA also pays the 5 % of its annual income to the Bia District Assembly and the Wildlife Division.

[16] According to the CEC members consulted, no hunting permits have been issued so far.

[17] Although for this particular case they referred to hunters entering the neighbouring Bia Conservation Area to deliberately poach, I believe it is a remarkable issue to illustrate some CREMA members' opinion on the need to curb the depletion of wildlife population and other natural resources.

[18] On average, a caretaker settled in a cocoa farm can get, after the harvesting of the cocoa, ten sacs of cocoa beans worth 2000 Ghana Cedis (~€ 850) (Amankwa, 48, interpreter, informal talk, 26 March 2012).

As for social benefits in the form of public goods or facilities, the CREMA money is not enough to invest in any social venture. In fact, the CREMA concept was not meant to aim at constructing any community facility such as dispensaries or schools; that is a responsibility that falls under the District Assembly (Christian Fumey Nassah, Wildlife Division, interview, 25 May 2012). However, the construction of social capital created by working together and organising under the CREMA can also be considered a social benefit in the sense that it contributes to the community members' empowerment.

With respect to personal benefits, it was reported that the CREMA has positively affected respondents' self-esteem in the three communities researched. This rise in self-esteem can be attributed mainly to one reason: most of the community members consulted agreed upon the fact that the CREMA has given them new opportunities for the future: *"I joined the soap-making group because I wanted to learn something new so that I can have more possibilities for my family in the future"* (Cynthia, 29, interview, 26 March 2012).

5.2.3. Legitimisation

The CREMA is implemented following existing local institutions but it also promotes the creation of new ones. In order to analyse legitimisation, it is therefore necessary to look into how community members perceive the extant institutions on the one hand and the newly created ones, on the other.

The decentralisation of natural resource management to the community level is based on the traditional authority hierarchy. Chieftaincy is inherent in the Ghanaian culture; it plays a central role in community life and cannot be disregarded when aiming at understanding community dynamics. The figure of the traditional chief is essential because he owns all the land at the community level. Therefore, considering that the CREMA is about integrating the management of wildlife and other natural resources into existing land use, by-passing the traditional chief is not possible.

Thus, as indicated in Section 5.2.1. on devolution, in the case of the Kwamebikrom CREMA the Wildlife Division and CARE International met in the first place with the traditional chiefs and elders in order to obtain their approval before proceeding any further. On this issue, a Wildlife Division officer consulted was clear: *"If the chiefs are not very much involved in the beginning, the idea* [CREMA] *will not succeed because they have authority over their own people and they have authority over the land"* (interview, 22 March 2012).

In the eyes of the community members, traditional chiefs are an unquestionable authority to which they profess great respect. Interestingly enough, when respondents were asked about how chieftaincy is perceived, both men and women seemed somewhat astonished and gave me clear sings of surprise as if discussing such issue was pointless. These examples provide a clear picture of the degree of cultural embeddedness of traditional chieftaincy.

Regarding the newly created institutions in the context of the CREMA, I analyse their legitimisation through representation, equity and accountability, issues of great importance that are not automatically resolved when the principles of the CBNRM approach are applied.

Representation under CREMA follows a typical democratic structure in the formation of the new institutions, the CEC and CRMCs. Elections of the members of these governing bodies are held every three years. What is more, in the Kwamebikrom CREMA an electoral committee with three CREMA members is constituted to conduct the elections with voting by showing hands. The candidates do not present themselves as such but they are seconded verbally by other CREMA members. When asked about the basis to second some candidates and not others, all respondents agreed that the main reason to vote for a person is that s/he is a well-reputed community member.

Yet, the gender representation is highly unequal. Not a single executive officer in the CEC and the CRMCs under study was female. As a matter of fact, women participate in the CREMA activities but they are not represented in the CREMA decision-making structures. I attribute this situation to the fact that the inception of the CREMA is *per se* unequal between men and women. As explained before, when the Wildlife Division and CARE approached the communities to discuss the objectives and functioning of the CREMA, they had to follow the customary protocol of meeting with chiefs and elders in the first place, who are all men. Even though the second round of contacts after the chiefs and elders' approval involved women and the youth, the initial power to decide whether and how the CREMA idea would be accepted exclusively fell onto men. Perhaps cultural reasons could be invoked to find a more specific answer; however, deepening into the issue of gender under the CREMA is beyond the scope of this research.

As far as equity is concerned, the CREMA concept provides a new institutional system that theoretically facilitates the equitable distribution of benefits. This reflects what Roe *et al.* (1999: 91) highlight about those benefits coming from the new institutions promoted by most CBNRM schemes: "they should be shared in a way that is commensurate with the varying sacrifices and contributions made, or de damages incurred". The Kwamebikrom CREMA regulations are clear on this issue and for every product for sale the cost bearer, whether an individual or a group, keeps the whole share after deducting the corresponding fees. Nonetheless, I was aware, for instance, of past internal frictions within the beekeeping group in

Kwamebikrom. One of its members informed me that working as a group had been problematic in the beginning because some members would not work as hard as others but all would eventually get the same share after selling the honey[19] (George, 35, informal talk, 28 March 2012).

There are clear signs of overestimating benefits of the CREMA programme among community members, in particular in exercising some income-generating activities. This situation is seemingly due to the expectations raised by CARE International, the NGO which collaborated with the Wildlife Division in the implementation of the CREMA. According to several CREMA members, the NGO apparently promised to provide the communities with more materials and equipment than it eventually did and many community members have not been able to undertake some activities in which they were very interested, such as grasscutter rearing[20].

Regarding accountability, the Kwamebikrom CREMA Task Force (CTF), an organ which monitors the CREMA accounts and the activities of the CEC and local CRMCs when needed, plays a crucial role (Appendix1, Article 7.3.). The most remarkable characteristic is the independence of its members since they are selected from non-executive CREMA members. In any case, it has to be stressed that in this first CREMA site accountability was not an issue discussed in detail during my talks with the community members – in fact, the CTF has never been called to action. I believe the reason is because the CREMA has only been working for three years and the little money that has been generated has been widely used for the internal functioning of the income-generating activities by purchasing materials, travelling to the markets to sell harvested products, etc.

5.3. Local Ecological Knowledge - LEK

In the theoretical chapter it has been indicated that LEK can be of great importance to natural resource management since it offers new ecological knowledge, can contribute with new management models and, as it stems from local needs and follows local procedures, it has implications in the development field (Berkes *et al.* 1995: 282). In this direction, this section addresses, firstly, the management systems that directly affect wildlife and other natural resources found in the study communities and, secondly, the income-generating activities that indirectly contribute to wildlife and natural resource management by reducing pressure on forests and natural resources. This section also unveils remarkable cultural considerations that can be of great relevance to a better understanding of wildlife and other natural resource management in the Abrewakrom, Kwamebikrom and New Wenchi.

[19] Although the Wildlife Division intervened and suggested they just worked individually, the members decided to continue as a group since their productive capacity would be higher.

[20] This extreme could only be confirmed with the communities and the Wildlife Division. No CARE staff member was successfully contacted to ask him/her about this.

5.3.1. Managing wildlife and other natural resources through taboos and reforestation

Berkes *et al.* (1995: 285) observe certain arrangements within the realm of LEK that are determined by social restrains which ensure a restricting use of natural resources and also act as conservation practices.

Some of the so-called taboos were found in the study communities. Following the classification by Colding and Folke (2001: 584) included in the theoretical chapter, the most remarkable taboo is the habitat taboo applied in the shrines of the different communities[21]. A shrine is a sacred place where customary traditions are undertaken in order to communicate with the gods or ancestors.

These particular spots are the most respected, and feared, at the community level. Shrines are normally located adjacent to a river or water pond, where fishing is strictly forbidden (Figure 5.4.). According to the community members consulted, the violation of these rules can entail the outbreak of diseases for the person who has dared to fish. This habitat taboo applies to other animals and plants, whose extraction is equally forbidden if located in a shrine.

Figure 5.4. Water pond in Abrewakrom.

Interestingly enough, in trying to find an explanation for the existence of these taboos, no specific principle can be pointed out as the reason why a particular taboo applies to some animal species or why others apply to a particular place. In asking about that, the traditional chiefs gave a recurrent answer: *"that is the knowledge and wisdom that we have inherited from our ancestors"* (community chief, 53, interview, 28 March 2012). Thus, they claim something similar to faith as the reason to not question what they have learned from their forefathers.

[21] I was informed by both CREMA members and Wildlife Division officers about several other limitations to access rights and use rights whose effects on wildlife conservation are similar to those by taboos. However, these are not based on LEK but on rules and regulations as stated in the Wildlife Division Laws: illegal hunting techniques to avoid unnecessary suffering of hunted animals; prohibition of hunting from 1st August to 1st December of every year since this is the breeding season of most of the animals; and hunting endangered species (Appendix 4, Article 10). Yet, interestingly enough, the Article 10.1 of the Kwamebikrom CREMA constitution (Appendix 1) on the protection of amenities in the CREMA land also includes the prohibition of picking snails during their incubation periods. This limitation could be considered a life history taboo since it resembles some customary regulations which prohibit killing any slow-moving and/or defenceless animal (Forestry Commission 2008). However, no CREMA member could confirm whether this limitation is based on customary laws belonging to the realm of LEK.

Customary rules and regulations in the form of taboos are still practised, although, over time, their enforcement has unavoidably been undermined by modernity and, in particular, the role of Christianity. In this sense, in many rural communities there were even six different churches established, some of which do not allow their parishioners to perform customary practices[22].

The performance of religious rites in shrines and sacred groves is one of the few human activities that are permitted within the core zones of the Kwamebikrom CREMA[23]. As Figure 5.5. shows, the core zones are located along rivers and streams where shrines and sacred groves are mostly located. These are areas where the natural forest and riverine vegetation are still in a relatively intact condition. According to the Wildlife Division (2009: 11), the survival of wildlife in this CREMA can be related to the perpetuation of patches of forests and narrow bands of riverine vegetation.

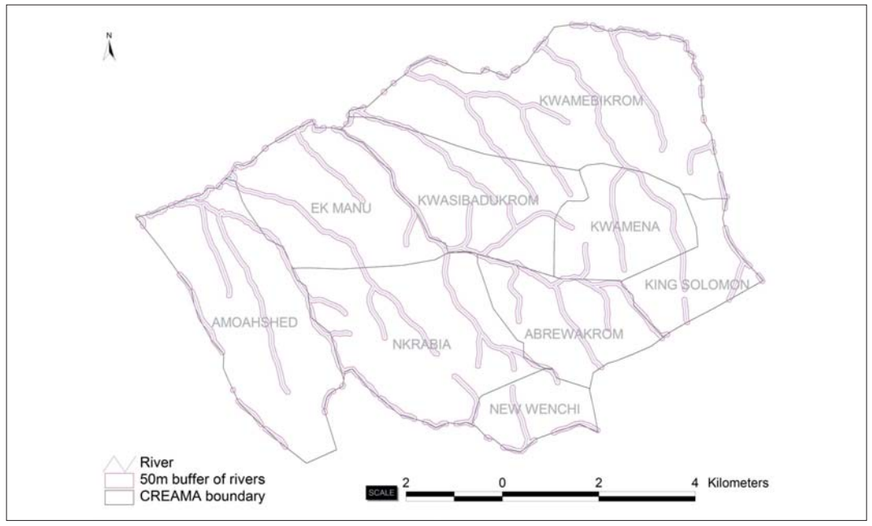

Figure 5.5. Kwamebikrom CREMA showing core zones along rivers and streams (source: Wildlife Division 2009).

The establishment of the core zones is intended to avoid human disturbance, no economic activities are allowed in this area. However, the buffer zones do support certain land-use practices which can also contribute to wildlife and other natural resource management. It is worth noting the case of reforestation and enrichment planting activities, since they represent a source of attraction to wild animals, particularly primates from the Bia Conservation Area into the CREMA (Wildlife Division 2009: 8). Furthermore, farm bushes are also areas frequented by the bushbuck (*Tragelaphus scriptus*) and the Maxwell duiker (*Cepahlophus maxwelli*).

This activity is particularly encouraged by the Wildlife Division, since it enriches the ecosystem by expanding the forested area. CARE, on behalf of the Wildlife Division and the Forestry Services Division (FSD), distributed the seedlings among the community members interested who planted them on their lands.

The most common tree species in the study communities are teak (*Tectona grandis*), ofram (*Terminalia superba*) and wawa (*Triplochiton scleroxylon*). Most of the reforestation activities undertaken by CREMA members are done by planting trees in isolation towards the edge of the cocoa plantations. This is because tree planting is an activity whose benefits will not be delivered until approximately two decades later and farmers prefer to use all the possible land for cocoa, which is after all their main source of income. The trees are mostly planted in a random fashion, that is to say, without following a clear spacing or order in which the seedlings are planted. No special treatment is granted to the trees. Unless there is a pest outbreak, the farmers do not usually use pesticides or insecticides, which otherwise would be commercial ones since they are more effective. All in all, the trees are left on their own while they are growing.

It is worth noting that the buffer zone also allows trade in bushmeat and in NTFPs. Currently there is an open access system operating within the CREMA for the harvesting and use of NTFPs. This is poorly supervised or regulated. The Wildlife Division recommends in the Kwamebikrom CREMA management plan that the CREMA executives come up with a hunting permit system issued by the CEC to regulate the current exploitation levels of wildlife (Wildlife Division 2009: 10). Yet, according to a CREMA executive from Abrewakrom (32, interview, 22 March 2012), no license has been issued so far. Legal trade in NTFPs is not in place either; however, a transect walk around Abrewakrom revealed that communities resort to some plants to use them as herbal medicines to cure various problems such as headache, diarrhoea or recurrent coughing (27 March 2012).

5.3.2. Reducing pressure on forests and natural resources through income-generating activities

In the study communities, the CREMA programme promotes the development of income-generating activities to increase communities' income. These activities are based on natural resource use, integrated in the farming system or even not related to natural resources or farming. These activities can have a mitigating effect on communities' pressure on the Bia Conservation Area, which they access to meet their livelihood needs.

[22] During some visits to the shrines, I noted that some community members did not dare to access the sacred places. I was later informed that they were members of the Seventh-day Adventist Church and were forbidden to do so.

[23] The other permitted activity is fetching of water.

Income-generating activities based on natural resource use

Beekeeping

Commercial beekeeping is an activity that was new for the community members when the CREMA came into being. Thus, any member interested was invited to attend workshops organised by the Wildlife Division and CARE to learn how to carry it out.

The opinions expressed by the members of the beekeeping group in Kwamebikrom revealed that the production of honey follows a well-established procedure whose various stages and skills were learned in the workshops. The construction of the beehives was delegated to a carpenter in the village who followed the indications of the manual based on illustrations and figures that the members were given.

The setting for the beehives, six in total, is in a plot of cleared land not too far from the village. In order to attract the bees, they were given a piece of wax that they put inside the boxes. The beehives stand on four legs that are placed in pots filled with dirty oil to prevent the attack of ants.

The harvesting period takes place twice a year, in March and November. The beekeepers make use of special suits provided in the workshops to avoid being bitten by the bees. Once the wax is collected from the beehives, they place it in a filter (Figure 5.6. – right) so that the honey gets filtered getting rid of dead bees and small pieces of wax. They store the honey in big plastic bottles to transport them to the Kumasi Central Market where they sell it.

Figure 5.6. Beekeeping in Kwamebikrom.

Income-generating activities integrated in the farming system

Palm oil extraction

The members of the palm oil extraction group did know how to make oil from palm nuts, a productive activity deep-rooted in the region. Even though they already knew the process, the Wildlife Division and CARE organised some workshops to teach them how to use what was locally referred to as “the technical way”. This is the term community members resort to when talking about the new methods in some income-generating activities whose performance entails new materials and/or machines.

Palm oil extraction is a demanding activity in terms of physical work, since the very first stage of the process is cracking the palm nuts. Palm oil extractors could be released of this task by using the machines that they learned to operate in the workshops. However, CARE never provided them with those machines as it apparently promised. Being unable to purchase the machines, the group members resort to the local way.

From March to August, the palm nuts are ready for collection from the palm trees located in farmers’ private lands (Figure 5.7.). These are cracked by putting them in a mortar with water. After crushing them with the pestle for 15-30 minutes, the nuts are well grounded with the resultant liquid being filtered by making use of a net. It is then cooked for two hours, a process whereby the oil comes on top forming a thin layer. The latter is removed and cooked again to ensure no water is left. Finally, the oil is stored in big bottles of 30 litres and sold to an oil wholesaler.

Figure 5.7. Palm nuts in Kwamebikrom.

Vegetable growing

Vegetable growing is another activity that is mainly undertaken on an individual basis. The community members who practise it reserve a piece of land on their farms where they plant various crops, the most common being cassava, peppers and tomatoes.

There are two main management systems which deserve attention under this activity: pest prevention and the factual methods used to grow the vegetables. Although the community members consulted know about local methods to fight the attack of some insects, such as covering the plant leafs with ashes, they overwhelmingly prefer the commercial pesticides and insecticides. They assure these give better results and act faster than the ashes. However, they are also more expensive so the farmers resort to the local method, cheaper yet less effective, when they cannot afford the commercial products.

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With respect to the factual methods to successfully grow vegetables, intercropping is typically used (Figure 5.8.). Combining two crops in the same piece of land is a common practice because the growth of one can positively affect the other. This is the case, for instance, with cassava and peppers. Cassava is a fast-growing plant which develops big leafs, being very resilient to sun rays. However, pepper plants can easily get burned by the sun. Thus, by mixing cassava and peppers, the former makes shade over the latter, avoiding it getting burned.

Figure 5.8. Intercropping of cassava with red peppers in Abrewakrom.

Income-generating activities not related to natural resources or farming

Soap making

The case of soap making is similar to palm oil extraction in the sense that the communities already knew how to do it long before the CREMA came into being. Similarly, the community members attended a few workshops where they learned a highly technical process implying the use of new products and other gadgets. Soap making requires the participation of several people in a relatively long process along which the members take turns in the physical tasks[24].

Firstly, one group mixes water with soda in a small bucket. Rubber gloves are used when manipulating the soda. The quantity of soda is established by using a measuring tool that is put in the water and whose buoyancy determines how much soda is to be added (Figure 5.9. – left). At the same time, another group blends, in a big washbowl, palm oil with more water (5 parts of soda for 10 parts of oil) plus lavender perfume, antiseptic and other chemicals[25]. In the meantime, a square tray is set on the floor where the resultant dense paste of mixing the initial water with soda and the perfumed palm oil with chemicals will be placed (Figure 5.9. – centre). This paste is left in the mould for 24 hours to get solid.Following this, the soap is cut into bars using a cutting board (Figure 5.9. – right). The soap bars are then shaped by using another mould and ready to be transported to the Kumasi Central Market.

Figure 5.9. Pictures showing various stages in soap making.

All in all, the income-generating activities are providing economic incentives to the CREMA members so that they are less tempted to exploit natural resources. The degree to which these activities provide them sufficient income as to withhold communities from exploiting the natural resources is problematic without a conclusive quantitative assessment. In any case, every single CREMA member assured that they are fairly content with what these activities provide with. They confirm that the income from these activities is not comparable to the income they get from cocoa farming. However, they also insisted on the fact that they mainly depend on these activities when it is off-cocoa season. Thus, it appears that the objective of these activities in reducing people's pressure on forests and natural resources works.

[24] The day I witnessed the process there were eighty members of the soap-making group, all women.

[25] In asking the specific chemicals that are to be added, the group members did not know the names nor was it indicated on the bottles containing the chemicals.

5.3.3. Cultural considerations (cosmology)

Pierotti and Wildcat (2000) introduce the notion of cosmology as the way in which things are connected. Considering the purpose of this section, it has to be remarked that it was known in advance that villagers in the study communities are farmers in the first place. This fact *per se* anticipates the way in which community members relate to the environment that surrounds them. As previously stated, the depletion of natural resources in the area has occurred due to habitat conversion from forests to cocoa plantations with many villagers having migrated from the northern regions in the pursue of better opportunities. Thus, this is clearly not an area where environmental harmony reigns. What is more, there are even conflicts with elephants coming from the forest reserve which take over cocoa plantations and destroy them. This example, as well as others associated with poaching activities, proves that the relations between community members and other biological beings are not smooth.

In general, community members do not seem to have close ties with the forest in terms of developing emotions towards it or having very specific knowledge about it. The group discussions around the factual state of the natural resources around the communities revealed that participants illustrate those in a sort of replication of the awareness-raising meetings initially undertaken by the Wildlife Division. The community members used exactly the same language as Wildlife Division officers when explaining that natural resources have to be protected for the sake of future generations, seemingly replicating what the Wildlife Division had told them before. Similarly, they are aware of the fact that their surroundings have changed a lot in the past decades with forested lands having decreased greatly. Yet, when they are asked about their role as cocoa farmers in changing the landscape, the response goes back to the fact they also need to make a living.

To sum up, as far as cosmological issues are concerned, the relations in Abrewakrom, Kwamebikrom or New Wenchi between community members and other biological beings are not based on reciprocity, let alone on obligations. Forests and other natural resources are at risk and this is the main reason why the Wildlife Division is very diligent in the enforcement of rules which concern the Bia Conservation Area and why it decided to employ the CREMA concept in the neighbouring communities.

5.4. Summary

This chapter has highlighted that in this first CREMA site devolution has been total by granting the CREMA communities with the Certificate of Devolution of Ownership for Wildlife Management. Also, participation is well placed thanks to the involvement of the communities in decision-making, especially in the formulation of the CREMA constitution, and in implementing the programme whose outputs in the form of benefits are shared by their members. Following this, the CREMA concept is legitimised at the community level due to the fact that the decentralisation of natural resource management is based on traditional authority hierarchy. Likewise, the democratic structure that is employed in the formation of the new CREMA institutions, the CEC and CRMCs, generally has a positive effect on representation, equity and accountability. Yet, the involvement of women is the most notable exception.

With respect to the role of local knowledge in wildlife and other natural resource management practices through taboos, only those classed as habitat taboos apply to the CREMA land, notably those in the community shrines. As far as reforestation is concerned, CREMA members resort to a combination of technical and local methods to plant the trees that eventually enrich the ecosystems to attract wildlife. Similarly, the income-generating activities to reduce the pressure on forests and natural resources combine technical and local methods, although the sole activity based on natural resource use, beekeeping, exclusively follows technical methods learned in the initial CREMA workshops.

Finally, regarding cosmology, the researched communities cannot be seen as entities in communion with their surroundings. In this sense, the conservation of wildlife and other natural resources cannot be understood without considering the efforts made by the Wildlife Division, among which the very CREMA concept is an outstanding example.

6. Local knowledge in CREMA site 1

This chapter focuses on the second research site: the Akyekyere/Sureso/Pebaseman CREMA. It follows the same format as the previous chapter, hence it begins with a general description of the research site, followed by the analysis of the CREMA with respect to devolution, participation and legitimisation as the main characteristics of CBNRM. The second part turns the attention to the role of local knowledge in this second CREMA site looking respectively to wildlife and natural resource management systems being employed, the income-generating activities that are meant to reduce pressure on forest and natural resources, and to cultural considerations.

6.1. Description and general characteristics of research site

The Akyekyere/Sureso/Pebaseman is situated in the Wasa Amenfi West District of the Western Region and covers an area of 95 km². This CREMA is constituted by twenty participating communities: Akyekyere, Supanso, Essandokrom, Nkrankrom, Gonokrom, Atobrakrom, Koduakrom, Sekenti, Asante Akyem, Kamaso, Kamaboi, Donkorkrom, Ataase, Metemeba, Forest Ano, Betemaso, Ayensukrom, Akakpo, Adubakrom and Sureso.

Figure 6.1. Riverine forest in the Mamiri Forest Reserve.

This CREMA borders the Mamiri Forest Reserve (Figure 6.1.; land-cover map in Appendix 3), which covers an area of 45 km² and lies on the boundary between the wet evergreen and moist evergreen forest zones (Hall and Swaine, 1981).

As far as natural resources are concerned, prior to the implementation of the CREMA programme, a fauna survey was conducted and showed that the Akyekyere/Sureso/Pebaseman CREMA has a fairly good population of wildlife species, belonging to various classes such as avian, reptilian or amphibians. Additionally, 21 species of mammals have been reported as habiting in the CREMA land. With respect to tree species, the most predominant are: afara (*Terminalia superba*), black afara or idigbo (*Terminalia ivorensis*), African teak (*Milicia excelsa*), ceiba (*Ceiba pentandra*), African mahogany (*Khaya ivorensis*), baku or cherry mahogany (*Tieghmella hecklii*), false iroko or bark cloth tree (*Antiaris toxicaria*), sapele (*Entandrophragma cylindricum*) and wawa (*Triplochiton scleroxylon*). Yet, as with the first CREMA site, the amount of animals as well as the surface of forested land have been greatly affected by logging activities and habitat conversion into farmlands, especially cocoa (A Rocha Ghana and Forestry Commission, 2009). In addition to the actively farmed areas, other six main habitat types have been confirmed in this CREMA: undisturbed forest, disturbed forest, riverine forest, fallow areas, wetlands and human settlements (*ibid.*).

Taking this surrounding environment into account, the CREMA primarily seeks to include the management of the aforementioned natural resources in the local land-use practices in the communities involved. Furthermore, the communities are engaged in a series of income-generating activities to avoid having to resort excessively to the Mamiri Forest Reserve. It is important to note that the communities are allowed to access it in order to exploit some of its natural resources. Unlike wildlife reserves, such as the Bia Conservation Area, forest reserves are subject to the extraction of non-timber forest products by forest fringe communities. Having said that does not mean that the enforcement of all national laws by the Wildlife Division is not in place; it is indeed, as proved by the fact that the hunting of some animals in the forest reserve, as well as in the CREMA land, is regulated or strictly forbidden.

With respect to the socio-economic background of the people living in this area, the situation is very similar to that in the Kwamebikrom CREMA with cocoa farming as the main occupation. Other cash crops such as oil palm, cola and rubber are also an important source of income for the communities. The main food crops are cassava, maize and plantain.

In Gonokrom, Kamaso and Nkrankrom, the income-generating activities that are being practised are animal rearing, kenke making, kola-nuts trading, palm-oil extraction, traditional birth attendance and vegetable growing. As

notably remarked by many respondents in these communities, these activities are not mutually excluding and some community members combine them, resorting to one or another depending on the season.

6.2. Community-Based Natural Resource Management

This section addresses the particularities of the main characteristics of the Akyekyere/Sureso/Pebaseman CREMA as one example of CBNRM programme. In this direction, each subsection is dedicated to show the main findings on devolution, participation and legitimisation.

6.2.1. Devolution

The process of devolution in this CREMA differs from the Kwamebikrom Stool Land CREMA in that the request to implement the CREMA concept came from the communities and not the Wildlife Division.

Even though the CREMA policy began in 2000, the initial project which would eventually turn into the first CREMA in this area started in 1993 when the Wasa Amenfi West District Assembly initiated an agroforestry project called "Centre for Agroforestry Development". The communities involved came together as an association in order to curb the indiscriminate cut of trees on farmland in off-reserve areas that was occurring without adequate compensation. In facing financial constrains over the years, they approached the Global Environmental Facility (GEF[27]) for funding to support their agroforestry programme. In the GEF small grants steering committee there was a member from one of the communities involved in the agroforestry project and who informed the communities about the steps the Wildlife Division was taking to implement a CBNRM programme in Ghana. The communities discussed the financial issues with the GEF representative and sought guidance in the Wildlife Division, which in 2004 finally received a proposal from the communities to shift from the agroforestry programme to the CREMA programme.

Thus, the Wildlife Division guided the communities through the purposes of the CREMA and informed them about the steps to be taken before being fully empowered with authority over the natural resources.

Although the process of devolution followed an identical protocol as with the Kwamebikrom CREMA in terms of the organisation of awareness-raising meetings, demarcation procedures and the final formulation of the constitution, the leaders of the various communities were the ones asking for guidance to implement the CREMA. This after all meant that the process encountered fewer difficulties between the Wildlife Division and the communities. In this sense, the chiefs and elders had already informed the rest of the community members and they were all already convinced that the CREMA implementation could serve to curb the depletion of natural resources in the area.

The devolution process came to an end when the twenty participating communities were granted with the certificate of devolution of authority, issued by the Ministry of Land and Natural Resources[28].

6.2.2. Participation

This variable is assessed by looking into its different categories suggested by Cohen and Uphoff (1980): participation in decision-making, participation in implementation and participation in benefits.

Participation in decision-making

The local importance of tree planting is crucial to understand the generation of ideas and the formulation and assessment of options at the community level in this CREMA.

With respect to the initial decisions regarding the identification of local needs and how to meet them, the mainstream concern in the CREMA area was, as previously stated, the fast rate at which deforestation was taking place. Beyond the obvious depletion of natural resources, the members of the various communities affected were particularly worried about two main factors: inadequate compensation for trees logged by legal and illegal timber operators and fears of being held responsible due to irregularities with felled trees whose origin is uncertain[29].

By assessing the option of applying the CREMA concept, the communities realised the problem could be solved since the CREMA would give them the necessary authority and legal rights over the natural resources. As a result, *"the Akyekyere/Sureso/Pebaseman CREMA is the first initiated CREMA by the local people and the farmers themselves"* (CREMA chairperson, interview, 16 April 2012). This first stage also included the conventional norm of guiding the communities in writing the constitution which is based on the CREMA members' values and purposes. As an example, tree planting is such a pivotal issue in this CREMA that integrating tree planting into farming activities was a requirement to become a member of the CREMA (Appendix 2, Article 9). The Wildlife Division too was very concerned about the decreasing surface of forested lands and the negative impact thereof on wildlife species. Thus, tree planting and seeding production were the activities that the government agency mostly promoted as integral part of the management of wildlife and other natural resources in the off-reserve area.

[27] The GEF unites 182 countries in partnership with international institutions, civil society organisations and the private sector to address global environmental issues while supporting national sustainable development initiatives. The GEF provides grants for projects related to biodiversity, climate change, land degradation, the ozone layer, and persistent organic pollutants.

[28] I was not given access to the certificate of devolution by the executives of the Akyekyere/Sureso/Pebase CREMA and therefore could not confirm the date when the certificate was issued.

[29] Under the CREMA, planted trees on the farms are the property of the farmers. Before they harvest the trees, they have to inform forestry officials for the latter to be certain of the source of the trees. These are inspected and officials give approval and the subsequent token called "conveyance fee" is paid to the Forestry Commission before the farmers can transport the logs (Christian Fumey Nassah, email comm., 18 June 2012). Naturally regenerated trees on farms fall under the custody of the State (i.e. Forestry Commission) and can only be logged by timber operators who hold a timber utilisation contract (TUC) issued by the Forest Services Division of the Forestry Commition.

However, once the CREMA concept was established and functioning under the umbrella of the recently created constitution, the members of the various communities decided to include many more activities to enhance people's livelihood. In this sense, as far as ongoing decisions are concerned, it is very notable that the CREMA communities have registered an increasing number of income-generating activities under the programme whose common denominator is the use of a given natural resource. The registration of the livelihood activities seems to be a fairly simple process whereby any CREMA member interested in making profit out of harvesting a natural resource just needs to ask his/her corresponding Community Resource Management Committee to do so.

The operational decisions, the way in which communities organised themselves to rule the CREMA, led to the appointment of the CREMA executive officers and the nomination of the CREMA Executive Committee (CEC) and the Community Resources Management Committees (CRMCs). This process and how it is undertaken is standard to all CREMA programmes implemented in Ghana.

Participation in implementation

The way in which the communities of Gonokrom, Kamaso and Nkrankrom take part in the CREMA programme differs from that in Kwamebikrom in that the members of the Akyekyere/Sureso/Pebaseman CREMA carry out the income-generating activities on an individual basis (Figure 6.2.). However, as several CREMA members assured, it is not uncommon to resort to a neighbour or to a friend in critical moments that entail the performance of exhausting physical tasks, such as cracking palm nuts for palm oil extraction. In none of the income-generating activities carried out under the CREMA the formal organisation of groups was observed.

Figure 6.2. Woman working on her own in a vegetable garden in Kamaso.

In addition to these activities, which receive great attention from ordinary CREMA members because they provide an alternative source of income, participation in administration and coordination receive much less interest. Surprisingly enough, meetings summoning all CREMA members and executives are held only once a year, which results in a mainstream poor understanding of what the CREMA does and how it works. Most of the ordinary members consulted were very knowledgeable about their own income-generating activities but were not as familiarised with important issues such as cash payments. Some members claimed not to have always paid the required contributions after harvesting natural resources. What is more, when asking about benefit-sharing arrangements some members did not know what to answer[30].

Having said that, there seems to be a gap between executive and ordinary members in terms of sharing information on how the CREMA works. In this context, a great enthusiasm was palpable when talking about the CREMA with executive members whereas ordinary members seemed more comfortable when directing the discussions to their income-generating activities.

Participation in benefits

The general opinion among CREMA members is that the programme has positively affected their living conditions in the sense of enhancing their livelihoods. Thus, as far as material benefits are concerned, the activities that the CREMA promotes have supported many households with a remarkable extra income when the cocoa season is over. The constitution foresees benefit-sharing arrangements but, as previously mentioned, some of the CREMA members do not seem to know that they should contribute to the programme by paying 2% of earnings during the harvesting of resources. Yet, there are measures established under this CREMA which are very positive in terms of obtaining benefits from participating in the programme: the so-called revolving fund acts as a loan to support any CREMA member when s/he is not eligible to apply for this kind of financial products in commercial banks. This is what happened to a sheep breeder in Nkrankrom who obtained a loan from the CREMA revolving fund to buy an expensive veterinary treatment for his animals[31].

With respect to social benefits, the situation is identical to that in the Kwamebikrom CREMA in that the CREMA resources are not meant for the investment in social ventures, since the District Assembly is the governing institution which allocates funds for the construction of new social facilities or for the improvement of existing ones.

[30] This feeling of unawareness by ordinary CREMA members was reinforced by the fact that the CREMA executive interrupted all my questions that had something to do with the CREMA functioning.

[31] There are some contradictions around this issue because, according to the constitution, the revolving fund applies an interest of 20% whereas the sheep breeder and a CREMA executive assured there is no interest in this kind of transactions. This case also proves the misunderstandings on how the CREMA truly works among its members.

Regarding personal benefits, it is important to shed light on the levels of power that a few CREMA executives have accumulated. This extreme was confirmed in a particular executive's attitude towards other CREMA members. He already held a high status in his community before the CREMA came into being but his new attributions as a CREMA executive have extended his authority over all the CREMA communities where every single member professes him deep respect. This was illustrated in our visits to Gonokrum, Kamaso and Nkrankrom, where traditional chiefs and other community members clearly adopted a submissive pose and honoured him with great words to highlight his figure.

6.2.3. Legitimisation

The CBNRM principle of legitimisation is assessed following the same framework as in the Kwamebikrom CREMA case. Thus, this sub-section looks into the way the members of Gonokrum, Kamaso and Nkrankrom perceive both the existing institutions on which the CREMA is based and the newly created ones that the programme promotes.

One of the main characteristics of the CREMA concept is that it bases its organisational scheme on traditional authority hierarchy. In this sense, the same situation encountered in the Kwamebikrom CREMA applies here: the involvement of the traditional chiefs and elders has a positive effect on the implementation of the programme. What differs with respect to the first research site is that the Wildlife Division did not have to persuade the traditional chiefs and elders that they should convince other community members of the need to implement the CREMA. As said, in this case the programme was requested by the communities themselves, which means that the leaders of the communities had already shared with their members some hints on the CREMA concept. What is more, the chairperson of the Akyekyere/Sureso/Pebaseman CREMA is the traditional chief of one of the communities involved, which in the initial stages entailed a great impact in the transmission of the CREMA purposes.

As far as the formation of the new CREMA institutions is concerned – the CREMA Executive Committee (CEC) and the local Community Resource Management Committees (CRMCs) – the Akyekyere/Sureso/Pebaseman CREMA constitution stipulates a democratic procedure. However, the specifications of how community representation is applied are very vague. Although the constitution informs that each community shall meet and elect its officers to be known as the CRMC, it does not specify how these officers are actually elected. There is not an organ such as an electoral committee in the Kwamebikrom CREMA to conduct the elections. This issue is crucial because the CEC is formed by the representatives from the various CRMCs[32]. By looking into these governing bodies from a gender perspective, the situation is identical to that in the first research site: all executive CREMA members in Gonokrum, Kamaso and Nkrankrom are men. Women are engaged in the income-generating activities but this involvement is not extensible to the CREMA decision-making structures. In this light, and considering the great similarities in terms of gender relations at the community level between this research site and the previous ones, I point out the same cultural reasons to have a better understanding of why women are excluded from decision-making.

Regarding equity, this CREMA theoretically provides a fair distribution of benefits, but in practice, as was previously mentioned, some CREMA members do not contribute with the required 2 % of earnings during the harvesting of resources. When asking about possible conflicts that might have arisen due to an unequal contribution to the CREMA, all the CREMA members consulted assured they did not know about any dispute because of this issue.

In the comparison with the symptoms of overestimation of the delivery of benefits in the Kwamebikrom CREMA, it has to be highlighted that these feelings do no occur in this CREMA. If there were some in the beginning, these have been calmed down over time as the programme has already been running for eight years. These CREMA members do not show any signs of stagnation which has resulted in the fact that many daily productive activities, such as kenke making or vegetable growing, have been absorbed by the CREMA.

Accountability is one of the main weaknesses of this CREMA. Although the constitution contemplates the resource of asking an external audit team to audit all CREMA accounts and transactions of CEC and CRMCs, the truth is that it is not compulsory. Considering that discussing this issue with ordinary CREMA members was going to be impossible due to a prominent CREMA executive's presence in the interviews, I deliberately brought up the topic when talking to executive members. I was aware that discussing accountability was problematic, made my respondents feel uncomfortable and the arguments to my questions were, at best, elusive. This situation was reinforced by one executive's undisguised comment on the fact that the disclosure of financial information upon the request of any CREMA member is not possible.

All in all, although this CREMA is ultimately legitimised by following a structure based on the traditional hierarchy, the legitimisation of the newly created governing structures is controversial. What seems to dominate people's minds when discussing how the CREMA is ruled is something similar to apathy or indifference. Hence, as long as the CREMA continues delivering monetary benefits thanks to the income-generating activities, community members will keep on supporting the programme and the governing structures on which it partially stands[33].

[32] Representation could only be confirmed by reading the Akyekyere/Sureso/Pebaseman constitution. It was virtually impossible to address this issue during my interviews with ordinary CREMA members due to the systematic interruptions by a CREMA executive, who, in my opinion, would not have accepted any criticism. I consider my inability to persuade this executive that his presence was not necessary at every single interview that I conducted in the study communities as one of the main limitations of this research.

[33] These impressions are a reflection of my own observations during the interviews and they could not be confirmed by the genuine opinion of ordinary CREMA members due to the restrictive circumstances during our talks.

6.3. Local Ecological Knowledge – LEK

Berkes *et al.* (1995: 282) observe that LEK can be relevant in natural resource management given its new contributions on ecological issues and on management models as well as its implications in the realm of development since LEK stems from local needs and follows local procedures. Having said that, this section serves to unveil, firstly, the management systems that directly affect wildlife and other natural resources found in Gonokrom, Kamaso and Nkrankrom. Following this, it gives a detail account of the income-generating activities that indirectly contribute to wildlife and natural resource management by reducing pressure on forests and natural resources. Finally, this section also addresses key cultural facts that can facilitate a better understanding of wildlife and other natural resource management in the previously-mentioned communities.

6.3.1. Managing wildlife and other natural resources through taboos and reforestation

Following the observation by Berkes *et al.* (*ibid.* p. 285), taboos as social restrains can be interpreted as conservation practices thanks to restricting use of natural resources. Only one such taboo based on LEK[34] was found in Kamaso, although also applicable elsewhere, and was mentioned during the interview with the traditional birth attendant. According to Colding and Folke (2001: 584), this taboo would be classed as a segment taboo, since women are not allowed to cut the crust of the wawa tree[35] (*Triplochiton scleroxylon*). This is the reason why she has to ask her husband or another man to do it each time she needs this ingredient to make the herbal medicine derived from it.

In the surroundings of Gonokrum, Kamaso or Nkrankrom there are no shrines, therefore no habitat taboos (*ibid.*) could be identified[36]. Similarly, no specific-species taboos which prohibit the killing of particular species were found in the study communities[37].

The impact of modernity and the role of Christianity as the main reasons for the weakening of traditional beliefs in the Kwamebikrom CREMA are also applicable to this second research site. In fact, the three CREMA members consulted on this issue during an informal talk agreed without hesitation that traditional beliefs were common in the "*old times*" (William, 48, informal talk, 15 April 2012), clearly referring to people's beliefs prior to the spread of Christianity.

As far as the principles behind these institutional arrangements are concerned, I did not expect a different reasoning to explain the existence of the few taboos reported. This was confirmed during the aforementioned informal talk: local knowledge is transmitted from one generation to the next without questioning it. My interpretation why they do not question them is that a genuine fear is perceived in their words and body expressions when asking them about what would happen if they dared to violate a particular taboo.

Similar to the Kwamebikrom CREMA, a zonation system has been established in the Akyekyere/Sureso/Pebaseman CREMA to regulate the kind of management activities that can be undertaken. The core zones (Figure 6.3.) are located along water courses and their tributaries following an identical rationale as in the Kwamebikrom CREMA. The fact that the forest and riverine vegetation are in a better state along rivers positively affects the survival of wildlife (Wildlife Division 2009: 11). No human activities are allowed in these areas unless they are related to the performance of religious rites or to the fetching of water (A Rocha Ghana and Forestry Commission 2009: 18).

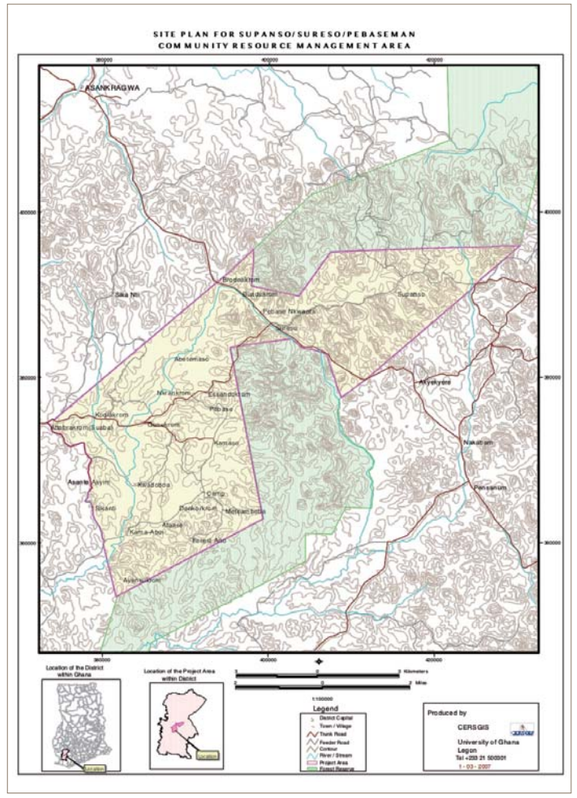

Figure 6.3. A map of core zones along major water courses and their tributaries within the CREMA (source: A Rocha Ghana and Forestry Commission 2009).

[34] Other limitations to access rights and use rights are reported in the Akyekyere/Sureso/Pebaseman CREMA constitutions (Appendix 2, Article 35) but these, as in the Kwamebikrom CREMA, are based on statutory laws following rules and regulations as stated in the Wildlife Divisions Laws.

[35] The previously-shown Figure 6.7. – right pictures a hand using a machete to cut the crust; it is actually the hand of a male CREMA member who accompanied us in the identification of some of the herbal medicines that the traditional birth attendant uses.

[36] However, the Akyekyere/Sureso/Pebaseman CREMA Management Plan observes the existence of a fairly big sacred grove named Obuo Kwesi located in the community of Akyekyere.

[37] The Mamiri Forest Reserve does serve as the habitat of two reptile species that can be classed as specific-species taboos: the *kyekye* (broad-fronted crocodile – *Osteolaemus tetraspis*) and the *mampam* (Nile monitor - *Varanus niloticus*). They are believed to have spiritual powers with ghosts living within them. According to the respondent who explained me this (Hannah, 61, interview, 15 April 2012), if a person kills these animals, the ghosts would reveal themselves causing serious damages to the daring person in the form of a disease.

The buffer zone in this CREMA supports certain land-use practices such as cocoa farming and food-crop cultivating (cassava, maize and plantain). The bushbuck (*Tragelaphus scriptus*) and the Maxwell duiker (*Cepahlophus maxwelli*) recurrently roam by the farm bushes and the Wildlife Division therefore recommends to leave abandoned farms to fallow for periods at least between two to five years to serve as grounds for recruitment of the species which are major source of bushmeat (*ibid.*). The harvesting of this NTFP plus others such as snails or fuel wood are regulated as enshrined in the CREMA constitution[38].

In addition to the aforementioned management practices, reforestation and enrichment planting such as establishing a tree nursery for seedling production are also prominent activities being undertaken by CREMA members which contribute to the extension of forested off-reserve areas, therefore attracting wildlife.

Tree planting is one of the most common activities under this CREMA. It has to be reminded that the Akyekyere/Sureso/Pebaseman CREMA was an agroforestry project before starting as such. Then, the entire tree planting previously done was absorbed by the CREMA. The characteristics of tree planting are very similar to those in the Kwamebikrom CREMA. The trees are planted in two different ways: in monoculture plantations, teak (*Tectona grandis*) mostly, or forming a fence around the cocoa farms. When the trees form a plantation, these are planted in a systematic way in rows following a given spacing. In contrast, tree planting around cocoa farms occurs in a random manner. This is mainly due to space constrains since the cocoa virtually takes over the available land.

With respect to seedling production (Figure 6.4.), it was unknown before the CREMA came into being so the Wildlife Division organised some workshops for the members who were interested in seedling production.

Figure 6.4. A tree nursery in Kamaso.

[38] As far as hunting is concerned, for instance, the rules and regulations applicable and highlighted in the Akyekyere/Sureso/Pebaseman CREMA constitution are those stated in the First, Second and Third Schedules of the Wildlife Conservation Regulations of 1971. The First Schedule (Appendix 4) informs that certain species of animals are completely protected and should never be hunted whereas the Second and Third Schedules (Appendix 5) specify the animal species that may be harvested with restrictions.

During these workshops, CREMA members were taught the different stages they have to follow in seedling production. According to a CREMA member (48 years old) in Kamaso who informed me about the workshops he attended, the process is as follows. Firstly, the seed has to be planted in a small plastic bag with a thin layer of soil on top to not asphyxiate the seed because of the lack of oxygen. Secondly, once the seed germinates, it has to be transplanted to a bigger bag with more room for the roots to grow. Finally, the tree seedlings are directly sold in these bags. According to the respondent, no pesticide needs to be used.

In his tree nursery, I observed he has planted eight different species of tree seedlings. When he began this activity in 2004 the Forestry Services Division (FSD) provided him with some seeds but nowadays he resorts to the Mamiri Forest Reserve (Figure 6.5.) where he collects different seedlings that he later transplants in his nursery. The seedlings are sold at an amount ranging from 0,25 to 0,5 Ghana Cedis each (between € 0,1 and € 0,2). The most valuable are African mahogany (*Khaya ivoriensis*) and asamfina (*Aningeria robusta*), the trunks of which can be sold for 1,000 Ghana Cedis (€ 450) after 40 years.

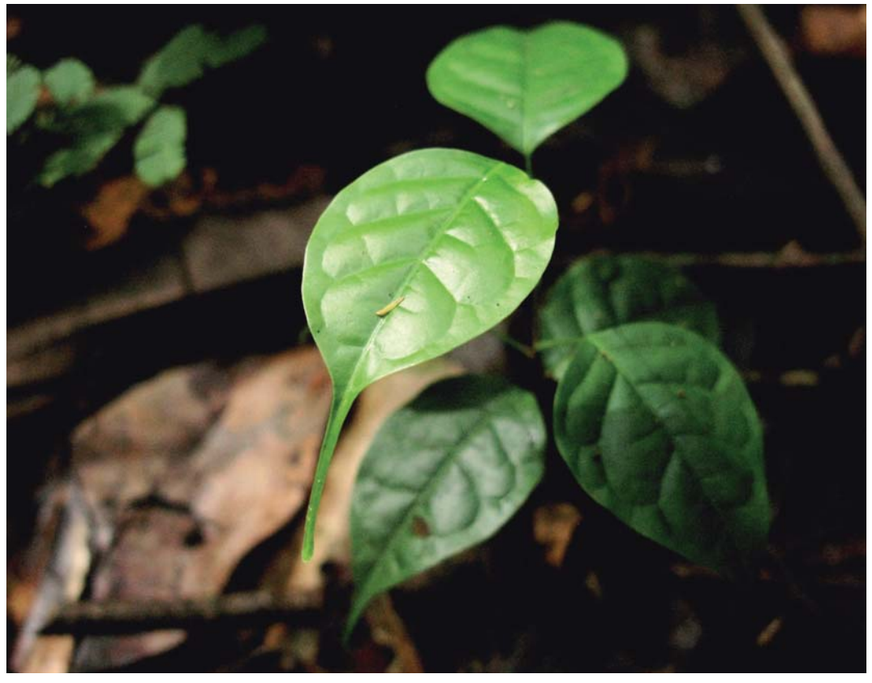

Figure 6.5. Seedling of African mahogany (*Khaya ivoriensis*) in the Mamiri Forest Reserve.

6.3.2. Reducing pressure on forests and natural resources through income-generating activities

The system of uses and practices on which the CREMA stands to reduce people's pressure on natural resources is related to the promotion of income-generating activities. These are explained in detail according to whether they are based on natural resource use or integrated in the farming system. In this CREMA, activities not related to natural resource use or farming were not reported[39].

Income-generating activities based on natural resource use

Traditional birth attendance

In principle traditional birth attendance does not sound as an income-generating activity suitable for the CREMA; yet, it has to be reminded that it is based on natural resources such as herbs, plants or the crust of some trees that can be found in the CREMA land.

This activity is the most remarkable example of local knowledge put in practice since it entails the use of herbs to prevent and treat common diseases in humans[40]. Hens (2006: 24) emphasises that "still today, herbal medicines are more affordable, accessible and used by the majority of Ghanaians". This is also the case in Gonokrum, Kamaso and Nkrankrom, three small communities with no dispensaries and where transport to the nearest health centre is limited.

Traditional birth attendance mainly consists of assisting women during their pregnancy and when delivering their children but it also includes other treatments related to problems that women may encounter in particular stages of their life such as during their menstruation. This activity remarkably employs local methods such as the use of herbal medicines that can be collected from the communities' surroundings. Considering the great isolation of some communities in Ghana, the Ministry of Health has a national programme to train women interested in becoming traditional birth attendants to reduce the child mortality rate in rural Ghana.

According to a community member (58 years old) engaged in traditional birth attendance in Kamaso, she knows at least 50 varieties of herbs that can be used to treat women when they are pregnant or when they suffer from abnormal menstrual pains. Due to space constraints, it is impossible to explain in detail the use of all herbs in traditional birth attendance, but a brief account of two local practices is provided to illustrate this activity:

1. To help the foetus grow strong the crust of the wawa tree (*Triplochiton scleroxylon*) (Figure 6.6. – left) is cut into pieces and grounded in the mortar with 21 palm nuts. Then this is mixed with water to make soup. Plantain is added in a later stage and boiled together with the soup. Women have to drink it with some pepper and salt on a regular basis during their pregnancy.
2. To stop menstrual pains the crust of the afara tree (*Terminalia superba*) (Figure 6.6. – right) is cut into small pieces and these have to be boiled with one single pepper. When the soup is well cooked, it is left to cool down. The woman with the menstrual pains has to drink it three times a day until the pains stop.

The knowledge behind the use of herbal medicines typically follows the trial-and-error technique, that is, experimentation until the right desired results are found. In the case of the respondent in Kamaso, she learnt everything she knows from her grandmother, who taught her while she was making the medicines. Hence, the transmission of knowledge is purely oral.

Figure 6.6. Various specimens used for herbal medicines.

[39] The income-generating activities in the Akyekyere/Sureso/Pebaseman CREMA are all carried out on an individual basis. However, the community members do occasionally resort to team work when the physical tasks to be performed are too demanding.

[40] The collection and use of herbal medicines can also be made to treat animals.

Income-generating activities integrated in the farming system

Animal rearing

Small-scale animal rearing is a common income-generating activity in the communities researched. Chickens, sheep and goats roam freely during daylight in the CREMA land but once the sun sets, the animals are kept safely to spend the night (Figure 6.7.).

In general, no money is spent on food for the animals since they spend twelve hours a day in search for their own food. However, veterinary care can be recurrent and then, depending on the cash availability, animal breeders resort to local methods, more affordable, or commercial drugs for the affected animals.

According to a respondent engaged in sheep rearing in Nkrankrom, the sheep can sometimes accidentally eat caterpillars when grazing which can provoke stomach pains. A local method to tackle this problem is to give them palm oil to drink which eases the digestion process. In any case, in the event of a disease outbreak, the respondent assured he would not doubt in relying on commercial drugs to cure the animals[41] as soon as possible.

Figure 6.7. Sheep rearing in Nkrankrom.

[41] Interestingly enough, once he had to apply for a loan from the CREMA to pay for a costly treatment for his six sheep.

Kenke making

Kenke is the Ghanaian version of fermented, partially cooked cornmeal, very typical of some West African countries. It is usually served with stew of crushed tomatoes and pepper.

The process of kenke making is very traditional and, according to the two women consulted, has not changed in generations. It is an activity exclusively undertaken by women which they learnt by seeing their mothers making it. They knew long before the CREMA how to make kenke, since the consumption of this meal is widespread in Ghana.

The corn is either bought in nearby markets or extracted from maize that some villagers plant in their lands. The corn is grounded in a mortar and soaked in water, then allowed to ferment for three days. The kernels are then partially cooked, wrapped in banana leaves, and steamed until they turn into a consistent and dense paste.

Once the kenke is ready, the women normally sell it at small stands in front of their houses. Each unit of kenke, approximately the size of a fist, is sold for 30 pesewas[42]. In case a kenke maker cannot sell all the units, these are sold at a lower price, 10 pesewas, to feed domestic animals: *"Nothing is wasted!"* (Rose, 54, Nkrankrom member, interview, 16 April 2012).

Kola-nuts trading

The kola nut is the fruit of the kola tree (*Cola acuminata*) (Figure 6.8. – left), native to the tropical rainforests of sub-Saharan Africa. The nuts (Figure 6.8. – centre) contain caffeine and are ceremonially chewed in many West African countries, individually or in a group setting. They are also used as a flavouring ingredient in some commercial beverages, which has rendered them a high value in international markets.

The community members involved in kola-nuts trading simply collect the fruits from naturally grown kola trees scattered in the CREMA land. They can be either plucked at the tree branch or picked from the ground after falling from the tree once they ripen. The fruits are cracked to find inside around a dozen round nuts, which are kept in sacks until the market prices are good for selling[43] (Figure 6.8. – right).

Figure 6.8. Kola tree; community member showing the kola nuts; and sacks waiting to be sold.

[42] 100 pesewas is one Ghana Cedi.

[43] A sack containing 150 kg of kola nuts can be sold approximately for 1000 Ghana Cedis (~€ 450) (Nkrankrom chief, 27, interview, 12 April 2012).

Palm oil extraction

This activity is very common in Ghana's high forest zone. The CREMA members involved in it collect the palm nuts from the palm trees located in farmers' private lands and follow the same procedures to extract the oil from as explained for the first research site.

The situation is also identical in this CREMA in that the community members engaged in palm oil extraction resort to the local methods since they do not have enough money to purchase the machines that would ease their tasks.

As shown in Figure 6.9., even though this activity is not carried out on a group basis, some community members occasionally join together to facilitate a process that would be longer and more tedious otherwise. In return for the assistance they have received from others, they share the monetary benefits. The terms and conditions in this kind of transactions are very informal and mostly depend on the previous relationship that the participants have.

Figure 6.9. Selecting palm nuts in Nkrankrom.

Vegetable growing

This income-generating activity was practised in the communities long before the CREMA programme started. The vegetable gardens in this CREMA are noticeably lager (Figure 6.10. – right) that those visited in the Kwamebikrom CREMA giving the impression that vegetable growing is more systematic in this case and not just reduced to a small piece of land in the cocoa farms.

The kind of products planted is the same as in the first CREMA site: peppers, tomatoes and cassava[44]. In order to avoid the outbreak of any pest, the vegetable growers consulted in Kamaso assured they exclusively use commercial pesticides by spraying their gardens. They also know the local method that entails covering the leaves of the plant affected with ashes; however, they agree with the Kwamebikrom CREMA members in that the commercial pesticides are more effective. In asking about the inconvenience of their being more expensive, they asked that so far they have not experienced cash constrains to the extent that they could not afford to purchase them.

Figure 6.10. Growing tomatoes in a vegetable garden in Kamaso.

Intercropping is also a local method greatly in place, for the same reasons as in the Kwamebikrom CREMA and implying the mixture of cassava, more resilient to sun rays, with other vegetables that are more sensitive to sun burns. No other local methods to grow vegetables were observed.

[44] In Kamaso and Gonokrom, for instance, I could also see big maize plantations, but these are not cultivated under the umbrella of the CREMA.

In summing up the opinion of all the CREMA members consulted regarding the aforementioned income-generating activities, these undoubtedly represent a noteworthy source of income. Although the share they represent in the CREMA members' overall livelihoods can widely depend on the kind of activity, it has to be reminded that it is very common to combine various activities with different harvesting seasons in order to make sure income does not stop flowing in. Even though cocoa farming is still the main pillar on which CREMA members' livelihoods stand, some income-generating activities can provide a fairly good amount of money: a 150 kg sack of kola nuts can be sold for € 450; a sheep for approximately € 100 if needed; vegetable growing can meet both commercial and subsistence requirements for food and income, etc. All in all, the economic incentives inherent in the income-generating activities can lessen the pressure on forests and natural resources and indirectly contribute to a better management of these[45].

6.3.3. Cultural considerations (cosmology)

The worldview that explains the way in which things are connected in the study communities, that is the cosmology (Pierotti and Wildcat 2000), is greatly determined by the landscape being dominated by cocoa plantations. As introduced in Section 6.1., and also coinciding with the Kwamebikrom CREMA, the inhabitants of Gonokrum, Kamaso and Nkrankrom are primarily cocoa farmers. What was inherent in virtually all discussions with CREMA members is that the most important thing for them at the end of the day is to have enough money to avoid the impoverishment of their livelihoods. Cocoa is the priority because it represents the main source of income. Thus, following Berkes' observations (1989, in Berkes 1993: 5) on reciprocity and obligations as the main pillars on which the humans-nonhumans relations are based, it has to be assumed that this is not the rhetoric in place in the Akyekyere/Sureso/Pebaseman CREMA.

It stems from the facts presented so far that tree planting was one of the motivations for the creation of this CREMA and that it is currently an important natural resource management activity. Yet, when CREMA members, especially the executives, were asked about their reasons to be so observant of the problems due to deforestation and depletion of other natural resources, their message is a replication of that typically used by environmental NGOs[46]. Surprisingly enough, their speeches include a myriad of technical terms such as "carbon sequestration", "REDD+", "reduction of emissions" and many others which indicate that the preservation of the natural resources is rather interpreted from a normative angle and not following a spiritual or more emotional oratory.

This last point plus the fact that the surrounding environment is seen as the primary source of economic gains clearly reveal that the prevailing worldview among CREMA members is not one which contributes to the survival, reproduction or evolution of the villagers' culture and identity. In addition, many CREMA members have migrated to the area from the northern savannah region and this influences the fact that culture and identity are not homogenous and that they are not exclusively attached to the high forest zone. This evident disassociation with the nonhuman world anticipates that, as stated before, the relations between CREMA members and other biological beings in the Akyekyere/Sureso/Pebaseman CREMA are not based on reciprocity and obligations, resulting in a similar situation as in the Kwamebikrom CREMA.

[45] I am aware that these impressions on the weight of the income derived from all these income-generating activities cannot be interpreted as final; this is the reason why I suggest further quantitative research to be done in order to be conclusive on this issue (see Section 7.3. on Recommendations for further research).

[46] The International Union for Conservation of Nature (IUCN) and the Forestry Commission initiated a REDD+ project in the area which runs simultaneously with the CREMA. Hence, the fact that some CREMA members recurrently confuse the different purposes of the two programmes.

6.4. Summary

This chapter has emphasised that this second CREMA site has experienced full devolution of natural resource management. As far as participation is concerned, it is less strong compared to the Kwamebikrom CREMA. Even though communities had a central role in decision-making in the implementation of the CREMA (they requested to the Wildlife Division the application of the CREMA concept), in the course of the eight years since its inception, important issues concerning administration, coordination or benefit-sharing are not working properly. In terms of legitimisation, the fact that the CREMA follows a structure based on the traditional hierarchy has had a positive effect. Yet, the perception, especially among ordinary CREMA members, of the new governing bodies is dominated by a clear indifference. In this sense, it appears that the CREMA is legitimised among those because it continues delivering monetary benefits thanks to the income-generating activities.

With respect to local knowledge and its role in the wildlife and other natural resources management practices through taboos and reforestation, only segment taboos have been reported in the study communities and the methods used in tree and enrichment planting mostly follow technical procedures. All the income-generating activities promoted as an economic incentive to reduce the pressure on natural resources were already practised before the CREMA came into being. These follow local procedures although there is an overwhelming majority who think that they would invest in new techniques if they could afford them.

Lastly, regarding cosmology, considering the role of cocoa in the local economy, this CREMA cannot be perceived as an arena where harmony among humans and nonhumans seemingly prevails. CREMA members are all cocoa farmers in the first place who reproduce good-will messages on natural resource conservation due to the impact of external agencies and that has nothing to do with their cultural survival.

7. Conclusions and recommendations

This chapter discusses the main conclusions and findings of this research. It starts with a summary of those as regards the three sub-questions and the main research question. Subsequently, it continues with a discussion that intends to relate the research results to the theoretical framework. The chapter then concludes with the presentation of recommendations for further research and for practitioners, CREMA members and policymakers as well as my overall reflection on the writing of this thesis.

7.1. Summary of the research findings

The following section focuses on the research findings by summarising the results presented in Chapter 5 and Chapter 6. These are addressed by formulating answers to the three sub-questions and the main research question.

7.1.1. What management practices and principles based on LEK can be identified in the CREMA?

The main objective of the CREMA in the two research sites is to stimulate community-based management of wildlife and other natural resources in off-reserves areas. The analytical chapters have addressed, on the one hand, direct natural resource management practices through taboos and reforestation and, on the other, indirect ones focussing on the promotion of economic incentives to reduce the pressure on forests and natural resources.

In terms of taboos, only two types, habitat taboos and segment taboos, have been strictly reported in off-reserves areas. These are deeply respected and CREMA members do not question them due to mainly a rhetorical mechanism in the form of great fear to what may happen to them if taboos were violated. No principles can be claimed as the reasons to explain their existence; it appears that these pieces of information have been lost over time in the oral transmission of knowledge and that knowledge holders do not question this inheritance from their ancestors.

With respect to reforestation, tree and enrichment planting are activities widely spread in the study communities whose extension represents a source of attraction to wildlife. However, practices or principles based on LEK and reported in off-reserves areas are almost nonexistent. CREMA members engaged in tree planting either simply plant the trees in monoculture plantations or by forming a fence around the cocoa farms in a random manner and no other local practices have been reported. Likewise, seedling production was introduced as a new natural resource management practice and CREMA members had to learn previously-unknown methods, remarkably technical, to undertake it properly.

Yet, although to a lesser extent, the CREMA also seeks to keep away the attention from the standing forests and other natural resources by promoting a series of income-generating activities as an incentive for the communities. But as far as these activities are concerned, not all of them are based on or related to natural resources. The analytical chapters have shown that there are even income-generating activities carried out within the framework of the CREMA scheme that are unrelated to natural resources but exclusively meant to reduce human pressure on them. In this context, traditional birth attendance is the sole income-generating activity based on natural resource use and following methods exclusively stemming from LEK on medicinal plants. Income-generating activities integrated in the farming system such as animal rearing, kenke making, palm oil extraction or vegetable growing were practised long before the CREMA came into being and its members mainly use local methods. Finally, soap making is the only income-generating activity that is not related to natural resources or farming. Its implementation entailed the participation of interested CREMA members in workshops organised by the Wildlife Division where they learnt new methods that imply the practice of unknown techniques and the use of various gadgets.

The general advantage of using local methods is that, in general, CREMA members can find in their communities and surroundings all they need to carry them out. Therefore, practising local methods is more affordable. Yet, it has been stressed by most of them that the adoption of new methods results in higher levels of productivity and income.

Looking into cultural considerations that can be of great relevance when assessing the role of LEK, worldviews explaining how things are connected in the two CREMA sites cannot be understood without considering the role of cocoa. In both research sites, cocoa represents the main source of income and precisely the habitat conversion from forested lands into farmlands, especially cocoa, is one of the main reasons for the introduction of the CREMA. CREMA members are ultimately farmers and their perception of the surrounding forests is not one implying emotional, let alone, spiritual connections. The enforcement of rules to protect the forest resources is in place due to the economic interest behind the CREMA concept and not because of people's culture being at risk[47].

7.1.2. How does LEK strengthen CBNRM (through enhancing participation and legitimisation)?

My initial hypothesis was that any given CBNRM scheme will be more successful as long as it stems from local needs and follows local procedures. In this sense,

[47] This can also be due to the fact that many people in the study areas do not have their roots in these areas but migrated from the northern savannah regions.

it has to be emphasised that this hypothesis applied to the CREMA can only be partially accepted.

As far as participation is concerned and particularly looking into the consideration of local needs, the CREMA concept works for the sake of people's livelihoods whose consolidation is the mainstream concern. However, when taking local procedures into consideration, participation under the CREMA generally follows a pre-established normative structure with several administration and coordination issues that are completely new to the communities involved. Although it is true that the character of these governance arrangements is vested in the CREMA constitution, it is also true that the understanding of their functioning is not automatic and the course of time can have counterproductive effects, as the cases of the two CREMA sites contrastingly show.

In summarising how LEK can strengthen the CREMA, it is important to pay attention to the place of local practices in the income-generating activities since these represent the main dynamic that moves the CREMA forward. In this sense, the mainstream opinion of CREMA members in the exercise of these activities has made clear that they prefer to adopt new methods which can provide them with more income and better opportunities in the future. Yet, against important financial constraints, they ultimately resort to local practices since the new ones also require more investment in materials and equipment coming from outside the communities.

With respect to legitimisation, LEK strengthens the CREMA in that its implementation is based on the traditional authority hierarchy. Given that the CREMA is about integrating the management of wildlife and other natural resources into existing land use, by-passing traditional authorities is not possible because they own all the land at the community level. Furthermore, persuading them first is an important step because they can act as the ultimate catalyst considering the deep respect that all community members profess to traditional authorities. Yet, not only is the role of customary authorities essential for the CREMA to be legitimised in the eyes of its members. In both research sites, the economic interest underpins the CREMA programme since it provides the necessary incentives that turn the theoretical concept into a real venture with palpable results.

7.1.3. Does LEK enhance people's empowerment by strengthening their entitlements?

Communities' empowerment does not come from the use and reproduction of LEK. The essential figure which has to be taken into account when assessing empowerment under the CREMA is the formulation of the CREMA constitution.

Thanks to the formulation of the constitution the CREMA communities develop similar capabilities as those of the central government. Following Kull's (2000: 62) observations on the fact that the character of devolution depends on the combination of rights and responsibilities being decentralised, the CREMA constitution facilitates a proportional growth of rights in relation to responsibilities. As a result, the governance arrangements of the constitution lead to stronger entitlements in that the CREMA communities gain rights to own (authority over decision-making), to use (access to resources) and to intervene in the allocation of natural resources (control over finances and distribution of benefits) (Dietz 1996: 41). Also very important is the fact that the Kwamebikrom CREMA and Akyekyere/Sureso/Pebaseman CREMA constitutions have a legal recognition thanks to their incorporation into the local government bye-laws of their respective District Assemblies.

But assessing empowerment is not only about delegating ownership over natural resources from the Wildlife Division to the CREMA communities, but also how effective this transfer of ownership and control has been in terms of distribution of power and how participation has been regulated (Roe *et al.* 1999: 91). In general, CREMA members seem to be content with how power is distributed with the creation of the new CREMA governing bodies: the CEC and the local CRMCs. Although their representation follows an alleged democratic structure, it is worth mentioning the notable exception of the lack of female representation in the said governing bodies. In terms of how participation is regulated, no conclusive findings common to both research sites can be pointed out since the levels of participation in, above all, implementation and benefit sharing considerably differ. The transmission of information in the Kwamebikrom CREMA has worked in a better way and the implementation of the programme is more recent. However, in the Akyekyere/Sureso/Pebaseman CREMA, the understanding of how the CREMA works between executive and ordinary members has widened over time leading to confusion among the latter over issues that concern administration and coordination, resource contribution and benefit sharing.

7.1.4. Answer to the main research question

What role does local ecological knowledge play in a community-based natural resource management scheme like the CREMA in Ghana's high forest zone?

The role of LEK in the CREMA is noteworthy with respect to institutional arrangements in the form of taboos, although it is less relevant in terms of cultural considerations pertaining to the realm of LEK. In restricting the findings to the amount of taboos reported in the CREMA land, only two types have been found, mainly due to the impact of modernity and the local importance of Christian religions. However, considering the demonstrated degree of respect of taboos by community members, it is worth mentioning the positive effects that these could have on the preservation of wildlife and other natural resources. In this sense,

the taboos reported in the protected areas adjacent to the CREMAs illustrate this extreme: the fact that killing a bongo or a broad-fronted crocodile is believed to cause diseases has a clear persuasive effect which can contribute to their preservation.

Yet, CBNRM schemes like the CREMA cannot exclusively rely on this kind of mechanisms to lead to better natural resource management. Ghana's high forest zone is a contested land where large portions of forested areas have been converted into farmlands and all CREMA members in the study communities are actually engaged in cocoa farming. Hence, it is not possible either to invoke cosmology as a dimension of LEK that could potentially underpin the achievement of good results.

The role of LEK in the income-generating activities is more significant. However, when looking exclusively into those based on or related to natural resources, only traditional birth attendance appears as one remarkable example of local knowledge put in practice. In other activities integrated in the farming systems but not directly related to natural-resource use, local methods also have a remarkable weight, yet it is essential to immediately emphasise that its use is associated with financial constraints. The communities involved overwhelmingly prefer the new technical methods that the CREMA may bring mainly because they ease the tasks performed, maximise production and provide more income. However, as the two research sites have shown, the lack of cash is a recurrent problem in both locations which certainly frustrates the purchase of the required equipment or materials to aim at the said objectives of less effort, higher results and more consolidated livelihoods.

Barret *et al.* (2001: 498) note that the CBNRM approach seeks better natural resource management results by promoting full communal participation and by incorporating LEK in management, regulatory and enforcement processes. According to the experts of the Wildlife Division consulted, the application of the CREMA concept has curbed the depletion of natural resources, in particular wildlife, which is its main concern. However, one cannot be as conclusive when considering the means to achieve the foregoing objective, at least as far as the promotion of participation and the incorporation of LEK in the two research sites are concerned. On the one hand, participation is fairly strong especially in tree and enrichment planting and in the exercise of the income-generating activities, although perseverance in information sharing is advisable to make the CREMA functioning clear to all members. On the other hand, the role of LEK in management, regulatory and enforcement processes under the CREMA widely differs without following a clear common pattern. Strict natural resource management in off-reserve areas hardly observe the application of distinctive practices exclusively based on LEK. Significant taboos protecting wildlife are almost nonexistent and reforestation activities combine both local and new methods. In general, wildlife

is rather protected following the sanctions established by the Wildlife Division and stated in the CREMA constitutions. CREMA regulations and their enforcement also mix a governing structure bringing together traditional authorities and newly-created institutions such as the CREMA Executive Committee and the Community Resource Management Committees, although the figure of the traditional authority is crucial to establish the CREMA.

All in all, what the study CREMA sites show is that local knowledge is put in place and used to some extent by local communities. Yet, as this research has shown, local communities are highly-permeable entities surprisingly willing to adopt new dynamics in form of different beliefs or knowledge systems entailing more technical methods. In this sense, it cannot be concluded that the role of local knowledge under the Community Resource Management Areas concept is vital for its functioning and success. Great caution in the use and interpretation of local and scientific/technical knowledge systems is then needed if harmony between the two is to reign in the achievement of positive results under the CREMA.

7.2. Discussion (in relation to theoretical framework)

This section aims to relate the foregoing empirical results to the theoretical body presented in Chapter 2. In light of this, I suggest doing so by addressing the two main concepts of this research, CBNRM and LEK, as a whole, that is, by relating the findings of this research to the connections between the two.

As stated in Section 2.3. and following Banuri's and Apfell-Marglin's (1993: 11) observations, LEK is committed to the local context. By combining this fact with the main characteristics of the CBNRM approach, three main linkages between the latter and LEK are identifiable.

Kellert *et al.* (2000:706) establish that incorporating community members along with their local institutions in natural resource management is the first characteristic of the CBNRM approach. This is certainly the case in Ghana, where chieftaincy is inherent in the community idiosyncrasy and it cannot be excluded when it comes to discuss natural resource management since all the land in the community belongs to the chief. The role of the traditional chiefs at the community level is essential for both the expert who supports the adoption of the CBNRM approach, since this intervention can be jeopardised without the chief's previous approval, and for the community members who profess great respect for their traditional leader.

According to Kellert *et al.* (2000: 706), CBNRM endeavours to legitimise local property rights in natural resource management. This is a crucial step to be taken because by devolving the rights to the communities they will have the necessary

incentives for management. The CREMA clearly exemplifies this extreme with the formulation of the CREMA constitution, thanks to which communities extend their rights and responsibilities over the natural resources. Yet, granting rights and responsibilities by demonstrating government commitment to the devolution process should not be overestimated because the previous imbalances can be perpetuated at the local level. In this sense, participation is not an issue that can be taken for granted when the CBNRM approach allegedly involves all community members. These after all are the critical mass which facilitate the progress in the implementation of any programme. As the Akyekyere/Sureso/Pebaseman CREMA shows, not following all the prerogatives can jeopardise the continuation of any CBNRM programme. Thus, providing a structure to guarantee that all members adequately participate and benefit from the devolution of rights and responsibilities has to be implicit to the said process.

The third linkage is that CBNRM envisages the inclusion of local values in modern natural resource management as a way to harmonise the differences between local and scientific/technical knowledge (Kellert *et al.* 2000: 706). This is believed to enhance environmental decision-making by paying attention to the cultural background local communities belong to (*ibid.*, p. 710). However, assessing local values and including those in environmental decision-making can certainly be problematic when the communities involved in natural resource management are not culturally homogenous. Ghana conveniently illustrates this case due to the high migration rates of people from northern regions to the high forest zone, especially in the 1970s, seeking better working opportunities in cocoa farming. Thus, in such cases of mixed cultural background, whose values prevail? What makes these values local? In this sense, it is worth mentioning the complexities addressed in Section 2.2. to find the right definition for LEK and how it should be named: indigenous knowledge, traditional knowledge or local knowledge. Following this, it could be argued that chosing "local" over "indigenous" and "traditional" invoking political and semantic reasons respectively overlooks other notable issues when trying to understand what local in LEK means after all. The case of the migrants from Northern Ghana settling in the Western Region illustrates this intricacy. In this light, trying to use methods embedded in a knowledge system that was meant to be used in a radically different environment can be ineffective. Thus, this observation emphasises that what makes local knowledge actually local is that it is territory-bound. Yet, the knowledge brought by migrants from other ecological zones might, depending on the case, still be partially valuable; therefore stressing that knowledge is ever changing and can adopt new hints over time.

These complexities around how to harmonise local values join Scott's remarks (1998, in Mauro and Hardison 2000: 1263) on LEK being traditionally excluded from environmental decision-making by labelling it as superstitious or irrational. Even though the two study CREMAs have actually demonstrated that there is still respect for the supernatural, branding LEK as such is negligent in the sense that it ignores other pragmatic contributions which can make natural resource management more accessible to local people.

Reforestation has proven to be a direct natural resource management activity widely spread among CREMA members whose planting methods partially follow local procedures. Likewise, as far as indirect wildlife and other natural resource management activities are concerned, most of the reported CREMA income-generating activities are based on local methods, which make them more affordable. It has been proved, nonetheless, that this goes against many people's wishes in that they prefer more technical methods which would increase productivity. However, it is also true that promoting the use of new techniques in a context of great financial constrains can easily result in stagnation and frustration, as in the Kwamebikrom CREMA.

Yet, the prescription to allegedly ease the implementation and functioning of the CBNRM approach by incorporating LEK cannot be interpreted as an irrefutable truth. Although it makes the CBNRM scheme more approachable, turning it meaningful too might not come right after. This is particularly the case in the Western Region of Ghana with people's main concern being the consolidation of their livelihoods. The pursue of better opportunities can accelerate the abandonment of practices embedded in LEK over time. Similarly, other circumstances in which people deliberately stop following certain local beliefs labelling them as archaic nowadays or even inadmissible for some creeds can result in the rejection of particular values and attitudes attributed to LEK.

7.3. Recommendations for further research

The previous sections indicate that the role of LEK under the study CREMAs is worth being mentioned but not relevant. However, in the process of analysing the data, other important issues have come to attention and shedding light on them is recommended in order to better understand the functioning of the CREMA.

Firstly, considering the economic incentive behind the CREMA, it would be very recommendable to assess the real impact of the income-generating activities on people's income. A comprehensive assessment using quantitative methods could show to what extent the income that they may get from the CREMA makes a difference. The general opinion among CREMA members clearly states that they are fairly content with the monetary benefits from the programme, in particular after the cocoa season when their livelihoods are remarkably depressed. However, in asking them about the purchasing power with the CREMA income, the answers were generally vague without providing more details as to formulate conclusive impressions.

Secondly, accountability is another issue which may require further research. The CREMA is about devolving the ownership and responsibility over the natural resources to the communities leading to a situation in which they do not hold accountable to any superior organisation in the hierarchy. Likewise, as the case of the Akyekyere/Sureso/Pebaseman CREMA showed, CREMA governing bodies and executives may not be accountable to their members either. Although it is true that external audits can be requested, as long as these are not compulsory, accountability will remain highly controversial; even more when the disclosure of financial information is not foreseen by executive members. A closer look into how the CREMA money is used is essential because accountability is related to legitimisation. No CREMA can afford allegations of fund mismanagement because it would undermine the whole implementation. Its functioning has to be transparent, in particular in the eyes of its members; it is therefore recommendable directing further research towards the analysis and assessment on how transparent the CREMA financial structure is and on how CREMA members perceive it.

Thirdly, also related to legitimisation, is the recommendation of using a gender perspective in the assessment of participation in the CREMA. In both research sites, it has been established that, in principle, participation in implementation and in benefits in the CREMA seems not to be influenced by gender issues. However, it has also been noted that women are not taking part in decision-making. They are not represented in the CREMA governing bodies, let alone participating as executive members. Although this research has made clear that this is the case in the Kwamebikrom and the Akyekyere/Sureso/Pebaseman CREMAs, it has not been possible to shed light on the intricacies that could lie behind.

7.4. Recommendations for practitioners, CREMA members and policymakers

Based on the previous sections, some recommendations for practitioners, CREMA members and policymakers can be made.

This research has shown that there is a mainstream inclination among CREMA members to follow "technical methods" in the development of the income-generating activities. This proves that there is a sense of overall strong participation in the formulation and assessment of options and, to a lesser extent, in the way in which community members participate under the CREMA. However, this has also resulted in serious challenges since the communities do not have the financial means to fully adopt the demanded technical methods. In light of this, the implementing agencies and practitioners need to be cautious in the promotion of activities whose characteristics do not allow the communities being fully independent considering the financial constrains they suffer from. This is not to say that promoting new activities through workshops is not positive; it certainly is, but it should be accompanied with the provision of mechanisms that lead to the successful development of those activities.

Teaching workshops only on the requirements to exercise a new given income-generating activity properly is not enough. They should also provide managerial skills emphasising, for instance, entrepreneurial qualities. CREMA members are not equally attributed with pro-activeness or innovation. Some groups in the study communities acted pro-actively adopting different methods due to the financial obstacles. On the contrary, others transmitted a sense of growing frustration without being able to undertake an income-generating activity as it was told to them during the workshops. Providing consistent motivation to encourage communities to enhance their performance through previously-known methods can significantly contribute to the prevention of stagnation.

In order to facilitate the participation of all members and to facilitate a clear understanding of the programme, the CREMA should provide sound mechanisms to do so. Some CREMAs specifically mention in their constitutions that women participation is promoted, but no provisions are included to turn it a fact. As the initial decision-making process in the CREMA implementation is unequal between men and women and as long as no gender-sensitivity mechanisms are enforced, good intentions will merely remain so.

The implementation of the CREMA culminates in the full devolution of ownership and responsibility over the natural resources to the communities. Although this seems in principle very positive, the fact that no superior organisation ultimately monitors the course of events can be problematic if, for instance, issues associated with mismanagement occur. Communities are of course subjected to all national laws holding accountable to what happens in this regard in the CREMA land. However, other issues such as transparency are fully delegated to them. Thus, while some CREMAs include the recurrent organisation of external audits to audit their accounts and financial activities, others do not even foresee the disclosure of this kind of information, which clearly calls their accountability into question. As a result, external audits, for instance, should be a pre-established requirement to the formation of any CREMA.

The hours of interviews and discussions with CREMA members have made clear that people's primordial concern is the consolidation of their livelihoods. From the two CREMA sites it can be interpreted that the CREMA members are in general more preoccupied by the development of the income-generating activities which were conceived as secondary strategies to keep communities' attention away from forests and natural resources. The CREMA is primarily about integrating wildlife and other natural resource management use into existing land practices. Even though there is a segment among CREMA members who takes this prerogative to heart, CREMA executives most remarkably, ordinary members do not seem to

project that enthusiasm. In this sense, the Wildlife Division should be more vigilant so as to warranty that the transmission of information gets to all members. In any case, I am aware that the CREMA concept is relatively recent; however, if what the CREMA ultimately intends is to turn farmers into guardians of the forests, more actions should follow to maintain the CREMA concept alive.

7.5. Reflection on methodology

My overall impression on the combination of methods used in this research is very positive. Basing data collection exclusively on qualitative methods granted me the opportunity of witnessing the CREMA dynamics in the quietest way. That is not to say that my time in the study communities went unnoticed; yet, staying several weeks with the communities undoubtedly facilitated the exchange of knowledge, information and opinions in which this study is embedded. What is more, I would say that a fully qualitative research even requires a longer stay to facilitate the incorporation of as many relaxed discussions and informal talks as possible. As a matter of fact, I owe to informal talks a remarkable part of this research, when papers and the voice recorder were left behind. But, I am now aware that in order to weight the real importance of the income-generating activities, I should have distributed surveys to unveil the overall livelihood strategies of the CREMA members.

The use of some of the qualitative methods was nonetheless challenging. I am particularly referring to situations encountered while conducting the in-depth interviews. Although this is the method through which more information was provided, more details could have most probably been facilitated if I had approached the interviews in a more private way. In light of this, I would kindly make clear from the very beginning that interviews should be conducted in a separate space just in case the interviewees decide to shed light on sensitive issues. Several times I had the impression that some villagers were silencing some details in their speeches due to the scores of people gathering sometimes around us.

Similarly, I would politely but categorically ask community leaders not to be in the interviews addressed to other community members by claiming “research needs”. Even though resorting to this euphemism is by no means a guarantee of privacy, making this clear during my introduction to leaders could have possibly been more effective than trying to display an already-late persuasive oratory during some interviews.

Despite all the challenges encountered, my personal opinion on the process which has made the completion of this research possible is not one that looks back with regret. Many things can always be changed but, all in all, I am very satisfied with the overall result after almost a year of readings, meetings and travels to write this thesis.

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Appendices

Appendix 1. Kwamebikrom Stool Land CREMA constitution[48]

[48] As the reader will note, the last pages of the Kwamebikrom CREMA constitution are not included due to the fact that the original document did not have them either and it was therefore not possible to incorporate them. However, I believe the remaining pages are sufficiently illustrative as to understand the rules and regulations of the Kwamebikrom CREMA.

KWAMEBIKROM STOOL LAND CREMA CONSTITUTION

1. NAME

The name of the crema shall be known and called Kwamebikrom Stool Land Community Resources Management Area (CREMA).

2. SCOPE

The scope of the Kwamebikrom Stool Land and Community Resources Management Area (CREMA) shall extend to all communities within the Kwamebikrom Stool Land.

3. INCORPORATION (LEGAL STATUS OF THE CREMA)

The constitution of the CREMA shall be legally recognized by the local government bye-law of the Bia District Assembly (L.I 462) and the Traditional Authority by-law.

4. AIMS AND OBJECTIVES

The aims and objectives of the CREMA shall be as follows:

4.1 To improve livelihood of farmers through sustainable wildlife management as part of farming.

4.2 To provide income to farmers for bi o-diversity conservation

4.3 To promote ecotourism in the CREMA.

4.4 To help people within the CREMA develop concern for and the desire to protect wildlife and promote its environment/habitats.

4.5 To make people within the CREMA understand and appreciate that wildlife resource is part of our responsibility of our cultural heritage for the present and future generations and its therefore the responsibility of every generation to ensure that it is not needlessly depleted or abused.

5. POWERS

The powers given to CREMA and its authority limitations shall accordingly be observed. In exercise of the powers given, CREMA shall:

5.1 Determine its own leader as Community Resource Management Committees (CRMC) and the CREMA Executive Committee (CEC). This shall be done at every community level for CRMCs and from all the communities for the CEC.

5.2 Determine the roles and responsibilities of members.

5.3 Determine rules and regulations to protect the CREMA wildlife resources.

5.4 Determine how to generate income for CREMA

5.5 Determine how to control outsiders from CREMA resources

5.6 Determine how to deal with offenders of the CREMA rules and regulations.

5.7 Collect and disseminate information about natural resource management and utilizations (both consumptive and non-consumptive) by inviting officials concerned to the CREMA

5.8 Increase the area and membership of the CREMA

6. MEMBERSHIP

Membership of the CREMA shall include all inhabitants within the stool land of Kwamebikrom. This specifically comprises:

6.1 settlers of the land:

Land owners, settler farmers, women, men, traders, the strong and the vulnerable and future generations.

6.2 Honorary members:

The CREMA would always acknowledge members who have contributed to the community development in any form as honorary members. However these members are not entitled to any financial gains of the CREMA.

6.3 Ex-officio members:

There shall be outsiders of the institutions that would be part of the CREMA without ascribing any voting powers.

6.4 Representations:

Representations of CREMA members outside the area shall be possible. This only applies to members who own farmlands and leave without selling the farms/lands. Such members can thus be represented by relatives, friends or farm hands as indicated by owner during sojourning.

6.5 Termination:

Termination of membership in the CREMA shall be possible only through death of a member or resettlement of a member outside the scope of the CREMA without any livelihood activities traceable to the CREMA area.

7. ORGANIZATION AND OFFICERS

The membership of CREMA shall organize itself effectively through selection of the CREMA leadership through elections. Election of the leaders shall be by hands following the nomination of potential leaders. Thus through the election the following CREMA leadership structure shall exist.

7.1CREMA Executive Committee (CEC):

CREMA Executive Committee (CEC) members shall be the highest decision making body of the CREMA. There shall be two (2) CREMA Executive Committee members (CEC) from each community to constitute to the Kwamebikrom stool land CREMA. Thus with the current nine communities within the CREMA scope there shall be eighteen (18) CREMA Executive Committee (CEC) members in total. Selection of these executives shall be made from CRMC and a non CRMC member at every community level. The CEC shall be responsible for settling disputes among the members, monitor the CREMA activities at all levels, establish network with District stakeholders and ensure transparency/accountability in their stewardship.

7.2 Community Resources Management Committee (CRMC):

The Community Resources Management Committee (CRMC) is the second higher decision making body after CREMA Executive Committee (CEC) at Stool land level but first decision making structures at the village level. The selection of community

resources management committee shall be done by the people at the village level and the CRMCS shall then select the executives. The CRMC shall be responsible for organizing CREMA meeting, sensitizing CREMA members and initiating CREMA activities.

7.3 CREMA Task Force (CTF):

The CREMA Task force (CTF) is the surveillance or special eye of the CREMA that shall enforce CREMA rules and regulations. This organ of the CREMA leadership structure shall also monitor the CREMA accounts and activities of the CRMCS and CEC whenever necessary. There shall be two (2) members for the CREMA Task force (CTF) from each community within the CREMA. The selection of members shall be from non executive CREMA members.

7.4 Duties of the Executive Officers:

Officers of the CRMCS and the CEC of the CREMA shall consist of the following: Chairman, vice chairman, secretary, treasurer, organ zing secretary and two members of the committee.

The Chairperson

The following shall be the duties of the chairperson:

i. The chairman shall convene all meetings of the CREMA in constitution with the other members of the executives.
ii. Shall have the power to convene emergency meetings
iii. Shall preside at all meetings of CREMA but in his absence the vice chairperson shall chair the meeting.
iv. Execute or cause to be executed all decisions of the CREMA
v. Encourage the proper observance of the rules of the CREMA
vi. Perform any other duty that CREMA may assign him to do from time to time

The Vice Chairperson

i. The vice chairperson shall preside at all meetings in the absence of the chairperson.
ii. The vice chairperson shall assist the chairperson in the performance of his or her duties.

The Secretary

The following shall be the duty of the secretary.

i. The secretary shall take minutes and keep records of the proceedings of the general and executive meeting.
ii. S/he shall also be generally responsible for correspondence of CREMA.
iii. S/he shall in consultation with the chairperson prepare agenda for meetings and issue notice of meeting.
iv. S/he shall be responsible for safe keeping of all documents and minutes books except treasurer's book.
v. Perform any other duties that CREMA may assign him to do from time to time.

The Treasurer

i. S/he shall be responsible for financial records of CREMA
ii. S/he keep the accounts of the CREMA
iii. S/he shall keep proper records of income and expenditure of CREMA
iv. S/he shall collect money and pay into CREMA account
v. S/he shall report to the Annual General Meeting on the financial position of the CREMA

The Organizing Secretary (Porter)

i. S/he shall be responsible for making arrangements relating to meetings, transportation, field trips/meetings etc.
ii. The organizing secretary shall also act as the secretary in the absence of the substantive secretary.

7.5 Elections and Tenure of Office:

Elections:

i. Officers of the CREMA shall always be elected

ii. Any CREMA member considered responsible by simple majority is eligible for election

iii. Candidates for any position shall be nominated and seconded verbally

iv. Elections shall be by showing hands

v. Members shall nominate a three member electoral committee to conduct the election. The electoral committee shall be dissolved after the election.

Tenure of Office:

i. Officers shall hold office for a period of three years, but shall be eligible for re-election.

ii. In the event of:

- Death of office holder the remaining executive committee shall continue in office for three months and afterwards election to replace vacant position shall be conducted.
- Removal, resignation, or incapacitation of office holder, the remaining executive committee shall continue in office for six months and afterwards election to replace vacant position shall be conducted.

8. FINANCIAL STRUCTURE OF THE CREMA:

8.1 Sources of CREMA income:

Money for the CREMA shall be generated from dues collection, fees of issuing hunting permits, penalties from offenders, sales of confiscated animals/ NTFPSs.

8.2 Account of the CREMA:

The money shall be saved in the bank. There shall be a general account for entire CREMA and individual accounts for each community within the CREMA scope.

8.3 Expenditure decision on CREMA income:

Expenditure decision shall be first taken by CEC and CRMC and finally meet with the members. Authorization of expenditure shall be done by a member of CEC, CRMC and TA at each community level after the community members approved the expenditure.

8.4 Fees:

The CREMA shall pay 5% of its annual income generated to each of the following:

a. Bia District Assembly

b. Wildlife Division of the Forestry Commission

8.5 Accountability of income:

Accountability of income generated per annum shall be done at a general meeting after the CEC and CRMCS have prepared the accounts and been audited by the CREMA Task forces (CTF).

9. MEETINGS

9.1 Ordinary Meetings:

9.1.1 Frequency of Meetings:

The members of each community of the CREMA shall determine how often to meet. An annual general meeting of each of the CREMA shall be held towards the end of the year at which every member shall be entitled to attend. The chairmen of the CRMCs shall present a report for the year and the activities of the CREMA assessed.

9.1.2 Quorum for Meetings:

One-third of the total membership shall constitute quorum for all general meetings.
Four (4) members of the CREMA Executive Committee (CEC) including either the chairman or the vice president shall constitute quorum.

9.1.3 Procedure at meetings:

At every general meeting, the secretary shall;

- Read the minutes of previous meeting, Provided that when reproduction of such minutes have been circulated to and received by each member of the committee. Prior to the meeting, the executive may resolve to dispense with this requirement.
- Submit the agenda prepared for the meeting for considerations and for the inclusion of items not captured if necessarily deem by members.

At annual general meeting, there shall also be confirmation of previous minutes of the annual general meeting and any intervening meetings conducted during the year.

9.2 Emergency meeting:

An emergency meeting may be called at any time when deem necessary by the CEC chairman.

10. GENERAL REGULATIONS

10.1 Protection of Amenities in the CREMA:

No person shall at any time

I. Hunt, captured or destroy any wild animal by using chemicals, any artificial light or fire within the CREMA
II. Pollute any water bodies within the CREMA
III. Use chemicals, poisons or explosives for fishing
IV. Farm within a minimum distance of fifty (50) meters from any water body
V. Use dogs, clubs and sticks for hunting within the CREMA
VI. Fell trees to hunt or catch canopy wildlife animals within the CREMA
VII. Set traps especially the type called 'JACK' within the CREMA
VIII. Use fire as tool of hunting rats and other land wildlife within the CREMA
IX. Pick snails during the incubation periods within the CREMA
X. Instruct caretakers to kill existing trees in farms within the CREMA unless such trees are life threatening or generally known to be unsuitable for cultivated crops within the location of the farmer.
XI. Destruct farms via timber extractions by timber concessionaires with the CREMA
XII. Illegally fell timber/ NTFPS using chainsaw within the CREMA
XIII. Block water flow in rivers to fish and thus causing siltation within the CREMA
XIV. Hunt during close seasons within the CREMA (1st August-1st December of every year)
XV. Pick/ hunt *tortoise, opera, apera, adowa, monkey, elephants, aposso and python* within the CREMA
XVI. Pollute drinking water bodies with effluent (waste) of alcohol distillation within the CREMA

10.2 Right of access to the Resources:

No person other than a CREMA member shall at any time

I. Hunt, capture or destroy any wild animal within the CREMA except with the consent of the CREMA executive Committee (CEC) and subject to conditions that committee may determine

II. Collect any NTFPS from the CREMA expect with the consent of the CREMA Executive Committee (CEC) and subject to conditions that the committee may determine

III. Hunt, capture, destroy or be in possession of any wild animal wholly protected by the bye-laws of the national law or the national law as prescribed in L.I 85 and its amendments

IV. Undertake any activity like hunting of wildlife or collection of any NTFP without taking licensed permit from the CREMA Executive Committee (CEC)

10.3 Trade in bushment/NTFPS

I. No person shall be allowed to buy bush meat/NTFPs from the CREMA unless he/she is in possession of license granted him/her for that purpose by the CREMA Executive Committee (CEC)

II. Non-CREMA traders in bush meat/NTFPs shall only buy from recognized licensed traders within the CREMA

III. CREMA traders in bush meat/NTFPs who also obtain their stock from external sources shall obtain permit from the CEC before selling

IV. Application for a license to buy bush meat/NTFPs in the CREMA shall be made to the CEC accompanied by an appropriate fee determined y the CEC.

10.4 Benefit Sharing :

I. Fees of hunting or bush meat trade permits and sales of confiscated wild animals shall be paid into the CREMA account and this money shall be used for community development.

II. For every NFTP harvested for sale 2 % shall be paid into CREMA account 2 % shall be paid to traditional authority (land owners) whiles cost bearer of the NFTP takes the remainder

III. For every wild animal hunted for sale 2 % shall be paid into CREMA account 2 :% shall be paid to traditional authority (land owners) whiles the cost bearer of the wild animal takes the remainder.

IV. The CREMA shall pay 5% of its annual income generated to each of the following:

a. Bia District Assembly

b.Wildlife Division of the Forestry Commission

10.5 offences and Sanctions:

I. offenders of section 10.1 of the CREMA constitution above shall be sanctioned by the CREMA Executive Committee (CEC)

II. Any person who contravenes any provisions made in section (10.2, 10.3 and 10.4) of the CREMA constitution for the first time shall be brought to the CREMA Executive Committee (CEC) and fined appropriately

III. Subsequent contraventions of the provisions made in section (10.2,10.3 and 10.4) of the CREMA constitution shall illicit prosecution in a law court and shall be liable to a summary conviction to a fine not less than:

- ❖ GH 50.00 or to a term of 6 Months imprisonment for offenders of hunting / bush meat trade.
- ❖ GH 200.00 or to a term of 3 years imprisonment for offenders of poisons as baits for fishing or wildlife animals
- ❖ GH 50.00 or to a term of 6 Months imprisonment for offenders of illegal harvesting or felling of NTFPS

IV. Any bush meat or NFTP of wholly protected kind or in closed season shall be confiscated and sold to public and money paid into the CREMA account

V. Any person who contravenes the national law that protects endangered species shall be prosecuted in the court of law by the WD in accordance to the provisions made in the Wildlife regulations 1971 L.I 85.

11. EXPANSION OF THE CREMA

As a result of the mobile nature of the wildlife resources, in the future there shall be expansion of the CREMA to nearby communities or area outside the scope of the CREMA where the evidence shows that wildlife from the CREMA cross to such areas However, this shall be done with the appropriate authorities of concerned areas or lands and the district assembly stakeholders (DA, WD, and MOFA &FSD). This shall be followed by sensitization of the target group on the need and merits of wildlife conservation especially in the arena of cultural heritage and environmental stewardship.

Critical aspects of the constitution shall be amended to legally recognized the expansion. Areas of the constitution that may be considered for amendment are:

- ❖ Name of the CREMA
- ❖ Benefit sharing guidelines
- ❖ Re-delineation of the CREMA boundary
- ❖ A new CREMA structure

The CREMA Executive Committee and Traditional Authority of the CREMA shall carry out all consultations with Bia District stakeholders and update the CREMA members on progress or otherwise of the expansion exercise.

12. CONSTITUTIONAL AMENDMENTS

Every member of the CREMA shall be qualified to propose an amendment of any part(s) of the constitution. The CREMA Executive Committee (CEC) shall have the sole responsibility for amending the constitution. All proposals from members for amendments to the constitution shall in all cases be communicated to the District Assembly stakeholders and the issues shall be discussed at the meeting of CREMA

Appendix 2. Akyekyere/Sureso/Pebaseman CREMA constitution

THE ACHICHIRE / SURESO / PEBASEMAN COMMUNITY RESOURCE MANAGEMENT AREA (CREMA) CONSTITUTION

1. **NAME:**

The name of the body shall be known and called **ACHICHIRE / SURESO / PEBASEMAN COMMUNITY RESOURCE MANAGEMENT AREA (ACHICHIRE / SURESO / PEBASEMAN CREMA)**

2. **BOUNDARY DESCRIPTION POSITION AND SIZE**

The Achichire / Sureso / Pebaseman CREMA lies between Latitudes 5°38′ and 5°45′ north and Longitude 2°17′ and 2°28′ west. All that piece or parcel of land situate at Achichire / Sureso / Pebaseman area in the Wasa Amenfi West District of the Western Region of Ghana bounded on the North West by Achichire stool land measuring 8.364km more or less on the North East by Bura River Forest Reserve with total measurement of 10.818km more or less on the South East by Achichire stool land measuring 10.182 more or less on the South West by unnamed stream and Mamiri Forest Reserve respectively with total measurement of 8.425km more or less on the South East by Mamiri Forest Reserve measuring 2.121km more or less on the North East by Mamiri Forest Reserve measuring 5.939km more or less on the South East by Mamiri Forest Reserve measuring 5.636km more or less on the South West by Achichire Stool land with a total measurement of 6.303km more or less containing an approximate Area of 91.00 sq.km or 22,486.5 Acres or 9,107.0 hectares.

All bearings if any, are approximate and refers to True North.

3. **AIM:**

The CREMA aims at bringing the people/communities together to collectively manage, develop, and use their natural resources in ways that create better conditions for their livelihood.

4. **MOTTO:**

The motto of the CREMA shall be:

"Our Natural Resources: Our concern, Our livelihood"

5. LEGAL STATUS:

The CREMA constitution, District Assembly Bye-Laws and the Certificate of Devolution issued by the Ministry of Lands and Natural Resources shall provide the legal basis of the CREMA.

6. PURPOSE:

The purpose of the CREMA is to:

i. Promote conservation and development of depleted forest and wildlife resources
ii. Practise sustainable agricultural systems and livelihood activities

7. OBJECTIVES:

The objectives of the CREMA shall be:

i. To improve the livelihood of farmers through the integration of food crops, trees, wildlife, and domestic animals in a sustainable farming system that conserves the integrity of the environment
ii. To improve land management to secure natural resources
iii. To generate and provide financial and technical incentives to farmers for biodiversity conservation, development and management
iv. To provide an appropriate platform to external stakeholders to engage in sustainable natural resources management and human well-being
v. To engage rural women, the youth and people with disabilities in sustainable environmental management and alternative livelihoods

9. MEMBERSHIP:

The membership of the CREMA shall be the following:

i. Farmers who have their own plot of land and wish to integrate tree planting and wildlife management into their cocoa farms or any farming activities
ii. Farmers who have already started tree planting and wish to integrate wildlife management into it
iii. Farmers who have their own plot of land and have the desire to enter into Agroforestry
iv. All other persons who reside in the target communities and have land based livelihood interests
v. Have registered with the CREMA Committee / Secretariat

10. HONORARY MEMBERS:

Honorary membership shall be conferred on individuals, groups of individuals and organizations who have interest in the CREMA process and are willing to support it in one way or the other.

11. RESPONSIBILITY OF MEMBERSHIP:

The responsibilities of membership shall be:

i. Attend all meetings regularly
ii. Be active in CREMA activities
iii. Strictly observe enforce the rules and regulations of the CREMA
iv. Be prepared to pay registration fees and membership dues
v. Explain the CREMA ideas to others and encourage them to join

12. DUTIES:

The duties of the CREMA shall be to:

vi. Regulate and control access to wildlife and tree resource within the CREMA
vii. Establish rules and regulations regarding the use of wildlife and tree resources
viii. Raise and manage revenue from the trade of wildlife and tree resources
ix. Ensure that the rules and regulations for the management of the CREMA are enforced
x. Take appropriate measures to secure the natural resources of the CREMA for the greater benefit of all members.

12. CREMA EXECUTIVE COMMITTEE (CEC):

There shall be an Executive Committee called CREMA Executive Committee (CEC). The CEC shall comprise representatives from the various Community Resource Management Committees (CRMCs) of the respective communities in the area and representative from the Centre for Agroforestry Business Development [CABuD].

The communities and their representatives shall be:

i. Achichirehene or representative
ii. Representative from Kamaso
iii. Representative from Nkrankrom
iv. Representative from Gonukrom
v. Representative from Essandokrom

vi. Representative from Abetemaso
vii. Representative from Camp
viii. Representative from Donkorkrom
ix. Representative from Kwaw Adoboah
x. Representative from Sika Nti
xi. Representative from Akapo
xii. Representative from Ayensukrom
xiii. Representative from Buadukrom
xiv. Representative from Appiahkrom
xv. Representative from Supanso
xvi. Representative from Ataase
xvii. Representative from Attobrakrom
xviii. Representative from Asante Akyem
xix. Representative from Sureso
xx. Representative from Pebase
xxi. Representative from Achichire

13. EX-OFFICIO MEMBERS:

The following representatives shall serve as ex-officio members:

i. Representative from District Assembly
ii. Representative from District Forest Office
iii. Representative from District Agricultural Office
iv. Representative from Wildlife Regional Office
v. District Chief Farmer

The CEC shall be serviced by a Secretariat. A Chairman shall be voted for at the first meeting of the CEC who shall then be presiding over meetings of the CEC. Other members shall be elected as Vice Chairman, Secretary, Treasurer Organizer and Financial Secretary.

14. CO-OPTED MEMBERS:

The CEC shall co-opt any person(s) that members consider useful to advise on any specific issue(s) as and when necessary.

15. REPRESENTATION OF MEMBERS AT THE CEC:

1. An absenting member to a meeting shall nominate a competent person of his/her choice from his/her community to represent him/her

2. Nomination shall be made by writing to the Secretariat latest on the day of meeting but before the meeting begins
3. A member shall be represented by another person in cases of:
   a) illness
   b) traditional matters
   c) pressing official engagement
   d) bereavement
   e) other genuine reason(s) that may be accepted by the disciplinary sub-committee
4. In case of long absence of a member for four (4) consecutive meetings, the community/institution that the member represents shall nominate another person to replace him/her

16. RULES GOVERNING MEMBERSHIP OF THE CEC

Every member shall be governed by the following rules:

i. Discipline:

A member shall not

a. without good reason and prior notice nominate someone to represent him/her for more than three (3) consecutive meetings
b. be involved or seen to be involved in corrupt, dishonest and fraudulent acts
c. be persistently drunk during meetings
d. be rude, rabble-rouser, intolerant or disrespectful of the views of other members
e. takes side during arbitration
f. leak out any information that may be considered as confidential by the CEC
g. do acts that amounts to tarnishing the image of the CREMA

ii. All members shall observe and be bound by any decision(s) that may be agreed and upheld by the membership
iii. All members shall swear oath of office
iv. A disciplinary sub-committee shall be established to deal with all cases of indiscipline that may be brought before it
v. All members shall confer with their communities before attending any meeting and shall report back to them after any meeting
vi. It shall be deemed as a case of indiscipline if any member conducts him/herself contrary to the rules governing membership and any other acts that may be considered as such by the disciplinary sub-committee

17. DISCIPLINARY ACTION AT THE CEC LEVEL

Any member judged to have been involved in any act of indiscipline shall be:

i. written to and given the opportunity to defend him/herself before the disciplinary sub-committee. If the defence is not acceptable he/she shall be warned verbally for the first offence

ii. warned with a letter with reference to the verbal warning for the first offence and

iii. have his/her membership of the CEC terminated for the third offence if judged incorrigible or made to pay a fine of Twenty Ghana Cedis (GH¢20.00) [whichever appears the best option by the Disciplinary Committee]

18. TERMINATION OF MEMBERSHIP AT THE CEC

Termination of membership shall be as follows:

i. the affected member shall be informed in writing about the grounds for his/her termination

ii. decision must be passed by not less then 2/3 (fifteen (15)) of the eligible members of the CEC

19. REPLACEMENT

1. In case of death, disability or termination of a member, the eligible CRMC or the Institution to which the affected member belongs shall nominate another CRMC member to represent it until the tenure of office of the CEC ends

20. TENURE OF OFFICE OF CEC / CRMC MEMBERS

The tenure of office for CEC/CRMC members shall be three (3) years renewable once. The Ex-officio members shall continue in office for as long as they represent their respective institutions.

21. CEC SUB-COMMITTEE

The CEC shall have the following sub-committees:

a. Disciplinary Committee
b. Planning, Monitoring and Evaluation Committee
c. Funds raising and Finance Committee

Other Committees may be formed to perform such duties as may be deemed necessary by the entire members of the CEC. Membership of sub-committee may include co-opted and ex-officio members.

22. FUNCTIONS OF THE CEC

The functions of the CEC shall be to:

i. Formulate the appropriate policies and programmes for the achievement of the aims and objectives of the Constitution.

ii. Ensure that the various CRMCs adhere to the rules and regulations of the CREMA.

iii. Discipline recalcitrant communities and members.

iv. Serve as the highest decision-making body of the CREMA.

v. Ensure that activity targets are achieved on schedule and reporting regularly on progress of activities, results and achievements.

vi. Encourage and support the Secretariat and CRMCs to work effectively and efficiently.

vii. Ensure that the most appropriate rapport is established between and among all stakeholders for the successful implementation of the CREMA.

23. SECRETARIAT

The CREMA Executive Committee shall be serviced by a CREMA Secretariat hosted and supported by the Centre for Agroforestry Business Development.

24. FUNCTIONS OF SECRETARIAT

The functions of the secretariat shall include:

1. Planning, monitoring, implementing, disseminating and co-ordinating decisions and proposals of the CREMA Executive Committee.
2. Compile data and prepare reports on activities of the CREMA and produce news bulletins/letters to all CRMCs.
3. Record proceedings of meetings of the CEC and act on them when approved and signed by the Chairman.
4. Provide general administrative work and public relations services.
5. Help to establish and maintain cordial and fruitful inter-community, national and international relations.
6. Help to design and prepare project proposals and seek appropriate funding.

25. COMMUNITY RESOURCE MANAGEMENT COMMITTEE (CRMC)

Each community shall have its own management committee that shall work and report to the CREMA Executive Committee through various representatives who may be either their Chairmen or Secretaries.

26. CRMC ORGANISATION AND OFFICERS

Each community in the area shall meet and elect its officers to be known and called Community Resource Management Committee (CRMC). Each committee shall have the following officers:

a. Chairman
b. Vice-Chairman
c. Secretary
d. Treasurer
e. Financial Secretary
f. Organising Secretary

27. DUTIES OF OFFICERS OF CRMC / CEC

The duties of officers shall be as follows:

1. **CHAIRMAN**
   a. Convene meetings of the CRMC/CEC in consultation with the Secretary
   b. Preside over all meetings of the CRMC/CEC.
   c. Have the power to call for minutes of meetings, financial records and other information on the activities of the CRMC/CEC at any time.
   d. Exercise supervision over the affairs of the CRMC/CEC and ensure that the representatives on the CEC confer with the CRMC before and after meetings.
   e. Perform such duties that may be determined by the membership.
2. **VICE-CHAIRMAN**

The Vice-Chairman shall:

a. Assist the Chairman in the execution of his/her duties
b. Act as Chairman in the absence of the Chairman or when called to do so by the Chairman or members

3. **SECRETARY**

The Secretary shall:

a. Call meetings upon directive from the Chairman through written and verbal messages
b. Keep all records of the proceedings at a meeting
c. Handle all official correspondence and notify all members through the Organising Secretary

4. **TREASURER**

The treasurer shall:-

a. Receive all monies accruing to the CRMC/CEC
b. Monies so receive shall be paid to the bank within twenty-four (24) hours
c. He or she will pay for goods and services in accordance with the financial regulations of the CRMC/CEC

5. **FINANCIAL SECRETARY**

The Financial Secretary shall:

a. Keep record on income expenditure of all monies that may accrue to the CRMC/CEC
b. Monitor all expenditure of the CRMC/CEC.
c. Write quarterly financial reports of the CRMC/CEC for the information and appraisal of all members

6. **ORGANISING SECRETARY**

The Organising Secretary shall:

a. Distribute / dispatch letters for meetings and to any other persons / organisation(s) that the CRMC/CEC may be dealing with
b. Serve as the porter of the CRMC/CEC.

28. FUNCTIONS OF THE CRMC

The functions of the Executive Committee at the community level shall be:

i. Develop annual work plans according to the project target and activities determined by the CEC / Secretariat

ii. Organize and co-ordinate the activities of and report through their representatives to the CEC / Secretariat

iii. Organize regular meetings to exchange information and share ideas on good environmental practices

iv. Forge closer relationships among all members and share in their worries and concerns

v. Ensure that all members are registered with the CEC / Secretariat and pay their registration fees and dues

vi. Create conservation / environmental awareness and educate members on the prospects and potentials of possible poverty reduction or elimination

vii. Liaise with the Secretariat for the relevant collaborating partners for their services when needed

viii. Arrange training and extension programmes and ensure that they are executed according to the agreement requirement

29. MEETINGS

In the absence of the Chairman / Vice, any Executive shall act as Chairman

A) ORDINARY MEETINGS

1. CEC shall meet once every quarter, precisely, the Wednesday of the third week of the third month of every quarter .ie. Adum Wukuda
2. CRSM shall meet every month, precisely, the Wednesday of the third week of the month .ie. Adum Wukuda
3. CEC meetings shall be held at its Secretariat or wherever the Chairman may decide
4. CRMC meetings shall be held in their respective communities at where the Chairman may decide
5. The Secretariat / Secretary shall call meetings through letters with agenda to all members not later than two weeks in the case of CEC and one week in the case of CRMC before the date of the meeting
6. The Secretariat / Secretary shall ensure that minutes of the last meeting are sent to members not later than two months after the meeting in the case of CRMC

B) QUORUM

1. Ordinary meetings of CEC and CRMC shall be properly constituted when at least two thirds of the voting members are present

2. In the absence of a quorum, members present shall form a sub-committee of the whole of at least one third of the members with at least three Executive members present. They will meet and present their proceedings and decisions to the membership at the next properly constituted meeting for adoption or rejection

C) EMERGENCY / EXTRAORDINARY MEETING

Emergency / extraordinary meetings shall be called as and when necessary by the Chairman of CRMC/CEC.

D) DECISION MAKING AT MEETINGS

1. In the cases of discipline and other serious breaches, decisions shall be moved by a member and seconded by another in the absence of the affected member.
2. Where there is need for voting before adoption or rejection, it shall be by simple majority.
3. Voting on any other matter shall be by show of hands except in no confidence or termination where voting shall be by secret ballot. The affected member shall be asked to stay out while voting proceeds.
4. Members are entitled to a vote each but the chair may have a casting vote.
5. Ex-officio members shall have no voting rights but may be entitled to any benefits that may be due to eligible members of the CEC / CRMC.
6. Co-opted members shall have no voting rights but while serving on CEC / CRMC they may be entitled to any benefits that may be due to members of the CEC / CRMC.
7. Honorary members shall have full voting rights at meetings they are invited to attend and enjoy any benefits that are due any eligible member.

30. FINANCE

The following strategies shall be adopted to source funds:

a. **EXTERNAL SOURCES OF FINANCE**

The CREMA Secretariat shall write project proposals to seek fundings from all possible sources.

All such external funds shall be lodged in a Revolving Fund and any such disbursement shall come from the Finance sub committee.

b. **INTERNAL SOURCES OF FINANCE:**

The Finance sub Committee shall institute measures to generate funds internally. Members at all the communities shall pay registration fees of Ten Ghana Cedis (GH¢10.00) and annual dues of Ten Ghana Cedis(GH¢10.00).

When external funding has been found to implement any activity, memorandum of understanding shall be signed with all beneficiaries be they individual community members or groups on benefit sharing arrangements to generate funds to service activities of the CREMA.

c. **BANK ACCOUNT**

i. The CREMA shall operate both savings and current accounts at the local bank or the nearest Commercial Bank.

ii. The Account shall have three signatories
   - The Chairman CEC / CRMC
   - The CABuD / Financial Secretary
   - The Treasurer CEC / CRMC

iii. The Chairman CEC and the CABuD representative and Treasurer shall be the main signatories to the account..

iv. In the absence of the Chairman, CEC shall authorize the Vice-Chairman to sign for specific transactions.

All monies shall be lodged at the bank within twenty-four hours (24).

d. **EXPENDITURE OF FUNDS**

All expenditures shall be authorised by CEC / CRMC.

e. **MODE OF EXPENDITURE**

Monies and resources shall be used in the following ways:

i. Support livelihood activities of members of the CREMA
ii. Establish and maintain nurseries and tree planting
iii. Support biodiversity conservation, development and management
iv. Support the development of NTFPs / Alternative livelihoods
v. For the management and administration of the CREMA
vi. On any activity relating to the realisation of the aims and objectives of the CREMA deemed fit and necessary by the CEC

f. **ACCOUNTING FOR FUNDS**

i. Proper documentation like receipts and records shall cover all transactions at the Secretariat CEC / CRMC

ii. A sub-committee or internal audit shall be formed with assistance of co-opted members to audit the accounts / transactions of CEC Secretariat / CRMC at regular intervals

iii. An external audit team shall be asked to audit the books of account once yearly and advice

iv. Half yearly annual financial reports shall be submitted for the information and perusal of members

g. **REVOLVING FUND**

i. A revolving fund shall be established to support implementation of projects by the CEC / CRMC (individual registered CREMA members).

ii. Any money disbursed from the Revolving Fund shall be a loan to any beneficiary.

iii. Beneficiaries shall only be registered members of the CREMA and are of good standing

iv. Any amount disbursed shall attract an interest of 20%.

v. Any amount disbursed shall be paid back within a period of six (6) months from the date of receipt.

vi. A beneficiary who repays his/her loan shall be eligible for further loans subject to the approval of the Finance Sub Committee.

vii. The Finance Sub Committee shall comprise CEC Chairman and seven (7) CRMC Chairmen and the CABuD representative.

viii. Appropriate disciplinary and legal actions shall be taken against any defaulters.

31. RIGHTS OF ACCESS TO NATURAL RESOURCES.

CREMA members and Non CREMA members shall not at any time:-

a. Hunt, capture, destroy or be in possession of any animal in the CREMA except with the consent of the CREMA Executive Committee (CEC) and subject to conditions as the committee may determine.

b. Collect any other commercial NTFP,s from the CREMA except with the consent of the CEC and subject to conditions as the community may determine.

c. An application to undertake (a) and (b) shall be made to the CEC accompanied by an appropriate fee determined by the CEC.

d. Hunt, capture, destroy or be in possession of an animal wholly protected by law as prescribed in L.I. 685 and its amendments.

e. Hunt, capture, destroy or be in possession of an animal during the close season as prescribed in L.I. 685 and its amendments

32. TRADE IN BUSH MEAT / NTFP,S

a. No person shall be allowed to buy bush meat / NTFP,s in the CREMA unless he/she is in possession of license granted him/her for that purpose by the Wasa Amenfi West District Assembly.

b. The CEC may decide to take a fee from a licensed bush meat / NTFP trader.

c. Non-CREMA traders in bush meat/NTFP.s shall only buy from recognized licensed traders within the CREMA.

d. Commercial traders in NTFP,s shall acquire permit from the CEC.

33. PROTECTION OF AMENITIES

No person shall at any time:-

a. Hunt, capture or destroy any wild animal by using chemicals, any artificial light or flare within the CREMA.

b. Pollute any water body within the CREMA.

c. Use chemicals, poisons or explosive for fishing in water bodies within the CREMA.

d. Farm within a minimum distance of 50 meters from any water body and 10 meters from any Forest Reserve line.

e. Use dogs, fire, poisons, clubs, cadgets and sticks for hunting within the CREMA.

f. Organize group hunting activities within the CREMA except with the permission of the CEC.

g. Indiscriminately fell trees, debark, girdle and uproot tress within the CREMA.

h. Set unprescribed fires within the CREMA

i. Enter the land/farm of hi/her neighbor to hunt, capture or destroy any wild animal without his / her consent and expressed permission.

j. Enter the land/farm of his/her neighbor to cut, destroy or exploit any tress resource without his / her consent and expressed permission.

k. Enter the land/farm of his/her neighbor to hunt with dogs either alone or in the company of others.

l. Enter the land/farm of his/her neighbor to hunt, capture or destroy any wild animal by setting fire to the bush

34. SELF DEFENCE / PROPERTY DESTRUCTION

a. Persons that may be attached by any wild animal within the CREMA shall have the right to kill the animal. In the event of killing in self-defence, the matter should be reported to the relevant CRMC/CEC.

c. Persons whose crop farms and property are destroyed by animals should report to the CEC for appropriate action.

35. OFFENCES

1. Offenders of section 4 above shall be sanctioned by the Traditional Authority or the Disciplinary Committee of CREMA, which ever way is convenient to the CEC.

2. a. Any person who contravenes section 2(d) shall be prosecuted in court by W.D. in accordance to provisions in the Wildlife 1971 L.I. 685

   b. subsequent contravention of section 2(a-c) and (e) shall illicit prosecution in a law court and the offender shall be liable on summary conviction to a fine not exceeding ten penalty units or to a term imprisonment not less than two months.

   c. Any bush meat or other NTFP,s illegally acquired shall be confiscated and sold to public and proceeds paid into CREMA account.

The following rules and regulations as stated in the Wildlife Laws shall apply to all members and communities:

i. No person shall at any time hunt, capture or destroy any of the species mentioned in the First Schedule of the Wildlife Conservation Regulations of 1971 (L.I.685) as wholly protected.

ii. No person shall at any time hunt, capture or destroy
a) young animals or

b) animals accompanied by their young

of any of the species mentioned in the Second Schedule of the Wildlife Conservation regulations of 1971 (L.I.685).

iii. No person shall between the 1st day of August and the 1st day of December in any year hunt, capture or destroy any of the species mentioned in the Second and Third Schedules of the Wildlife Conservation Regulations of 1971 (L.I.685) that applies to the Sureso / Pebaseman CREMA.

iv. No person shall manufacture, use or be in the possession of any gin trap or jack which may be used for the purpose of hunting, capturing or destroying any animal.

v. No person shall hunt, capture or destroy any wild animal by using any artificial light or flare or fire.

vi. No person shall hunt, capture or destroy any wild animal by using nets (except in the case of fish or poisonous snakes).

vii. No person shall hunt, capture or destroy any wild animal by using pitfalls, apadum snares effective only in conjunction with pitfalls, poison or poisonous weapons.

viii. No person shall enter the land / farm of his/her neighbour to hunt, capture or destroy any wild animal without his/her concent and expressed permission.

ix. No person shall enter the land / farm of his/her neighbour to cut, destroy or exploit any tree resource without his/her concent and expressed permission.

x. No person shall enter the land / farm of his/her neighbour to hunt with dogs either alone or in the company of others.

xi. No person shall enter the land / farm of his/her neighbour to hunt, capture or destroy any wild animal by setting fire to the bush.

36. BENEFIT-SHARING

A benefit-sharing arrangement shall be made between landowners and users of those lands within the CREMA. An appropriate Memorandum of Understanding shall be formulated in respect of each landowner and the user of his/her land at the commencement of the project by the CREMA Committee. Landowners and CREMA shall be entitled to 5% (five percent) and 2% (two percent) respectively of earnings during the harvesting of resources.

37. AMENDMENT

The constitution shall be amended as and when necessary by at least two thirds (2/3) majority of all CREMA members.

38. DEFINITIONS

a. **Ex-officio members** refer to officials representing decentralized offices of the District Assembly.

b. **Co-opted members** refer to people invited to attend meetings on account of their expertise.

c. **CEC** means CREMA Executive Committee.

d. **CREMA** means Community Resource Management Area

e. **CABuD** means Centre for Agroforestry Business Development

f. **CRMC** means Community Resource Management Committee

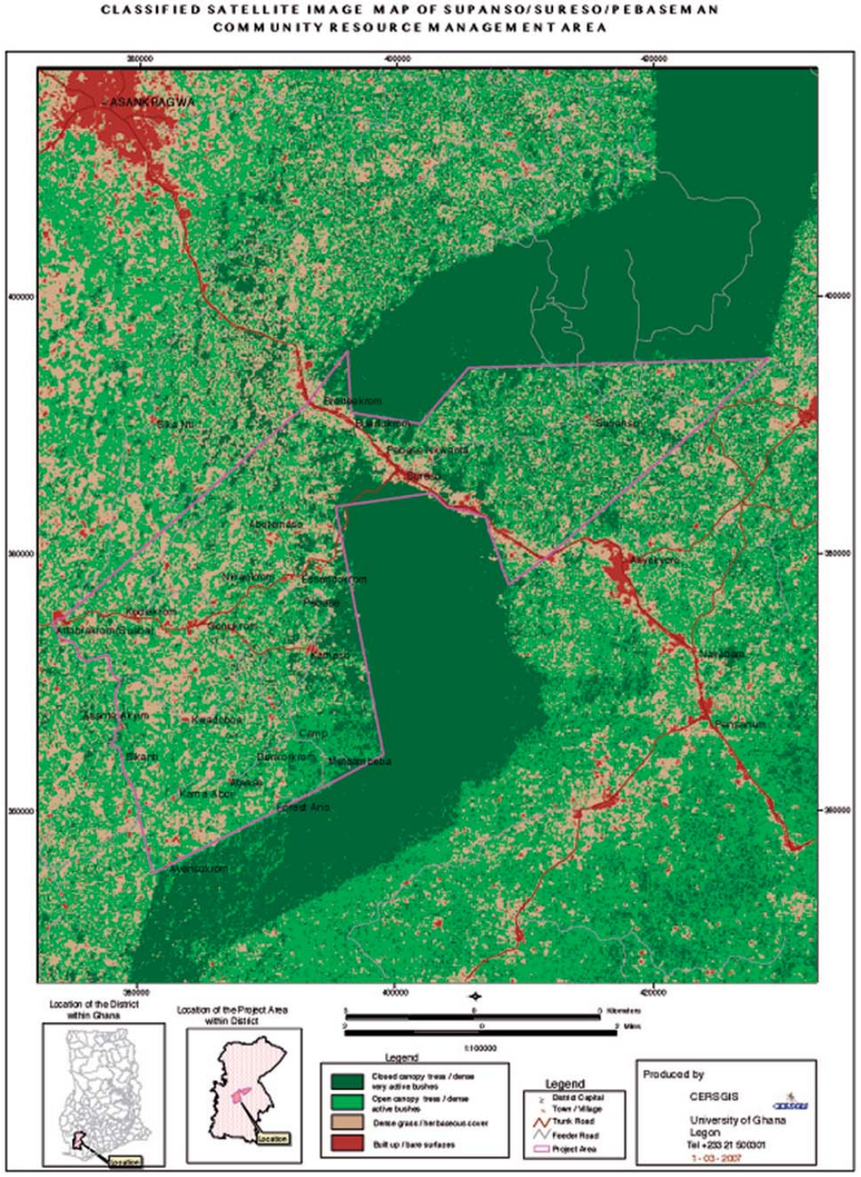
g. **Quorum**: This is the minimum number of members required to hold a meeting. Decisions made at such meetings are binding on all members.

h. **Replacement**: This is where the membership of a member whose representation is terminated is taken up by another person from the community / institution that the terminated member belonged to.

i. **Casting Vote**: This is a privilege given to the Chairman to cast another vote in case of a tie in voting in which the Chairman has already cast a vote.

j. **Emergency meetings** shall be called when there is/are conflict(s) like poaching, skirmishes between communities, serious disagreements with land owners and other stakeholders, accidents, death of official / member, gross / serious indiscipline on the part of CEC/CRMC members and / or staff of the Secretariat or visit of a prominent private or government official from the region or national level.

Appendix 3. Land-cover map of the Akyekyere/Sureso/Pebaseman CREMA



Appendix 4. First Schedule of the Wildlife Conservation Regulations: animals completely protected and should never be hunted

COMMON NAMES	SCIENTIFIC NAMES	LOCAL NAMES
PRIMATES		
MONKEYS		
Chimpanzee	*Pan troglodytes*	Akatia
Black and White Colobus	*Colobus polykomos*	Efoo
Olive Colobus	*C. verus*	Asibe
Red Colobus	*C. badius*	Ebene
Diana Monkey	*Cercopithecus diana*	Boapia
PROSIMIANS		
Bosman's Potto	*Perodicticus potto*	Aposo
Bush Baby	*Galagoides demidovi*	Aprenkensima
SCALY ANT-EATERS		
Giant Pangolin	*Manis gigantean*	Opra
Long-tailed Pangolin	*M. tetradactyla*	Aprawabene
Tree Pangolin	*M. tricuspis*	Aprawa
CARNIVORES		
Leopard	*Panthera pardus*	Osebo
Honey Badger	*Mellivora capensis*	Kwabrefo/Sisi
Clawless Otter	*Aonyx capensis*	Nsubodom
UNGULATES		
Elephant	*Loxodonta africana*	Osono
Water Chevrotain	*Hyamoshcus aquaticus*	Aberetwi
Bongo	*Boocercus eurycerus*	Tromo
REPTILES		
Broad-fronted Crocodile	*Osteolaemus tetraspis*	Kyekye
Nile Monitor	*Varanus niloticus*	Mampam

Appendix 5. Second and Third Schedules of the Wildlife Conservation Regulations: wildlife species that may be harvested with restrictions

COMMON NAMES	SCIENTIFIC NAMES	LOCAL NAMES
RODENTS	***RODENTIA***	
SQUIRRELS	***SCIURIDAE***	
Striped Ground Squirrel	*Euxerus erythropus*	Amoakua
Fire-footed Rope Squirrel	*Funisciurus pyrropus*	Apetebie
African Giant Squirrel	*Protoxerus stangeri stangeri*	Kukuban
ANUMALURES	***ANUMALURIDAE***	
Pel's Anomalure	*Anumalurus peli*	Ohafoo
PORCUPINES	***HYSTRICIDAE***	
Brush-tailed Porcupine	*Antherurus africanus*	Apese
CANE-RATS	***THRYONOMYIDAE***	
Marsh Cane Rat	*Thryonomys swinderianus*	Akrantee
POUCHED RATS	***Cricetomy***	
Emin's Giant Rat	*Cricetomys emini*	Kusie
CARNIVORES	***CARNIVORA***	
MONGOOSES	***HERPESTIDAE***	
Slender Mongoose	*Herpestes sanguine*	Kokobo
Cusimanse	*Crossarchus obscures*	Ahwea
Marsh Mongoose	*Atilax paludinosus*	Dompo
GENETS AND CIVETS	***VIVERRIDAE***	
Bloteched (Pardine) Genet	*Genetta tigrina pardina*	Animefaa
African Civet	*Civettictis civetta*	Kankane
AFRICAN PALM CIVETS	***NANDININAE***	
African Palm Civet	*Nandinia binotata*	Aberebee

COMMON NAMES	SCIENTIFIC NAMES	LOCAL NAMES
UNGULATES	***UNGULATA***	
HYRAXES	***HYRACOIDEA***	
Western Tree Hyrax	*Dendrohyrax dorsalis*	Owea
BOVIDS	***BOVIDAE***	
Bushbuck	*Tragelaphus scriptum*	Owansane
ANTELOPES	***ANTELOPINAE***	
Maxwell's Duiker	*Cephalophus maxwelli*	Otwe
Black Duiker	*Cephalophus Níger*	Oyuo
Yellow-backed Duiker	*Cephalophus silvicultor*	Okwaduo
Bay Duiker	*Cephalophus dorsalis*	Odabo
Royal Antelope	*Neotragus pygmaeus*	Adowa
BIRDS	***AVES***	
Black Kite	*Milvus migrans*	Sansa-Akrowa
Ahanta Francolin	*Francolines ahantensis*	Akokohwedee
Green Fruit Pigeon	*Treron calva*	Abroma
Wood Dove	*Turtur spp*	Abuburo
White-crested Hornbill	*Tockus albocristatus*	Asokwaa
Common Bulbul	*Pycnonotus barbatus*	Apatupre
Senegal Coucal	*Centropus senegalensis*	Obrekuo

BEYOND THE FOREST CANOPY