



## COMMUNITY BASED MANAGEMENT OF A PROTECTED AREA: THE CASE OF GEPRENAF IN BURKINA FASO

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### Abstract

*The present work analyzes the GEPRENAF project (West Africa Community-based Natural Resource and Wildlife Management Pilot Project) dealing with a threatened ecosystem in southern Burkina Faso. The project, funded by the World Bank, established a Protected Area and entrusted its management with the local village association AGEREF. This is the first empirical case study ever conducted about the protected area. The work assesses the socio-economic impact of the project on the local population. A qualitative field study was conducted, including review of the project documents, and interviews with focus groups and key persons. The following findings emerged from the study. On the one hand, the income generated by tourism activities, safari hunting and the establishment of value chains for non timber forest products is still low and sporadic. The scarcity of land for food crops due to the creation of the protected area is still an important concern. From an economic point of view, the management of the protected area is not a credible alternative to the traditional exploitation of natural resources, such as agriculture and grazing. On the other hand, the establishment of the reserve and the appointment of AGEREF to manage the park have meant significant institutional empowerment of the local community, and this has been essential to channel additional financial resources for infrastructures and micro-projects. Recommendations are advanced for improving the social and economic benefits of the project.*

**Keywords:** *community based conservation, socio-economic benefits, protected area, Burkina Faso.*

### Introduction

The present work looks at the West Africa Pilot Project on Community-based Natural Resource and Wildlife Management (GEPRENAF – *Projet de Gestion Participative des Ressources Naturelles et de la Faune*) dealing with a threatened forest area and its inhabitants in southern Burkina Faso, near the

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town of Banfora. The project, funded by the Global Environment Fund (GEF), the Government of Burkina Faso, the Government of Belgium, and the World Bank, established a Protected Area and entrusted its management with the local Inter-village Association for Natural Resource and Wildlife Management (AGEREF – *Association Inter-villageoise de Gestion des Ressources Naturelles et de la Faune*). The association is composed of the representatives of 17 villages surrounding the forest. The project aimed to ensure the involvement of beneficiary villages into the management of the protected area and the implementation of measures for the social and economic development of the local rural communities.

This study endeavours to assess the impact of the project on the local communities from economic and institutional points of view. The study also considers the perception of such impacts by the village population. This is the first empirical socio-economic case study ever conducted about the protected area. I conducted a field study in March and April 2005 using a qualitative methodology (Creswell 2003). I assessed Project documents and the results of research carried out by students of the University of Bobo-Dioulasso who had worked as interns at AGEREF. I collected primary data through semi-structured and structured interviews with focus groups and key persons, for a total of 18 group interviews in the villages and 12 individual interviews. The group interviews were conducted with members of professional categories and associations such as the Traditional Hunters Association and the Cotton Cultivators Association, and mutual aid organizations such as the Women and the Youth Associations. I conducted individual interviews with administrators and leaders of the project, and villagers. I used data triangulation in order to check consistency of information.

The paper is organized as follows. First, I will give an overview of the literature on community-based development and conservation initiatives, highlighting the main findings from several case studies around the world. Secondly, I will describe the areas of intervention of the GEPRENAF and the main objectives and actions of the project. Thirdly, I will assess the socio-economic impact of the project on the beneficiary villages. Fourthly, I will advance some recommendations on how to improve the implementation of the project and for further research.

### **What do We Know about Communities, Conservation and Development? CBNRM projects**

Three intertwined streams of discourse provide a useful theoretical framework and background to understand the GEPRENAF project. The first is the research tradition on forms of communal property, a diverse management and tenure system between private/individual property and public or state property (Berkes 1989, Ostrom 1990, Baland & Platteau 1996,

McKean 2000, Dolšak & Ostrom 2003, Van Laerhoven & Ostrom 2007, Agrawal 2007, Dulbecco & Yelkouni 2007, Bray *et al.* 2008, Libecap 2009). The second is the literature on protected areas recounting the shift from strictly conservationist approaches to the recognition of various degrees of community use rights on the resources in protected areas (Dixon & Sherman 1990, Wells *et al.* 1992, Borrini-Feyerabend 2000, Quattrone 2003, Hayes 2006, Galvin & Haller 2008). The third stream concerns precious information from myriad of donor funded projects which aim to combine nature conservation and development (Barrow *et al.* 2000, Roe *et al.* 2000, Hughes & Flintan 2001, Garnett *et al.* 2007) or, better, to reach the former through the latter or *vice versa*, depending on project design (Hsing-Sheng 2007). Projects of this kind include Community-Based Natural Resource Management projects (CBNRM) and Integrated Conservation and Development Projects (ICDPs).

We interpret CBNRM as the sustainable management of natural resources through returning property rights or others form of authority over these resources to the community (Barrow 2000). CBNRM projects promise to deliver on the improvement of rural livelihoods, conservation of the environment, and promotion of economic development. Since 20 years ago, many donors and conservation agencies have been implementing this kind of projects all over the world (Hughes & Flintan 2001, Blaikie 2006, Garnett *et al.* 2007, Galvin & Haller 2008). The GEPRENAF project also appears to take on this ambitious approach (GEF 2002). Regarding the impact of such projects on the livelihoods of the local population, the central question is whether CBNRM project can generate enough social and economic benefits which are clearly perceived by the community and sufficient to overcome the costs borne by the same community (Roe *et al.* 2000). Only if this trade-off occurs, such projects can create real incentives for the population to conserve resources. A brief list of possible benefits and costs that may be generated by CBNRM includes:

- i) Economic benefits: sale of tourist services; subsistence or commercial use of natural resources like wildlife, fish, plants, fruits; employment; monetary transfers to the community. The community-based management of a conservation area may lead to income diversification for a community which is highly dependent only on agriculture and animal husbandry (Roe *et al.* 2000, Bandyopadhyay *et al.* 2004).
- ii) Economic costs: purchase of equipment; land opportunity costs; damages caused to crops by wildlife (Johannesen 2006, Collomb *et al.* 2008).
- iii) Noneconomic benefits: institutional strengthening and empowerment of the community (Hsing-Sheng 2007); status and recognition at individual and collective levels (Van Laerhoven & Ostrom 2007);

revival of cultural linkages with nature and capitalization of indigenous knowledge.

- iv) Non economic costs: high collective action and transaction costs due to overlap between local institutions and new institutions imposed by project designers (Leach 1999, Skjølsvold 2008, West *et al.* 2006, Nelson & Agrawal 2008).

Moreover, it is important to consider the pattern of distribution of costs and benefits among members of the community, as well as the perception of costs and benefits by the beneficiaries themselves, which may differ from those assessed by external analysts (Roe *et al.* 2000, Kideghesho 2008).

CBNRM projects have been the object of sharp critiques both from theoretical point of view and on the basis of empirical findings (Blaikie 2006, Herrold-Menzies 2006, Hsing-Sheng 2007). Many authors argue that some degree of trade-off between conservation and development goals is unavoidable (Barrett & Arcese 1995, Hsing-Sheng 2007). Mutual causation processes between conservation and development initiatives are context specific and dynamic (Van Laerhoven & Ostrom 2007, Berkes 2007, Garnett *et al.* 2007, Platteau 2008). The implementation of participatory community management of natural resources has often been plagued by a top-down approach and the neglect of the role of indigenous knowledge in managing resources (Fairhead & Leach 1996, Gibson 1999, Blaikie 2006, Zougouri 2006). Often, local decision-making institutions are fragile and require continuing external support (Balint 2006). The goals of sustainable income generation alternatives based on nature rely too much on earnings from tourist activities, which are by definition volatile and fluctuating. The goals of wildlife preservation and that of income generation from wildlife-based activities, like safari and trophy hunting, are incompatible: if one is reached, the other is missed (Barret & Barcese 1995, Oates 1999, Wunder 2001, Kideghesho 2008).

In the evaluation of CBNRM projects, priority is given to outputs (number of square kilometers of conservation area; number of species protected; number of new institutions created (Blaikie 2006), rather than to outcomes, which are interpreted as the consequences of the outputs (Gottret & White 2001) and/or the overall project goals (Blaikie 2006). Outcomes such as sustainable environmental management or improved collective action cannot be measured in such clear terms. Therefore, it is difficult to reach deeper understanding of the impact of the initiative.

### **GEPRENAF and Areas of Intervention**

The GEPRENAF project concerns a large forest ecosystem (300.000 ha) and its inhabitants in the Comoe' region, between southern Burkina Faso and northern Ivory Coast. The project began in 1996 and ended in 2002. The total

budget for the Burkinabè part has been US \$ 6.6 million (GEF 2003, FAO 1996). The project was implemented in one of the richest areas of Burkina Faso from the natural point of view. The vegetation is mainly composed of medium to small size trees which cover 40 to 70% of the surface (AGEREF 2004). The wildlife population is diverse with prevalence of medium to large size mammals, like buffalos, gazelles, antelopes, warthogs, monkeys and, more rarely, elephants. Many of these species are considered to be on the brink of extinction (*ibid.*) in the area.

The surface devoted to agriculture is 9% of the total area under the project, but it increased by 530 % from 1956 to 1998 (*ibid.*) due to in-migration from other areas. The area attracts a large number of farmers because of the relatively high soil fertility, but it is also populated by flows of refugees escaping the ongoing conflict in Ivory Coast, just across the border. According to project documents, the main threats to the ecosystem are the uncontrolled extraction of forest resources by the increasing population of the surrounding villages: hunting, extensive-type of agriculture and animal husbandry, and bush fires (the so called *feux de brousse*) (GEPRENAF 1997).

The population of the 17 beneficiary villages in the area amount to about 20,000 individuals. There is a high degree of ethnic heterogeneity. Many authors have noted the existence of a fragile and oscillating equilibrium between the diverse ethnicities, and between those and the State authorities (Engberg-Pedersen 2003, Hagberg 2001, Ouedraogo 1997, GEPRENAF 1996, Dacher 1997). The literacy rate is around 6 % (AGEREF, 2004). Agriculture is the main economic activity, followed by animal husbandry. Extensive techniques are utilized. The cultivation of cash crops like cotton and yam reduces the amount of land available for food crops, and impoverishes the soil significantly. Subsistence hunting is still largely practised and is considered important in the local culture. All the villages are highly dependent on natural resources: hunting, fishing and harvesting of forest products are additional sources of income, besides agriculture and grazing. Before the beginning of the GEPRENAF project, there was lack of basic infrastructures like schools, health centres, and water wells. At present, the area is still very isolated due to the bad state of roads and bridges, which are often flooded during the rainy season.

In each village there is a Village Commission for the Management of the Territory (CVGT - *Commission Villageoise de Gestion des Terroirs*,) composed of representatives of the professional categories, the Chief of the Land, and the religious authority (Engberg-Pedersen 2003, Hagberg 2001, Baland & Platteau 1996, Dulbecco & Yelkouni 2007). Moreover, in each village, there are mutual aid organizations like the Women Association, the Youth Association, and the Association of Cotton Cultivators. Before the project started, there was already a rich network of formal and informal institutions.

The GEPRENAF project, implemented in this remote isolated community, brought a huge amount of financial resources and promoted the achievement of ambitious goals, mostly incomprehensible to the indigenous rural population. Concretely, the GEPRENAF project undertook the following actions. First, project staff conducted a consultation and negotiation of the old boundaries of the pre-existing forest estate and the change of status to partially protected area (*Forêt Classée et Réserve Partielle de la Faune de la Comoé-Léraba* or Partial Forest and Game Reserve of the Comoé Léraba) with the local population. Within the boundaries of the protected area, the local population is allowed to harvest dry wood, fruits, medicinal plants, honey, and fish with traditional techniques in the river Comoé. Hunting and cultivation of crops are therefore prohibited inside the conservation area, but are allowed in the buffer zone. The project also plans the organization of tourism activities in the Reserve<sup>2</sup>. Secondly, the project supported the creation of the Inter-Village Association for the Management of Natural Resources and Wildlife (AGEREF – *Association Villageoise de Gestion des Ressources Naturelles et de la Faune*), which became the concessionaire of the Reserve. Thirdly, the project sponsored the construction of various infrastructures in the villages (eight schools; nine houses for teachers; two health centres; four water wells; four buildings for hosting the tourists). Fourthly, the project staff implemented micro-projects for income generation and economic capacity building for local people.

As the management authority, AGEREF is in charge of the following. i) Management of the Reserve: local people were hired for maintenance and anti-poaching activities. ii) Permanent discussion and decision-making forum where representatives of each category of the population are involved. iii) Implementation of micro-projects and income generating activities: agroforestry, bee-keeping, soap production, *karité* butter production, draper decoration, marketing of forest products. iv) Organization of safari hunting and ecotourism in the Reserve. v) Redistribution of project benefits to the local communities vi) Representation of local communities in national and international institutions, like the *Programme National de Gestion des Terroirs* (PNGT) and the Program of Partnership between African and Italian Parks. The Inter-villages Association is currently financed by the *Projet de Partenariat pour l'Amélioration de la Gestion des Ecosystèmes Naturels* (PAGEN), a national scale project, funded by GEF and targeting different areas in Burkina Faso.

The main bodies of the AGEREF are the General Assembly and the Executive Secretariat. The first is in turn constituted by 102 members who are the representatives of the socio-economic organizations and the CVGT of the

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<sup>2</sup> The status of this Reserve lies between the categories II and VI of the IUCN classification of Protected Areas (IUCN 1994).

villages. The General Assembly meets once a year and decides on all issues regarding the management of the Reserve and local activities of development. The Executive Secretariat is composed of four professionals and constitutes the operational body of the Association. It is responsible for the direct organization and implementation of all the activities and for the coordination of the different agents. The Secretariat works with village people and maintains contacts with partners and institutions. The four members of this body are the only persons of the whole Association's staff who are educated, do not live in the villages, work full time for the AGEREF and receive a salary, first by GEPRENAF and now by PAGEN.

### **Findings and Discussion**

The material gathered during the research allowed an assessment of the economic and institutional impacts that the GEPRENAF project has had on the local communities.

#### ***Economic Benefits***

a) Job creation. The project GEPRENAF offered regular employment for about 50 people among the villages: 30 patrol officers against illegal hunting and cultivation within the Reserve; 10 tax collectors from the fishermen; 10 tourist guides for safari hunting . It is clear that a very small fraction of the whole population (0.25 %) received concrete employment opportunities.

b) Income generated by the tourism activities in the Reserve. The income generated by safari hunting activities with mainly European tourists, is divided and distributed to various stakeholders in the following way: the management of the Reserve (40%), operational costs of AGEREF (30%), the 17 villages (20%), and a Community Fund for the management of infrastructures (10%). Between 2003 and 2004, the tourist activities generated 6,004,250 FCFA (9,153 Euro)<sup>3</sup>. Following repartition rules, each village received 70,000 FCFA (107 Euro) for that season, and approximately 35,000 FCFA (53 Euro) per year on average from safari activities. The low amount of income generated by this activity is quite evident, and in particular the low proportion reaching every single village. However, the demand for safari is increasing every year because prices offered by the AGEREF to tourists are more competitive than those prevailing in East Africa. Should safari activities increase further, the risks of excessive development of this practice at the expenses of ecosystem preservation are real. According to AGEREF, it is not possible to manage more than 8 safari groups per year, because of the wildlife

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<sup>3</sup> 1 Euro = 655.957 FCFA (3/4/2005)

scarcity in the Reserve (AGEREF 2004). Tourism activities for wildlife watching are still at an embryonic stage. The development of this activity may be more sustainable from an environmental point of view, but indeed less profitable. The contradiction between wildlife preservation and wildlife-based income generation highlighted by Barret and Barcese (1995) and by Kideghesho (2008) perfectly applies in the case of the Reserve.

c) Commercial valorisation of forest products. The income generated by the commercialization of natural products has benefited individuals and groups. Several Women Associations increased their funds through the sale of *karité*, both unprocessed and processed<sup>4</sup>, with help from GEPRENAF. The same applies to the honey producers who received technical training and support by the project. The AGEREF is planning to set up a marketing chain for the honey to add value locally. The Association would buy the honey from the producers and sell it in towns for a higher price. The profit would be reinvested and used to support operational costs of AGEREF itself and the maintenance of equipment. A similar plan exists for the commercialization of dry wood. The organization of such value chains would strengthen collective action among local people, enhance the sense of belonging and solidarity, and increase the trust in the AGEREF institution. These elements are essential for the financial, social and institutional sustainability of the community-based natural resource management project. The creation of the Reserve has limited the rights of individuals by reducing cultivation land and hunting. The reserve would gain credibility and support if the people received, and perceived, tangible economic returns (Galvin & Haller 2008).

d) Support to the agricultural sector. A pilot plan for the stabilization of yam crops through natural techniques was started by the GEPRENAF together with the public Forest Service and involved 50 farmers. However, organizational and implementation problems created disappointment among the population, and no relevant results were achieved. The improvement and intensification of yam cultivation is essential for the successful and sustainable outcome of the project. A more rational and intensive land exploitation would allow to pursue both objectives of income generation and forest preservation.

e) Infrastructures. The building of infrastructures by the project had very positive impact on the living conditions of the community, especially the

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<sup>4</sup> *Karité* is the fruit of the shea tree. Shea butter is extracted from the fruit by crashing and boiling. It is used for cosmetic and medical purposes and as cooking oil.



schools and water wells. However, the situation is still far from fully satisfying the needs of the entire community. Some villages still complain about lack of drinkable water. The maintenance of some infrastructure, such as mills for *karité*, is problematic, and so is the management of health centres. The situation of the roads is particularly bad. The project did not invest in the improvement of communication and transportation, which is essential for the achievement of the project's objectives. In a project assessment document, the World Bank affirmed that it is not possible to build a bridge over the river Comoè, which separates two clusters of villages, because it would disturb wildlife. This is in spite of the strong request by the community (Banque Mondiale 2000:20). Setting both the economic development of the local community and its active participation in the management of the reserve as project objectives can pose such dilemmas. The building of basic infrastructure like a bridge is essential for the achievement of those objectives. In this regard, PAGEN seems to follow in the same path of GEPRENAF. It declares to be ready to finance waterholes for wildlife inside the Reserve, but does not react to the request of wells for drinkable water by the community (PAGEN 2002). These attitudes are the result of the contradictions in priorities of many donors in CBNRM projects (Blaikie 2006).

#### *Economic Costs*

a) Land confiscation. The creation of the Reserve caused the loss of a large area of agricultural land. The majority of villagers which have been interviewed consider the problem of lack of land for cultivation as very severe. Only a minority asserted to offset the loss of land with higher productivity thanks to cultivation techniques learned during project trainings. Moreover, many indigenous people who migrated in the past to the Ivory Coast are now coming back to the area. However, according to the recently established Reserve rules, old settlers may not claim back their land which is now part of the protected area. As a result of negotiations, only one village obtained the right to exploit again one area of the Reserve. However, AGEREF may not be in a position to replicate this precedent in order not to compromise the credibility of its commitment towards conservation. Moreover, many villagers complained that traditional authorities, like the Chiefs of the Land, negotiated the boundaries of the Reserve with the project staff without consulting the families living in the interested areas. GEPRENAF documents report that about 300 families have been displaced (GEPRENAF, 2002). A few women reported about brutal displacement methods by the public Forest Services, such as the burning of cultivated fields or huts. Like in other cases reported, land confiscation for conservation is a high cost paid by the beneficiary communities in CBNRM projects (Johannesen 2006, Collomb *et al.* 2008).

b) The GEPRENAF created clearly delimited buffer zones around the Reserve designated for agro-silvo-pastoral activities, with the assumption that a clear definition of boundaries and property rights would lead to a more efficient exploitation of the territory. Actually this had negative consequences. Agricultural and grazing activities which were before distributed into the whole Reserve are now concentrated in a much smaller area. This leads to more rapid soil impoverishment and to higher conflict over the land. Moreover, the project initiative for the establishment of herd grazing areas remained unaccomplished. Finally, subsistence hunting is allowed in the buffer zones, but many people complain that the wildlife escapes into the Reserve because of increased human pressure in the buffer zones. There is indeed game scarcity for subsistence needs.

As far as the quantitative assessment of economic losses is concerned, the data gathered only allow for a rough comparison between the economic loss incurred by villagers due to the creation of the Reserve and the monetary benefits that directly go to the local population as a result of the project.

The loss of income can be summarized in the following way. From the interviews, it was not always possible to estimate the exact number of hectares of cultivated land on which agriculture has been banned. However, project documents affirm that about 300 families have been displaced (GEPRENAF, 2002). One family owns on average 5 hectares (Sirima 2005:19), therefore we can calculate that approximately 1,500 hectares of agricultural land have been incorporated in the conservation zone. It is possible to earn up to 150,000 FCFA (229 Euro) from the cultivation of one hectare of yam (Konè *et al.* 2005)<sup>5</sup> generating about 225,000,000 FCFA (343,010 Euro) in total. Given that hunting is also forbidden in the Reserve, it is necessary to consider also the earning that would come from the sale of wildlife meat, about 15,000 FCFA (23 Euro) per prey (*ibid.*). Finally one must consider the loss of subsistence food, in terms of both crops and meat. There are no available data on income generated by breeding activities.

The amount of wages for newly created jobs is roughly 8,340,000 FCFA (12,714 Euro) per year (AGEREF, 2004). The income from safari hunting activities and devoted to the 17 villages was 906,000 FCFA (1,381 Euro) in 2004 (*ibid.*). Consequently, we calculate that the total amount of monetary benefits directly received by the population is about 9,246,000 FCFA (14,095 Euro) per year.

These calculations do not allow to determine with scientific precision the loss-benefit balance of the creation of the Reserve, due to the high level of

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<sup>5</sup> One hectare yields on average 3 tons of yam (GEPRENAF 2002). This vegetable is sold at 50,000 FCFA per ton approximately (Konè *et al.* 2005).

approximation of the figures in the project documents and in the interviews. Moreover, the application of a precise methodology of cost-benefit analysis was not in the scope of this research. However the figures give an idea of the scale of this economic imbalance. It is self evident that the purely economic losses derived by the strong limitations in agriculture and subsistence hunting due to the establishment of the Reserve largely overcome the financial returns created by the management of the Protected Area. Moreover, the AGEREF is dependent on external financing. Some additional income from commercial valorisation of forest products is benefiting individuals or groups, but this is linked more to local development actions rather than to development-through-conservation actions.

### *Non Economic Benefits*

a) Institutions. The non economic benefits of the project are more promising. The GEPRENAF supported institutional strengthening in the communities. Many interviewed people reported that the project fostered better interaction among the villages' socio-professional organizations. Before the project, they pursued their own interest in a corporative way. Given that the AGEREF has representation of the CVGT of each village, this reinforced the structure and the role of the CVGTs as well. Moreover, the villages used to be very isolated from each other. The AGEREF decreased the transaction costs for communication and coordination among the institutions of the 17 villages for actions concerning common interests mainly (but not limited to) natural resource issues and monitoring of the results. It offered facilitation and logistical support for large inter-village meetings. In some instances, the AGEREF actively contributed to the resolutions of conflicts between villages regarding land property rights.

The project GEPRENAF, through the creation of the AGEREF and the Protected Area, empowered and gave an institutional voice to this large community which was previously isolated and unable to interact with the public authorities. This has important consequences. In various occasions, villages, through the CVGTs and AGEREF, were able to successfully negotiate with the public Forest Services for the redefinition of part of the boundaries of the Reserve. Before the project, the State was formally the owner and the administrator of the Natural Reserve. Although the situation was *de facto* open-access because of very low levels of enforcement, all the villagers who had crops or grazing areas inside the Reserve were in a situation of formal illegality. Now, some of them succeeded in getting cultivation rights officially recognized. Although such episodes are exceptional, they are remarkable. Moreover, thanks to the GEPRENAF project, villagers were able to obtain microcredit from local banks and to repay it, thus establishing a relation of trust between villagers and the financial institutions. Finally, the AGEREF,

through its contacts with external institutions, channelled into the villages various financing opportunities, such as those of the National Program PNGT II<sup>6</sup> and those of the Program of Partnership between African and Italian Parks.

b) The relation of the villagers with the Reserve. The activities of environmental education conducted by GEPRENAF and AGEREF triggered interest in the communities and enhanced their awareness of the scarcity of natural resources and the need for sustainable exploitation. Moreover, the assignment of new tasks in relation to the management of the Reserve generated a sense of pride. Villagers are satisfied with the visits of tourists, even if rare. Thanks to the existence of the Reserve and of the AGEREF, the 17 villages now identify themselves as a community, which was not the case before. However the efficacy of such interventions to encourage permanent shift in people's behaviour towards sustainable utilization of natural resources is doubtful if there is a lack of credible alternatives to resource exploitation for subsistence needs.

#### ***Non Economic Costs***

a) The plurality and diversity of actors involved led to some typical negative consequences (Leach 1999, West *et al.* 2006, Skjølsvold 2008). We noticed the elevated transaction costs due to overlapping competences and high bureaucracy between AGEREF and other institutions, such as the *Direction Régionale de l'Environnement et du Cadre de Vie*. The AGEREF is often forced to interact with PNGT II, with the Forest Services and with the PAGEN, asking permissions or submitting complicated reports. The lack of coordination among the actors resulted in the weak results of some initiatives, such as the plan for the stabilization of yam crops. This generated disappointment in the population.

b) Participatory approach. Two issues would need to be highlighted. First, it is unclear the extent to which village representatives were able to negotiate with the public authorities and the project staff about the boundaries of the Reserve and the rules at the beginning of the project. Secondly, AGEREF meetings are too rare to ensure an effective participation of the representatives of the whole population in the decision making process. A lot of power to make decisions is in the hands of the Executive Secretariat, although members remain very competent, motivated and sensible towards community needs and issues. The payment of the salaries of the four

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<sup>6</sup> The PNGT II (*Deuxième Programme National de Gestion des Terroir*) is a nation-wide development program for the support of local rural communities funded by the Government of Burkina Faso in 1991 and 1998 (Engberg-Pedersen 2003, Hagberg 2001).

members of the Secretariat may not be financially viable in the future, which requires a more effective transfer of skills and knowledge to local villagers.

c) The level of enforcement of the Reserve regulations is high, due to the work of both Forest Rangers and local controllers hired by the project. This has the positive effect of ensuring clarity and transparency about the rules, although there is still some misunderstanding among people about what villagers are allowed to do and what not in the Protected Area. Rules have also the negative effect of imposing real limitations on the use of resources by villagers, if compared to the previous *de facto* open access situation. The frustration among the people because of the displacements from the Reserve and the loss of agricultural land is constant.

#### ***The Distribution of Benefits and Costs***

The share of benefits and costs derived from the project is not equally divided among the 17 villages. All the villages benefited from the building of infrastructure and received equal share of income from safari hunting. However, those located far from the Reserve bore fewer costs caused by families' displacement and confiscation of agricultural land than the villagers located closer to the Reserve. It is not surprising therefore that villagers belonging to the first group declared more satisfaction about the creation of the Reserve than those of the second group. Regarding the distribution of benefits among individuals and social classes, the beneficiaries of micro-projects, employment and roles in AGEREF seem to have been chosen among already influential individuals, and often one person benefited from all these three activities. Concerns about equity are indeed appropriate (Roe *et al.* 2000, Kideghesho 2008).

#### **Conclusions and Proposals**

The overall assessment of the economic impact of the GEPRENAF project on the population and the level of income generated by the management of the Protected Area points to a weak and sporadic outcome. The lack of land for food crops due to the creation of the Reserve is still a problem. The functioning of the association AGEREF depends on external financing.

The findings indicate that the social and institutional impact of the existence of the Protected Area created a degree of pride, trust and cohesion among the local population. The project gave an institutional voice the villages, which before were completely marginalized. The empowerment has been important for approaching State authorities and other financing institutions, and for obtaining credit lines from the banks. Therefore, the institutional benefit has had, indirectly, also an economic impact.

The GEPRENAF improved the living conditions of the beneficiary villages through the creation of infrastructures and empowered the local communities institutionally, but asked in return for the confiscation of agricultural land and the enforcement of strict limitations on hunting, grazing and fishing rights within the Reserve. The model might ideally work, but a simple and fundamental problem remains: the project did not create concrete alternatives to extensive agriculture and grazing to fulfil subsistence needs of the local people. Because of the lack of alternatives, the whole institutional apparatus is still weak and needs to be continuously legitimated in the process. Moreover, illegal hunting and cultivation continue to occur inside the Reserve.

The reliance on safari hunting as principal source of income is not sustainable. The PAGEN conditions further financing for AGEREF on the achievement of given indicators of wildlife preservation and of profitability of the Protected Area. Both goals are very slow to achieve and at the time of this research were still far from being reached. In the project area, the wildlife is not so rich as it is in other parts of Burkina Faso or Africa. In this situation, safari cannot become the *main* source of income from the Reserve. The existence of the AGEREF is indeed in peril. In order to make the Reserve profitable, the AGEREF should increase the safari hunting, but this would reduce the wildlife. The two goals are competing and still create trade off between income generation and wildlife conservation. A balance could be found as wildlife is indeed a renewable resource, but the future financing of AGEREF should not be contingent on the achievement of unrealistic parameters.

The following recommendations are provided in order to increase income diversification. First, the AGEREF should invest in the promotion of intensive agricultural techniques in order to increase the harvest per hectare. Many natural techniques have already been locally tested and need only to be spread and implemented more widely (Sirima 2005). Secondly, investments are needed in the development of fair market chains for forest products, such as *karité*, *nééré*, dry wood, honey, medicinal plants and fish. Such resources are abundant and the Reserve regulations allow the population to harvest them. The demand for such products in towns nearby is high, therefore they would easily find a market.

The scope of this research can only provide a general overview of both the social and economic situation of the area after the project. More investigation on selected issues is needed for specific interventions. While GEPRENAF has generated contradictory outcomes and the challenge of combining and integrating conservation and development objectives still stands, local communities and policy makers should continue to search a solution to some crucial nodes.

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