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Co-Managing Ecosystem Services of Forest Reserves in Ghana: The Case of the Bobiri Forest Reserve (BFR) in Kubease in the Ashanti Region of Ghana

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Abstract
The communal/admitted rights of the people of Kubease to the Bobiri Forest Reserve (BFR) allow the locals to collect certain quantities of specific Non-Timber Forest Products (NTFPs) for personal use without any payment. However, if these NTFPs are to be collected in larger quantities for commercial purposes, a permit is needed. The communal/admitted rights of the Community to the ecosystem services of the Reserve make them important stakeholders in its management. Over the years however, there have been the over exploitation and continual decline of the ecosystem services provided by the Reserve. The Study concludes that there is the need to put in place the right institutional and legislative framework that allow the knowledge and understanding of all stakeholders to be reflected in making and implementing sustainable forest management decisions. Here, the resource users are important, as they directly tend to have a greater knowledge of their local environment.
Keywords: Co-Management, Ecosystem Services, Livelihood, Stakeholders

1. Introduction

The designation of forest reserves in poverty-dominated areas has been met with various challenges. This is primarily attributed to the dependent of the forest host communities on these reserves for the collection of Non-Timber Forest Products (NTFPs) that contribute to their livelihood. In addition, the timber based or fuel wood based commercial activities in and around these protected areas perceived it as a threat to their economic gains. All these pose serious challenges to fully harnessing and developing such areas as well as ensuring biodiversity conservation.

Conservation organisations have responded to these threats by championing new approaches to protected area management that promise to build local constituents support through the sharing of the social and economic benefits from these areas. Several of these approaches include Community Based Natural Resource Management (CBNRM), Community Conservation Areas (CCAs), Integrated Conservation and Development Projects (ICDPs) as well as Collaborative Management (Co-Management) (Fox, 2007: 2).

In all these approaches, the Co-Management approach has been given much recognition in the past two World Park Congresses. The Co-Management approach requires two or more social actors to negotiate, define and guarantee among themselves a fair share of the management functions, entitlements and responsibility for a given territory, area or set of natural resources (ibid).

According to the Convention on Biological Diversity (2007), in addition to the forest host communities' dependence, they also unwittingly become responsible for the degradation of the resources and not realizing the consequences of this dependence. This corroborates Choudhury et al. (2004) assertion that the socio-economic and cultural life of the forest dwellers is closely associated with forest to a great extent. This close association is however not without ecological cost. Such ecological costs include reduction in the forest ecosystem services (Padmini et al., 2001), disrupting ecosystem services (Ghazoul, 2001) and changes in the population dynamics and demography of harvested species (Sinha and Bawa, 2001).

It is therefore the focus of the Co-Management approach to intensify collective efforts, maintain stability and ensure commitment to the long-term objective of sustainable management of forest ecosystem services. This can be complicated and difficult to achieve. The difficulty can however be overcome if the stakeholders can collaborate effectively. The multi-faceted but also highly fragmented stakeholder collaboration in managing protected areas requires Co-Management to ensure the growth and sustainability of such reserves. This is necessary due to the important role of knowledge transfer, *effective coordination and network building* in the context of the current economic climate (WTO, 2010: Forword, *emphasis by author*).

The Paper therefore investigates how the management functions, entitlements and responsibilities of the forest ecosystems of the Bobiri Forest Reserve (BFR) are negotiated, defined and guaranteed among various stakeholders for the sustainable management of its ecosystem services.

2. Ecosystem Services

The concept of an ecosystem; described as a dynamic complex of plant, animal and microorganism communities and the non-living environment that interact as a functional unit of which humans are an integral part provides a valuable framework for analysing and acting on the linkages between people and their environment (Millennium Ecosystem Assessment, 2003). The Millennium Ecosystem Assessment again defined Ecosystem services (as depicted in Table 1) as the benefits people obtain from ecosystems and have the capacity to provide goods and services that satisfy human needs directly or indirectly (De Groot et al., 2002), hence satisfying livelihood needs. Tropical rainforests for instance, provide numerous goods and services that contribute significantly to human well-being at the local, national and global levels as a result of their important ecological functions (Millennium Ecosystem Assessment, 2005).

It must be noted that biodiversity and ecosystems are closely related concepts. This relation has been elaborated by the Millennium Ecosystem Assessment (2003: 8-10). The former has been defined as "the variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. It includes diversity with and between species and diversity of ecosystems. Diversity is a structural feature of ecosystems, and the variability among ecosystems is an element of biodiversity. Products of biodiversity include many of the services produced by ecosystems (such as food and genetic resources), and changes in biodiversity can influence all other services they provide. In addition to the important role of biodiversity in providing ecosystem services, the diversity of living species has intrinsic value independent of any human concern".

According to the World Resources Institute et al. (2005: 33), ecosystems provide the foundation for all human survival. This is because their production of food, air, soil and other materials support life. Everyone, rich and poor, urban and rural therefore depend on the goods and services provided by ecosystems. The rural poor particularly have a unique and special relationship with ecosystems. This special relationship revolves around the importance of these natural systems to rural livelihoods. Central to the rural livelihoods is income either in the form of cash or in the form of natural products directly consumed for subsistence, such as fish, fuel or building materials. The rural poor therefore derive a substantial fraction of their income from ecosystem goods and services. Due to the nature-based character of such incomes, they are referred to as environmental income. The poor are especially vulnerable to ecosystem degradation because of their dependence on environmental income.

Table 1: The Millennium Ecosystem Assessment's Classification of Ecosystem Services using Categories of Provisioning, Regulating, Cultural and Supporting Services

ECOSYSTEM SERVICES	*DESCRIPTION*	*EXAMPLES*
Provisioning Services	Products obtained from ecosystems	-Food and Fiber -Fuel -Genetic Resources -Biochemicals, Natural Medicines, and Pharmaceuticals -Ornamental Resources -Fresh Water
Regulating Services	These are the benefits obtained from the regulation of ecosystem processes	-Air Quality Maintenance -Climate Regulation -Water Regulation -Erosion control -Water Purification and Waste Treatment -Regulation of Human Diseases -Biological Control -Pollination -Storm Protection
Cultural Services	These are the non-material benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences,	-Cultural Diversity -Spiritual and Religious Values -Knowledge Systems (Traditional and Formal) -Educational Values -Inspiration -Aesthetic Values -Social Relations -Sense of Place -Cultural Heritage Values -Recreation and Ecotourism
Supporting Services	Supporting services are those that are necessary for the production of all other ecosystem services. They differ from provisioning, regulating and cultural services in that their impacts on people are either indirect or occur over a very long time.	-Nutrient Cycling -Primary Production -Production of Atmospheric Oxygen -Soil Formation and Retention -Nutrient Cycling, -Water Cycling -Provisioning of Habitat

Source: Millennium Ecosystem Assessment, 2003: 56-60

Currently, there is rapidly growing human demand for ecosystem services. At the same time, the capacity of ecosystems to continue to provide many of these services is being altered by humans. There is the urgent need to manage such relationship to ensure equilibrium between the human needs and the carrying capacity of the ecosystem without affecting their long-term provisions. The management of such relationship requires an integrated approach (Millennium Ecosystem Assessment, 2003: 27) and hence the involvement of all stakeholders.

3. Stakeholder Identification and Collaboration

According to the World Wildlife Foundation (2005), a stakeholder is any individual, group or institutions that have vested interest in the natural resources of the project area and/or who potentially will be affected by project activities and have something to gain or lose if conditions change or stay the same. The identification and selection of appropriate stakeholders is therefore a vital element of the collaborative process (Reed, 2000). Stakeholder identification and collaboration provide a comprehensive understanding of who the stakeholders are, their motives and main interest, their roles in the decision-making processes which are important issues to consider when addressing problems that affect a variety of interests.

To ensure significant benefits for sustainability in light of environmental, social, cultural, economic and political uncertainties, stakeholder involvement is paramount (Medeiros de Araujo and Bramwell, 2000). The issue of

sustainability can be achieved by considering the broader variety of actors where a complex web of interest and trade-offs between the different stakeholders are considered (Timur & Getz, 2008, p. 446). It has been asserted that the benefits of involving stakeholders include better decisions, increased accountability, stakeholder acceptance and local community empowerment (Bramwell and Lane, 2000a). Collaboration further adds to on-going policy making, as it provides an opportunity for people who are affected by development to share their knowledge and experiences (Ibid).

It must however be emphasised that collaboration processes do not easily overcome power imbalances with the involvement of all the stakeholders in a process but there is the need to recognise he existence of systematic constraints such as the distribution of power and resource flows (Healey, 1997; Reed, 1997a). This is because unequal power relations among different actors are key in understanding patterns of human-environment interaction and the associated environmental problems (Bryant and Bailey, 2000: 38). Power therefore plays an important role in the social relations of production and decision-making about the use of resources. These are however exercised in diverse arenas, on multiple scales and infused with cultural knowledge and value (Paulson et. al, 2003: 209).

Collaboration seen as "a process of joint decision-making involving key stakeholders of a problem with a view of resolving conflicts and advancing share visions" (Ladkin & Martinez, 2002) is dependent on trust, involvement and beneficial for achieving a common purpose. Here, exclusion, advocacy and power are not used in order to reach goal. The World Wildlife Foundation (2000), p.3.2, 3.3) suggested that stakeholder collaboration could be a powerful approach to respond to problems that cannot be solved with separated efforts. It is therefore likely to achieve success in the collaboration processes if stakeholders need each other to reach and achieve individual as well as common goals, where there is enabling grounds for negotiation among the parties and where the parties are willing to participate in the processes. For the purpose of this Study, collaboration is viewed as joint efforts and goes beyond inter-governmental relations and business arena (Jamal and Stronza, 2009) to engage a set of key stakeholders with a view of resolving conflicts and advancing shared ideas and responsibilities with the aim of achieving a common purpose and resolving common problems (World Wildlife Foundation, 2000). Following from the proceedings of the International Tourism Research Conference in Stockholm in 2008, local residents, the host communities in this Study, are theoretically important groups of stakeholders in the Co-Management processes (The International Tourism Research Conference 2008).

4. Community Stakeholder Involvement

One important stakeholder in successful natural resource conservation and management efforts is the community. Community participation in conservation efforts fosters a sense of ownership on the part of the community and can provide valuable knowledge about local environments and current impacts of natural resource conservation and management practices. Community involvement is an important aspect of stakeholder collaboration as well as the monitoring of focal species. This necessitates the need to design monitoring programmes to accommodate people with often minimal scientific background whilst providing accurate and useful data (Bodmer et al., 1997).

'Host Community', mostly used in tourism literature is often presented as synonymous with "residents", "locals", "public" or "citizens" (Burns, 2004). An important characteristic of the host community is that it does not constitute a unified whole and its constituent groups of stakeholders and individuals are rarely homogeneous (Ashley and Roe, 1998). In line with this and for the purposes of this Study, a host community is used to refer to communities that are located in or near a forest and have access to the forest areas. These communities to a large extent depend on the forest for their livelihoods. According to the Forest Services Division (2012: 12), such communities fringe the Reserve with 5 km of boundary.

With reference to the participatory principle contained in Principle 22 of the Rio Declaration on Environment and Development, "Indigenous people and their communities, and other local communities, here, host communities have a vital role in environmental management and development because of their knowledge and traditional practices. Sates should therefore recognise and duly support their identity, culture and interest and enable their effective participation in the achievement of sustainable development (Brown, 1999: 6)."

There is the need to strongly motivate people and organisations in the host communities to participate in consultation and decision-making. This is often time consuming and demands a great deal of effort - often unpaid - and it can be an intimidating experience for non-technical members of the community. This can however be successful if the involvement programmes are those that involve all stakeholders, designed to improve the benefits people get from participation and lower the barriers to involvement (Collier and Berman, 2002: 7).

In the same train of thought, Brown (1999: 2) argues that the rationale for community involvement in forest management has become important for various reasons among which are the proximity of the host communities which makes them the immediate custodians of the forest as well the stakeholders in closest touch with the forest and dependent on it in a wide variety of ways. Hence, they are best placed to ensure its effective husbandry. Also,

the livelihood activities of host communities have a direct effect on the condition of the forest and their involvement in its management makes sound practical sense. In many instances in the developing world, there is a very limited capacity for effective management of the forest resource by the public sector. Even where public sector management is feasible, the costs of exclusive direct management by the state may be prohibitively high and local management may be an important way of cutting costs.

5. Concepts and Approaches Contributing to understanding and Practicing Co-Management

For easy structuring of data and a better conceptualisation of the findings of the Study variables, concepts and approaches contributing to understanding and practicing Co-Management are employed. Co-Management between state authorities and local people is a relatively well-recognized management approach to reconcile cultural and biodiversity conservation in Protected Areas (PAs) (DeKoninck, 2005, Berkes, 2009). There has been the moral argument underlying this to the effect that conservation goals should contribute to, rather than conflict with basic human needs (Mahanty et al., 2007).

In as much as considerable attention has been given to the role of local and traditional knowledge in conservation (Ross et al., 2009), indigenous people are still struggling to find a role in PA decision making processes and management actions (Jaireth and Smyth, 2003) as well as in effectively managing their land together with PA management agencies (Izurieta et al., 2011). It is the purpose of the Co-Management approach to support such social, cultural and economic outcomes as well as the partnership arrangements and processes linked to the interests and rights of the stakeholders. Co-Management has usually followed two options for the purposes of sustaining the availability and renewal of natural resources; either regulating the exploitation of specific set of resources (e.g., a valuable species) or it can be established over a delimited geographical area (e.g. protected area) (Borrini-Feyerabend et al., 2004). According to Berkes (2007a), Co-Management has been described as: power sharing, institution building, trust building, process, social learning, problem solving, and governance with each posing specific challenges to be addressed and alternatives to be balanced by the actors engaged.

There are several crosscutting themes (concepts and approaches) contributing to understanding and practicing Co-Management. These include but are not limited to: **Adaptive Management** approach - based on the recognition that the management of natural resource is always experimental, that we can learn from implemented activities and that NRM can be improved on the basis of what has been learnt. In the **Pluralism** approach, autonomous and independent (or inter-dependent) groups freely interact and collaborate on NRM issues on the basis of different views, interests and entitlements. The complex ways by which individuals and institution, public and private, manage their common concerns is expressed in the **Governance** approach. The **Conflict Management** approach promotes dialogue and negotiation in a non-violent process towards constructive rather than destructive results in Co-Management. The **Social Communication** approach mobilises the capacities and energies of people as well as enhances their knowledge and skills by involving them in NRM. Here, the participation of local people is envisaged and sought (Grazia et al., (2007: 5-6, 11-13). For the purposes of this paper, Co-Management is seen as a type of partnership between non-governmental and governmental natural resource users and managers in which management is formally shared, usually under an agreement (George et al., 2004).

6. Study Area and Methods

6.1 Location and Extent of the BFR

The BFR is the closest forest reserve to the city of Kumasi, capital of Ashanti region. Refer to Figure 1. It is located 35 km southeast of the regional capital and 2.5 km off the main Kumasi-Accra road at the village of Kubease. It lies on latitude 06°40'N to 6°44'N and longitude 01°15'W to 01°22'W. The Reserve covers an area of 5504.00ha (55.040km^2) as distributed as Table 2.

Table 2: Distribution of the BFR

Reserve	Potentially Protective Forest (Ha)	Potentially Productive Area (Ha)	Admitted Farms Area (Ha)	Total (Ha)
Bobiri	1417.22	4021.18	65.60	5504.00

Source: Forest Services Division, 2012: 7

Some of the forest host communities are Kubease, Nobewam, New Koforidua, Duampompo, Agyareago, Juabenma, Krofuom, Tetekaaso, Atunsu and Kyekyewere. For the purposes of this Study however, Kubease was selected. The selection of Kubease was informed by its description as the "gate-way" community to the Reserve. Again, its location on the main Accra/Kumasi road provides the "first impression" when approaching the Reserve. Kubease's selection was also informed by its population size. With reference to the 2000 Population

and Housing Census estimate of Ghana, Kubease is the host community with the highest number of inhabitants of about 1787 (Ghana Statistical Service, 2005).

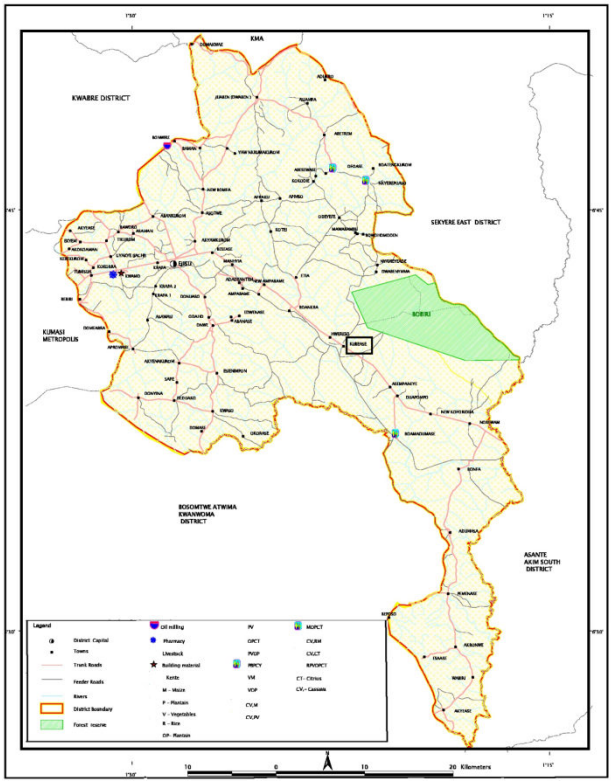

Figure 2: The Location of the Bobiri Forest Reserve and Kubease in the Ejisu Juaben-Municipality
Source: Ministry of Local Government and Rural Development and the German Technical Cooperation (2010)

7. Approach and Methods

A qualitative investigation approach was used for the Study. The new field of study as well as its exploratory nature demanded a more flexible and open research design rather than one that is highly structured and rigid. It again demanded participatory and collaborative relations in decision-making processes and hence the use of a qualitative approach. The participatory nature of the Study required the use of semi-structured interviews that have been viewed as central to participatory approaches. The Paper drew on advances made in participatory approaches and sustainable development in development studies and situated it in the sustainable management of ecosystems and their services. Here, the focus was to find out how participatory approaches can be effectively integrated into sustainable management of forest ecosystems. The Study therefore began with the investigation of secondary data. The secondary data were obtained from published documents, reports, journals, periodicals, the Internet, magazines, newspapers, national and other relevant state and non-state institutions that have interest in the sustainable management of forest ecosystems services.

The data collection process involved interviewing the Community, Forest Services Division (FSD) and Forest Research Institute of Ghana (FORIG). The researcher employed semi-structured in-depth interviews with the respondents from Kubease, FSD and FORIG. Brochures were also collected as important sources of information. The community and institutional surveys were therefore done using semi-structured in-depth interviews. Interviewees' responses were taped-recorded and shortly after transcribed. This was particularly done when interviewing FSD and FORIG. Shorthand notes were also taken right after the interview to capture important observations. Focus Group Discussion (FGD) was also identified as an appropriate technique for collecting data on the issues under discussion. The fact that the participants were rarely homogenous with different interests also informed the decision to use FGD. Here, the participants freely talked and shared their opinions. They either corroborated or challenged responses that were not a reflection of the truth. The dynamism of the whole process was spiced up by the different temperaments of the participants. Different ideas were brought from different angles with different interpretations.

The analysis of data proceeded in three stages: identification of themes, descriptive accounts and interpretative analyses. Based on the research questions, themes were identified from the data and derived inductively from the theoretical framework. The identified themes were given meaning through descriptive account and interpretative

analyses. The themes were analysed and presented in the words of the respondents and in some cases, direct quotes were used to embody the voices of all identified and interviewed stakeholders. This ensured a more reliable and credible research findings.

8. Results and Discussions

8.1 Inventory of the Main Ecosystem Services of the BFR

It was made evident by the Assistant District Manager (ADM) at the FSD and the caretaker at the BFR that the BFR functions as Production, Conservation, Research and an Eco-tourism site. The Reserve hosts an Arboretum of about 1.1 hectares made up of about 102 different indigenous species. It is also a home to about 456 butterfly species and still counting according to the caretaker of the Reserve. Particular interest has been given to the provisioning services of the Reserve upon which the livelihood of the Study community is dependent. The following NTFPs were mostly collected from the Reserve.

8.2 Fire Wood

Different means are used in harvesting firewood in Kubease. It is done by looping branches of mature tree, cutting shrubs and trees and in some cases felling matured trees. The most collected local wood species for firewood are emire, papea, ofram, esa and okro among others. Those who collect the firewood for commercial purposes make sales at the nearby bigger towns of Kumasi, Ejisu and Konongo. Such people depend on the fire wood collection as an important source of income and employment.

8.3 Hunting

The rate of hunting in the Community is low. Only a handful of people who are expert in hunting are involved in the hunting occupation. Hunting was not a major activity as it cannot be done all year round. It is prohibited between 1st August and 1st December every year. This period is the gestation period for the majority of the animals and is referred to as close season. The hunting periods are referred to as open seasons. Wild animals that are hunted include Duikers (Adowa), Antelopes (Otwe), Bushbuck (Kokote) and Deer (Wansane). Other small mammals include African Giant Rat (Kusie), Grass Cutter (Akrantee), Palm Squirrel (Opro) and other rodents.

8.4 Arts and Craft Materials

The BFR provides rattan, bamboo, special tree species and many other forest resources as arts and craft materials. The interview with the Researcher at FORIG posited that Rattan (Cane) and a special tree for making pestle known in local parlance as womma are the two most dominated art and craft material in the BFR.

8.5 Medicinal Plant Collection

Different plants are collected and used as medicine in rural areas in Ghana. This is much so in areas where access to modern health care facilities is absent. The presence of the BFR offers the Kubease community access to such medicinal plant collection. The Community depends on the Reserve for the collection of such medicinal plants, as they are cheap and easy to find. Specifically, these medicinal plants are used in healing fractures, stomach problems, piles and fever, boils as well as weaning babies among others. This practise has to a greater extent reduced the Communities dependence on the expensive and hard-to-reach health facilities in the bigger towns. Such plants (names in local dialect) include twapea, mahogany, nyamedua, esro wisa and kokodua. Other non-medicinal forest foods collected include mango, pawpaw, wild yam and avocado.

8.6 Other Forest Resources

The other forest resources provided by the BFR are snails and mushrooms. These are collected in seasons. During their seasons, they are part of the Community's diet. When they are collected in large quantities, some are sold to supplement other income sources. Mushroom is still prominent in the Reserve but there is a scarcity of snails. The Community attribute the scarcity to the changing conditions of the Reserve.

9. Forest Law Enforcement

Even though the Community has domestic use rights (communal/admitted rights) to the Forest resources, the current forest law restricts the collection of NTFPs above certain quantities. The law requires the acquisition of a permit for the collection of NTFPs when certain quantities that the FSD deems commercial are to be collected. The respondents were of the view that such law poses several challenges to their livelihoods. The Community members' responses showed that in as much as they are aware of such laws aimed at maintaining the health of the Reserve, they are unwilling to obey it. The discussions showed that the Community members want a system where they can have free unregulated access to collect NTFPs.

It became clear that the Community's non-involvement in the design of such a law has resulted in their unwillingness to obey it. Efforts to educate the community members on the need to obey the law to maintain the health of the Reserve have been unsatisfactory. In enforcing the law, a number of institutional structures have been put in place. The FSD, the Police Service, the Military, Traditional Authorities and the Community Forest Committees (CFC) are responsible for the enforcement of the law. The FSD in protecting, managing and conserving the forest resources does not have the power to arrest violators of the law. The Police Service and the

Military are charged with the power to arrest and prosecute offenders. The CFC and the traditional authorities also collaborate with the FSD to monitor and report forest law violations.

10. Stakeholder Analysis

The overview of the various stakeholders identified to have different interests in the BFR is presented in Table 3 as well as the description of their category and interests. It is not the purpose of this paper to extensively analyse the identified stakeholders based on their category and interest but to expose the reader to some basic characteristics of these stakeholders and their claim of interest.

Table 3: Stakeholder Matrix of Bobiri Forest Reserve

CATEGORY	*STAKEHOLDER*	*TYPE OF INTEREST*
Policy and Legislative makers	1. Ministry of Land and Natural Resources (MLNR), 2. Parliamentary Select Committee on Land and Forestry etc.	Formulation of sustainable forest policy initiatives
Resource Managers	1. Corporate and Divisional Headquarters	Strategic policy direction
	2. District Forest Services Divisions	Operational planning and implementation
	3. Resource Management Support Centre (RMSC)	Strategic planning support and project site
	4. Ghana Wildlife Society	Conservation of fauna
Resource Users (Forest host Communities)	1. All communities fringing the Reserve with 5km off boundary	-Sustained benefits from the forest and involvement in implementation activities -Direct and indirect access to resource benefits (NTFPs collection) to support livelihoods
	2. Landlords	To obtain adequate and cheap timber for building.
Academic Institutions	1. Ghana Education Service (GES)	Teaching laboratory for students and pupils
	2. Faculty of Renewable Natural Resources (FRNR)	Practical teaching and research
	3. FORIG	Use as project site for research and tourism
Land Owners	1.The Juaben and Effiduasi Traditional Councils	Promotion of social development within their respective areas
	2.The Traditional Authorities	Rights of consultation to ensure optimal benefit flow to stool and subjects
Law Enforcers	1. The Military	To assist in tracking down illegal chainsaw and logging operations.
	2. Police and Judiciary	To assist in the arrest and prosecution of offenders
Private Sector	1. Timber contractors	Availability of resource for harvesting
	2. Small scale carpenters	To obtain wood for manufacturing
Public Agencies	1. Environmental Protection Agency (EPA)	Compliance with national environmental standards
	2. Department of Feeder Roads (DFR)	Shortest possible motorable roads linking communities
International Communities	International Timber Trading Organization (ITTO), Netherlands Government	Improved conservation regime through efficient application of project funds

Source: Adapted from the Forest Services Division, 2012: 12-13 and views of experts from the FSD and FORIG.

The BFR is under the management of FSD, which oversees and manages the Forest area on behalf of the government of Ghana. The FSD works hand-in-hand with FORIG, which is in charge of research of tourism development of the Reserve. Every parcel of land in the Reserve is under the custodian of the sub-chief and

elders in Kubease. The sub-chief and the elders in turn administer it on behalf of the Juabenhene (Paramount Chief of the area). The Community also has communal/admitted rights to the Reserve. They are therefore imperative in understanding how the management functions, entitlements and responsibility of the BFR are negotiated, defined and guaranteed by the resource managers, land owners and resource users who have different interests and power in the use and management of the Reserve.

11. Co-managing the BFR

According to Ministry of Land and Natural Resources (2011: 18-19), current collaborative approach towards sustainable forest management in Ghana involves consultation, needs assessment, investigation, synthesis and consensus building. These are aimed at ensuring equity and the fair distribution of benefits and efficiency in the execution of sustainable forest management prescriptions. Unfortunately, there are no legislative supports for collaborative forest management in Ghana. The lack of legislative supports for collaborative forest management in Ghana does not therefore support sustainable forest management aimed at maintaining the health of forests to produce economically viable harvests and provide social and environmental benefits for now and the future as stipulated in the Ghana Forest and Wildlife Policy. Collaborative arrangements towards sustainable forest management in Ghana are therefore done on ad hoc basis.

There is increasing demand on the forest resources of the BFR thereby putting pressure on it. This has created complex situations that are difficult to manage. This has called for the urgent need now more than ever to find ways and means of ensuring the sustainable management of the forest resources. According to the (Forest Services Division, 2012: 25), for management purposes, the entire Bobiri Forest Reserve is divided into two management zones: Protection Management Zone of about 1430Ha of land and Production Management Zone of about 4075Ha of land. The Protection Management Zone contains research areas and strict nature reserve. It is home to the Bobiri Forest Arboretum, the Bobiri Butterfly Sanctuary and the Bobiri Guest House that serve as eco-tourism site. The Production Management Zone is managed in accordance with harvesting schedules that define the time frame in which particular compartments can be logged. In line with this, all timber production areas are managed sustainably under a 40-year felling cycle with prescribed diameter limits for each economic timber species.

12. Community Involvement in the Management of the BFR

The communal/admitted rights agreed on during the establishment of Bobiri Forest Reserve give the people of Kubease access to use the forest resources to meet their livelihood needs. According to the Forest Services Division (2012: 10), such communal/admitted rights include:

(i) The right to fish in streams and game hunting subject to the compliance with the provisions of Wildlife Conservation Regulation 1971 (1685). Hunting is however, prohibited between 1st August and 1st December (Close Season);
(ii) Collection of snails, honey, mushrooms, wild yams, medicinal plants, fruits, fuel wood (deadfall only) household and agricultural equipment and building material for domestic uses with free permit issued by the District Manager;
(iii) Access to existing bush paths provided the forest vegetation is not tampered with and;
(iv) Rights to farm within admitted farms

These rights make it imperative to involve the Community in the conservation and sustainable management efforts of the forest resources. This will go a long way to ensure the maintenance of environmental stability and the continuous flow of the optimum benefits from the social and economic goods and services that the Reserve provides to the resource managers and users now and in the future.

Efforts have therefore been made to get the Kubease community involved in the management of the BFR through a system referred to as the Modified Taungya System (MTS). The MTS is an initiative to replant degraded areas within the Reserve. Under this system, the FSD allocates degraded areas to farmers to grow food crops while planting and tending timber species. The FSD supports farmers with tree seedlings to plant along with their food crops. The arrangement is such that when the tree species grow and their canopies close, farmers move and may be allocated new plots of land for farming. Under the MTS cultivation of cash crops is not allowed, as crop cultivation cannot continue after canopy closure. Here, the farmers are supposed to get 40% of the proceeds from the trees they tend on their farms.

The farmers are however not entirely satisfied with the MTS. They complained of not getting the required 40% from the proceeds of the trees they plant. Due to inadequate checks, very few farmers currently replant trees on their farms under the MTS in the Reserve. The farmers are again not willing to tend the trees to full growth under the MTS after harvesting their crops since they have to move when the tree canopies close.

Speaking to the MTS again, the Farmers at the FGD pointed out that they need funds to undertake the farming activities that are not available. In addition, authorities in charge of the System demand payments from them

before demarcating the plots. There was also the concern that the FSD does not provide the needed farm inputs like seeds, cutlasses and money for the clearing and maintenance of their farms.
The farmers therefore lamented that the MTS has not and cannot help address their livelihood needs under the current circumstances. They therefore call for the need to provide them with incentives such as farm inputs and credit facilities to help them intensify their farming activities and thereby making farming under the MTS more lucrative and attractive. The farmers were again of the view that for the System to be effective, they need to be paid the 40% proceeds from the trees they plant. Calls were made by the researcher at FORIG to intensify education and awareness creation in the Community about the workings, implementation status and opportunities available for effective collaboration in the implementation and the successful execution of the modalities in the MTS. The Researcher at FORIG also reiterated that the need for the FSD to maintain the modalities in the System as well as make changes where needed.

13. Enhancing Co-management of the BFR: The Way Forward.

The Paper seeks to provide an overall guiding principle for policy action on how the management functions, entitlements and responsibilities of forest ecosystems should be negotiated, defined and guaranteed among various stakeholders for the sustainable management of forest ecosystem services in Ghana. In line with this, there is the urgent need to enact legislation that supports collaborative forest management in Ghana. This will go a long way to ensure support for sustainable forest management aimed at maintaining the health of forests to produce economically viable harvests, provide social and environmental benefits for now and the future. There is also the need for such a legislation to consider allocating greater portion of benefits accruing from resource management towards the development of host communities. Efforts should be made to strengthen local government institutions in promoting the sustainable utilization and management of the social and economic benefits from ecosystem services. Community level governance should be enhanced to ensure that revenues received are used in an open, transparent and accountable manner. Community level institutions should therefore be well equipped to directly receive, plan for and utilise these resources.
There exists a complex system of ecosystem and human well-being linkages that require multi-disciplinary approaches to fully appreciate. There is the need to understand these ecosystem-human-well-being linkages through proper information dissemination and management without treating the different aspects as independent. When this is done, the distribution of benefits from forest resources and people's impact on ecosystem services will be clearly understood. Deliberate actions should be taken to strengthen educational activities in forest host communities. These educational efforts should be aimed at sensitizing the community on sustainable forest management issues. To this end, the communities will be informed and local/indigenous knowledge on sustainable forest management practices enhanced. Concerted efforts should be made to identify alternative livelihood activities with forest host communities. This will help reduce their dependence on the forest resources and thereby improve the livelihood conditions of the host communities while maintaining the overall health of the forest ecosystem services. There is also the need to build the capacity of forest host communities and support them in exploring alternative livelihood interventions that are sustainable and viable in meeting their livelihood needs as forest communities.
All stakeholders should be involved in various stages of forest policy formulation processes. Considerations should however be given to their stakes, roles and capacities. Developing an integrated approach to forest management with the involvement of all stakeholders is imperative. By so doing, a balance between three objectives – conservation, sustainable use and fair and equitable sharing of the benefits arising out of the utilization of the forest as proposed by the Convention on Biodiversity will be achieved. Multi-stakeholder forums should be continually held in this direction to help build confidence among the different stakeholders. To ensure that Co-Management works, community-based forest organisations such as the CFC should be registered with the MLNR and their activities streamlined. Efforts should be made to develop forestry Co-Management guidelines for all forest reserves that set the functions and roles of all stakeholders. Resource managers do not usually see resource users as equal partners. Co-Management processes should therefore be seen as a dynamic process that can change the nature of power sharing over time. Here, power sharing should be recognised as a process that evolves through interaction, joint working, capacity building and experience. There is therefore the need to effectively analyse and understand the nature and degree of power sharing in developing Co-Management guidelines.

14. Conclusion

When forests are put under reserve in poverty-dominated regions, there is always the tension between the resource users expecting the reserve to continually provide its services to sustain their livelihood and the resource managers seeking to protect the overall health of the ecosystem through sustainable extraction of its resources. This was the case with the BFR and the Kubease community, a host community to the Reserve. In

this Study, the absence of alternative livelihood activities for the people Kubease has increased their dependence on the BFR to meet their livelihood needs. In this Community, the ecosystem services from the BFR constitute a direct life-blood for the majority of the people. While the major occupation of the people of Kubease is farming, this activity does not fetch them enough returns to meet their livelihood needs. This has increased their dependence on the BFR to sustain their livelihood. The result is the high pressure on the ecosystem sustainability of the BFR as well as an increasing stress on the BFR resulting from the nature-base livelihood of the Community.

Thus, exist the need to call to ensure a collaborative approach towards sustainable management of the BFR through consultation, needs assessment, investigation, synthesis and consensus building. When this is done, there will be equity and fair distribution of benefits and efficiency in the execution of sustainable forest management prescriptions of the BFR aimed at maintaining the health of the forest resources to produce economically viable harvests and provide social and environmental benefits for now and the future.

In conclusion, the following words are worth echoing:

Box 7.1: Expected Benefits of Co-Management

The primary advantage of Co-Management is that with the right institutional and legislative framework, it allows the knowledge and understanding of all stakeholders to be reflected in making and implementing decisions. Resource users directly tend to have a greater knowledge of their local environment. Once suitably organised and motivated by a sense of ownership, and funded through revenue-sharing, they are then in a position to respond to signs of local overexploitation or to damaging activities and to lobby for appropriate changes in policy.

Source: Ogwang et al. (2009: 54).

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