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Community Participation and Sustainable Forest Management in the Twifo-Hemang-Lower Denkyira District

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Abstract

Community participation is central to the sustainable management of forest reserves. However, forest reserves in the Twifo-Hemang-Lower Denkyira District are disturbed by rural people even under collaborative forest management, which threatens forest sustainability. The study analysed the socio-economic importance of the reserves to the forest fringe communities, participation levels of the communities in reserve protection, and challenges stakeholders face in ensuring sustainable forest management (SFM). The study adopted a descriptive study design to assess community participation in SFM. Both simple random sampling and purposive sampling techniques were used to select the sample for the study. Questionnaire, interview schedule and focus group discussion guide were employed for the primary data collection. The main findings of the study were that forest fringe communities enjoyed some benefits from the forest but this was not enough. Their participation in SFM was only by upholding the forest by-laws. However, a major challenge was the farm raiding by elephants from the forest reserve. Community participation in SFM was at the lowest levels. Some of the challenges encountered by stakeholders in SFM were non-cooperation of community members and access restriction to forest resources. The study recommends that government should not only legally recognise forest ownership rights but also build the capacity of communities to allow higher community participation levels in SFM.

Keywords: Sustainability, forest, management, community, participation

Introduction

Sustainability has emerged globally as a unifying concept in forest resource management. Sustainable forest management (SFM) has been recognised by many international environmental conventions as an essential tool for achieving sustainable development (United Nations Environment Programme, 2002). These include the 1972 Stockholm United Nations (UN) Conference on Human Environment, 1978 World Forestry Congress, 1987 Brundtland Report by the World Commission on Environment and Development (WCED), and the 1992 Rio de Janeiro Earth Summit.

The objective of these conventions was to stimulate the awareness of the need to link conservation of natural resources with the development needs of rural populations who are mostly dependent on the use of natural resources. It was also to strategise means of solving conflicts of interest in natural resource management and consumption since resources are limited in supply, and have multiple stakeholders and uses. Globally, local communities' participation in forest management became a popular approach to SFM (World Bank, 2004).

In line with this, the European Commission (2004) indicates that community participation ranging from *information sharing, consultation, decision-making to initiating action* in forest management is essential for the success of the SFM exercise. These are not mutually exclusive but are aimed at defining the role of forest fringe community members, empowering them as well as building their capacity in carrying out the SFM exercise.

The enormous role of forest fringe communities in SFM has also been acknowledged within Africa. This is evidenced with an increasing number of African countries gradually devolving authority and ownership to community institutions whose spatial spheres fall within forests and who have the interest and capacity to enforce SFM. Hence, participatory forest management is now an established principle in forestry programmes in Cameroon, Gambia, Ghana, Kenya, Malawi, Mozambique, Namibia, Tanzania, Uganda, etc. (Wily, 2002).

Forests, undoubtedly, provide important raw materials for many rural poor who depend directly on them for sustenance (Oduro, 2002). Forests give off some socio-economic benefits that contribute to meeting the needs of the society. According to Jones and Carswell (2004), *forests are particularly useful to indigenous and rural people for production and consumption purposes*. In addition, forest resources contribute to the overall economy through employment, energy, tourism, education and trade.

In reciprocity, forest fringe communities are to ensure the protection of forests and forest reserves (Agrawal, Chhatre & Hardin, 2008). This may be carried out through the monitoring of the forests and reserves against illegal encroachers as well as planting of native tree species to ensure their non-extinction within forest reserves. Communities are also to be involved in the formulation processes of policies, legislations, by-laws and general guidelines concerning forestry.

From the above analysis, it can be understood that the level of benefits from forests is an indication of the extent to which forests are valued by society

and subsequently the need to sustainably manage them. Since community participation in SFM includes aspects of land tenure, traditional knowledge, indigenous and community management systems, Odera (2009) has affirmed that community forest management is unlikely to be successful if it does not generate goods and services for the community members.

According to the Environmental Protection Council [EPC] (1991), not only has the rate of forests degradation in Ghana been a major concern since the British colonial era, the nation is unable to sustain the timber in its forests and reserves. Consequently, Ghana's forest cover dwindled from 8.2 million hectares to 1.6 million hectares between 1900 and 1997 (Ghana Forestry Commission, 2002). Ghana's timber industry virtually collapsed with forest reserves losing their entire forest cover during the 1970's and early 1980's under the burden of economic recession (Ghana Forestry Commission, 2002).

The Ghanaian government therefore realised that centralised forest regimes, which excluded local knowledge and traditional practices in forest policy-making and management, did not work in the achievement of SFM. The Parliament of Ghana passed the 1993 Local Government Act (Act 462) which made local authorities responsible for the overall development of their respective areas of jurisdiction, including forest management. The Forest Services Division (FSD) of the Ghana Forestry Commission also adopted an inclusive Collaborative Forest Management programme by involving local communities in the planning, appraisal, implementation, monitoring and evaluation of activities in forest reserves. Community Forest Committees (CFCs) in forest fringe communities were formed to collaborate with the FSD in forest management and benefit sharing.

Notwithstanding the importance of SFM and the many benefits of forests and reserves, forest management has been plagued with numerous problems. These cover environmental, social, and economic issues, thus rendering the journey to SFM extremely difficult (Baffoe, 2007). Issues bedevilling forest management include land tenure, forests conversion to farmlands, illegal logging by timber industries, poor benefit-sharing systems, and weak implementation and enforcement of institutional laws and structures.

The Twifo-Hemang-Lower Denkyira (THLD) District has large areas of forest reserves covering a total area of 288km² occupying 25 percent of the entire district surface area. However, the focus of this study was on the Kakum National Park and Pra Suhien Forest Reserve. The Kakum Park was created to provide habitat for both endangered

Pra Suhien Forest Reserve was created to ensure sustained optimum production of the forest reserve; maintain, enlarge and conserve the biodiversity of the Reserve; and satisfy the rights of local communities through collaborative efforts (Cape Coast Forestry Department, 2010).

The THLD District Assembly's 2006 medium-term development plan reports that economic activities of the forest fringe communities had adversely affected the ecosystem, even under collaborative forest management. The reserves, in terms of quality and species, were largely disturbed by the activities of the rural people through farming, logging and mining which threatened their sustainability (THLD, 2006). The forest loss therefore affected the local communities negatively. They suffered soil and nutrient depletion for agricultural purposes as their major economic activity was farming. It also resulted in the extinction of many of the plant and animal species upon which they depended for food and medicine. Non-Timber Forest Products (NTFPs) such as canes for basketry, bamboo for garden furniture, and tannins for leather works were becoming extinct with consequences for rural life (Institute of Statistical, Social and Economic Research/Department for International Development/World Bank, 2005). The Game and Wildlife Department (2010) as well as the Cape Coast Forestry Department (2010) reported the non-cooperation from the rural people, as the co-managers and owners of the reserves in the SFM programme. This raises doubt about the extent of participation of the forest fringe communities and their commitment to ensuring SFM. The study therefore analyses the socio-economic importance of the forest reserves to the forest fringe communities, the level of participation of the forest fringe communities in protecting the forest reserves, and the challenges stakeholders faced in ensuring SFM.

Theoretical perspectives

The study was guided by theories on Common pool resources (CPR) to understand why individuals engage in collective action arrangements to devise institutions that could cope with CPR problems. In understanding CPR, it is important to make a distinction between open access resources and communal resources. Open (common) access resources connote non individual ownership. In other words, free for all to use. This assumption indicates that there is rivalry in its consumption and difficulty in the exclusion of potential beneficiaries of the resource since they belong to everybody (Bruce, 2000). This makes provision and protection of the resources mostly challenging. In contrast, communal resources refer to tenure arrangements in which ownership is vested in the community by inheritance through a family, clan or tribe. Thus, access to communal resources and its benefits are limited to only community members or discrete parts of a community such as family or lineage. Bruce (2000) indicates that this type of resource is very common in most African traditional societies.

Ostrom (1990) indicated that collective action is needed to overcome forest depletion by limiting the use of common pool resources and managing the resource effectively. Ostrom (1990) further argued that users could agree on common rules and enforce them collectively to ensure a successful SFM. The emphasis on the adoption of the Theory of Collective Action for the sustainable management of CPR depends upon successful interaction and cooperation among stakeholders, including the primary users of the resource. According to Ostrom (1990), collectivisation of common resources ensures equity in forest management which guarantees SFM.

Poteete and Ostrom (2004) however opined that there is no guarantee that every group in any given situation will actually overcome coordination or social dilemma problems. Coordination and cooperation depend, among other things, on the size and heterogeneity of groups. Poteete and Ostrom (2004) therefore propose that success in managing a collective good depends on a small homogeneous group, while failure to overcome collective action problems frequently results in more loss of natural resources. The homogeneity may be in terms of ethnicity, perceptions, occupations, interests, wealth, a defined and bounded resource, and rule enforcement system. Critics such as Heckelman (2004) argue that problems of collective action emerge when there is inadequate information, conflicting interests, or because of the nature of the good.

As an approach to understand collective action, Gibson, Williams and Ostrom (2005) used the rational choice theory propounded by Buchanan and Tullock (1962) which assumes that individuals contribute to a collective action only if their individual expected benefits exceed their individual expected costs. In other words, a group of people or community would choose a collective mode of action when all members find it profitable to act. The value people place on their benefits and losses from development projects is critical in motivating and increasing their commitments towards project sustainability (Gibson et al., 2005).

The rational choice theory argues that a collective action must be composed of individual actions. Olson (1965) has challenged the view that groups of individuals having common interests usually collaborate to achieve them. With rational individuals having an incentive to take a "free ride" in the use of a resource without contributing to its management, it is difficult to mobilise individuals into collective action to manage the common resource. In Olson (1965)'s analysis, free riding is a problem in all but the smallest groups.

Runge (1986) used game theory to explain 'when' and 'why' people cooperate in forest resource management. The theory studies whether there

are incentives for people to participate in forest management and uses the element of cooperation to seek consensus in the management of natural resource conflict since resources are scarce in nature and have multiple uses. Runge (1986) recommends that collective action will be feasible if the people in a group can cooperate.

The degree of voluntary cooperation together with the monitoring of free-riders to ensure collective action plays a key role in the success of SFM. However, for a sustainable collective action in CPR management, Pagdee, Kim and Daugherty (2006) suggest the need to establish and understand resource ownership status, institute a common rule, as well as involve, define and sensitise all stakeholders, especially communities on their roles in SFM. Gibson et al. (2005) also argues that the whole exercise of SFM is about maintaining a balance between people's right to forest resources and ensuring ecological sustainability. As a result, residents in forest fringe communities should be given some rights to guarantee enhanced living conditions. Such rights could enhance their commitment to the sustainable management of forest reserves.

Community participation in sustainable forest management

In India, Agarwal (2001) found that despite women's limited presence as formal members of the Community Forestry Groups (CFGs), many women played an active role in protection efforts. Formally, protection of the bounded forest area is usually done either by employing a guard, with CFG members contributing the wage, or by forming a patrol group from among the member households. Agrawal (2001) asserts that only a small percentage of patrols were constituted by both men and women, or by women alone, and there was a rare female guard. However, he found women's informal vigilance to improve protection through the apprehension of intruders both from other villages and from their own village, and saving the forest through fire fighting. According to Agrawal (2001), women contributed substantially to protection of the forests in order to indicate their stake in forest regeneration.

Virtanen (2005) reveals that Community-Based Natural Resource Management (CBNRM) in Mozambique has been paternalist and overly rhetorical. Existing institutions turned out to be relatively inefficient in the CBNRM objectives while outcomes of new institutions initiated under project pressure differ remarkably. Even as some communities failed in the CBNRM exercise, others succeeded in creating a relatively robust management regime by controlling tree exploitation for charcoal burning. Majority of the residents were willing to impose rules on the use of key sustainability of the tree resources to continue the

However, full legal control over local natural resources led to the exodus of some households and marginalisation of some stakeholder groups within the community. Interestingly, CBNRM was better successful in the heterogeneous community than in the socio-culturally more homogenous one. The reason was that the homogenous community's project was not able to introduce any economically viable alternatives to the prevailing agricultural activities which were considered destructive. The outcome is therefore at odds with the popular outcome of Cleaver (2000)'s study on institutions which states that socio-cultural homogeneity is an advantage in CBNRM projects.

Conceptual framework

Sustainability of forest management comes through participation of stakeholders, particularly local communities at all levels of intervention from planning, implementation, monitoring and evaluation. The involvement of community members is likely to increase their influence or control over decision-making and move their involvement up the typology towards collective action. This is to promote community responsibility and ownership.

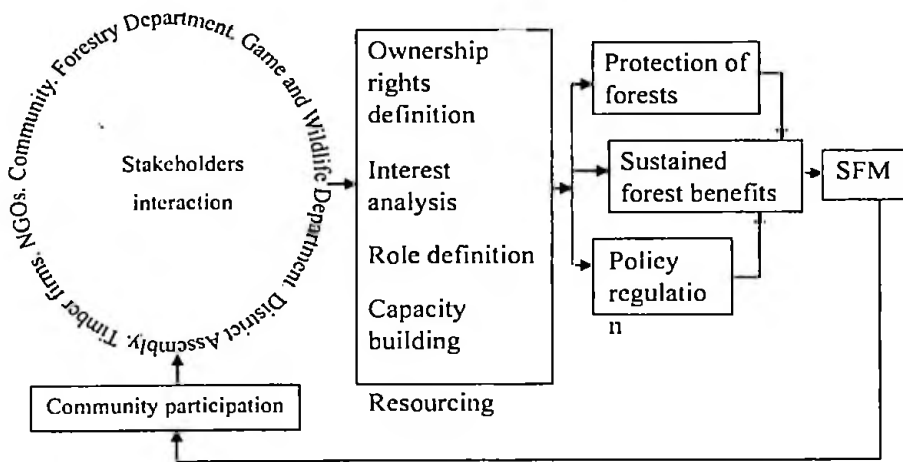


Figure 1: Framework for analysing sustainable management of a common forest reserve

Source: Authors' construct, 2011

For a successful SFM exercise, there is the need to involve the forest fringe communities in the interactions that lead to the definition of the ownership rights of each stakeholder. Successful SFM therefore requires common interaction among the forest fringe communities, timber firms, Forestry Department, Game and Wildlife Department, and NGOs. The community

comprises traditional leaders/chiefs, local associations/cooperatives, farmers, hunters, loggers, carpenters, charcoal burners, chainsaw operators, elites, etc.

However, all the stakeholders have different interests in the forest. It is therefore necessary that stakeholders interact and cooperate with one another to bring to bear the various conflicts of interests in the forest reserve which may be harmonised to achieve SFM. Each stakeholder is given a role in the sustainability exercise to avoid the problem of leaving the management of forest reserves in the hands of no one. This calls for building the capacity of the stakeholders through training programmes as well as resourcing them with tools and equipment, buildings, logistics, motor bikes, vehicles, among others, to ensure easy monitoring.

All these are done to ensure the protection of the forest reserve which in turn guarantees sustained forest benefits. Rationally, individuals will contribute to the SFM exercise only if their expected benefits exceed their expected cost. This implies that benefits serve as motivation for stakeholders in SFM. Voluntary cooperation of all stakeholders, monitoring of free-riders and enforcement of policy regulations will promote collective action in successful SFM.

Research methodology

The study employed a non-interventional and descriptive study design focusing on communities on the fringes of forest reserves in the THLD District. Stratified sampling technique was used to group the communities into three strata – communities surrounding the Pra Suhien Forest Reserve (8), communities around the Kakum National Park (43) and communities common to both reserves (2).

Due to the uniformity in the management practices in protecting a particular forest category, four communities were randomly sampled from each of the forest reserves, whilst the two communities common to both reserves were purposively sampled. The sampled communities were:

Kakum National Park – Abrafo Gyaware, Antwikwaa, Abeka Nkwanta, and Afiaso. .

Pra Suhien Forest Reserve – Frami, Bekawopa, Bremang, and Ankaako.

Communities common to both forest reserves – Abrafo Odumase, and Mfuom.

The total number of household heads in the sampled communities was 1,643. According to Krejcie and Morgan (1970), a population of 1,643 requires a minimum sample size of 310 to ensure representativeness.

However, a total of 328 respondents were used for the study. Proportionate sampling was used to sample household respondents. Random numbers were used to shuffle the names and the number of names was selected to correspond to the sample size for each community.

The total number of household respondents for the Pra Suhien forest region was 167. This comprised 74 household respondents around the Pra Suhien Forest Reserve and 93 household respondents around both forest reserves. These were added to give a clearer picture on the socio-economic importance of the forest reserves to the communities. The total number of household respondents for the Kakum National Park alone was 33.

Two traditional leaders (Chief and 'Abusuapanyin') were purposively sampled from each community for the study. This is because the Chief and the 'Abusuapanyin' play a critical role in the transfer of forest ownership rights to Government. Five women engaged in the collection of food and firewood, and five hunters were selected from each community for a focus group discussion. Hunters were selected to stand in for the men because they derive all the benefits other men obtain from the forests in addition to their hunting business. It was perceived that they could give a clearer picture on both the benefits and the challenges associated with the management of the forests.

One focus group discussion was held in each community. Snowball sampling was used to select both the women and the hunters from the communities. According to Creswell (2002), snowball sampling method is used when the information about a population is scanty. The first hunter and woman engaged in firewood collection were identified upon enquiries from the community members. The identified respondents led the researcher to the identification of other hunters and women for the focus group discussions to be carried out.

The District Planning Officer of the THLD District Assembly, District Game and Wildlife Manager, Director for the Cape Coast District Forestry Department, Directors for Microsere, and the Ghana Heritage Conservation Trust (GHCT) which are NGOs, and Managers of three timber firms were purposively sampled for the study. The total sample size for the study was 328. This comprised 20 traditional leaders, 50 women (5 from each community) engaged in the collection of food and firewood and 50 hunters (5 from each community) for focus group discussions, as well as 200 household heads, three Heads of District departments, two Directors of NGOs, and three Managers of timber firms.

The study employed survey data collection method (questionnaire and interviewing) and focus group discussion (FGD) to collect the primary data. The data was analysed using Statistical Product and Service Solutions version 17 software. Descriptive statistics such as frequencies and percentages were used. Chi-square test of independence was used to explore associations between variables. An alpha value of 0.05 was used for all inferential analysis.

Results and discussion

Socio-economic importance of the forest reserves

Forest is an important resource that plays a crucial role in the socio-economic well-being of the rural people. Datta and Sarkar (2010) indicate that people's willingness to participate in SFM largely depends on the socio-economic benefits they derive from it. The study found that communities which share boundary with the Pra Suhien Forest Reserve enjoyed some admitted rights such as fetching food, a basic necessity for sustenance from the Forest Reserve. Some of the food items were mushrooms, fruits and snails. Another right of benefit enjoyed by the residents included fetching cultural artefacts such as chewing sticks and sponge, considering the importance they attached to their cultural and traditional systems. These rights were however granted only for domestic consumption, and not for commercial purposes. The results also indicate that some of the respondents did not know all their admitted rights to the Pra Suhien Forest Reserve.

The communities' enjoyment of the admitted rights is likely to improve their commitment to SFM. Deducing from the findings of Gibson et al. (2005), the non-commercialisation of the benefits is also likely to reduce community members' benefits which will in turn affect their commitment to the SFM exercise negatively. Gibson et al. (2005) opine that people will be committed to SFM if their expected benefits exceed their costs. Datta and Sarkar (2010) found that inadequate awareness of specific rights and opportunities of different stakeholders in SFM often reduces the commitment of such groups.

Forty-five (27%) respondents complained that some of the admitted rights of the communities were becoming less important with time. Such rights included access to bamboo for roofing houses, and sponge for cleaning teeth and body. This suggests that the admitted rights of the forest fringe communities should be revised with time to suit the economic and socio-cultural needs of a particular generation and to prevent any unwanted activities that will however threaten the SFM programme. The threat could be in the form of illegal activities from the communities anytime their admitted rights depreciate in value with their socio-cultural and economic activities.

Attempts to revise the admitted rights of the forest fringe community members to suit their current needs may help to rekindle their commitment to the sustainability of the forest reserves. The rekindling of the commitment of members of the forest fringe communities in SFM agrees with the submission by Odera (2009) which states that the extent to which a forest reserve is devoid of illegal activities is a reflection of how the communities value the benefits they generate from the forest management programme.

All the respondents (33) from the communities surrounding the Kakum National Park alone admitted to not having any admitted right from the forest reserve. The chief of Antwikwaa reported that the communities had been relieved of the right to access NTFPs from the Kakum National Park. The Game and Wildlife Department confirmed this fact and added that the communities were relieved of that right because of the change in status of the Kakum Forest from a forest reserve to a National Park in 1989. The admitted rights of the communities to the reserves depend on the purpose for which the forest is conserved and any activity that does not conform to the purpose may constrain the goal of SFM.

The curtailing of the communities' admitted rights in the Kakum Forest Reserve constitutes a breach of contract. This is because once the initial agreement to reserve the forest as a production unit where communities had the admitted right to fetch NTFPs had been changed, it might pose a threat to the SFM programme. For instance, all the respondents indicated that they were only informed to desist from exercising those admitted rights. They did not give their consent to the change in purpose of the forest reserve and the curtailing of those rights. The commitment of community members in the SFM activities is likely to be affected if they continue to be restricted from access to forest resources without any proper compensation. The result buttresses the notion of the rational choice theory that people's willingness in SFM is a relation between their benefits and costs.

From Figure 1, thirteen (39.4%) respondents reported that access restrictions to forest resources had increased the cost of living in the communities, whilst 9 (27.3%) respondents indicated that the access restrictions to forest resources had promoted illegal felling of trees. The illegal activities conducted by the communities in the forest reserves may be attributed to the activities of free riders who have the incentive to take a free ride in the use of forest resources without contributing to its management as explained by (Olson, 1965).

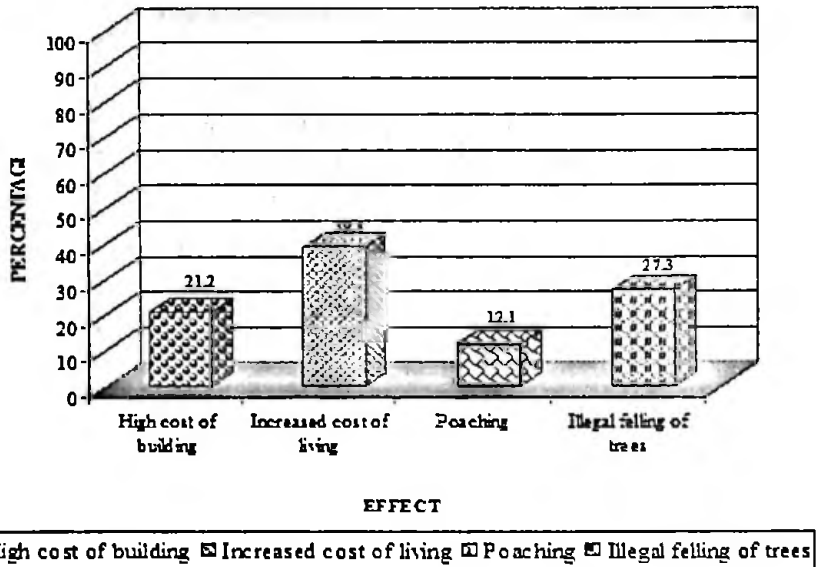


Figure 1: Effects of access restrictions to forest resources on communities

n = 33

Source: Field survey, 2011

The increased cost of living resulting from access restrictions to forest resources may imply that programmes put in place to cushion the communities to adhere to the principles of SFM were not effective to offset the costs the communities incurred in ensuring the sustainable management of the forest reserves. The illegal activities in the forest reserves may also imply that the communities benefited less from the SFM exercise which would cause the unwillingness of the people to adhere to the principles of SFM as an outcome of the interaction between benefits and costs. This assertion corroborates the view of Buchanan and Tullock (1962).

A majority (75.5%) of the respondents were not satisfied with the admitted rights of their communities to the forest reserves. Reasons for the dissatisfaction included restriction from harvesting trees for building and community development activities, denial from fetching food items from the forest, and restriction from obtaining cultural artefacts from the Kakum National Park. As described in the conceptual framework, people in a group would not likely contribute to SFM because their net cost exceeds their benefits.

Regarding the nature of the reserves, communities surrounding the Pra Suhien Forest Reserve were to benefit from Social Responsibility Agreements (SRAs) with timber firms, whilst those surrounding the Kakum National Park were to benefit from social responsibility activities from the management of the Kakum National Park. The Forest and Wildlife Policy of 1994 indicates that before any timber firm is given a concession in the forest reserve, it first has to settle its SRAs with the forest fringe communities that are likely to be affected by its activities. Benefits from SRAs are expected to promote infrastructural development in the forest fringe communities. Such benefits are also to complement the admitted rights to spur up development in the forest fringe communities and to renew the people's commitment to the sustainable management of the forest reserves. Figure 2 shows that 42.5 percent of the respondents admitted to not receiving any benefits from the SRAs with timber firms, while 11.9 percent indicated that their communities had benefitted from SRAs through the construction of culverts.

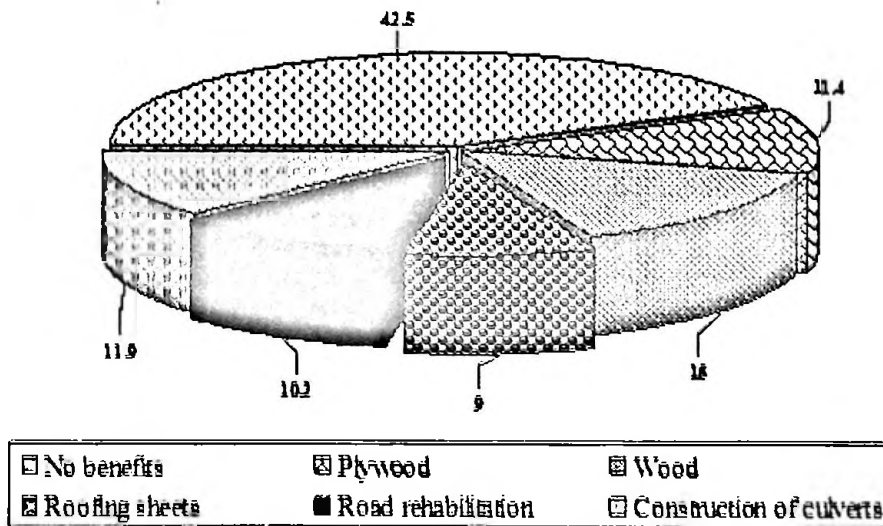


Figure 2: Benefits from SRAs with timber firms

n = 167

Source: Field survey, 2011

The management of the three timber firms and the Forestry Department indicated that the community leaders mostly opted for monetary payments over infrastructural projects in their communities during SRA meetings, accounting for the little physical benefits from the SRAs in the communities. The monetary payments to the traditional authorities were not

also used for physical development in the communities as they were intended. Such benefits were locked up among the traditional leaders. As a result, the traditional authorities benefitted more from the SRAs than the residents in the forest fringe communities. Consequently, some community members illegally harvested trees from the reserves, whilst others condoned and connived with chainsaw operators to fell trees from the reserves for personal benefits. The indication is that community members are less satisfied with their share of benefits from the SFM exercise. The finding is consistent with Buchanan and Tullock's (1962) assertion that people's willingness to adhere to SFM principles is an outcome of the interaction between benefits and costs.

GHCT, a local NGO in charge of the management of the Kakum Canopy Walkway, had instituted programmes to support community development projects. The forest fringe communities apply to the GHCT indicating the projects they need, how such projects could contribute to the improvement of their living conditions, and their budget estimates. This is aimed at addressing some of the developmental challenges of the communities surrounding the Kakum National Park and to renew the community members' commitment to SFM. However, the study revealed that only residents of Abrafo Odumase were aware of and had benefitted from this package. Benefits received from the GHCT include a market facility, community centre and library.

The Game and Wildlife Department in collaboration with Microsfera, an international NGO, had instituted some alternative livelihood empowerment programmes to improve the socio-economic conditions of communities surrounding the Kakum National Park. The programmes included micro credit, soap making, snail rearing, beekeeping, and grass cutter rearing. The introduction of economically viable alternatives to make up the lost right of the communities around the Kakum National Park to the forest resources would make the SFM project more successful (Odera, 2009). However, most communities surrounding the Kakum National Park did not benefit from the livelihood programmes. The Game and Wildlife Department attributed the unequal benefits sharing to inadequate financial support and low budgetary allocations in support of SFM in Ghana.

The study revealed that stumpage fees were paid every quarter to the traditional authorities. At the end of every quarter, the total amount of money realised from every production forest reserve like the Pra Suhien Forest Reserve is calculated and a management fee of 50 percent of the total is subtracted by the Forestry Department. Fifty-five percent of the remaining amount goes to the District Assembly (DA) for development activities in the forest fringe communities. The remaining 45 percent is divided into 45 percent and 55 percent and given to the traditional council and stool land owners, respectively.

The study revealed that none of the traditional authorities in the forest fringe communities had ever benefited from stumpage fees. The reason is that most stool land owners were the same people who formed the traditional council. The 45 percent therefore went to the traditional council represented by the Paramount Chief. It was therefore the responsibility of the traditional council to distribute the money to its sub-chiefs, particularly those in the forest fringe communities. The DA did not also use its portion of the stumpage fees to improve infrastructural facilities in the forest fringe communities. This was because both the traditional council and the DA were not compelled by law to spend part of the stumpage fees in the forest fringe communities. The unfair benefit sharing system in SFM in Ghana is due to weak implementation and enforcement of institutional laws and structures (Baffoe, 2007).

Community participation in SFM

The study found that stakeholders interacted during the meetings of the Reserve Settlement Commission to define the purpose of the forest reserves, ownership rights, various interests, assign roles to stakeholders, and agree on the sharing of benefits. It was also to agree on the payment of compensations to the communities over the transfer of the forest management to the Forestry or the Game and Wildlife Departments, and to address the concerns of the stakeholders. The interaction at those meetings was to streamline the activities of the stakeholders towards SFM.

From the focus group discussions, community members interacted with the other stakeholders to seek redress to the challenges they faced in SFM. They also interacted with the Game and Wildlife Department, Forestry Department, and NGOs to receive training on forest protection activities and other sources of livelihood empowerment programmes. A hunter from Beawopa stated, "We only get the opportunity to interact with timber firms when timber contractors are on their way out of the communities with the timber". Traditional authorities only interacted with the District Assembly and timber firms to settle SRAs. They also interacted with NGOs for alternative livelihood empowerment programmes.

Forest policies and by-laws containing rules and admitted rights of the local communities were developed and accepted during the Reserve Settlement Commission by all stakeholders. From the study, all the sampled traditional leaders admitted that their communities were represented in the decision-making that led to the acceptance of those rights and forest by-laws.

The by-law for the prohibition of hunting during the close season (31st August – 31st December) was formulated by the Forestry Commission at the

national level without the communities. The outcome was only communicated to the communities, indicating the level of community participation in the formulation of forest policies. The majority (83%) of the respondents admitted to their willingness to adhere to this by-law because of the short restriction period, likely benefits they stood to derive from it, and its minimal impact on their primary activities. The people's willingness to obey a by-law depends on the effect it has on their primary activities and the benefits they expect to gain from it. This confirms the underlying conceptual assumption that people contribute to a collective action only if their expected benefits exceed their expected costs.

None of the respondents participated in the decision-making that led to the formulation and the adoption of the by-law to ban people from entering the Kakum National Park without permission. It was indicated that the by-law was formed because of the change in purpose of the then Kakum Forest Reserve to Kakum National Park at the National level of the FSD. Consequently, 71 percent (142) of the respondents registered their reluctance to uphold this by-law because of the loss of economic resources, medicinal plants, food, and cultural artefacts, as well as feeling cheated in the forest management programme. The community members cost their losses to be higher than their current benefits, hence the unwillingness of the majority to contribute to the collective action of obeying the by-law (Gibson et al., 2005). About 29 percent (58) of the respondents attributed the reasons for supporting the by-law to the fear of legal actions and harassment from the Game and Wildlife Department. This corroborates with Ostrom, Burger, Field, Norgaard and Policansky's (1999) assertion.

For the by-law that prevented community members from entering the Kakum National Park with tools and machines that could destroy wildlife, all the respondents indicated that the information was handed over to them by the Game and Wildlife Department. The communities were not part of the decision-making to enact this by-law. Supporting this fact, 60% (120) of the respondents registered their dissatisfaction with the by-law, whilst 40 percent (80) indicated otherwise. This suggests that the communities around the Kakum National Park did not understand the management plan for a national park such as the Kakum.

All the respondents agreed with the by-law that bans the commercialisation of the admitted rights unless with a licensee, even though the communities did not take part in its formulation. This is, especially the case in the Pra Suhlen Forest Reserve. Some of the reasons they gave for their satisfaction with this by-law were free access to NTFPs and the assurance of sustainable benefits from the forest reserves, as suggested by Ostrom (1990) and Agrawal et al. (2008).

All the respondents admitted that the communities were not consulted in the formulation of the by-law that prohibits the killing of wholly protected animals. However, they indicated their willingness to support it because they were made to understand the need for such actions in order to help protect the animals from extinction. The understanding of the community members on the importance of a by-law is critical to ensuring their compliance and an effective implementation of SFM.

The only contribution of the forest fringe communities to the forest management policies was through information sharing and their compliance with the by-laws. The communities are less likely to comply with the decisions taken by other stakeholders. The finding is in line with that of Amanor and Brown (2003) who stress that decision-making should involve the primary resource users whose ownership status is clearly established and understood, to ensure more equitable and sustainable forest management.

The study further observed that the Forestry Department had educated CFC members at Bekawopa on the various forest offences and basic forestry protective measures. These included the inspection of permit to harvest trees in the forest reserve and how to arrest an encroacher since the use of weapons was not allowed by the CFC members. The members were, however, not given certificates of membership or resourced. Inferring from the study, the CFC members were willing to do the work as they had educated their community members on some of the by-laws and forest offences. Although the Committee was formally not operational, the members reported that their informal activities had helped to curb illegal activities in the forest reserves. They attributed this to their acceptance by the community members. Illegal activities in SFM are more likely to be reduced if the local people are involved in the management.

It was established that the capacity building of the members of the communities and their traditional leaders was too low to allow them to initiate actions in the SFM process. The majority (96%) of the respondents reported that they had not received any form of training or education on forest protection by the government agencies. To correct this, the Game and Wildlife Department had established a Collaborative Management Research Unit which is expected to educate and train the forest fringe communities in effective SFM.

Table 1 shows gender participation in the establishment of forest camps. Only 22 (17.6%) of the male respondents and 9 (12%) of the female respondents participated in the establishment of forest camps through communal labour. The non-participation of the majority of the respondents in the establishment of forest camps was due to the few number of forest

camps dotted in and around the forest reserves, denying most community members the chance to participate in their establishment.

Table 1: Gender and participation in the establishment of forest camps

Gender	Response		Total (%)
	Yes (%)	No (%)	
Male	22 (17.6)	103 (82.4)	125 (62.5)
Female	9 (12.0)	66 (88.0)	75 (37.5)
Total	31 (15.5)	169 (84.5)	200 (100)

Pearson $\chi^2 = 1.404$ $p = 0.23$

Source: Field survey, 2011

A Chi Square test of independence used to explore the relationship between gender and participation in the establishment of forest camps gave a p-value of 0.23. Since the p-value of 0.23 is larger than the alpha value of 0.05, it implies that the result is not significant. Thus, there is no association between gender and participation in the establishment of forest camps. The implication is that both sexes participated equally in the establishment of forest camps.

The communal labour involved the males engaging in the weeding of the land, with the females engaged in the fetching of water, and masons and carpenters within the communities helped in the construction of the camps. These were done with the hope that some of their community members would be recruited as forest guards by the management of the forest reserves. However, none of such communities had their members recruited as forest guards. The result is likely to discourage members of the communities in the SFM agenda since their efforts did not pay off as they expected.

Challenges stakeholders face in ensuring SFM

The Forestry Department identified delays in the payment of stumpage fees by the timber firms as a challenge it was confronted with in SFM. The stumpage fees were usually paid during or after the harvesting of the trees or the selling of the wood products. Some firms had been in the debtors' records of the Department for more than ten years, whilst others had folded up without paying for the stumpage fees. This could be attributed to the legislation for regulating access to timber and payment of stumpage fees, as explained by Baffoe (2007) that legislation on access to timber resources has been generally skewed in favour of big logging companies and weak enforcement of the law. According to the Forestry Department, such delays affected their budgets and, for that matter, their effectiveness in monitoring

activities in the forest reserves. They also admitted that such delays in payment affected the flow of benefits to the other stakeholders which in the long run reduces their commitments and motivation in SFM. This also explains why some of the communities had not received anything from stumpages.

The Game and Wildlife Department identified inadequate logistics as one of the challenges they encountered in their operations to ensure SFM. The Department is responsible for protecting the Park against poachers, chainsaw operators and other illegal encroachers. These activities require vehicles, motor bikes, fuel, protective boots, uniforms, guns, tents, mattresses, among others. The study revealed that these logistics were inadequately supplied. As a result, there were less forest camps than expected and less forest guards and patrols than required, which is not healthy for SFM. The Department needs to be resourced with adequate logistics and funds to ensure effective SFM.

The District Assembly (DA) explained that they were less engaged in the activities of SFM. The District's Planning Officer said, "We are mostly not invited to participate in stakeholder meetings and activities organised by both government agencies, even though we are expected to play an advisory role to the forest fringe communities and to negotiate on behalf of the communities during SRA meetings with timber firms. On occasions when we are invited, the invitations arrive either late or belatedly". The DA did not get enough opportunity to play its advisory and negotiation roles as expected to promote SFM. The inadequate benefits enjoyed by the communities in SFM and the reasons why the traditional authorities opted for monetary payments instead of benefits that could develop the communities from SRAs may be attributed to this challenge.

The timber firms also pointed out that non-cooperation from the forest fringe communities was a challenge they faced in SFM. The Manager of Yarahin Timber Company remarked, "Some of the communities harbour chainsaw operators to harvest trees from our compartments in the forest reserve when they notice we have not shown up for some time". Another manager annoyingly said, "Some of the chainsaw operators cut reserved tree species which are to be left for the regeneration of the compartments and waste the branches of the tree which are too small to be used in their operations". These affect the profitability, re-licensing for other compartments, and the amount of stumpage fees to be paid by timber firms, which eventually affects the SFM process. Failure of any of the stakeholders in playing his or her role properly will affect the effectiveness of the others in their roles to ensure the success of the SFM programme.

The NGOs identified unrealistic expectations from the forest fringe communities as a challenge they were confronted with in promoting SFM. The NGOs provided development activities in the forest fringe communities, trained people on alternative livelihood empowerment programmes, and provide micro credit services to promote economic activities in the forest fringe communities. All these activities were done to sustain the commitment of the communities in SFM. The NGOs reported that the community members expected to benefit more than what they were receiving. Some of the communities expected to receive pipe-borne water facilities, electricity and asphalt roads as benefits from the forest which, according to the NGOs, could not be delivered through the benefits from the forest reserves. The Manager of the GHCT said, "Some of the communities do not appreciate the assistance we offer to them".

All the sampled traditional leaders admitted that they had not received any compensation from the government for the taking over of the forest management from them. The compensation was to settle the lost rights of the traditional authorities in the forest as a result of its conservation. It was revealed that no compensation had been paid to the traditional authorities. Meanwhile, the rights to farm, harvest trees, hunt, and fetch fruits from the forest had been taken away from the communities by the government. This may be the reason for the reluctance of some of the traditional leaders to report illegal activities in the forest to the appropriate authorities for action. The forest fringe communities cited unfair access restriction to forest resources as a challenge they faced in ensuring SFM. Access to forest resources is regulated by by-laws governing a particular forest reserve type. Sixty-six percent (132) of the respondents indicated that the restriction of access to forest resources was a loss of their source of livelihood. A cocoa farmer said, "The forest is our source of sustenance, and the denial of our entering the forest reserves and restricted access to forest resources makes life difficult". The illegal activities carried out in the forest reserves may be attributed to the denial of access to forest resources. Thus, the lost rights of the communities may be higher than the benefits they derived from cooperating in SFM.

The forest fringe communities, particularly those around the Kakum National Park, reported of crop or farm raiding by elephants from the Park as a major challenge that confronted them in ensuring SFM. Fifty-six (33.5%) of the respondents around the Kakum National Park complained of having their farms raided by elephants without compensation from the management of the Park. A plantain farmer said, "The elephants severally raided my farm in 2009, resulting in total loss of annual farm produce". The raiding of crops and farms by elephants might plunge members of the communities into poverty. Thirty-one (18.6%) respondents around the Kakum National Park

indicated that the technique of spraying farms with grease and pepper to drive away the elephants was expensive. A farmer at Antwikwaa said, "People are sometimes tempted to attack the elephants to avenge their anger". The attacks on elephants which face threat of extinction pose a threat to a successful SFM.

Conclusions

With a careful study of the summary of findings from the study, the following conclusions were made concerning the participation of forest fringe communities in the sustainable management of forest reserves in the

THLD District:

The willingness and the commitment of the forest fringe communities greatly depend on the benefits they derive from the forest. Forest fringe communities around the Pra Suhien Forest Reserve enjoyed some admitted rights, while those around the Kakum National Park enjoyed social responsibility benefits and alternative livelihood empowerment programmes from the conservation of the forests. Nevertheless, some of the admitted rights were losing their value in relation to the social, economic and cultural conditions of the people.

The communities participated at the information-sharing level in the forest management programme and in few cases at the consultation level, both of which are low levels of participation. They participated in SFM through their access restriction to forest resources, informed decisions about the management of the forest reserves and their compliance with the forest by-laws and regulations. The communities neither participated in the decision-making and policy formulation processes nor initiated any action in SFM. The low level of participation of the communities as owners and partners in forest management does not ensure successful and sustainable management of the forest reserves.

All the stakeholders in the SFM programme encountered challenges. These include inadequate logistics, non-cooperation from traditional and forest fringe communities, unrealistic expectations from community members, non-benefits from stumpage fees and SRAs, as well as crop and farm raiding by elephants from the forest reserves without any compensation from the government to forest fringe community members who were affected. These challenges, coupled with the low level of community participation and limited benefits the communities derived from the management of the forests, posed a major threat to SFM in the THLD District.

Recommendations

It is recommended that the Forestry Department and the Game and Wildlife Department revise the admitted rights of the forest fringe communities with time and technological advancement to suit the economic and socio-cultural needs of a particular generation. This will enable the community members to appreciate the benefits from the forest reserves, prevent any illegal activities that threaten the SFM programme, and rekindle their commitment to the sustainability of the forest reserves.

The THLD District Assembly and the Forestry Department should discourage the traditional authorities from opting for monetary payments during SRA meetings but encourage infrastructural development in the forest fringe communities for the benefit all community members. The benefit-sharing system should be transparent and accountable.

Government should revise the nature of the distribution of stumpages to benefit sub-chiefs, by putting in place regulations as to how the disbursement of stumpages for the sub-chiefs would actually get to them. This will help to improve the communities' participation in the forest reserve management exercise.

Forest fringe communities should be involved in the decision-making on forest management issues and forest by-laws and regulations formulation processes. However, stakeholders, particularly community members and traditional authorities, require greater capacity to exercise their rights and execute their responsibilities in SFM. The Forestry and the Game and Wildlife Departments and NGOs should therefore build the capacity of community members and traditional authorities to ensure meaningful participation.

The government and NGOs should support the Forestry and the Game and Wildlife Department with additional budgetary support to facilitate their optimal functioning and to resource communities with the necessary tools and equipment for effective SFM.

Policy-makers should reconsider issues of contention in SFM by ensuring that the farms are not raided by elephants.

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