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## **The Role of Cocoa Agroforests in Community and Farm Forestry in Southern Cameroon**

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## **Opportunities and Constraints for 'Community-Based' Forest Management: findings from the Korup Forest, Southwest Province, Cameroon**

Ruth Malleson

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# THE ROLE OF COCOA AGROFORESTS IN RURAL AND COMMUNITY FORESTRY IN SOUTHERN CAMEROON

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## SUMMARY

Over 70 years of familiarity with cocoa agroforests enables the farmers of southern Cameroon to obtain food, medicinal plants and income from this ecosystem. Since 1994, social forestry activities in Cameroon have focussed primarily on the idea of community forests, despite the fact that this approach is likely to encounter problems inherent in the way that the Administration works and in the structure of the communities concerned. In addition, the ban on individuals exploiting non-timber forest products (NTFPs) and timber from community forests for profit increases the appeal of 'private' land (such as cocoa agroforests). Such land is also the ideal place for forestry activities, in a context where community spirit is not strong enough to encourage general participation in group initiatives. This paper argues that the objectives of the community forestry programme could partially be met through the good management of cocoa agroforests.

There could be complementarity, in ecological, economic and social terms, between farmer management of agroforests and community forestry if the latter were designed to take into account the general management of the land area in question. Unfortunately, cocoa farmers receive no help from either the agriculture or forestry departments, and 85% of them have

no contact whatsoever with extension services. This paper therefore recommends that: (1) community forestry projects be designed to form part of a general land management concept which includes cocoa agroforests; (2) NTFPs be domesticated in cocoa agroforests to reduce pressure on the forest; and (3) that domestication projects take account of the intra- and inter-specific diversity of forests in the zone.

## INTRODUCTION

Cocoa agroforests cover between 300,000 and 400,000 hectares of southern Cameroon (Kotto-Same *et al.*, 2000). Around 400,000 households depend on these ecosystems for their income and food (Losch *et al.*, 1991). Introduced into Cameroon in 1886, cocoa production has, since 1920, been practised almost entirely by small farmers, on small plots (Gockowski & Dury, 1999). These agroforests have structural and functional similarities with forests.

Community forests have existed in law in Cameroon since 1994 (Diaw, 1998; Diaw *et al.*, 1999), but none were actually established until 2000 (Djeumo, 2001). Some of the constraints on their creation and management could be the result of community organisation and the functioning of the administration (Brown, 1999; Diaw *et al.*, 1999). Communal

definition of programmes is often not a simple process, and may even cause conflict (Malleon, 2000). And even where community programmes have been established, true participation by the members is not always obvious (Sen & Das, 1987). In southern Cameroon, some resources which should be included in community forest management plans already exist in cocoa agroforests.

Some people see timber as the biggest income earner in community forests. However, other components, such as non-timber forest products (NTFPs) and agroforestry, can also be sources of income (Mollet *et al.*, 1995; Ndoye *et al.*, 1997; Leakey & Simons, 1997; Schreckenber *et al.*, 2000; Awono *et al.*, 2000). Studies conducted in the Amazon forest have even shown that NTFPs could produce more income than timber (Peters *et al.*, 1989). In Africa, the forest is increasingly being seen as a significant source of food, income and poverty alleviation (Sene, 2000; Warner, 2000). Whilst the management of community forests requires group work by the neighbouring population, farm or 'rural' forestry, as seen in cocoa plantations, has the advantage of giving the responsibility to those who already manage trees on their plots. They feel more involved and willing to invest their effort in this work. This is not the case with some community forestry projects, which have rather tended to reduce the income which poor households derive from the forest, forcing some of them to cease their activities altogether (Malla, 2000). In such a situation, the domestication of forest species within cocoa agroforests is one of the best options for satisfying certain social and economic needs. This agrees with Leakey's (1996) definition of agroforestry as a "dynamic, ecologically based, natural resource

management system that, through the integration of trees in farm- and rangeland, diversifies and sustains smallholder production for increased social, economic and environmental benefits". In addition to cocoa itself, cocoa agroforests also produce NTFPs and timber.

Very few studies to date have looked at these agroforestry ecosystems, particularly in the current context of changing modes of management, as areas which could contribute to 'rural' and community forestry. The aim of this article is to remedy this situation, by showing how cocoa agroforests can contribute to the development of 'rural' and community forestry in southern Cameroon.

### SOME GENERAL CONSIDERATIONS AND TERMINOLOGY

Forestry is defined as all the techniques aimed at creating, conserving, developing and managing the forest and individual trees in order to increase the value of their natural resources (DDA & Inter-cooperation, 1991). It therefore includes both industrial and traditional forestry activities. The latter covers all those activities conducted by farmers on their own initiative and/or with State or donor encouragement. They may be individual or group activities.

#### Community forestry

Community forestry introduces the concept of collective activities, in terms both of labour and of the management of the income from the forest (Sen & Das, 1987). In rural areas, community forestry may take place in forest and other land types, and can thus include both pure forestry and agroforestry. Whilst some

community forestry projects have proved their worth in mountainous areas of Cameroon (Mount Cameroon, Ijim and Kilum), particularly with sylvopastoral, reforestation and protected area management programmes (WWF-Cameroon, 1993), the idea of community forestry is still at an embryonic stage on the southern Cameroon plateau, and appears to apply only to forested areas.

Community forests can be established within the non-permanent forest estate, and are subject to a management agreement between a village community and the Forestry Department. They can be up to 5000 ha in size, regardless of the size of the neighbouring population<sup>1</sup>. Individuals may gather products from community forests for family consumption purposes, but not for sale<sup>2</sup>. The gathering of products for sale must be a community activity. Yet, community activities generally only attract participation if they produce an obvious short-term benefit, which is often far from being the case. In southern Cameroon, some activities permitted in community forests are already taking place in cocoa agroforests. Harmonious land development should take into account both community and individual aspects.

#### 'Rural' forestry

'Rural' forestry (*foresterie paysanne*) covers those forestry, agroforestry and sylvopastoral practices which form part of family or village

activities in rural areas (DDA & Intercooperation, 1991). We shall use the expression 'rural forestry' here to designate those activities which occur at the level of the household, rather than the community. This includes tree management, timber production, wood and NTFP gathering from individual plots, such as cocoa plantations.

Cocoa production in Cameroon consists of growing cocoa trees in the shade of forest trees, thus creating a degraded forest environment. In Cameroon, three-quarters of cocoa agroforests are situated in the Centre, South and East Provinces (Losch *et al.*, 1991). The Cocoa Development Company, SODECAO, has conducted some agroforestry projects in southern Cameroon in the past, such as the introduction of *Terminalia* into cocoa plantations (Diaw *et al.*, 1999).

For a long time, the main management objective in these areas was the production of cocoa. However, changes are occurring in the type of management of these ecosystems, which are gradually becoming places not only for the development of cocoa, but also for the management and conservation of forest resources (Sonwa *et al.*, 2000). Studies are currently underway in the Benchmark Zone of the ASB (Alternatives to Slash and Burn) project to achieve a better understanding of these changes. This benchmark zone is a corridor which covers a gradient running from severely degraded forest in the north to intact forest in the south. It was chosen as being characteristic of the prevailing conditions in the Congo Basin. Some of the results presented in this document come from work in progress in this benchmark site (Sonwa *et al.*, 2000).

<sup>1</sup> See Djeumo (paper 25b) and Klein (paper 25f) in this mailing for more details.

<sup>2</sup> Unless specifically permitted in the Community Forest management plan.

### Land tenure

Community forests, as defined by the law in Cameroon, are part of the State's non-permanent forest estate. Neighbouring communities only have usufruct rights as long as they are responsible for forest management. Outsiders have no right of access to these community forests.

Cocoa plantations are generally also found in the non-permanent forest estate. However, in contrast to community forests, they are the 'property' of households in the traditional sense. In southern Cameroon, planting a tree on a plot gives the right of ownership over that plot, and thus the possibility of enjoying usufruct from the land. Cocoa plantations are thus passed down from generation to generation, from father to son. In southern Cameroon, over half of cocoa agroforests have been inherited by those who own them today. More than 95% of cocoa agroforest owners are from the local area (Sonwa *et al.*, 2000), which means that they could be involved in the management of community forests, if any were created in their village. The feeling of personal ownership of cocoa agroforests often results in a greater personal investment in their management.

### THE IMPORTANCE OF COCOA AGROFORESTS

#### Ecologically sustainable areas

The sustainable use of forest resources, which is one of the objectives of rural and community forestry, is fully achieved in the current management of cocoa agroforests. The most common type of land management in southern Cameroon is still slash-and-burn cultivation,

which involves significant deforestation. A comparison of the types of land management in southern Cameroon shows that cocoa agroforests are less harmful to the environment than other forms of soil management (Gockowski *et al.*, 1998; Gockowski & Weise, 1999; Kotto-Same *et al.*, 2000). Agroforests generally receive no chemical fertilisation, which helps to protect their soils. The soil, as well as the other components of the cocoa plantation, suffer less damage when wood is cut using chain saws. This type of cutting causes less environmental damage than other logging processes.

The structure of cocoa agroforests is similar to that of forests. This structure allows them, like forests, to contribute to the physical and chemical conservation of the soil, to thermal regulation, and to species conservation. It is similar to that of agroforests in Indonesia which have been studied for a long time, and are today seen as models to be reproduced elsewhere in the tropics with locally appropriate variations. Indonesian agroforests conserve 50% of plants (30% of trees, 50% of bushes and epiphytes, 50% to 95% of vines, and 100% of underbrush), 60% of birds and 100% of the forest's larger animals (ICRAF *et al.*, 1997). Cameroon's cocoa plantations have the appearance of degraded forest and are a habitat for local wildlife (Gartlan, 1989).

Carbon conservation is one significant role played by cocoa agroforests. Kotto-Same *et al.* (1997) state that, in the humid forest zone of Cameroon, cocoa plantations conserve 62% of the carbon of the primary forest. The establishment of a cocoa plantation on a short-term fallow can save 95 t of carbon per hectare (Gockowski & Dury, 1999). A study conducted

by IRAD under the ASB programme (1997) and cited by Duguma *et al.* (1998) found a plant biomass of 304 t/ha in cocoa plantations, as compared to 85 t/ha in food crops fields and 541 t/ha in primary forest. Cocoa agroforests adjacent to production forests also play the role of buffer zones. After timber is logged, forests need time to regenerate to the stage of 'initial maturity'. In this context, strong pressure from over-exploitation (as in slash-and-burn cultivation) could hinder or slow down regeneration. One way of reducing this pressure would be to encourage the creation of cocoa agroforests along the boundaries of logging forests. These areas could thus constitute belts between the intensely exploited zones and the forests. In addition to those species which existed before the establishment of cocoa plantations, and some of which remain in the plot to provide shade, cocoa agroforests can also, through the phenomena of zoochory, anemochory or other modes of dispersal, receive seeds from the forest. By receiving many seeds from different individuals of the same species from the forest, cocoa agroforests can thus contribute to the genetic conservation of forest resources. The domestication of many NTFPs in these formations can help to conserve biodiversity (Leakey, 1997), making these areas *ex situ* conservation banks. It should be pointed out that, despite this ecological importance, rural and community forestry generally go beyond the purely environmental context to take in the social, political and economic environment in which the rural populations live (DDA & Intercooperation, 1991).

#### Socially equitable management

The attempt to establish a socially equitable system is one of the concerns of rural and

community forestry, and of many rural development projects. The involvement of women in the management of income is increasingly seen as one way of achieving more sustainable development. It is particularly important that there should be a strong social balance in the cocoa sector, since at least 75% of south Cameroonian farmers are cocoa producers, and 400,000 households in the zone produce cocoa (Losch *et al.*, 1991). Fortunately, in cocoa agroforests, both labour and income are divided between men, women and children. Cocoa is usually sold by the men, whilst the women and children generally deal with the management and marketing of NTFPs. The men are also responsible for selling any timber, and the children often gather NTFPs for home consumption. The gathering of NTFPs in cocoa agroforests, rather than in forests, means that women can save on distance and time, which can thus be devoted to other household tasks. The current form of cocoa agroforest management makes these systems more or less socially balanced, as regards the various members of the household.

Local capacity strengthening, which is one of the objectives of rural and community forestry, is clearly occurring today in the management of cocoa agroforests. The cocoa sector has long experience with direct State involvement through structures such as the Cocoa Development Company (SODECAO) and the National Commodity Marketing Board (ONCPB). The former was responsible, amongst other things, for maintaining roads, purchasing and distributing inputs and spraying plots. Today, the farmers have to manage the cocoa production chain themselves, that is,

purchase their own inputs, spray their plots, and market their harvest on the basis of the fluctuating prices of the international market. To do this, cocoa farmers have to group together to deal with buyers, in the same way as the farmers involved in community forests have to group together to negotiate with logging companies. Some of the work in cocoa agroforests is already conducted on a group basis. The organisation of marketing is still at a very embryonic stage, but is increasingly being recognised as necessary. Many CIGs (Common Initiative Groups) come together to market their harvest. These associations could be used to improve the negotiating capacities of rural communities in community forestry. This would further help to reduce the social imbalances between those involved in community forestry.

Cocoa agroforests, which have served as a laboratory for the development and implementation of socially fair and balanced practices, could be taken as a model by community forest managers. The form of management adopted and the approach to negotiations with partners in the chain include elements conducive to equity within households and between players in the cocoa chain. Organisation of producers to deal with buyers is as yet at its early stages, but could still serve as an example for community forestry.

#### **Diversified sources of income**

Cocoa is an important source of income in southern Cameroon. In the 1980s, cocoa production represented between 50% and 75% of the total budget of 90% of households in the central part of southern Cameroon (Lepplaideur, 1985). During the 1983-1984 season, for

instance, nearly CFA 7 billion was paid to the farmers of the Lekié division in Centre Province, representing CFA 230,000 per farmer (Santoir, 1995). The crop thus provided money for children's education, family health care, construction, etc. 81% of cocoa farmers have no other occupation. With the fluctuations in cocoa prices on the international market, they have tried to find other sources of income from their cocoa plantations, and so have come to exploit NTFPs, some of which form part of the structure of their cocoa agroforests (Sonwa *et al.*, 2000).

NTFPs and exotic fruits are other sources of income exploited in the cocoa plantations. This is done in the traditional manner, on the initiative of the cocoa farmers, since more than 85% of farmers have no contact whatsoever with the extension services (Sonwa *et al.*, 2000). The most commonly exploited NTFPs are: *Dacryodes edulis*, *Elaeis guineensis*, *Irvingia gabonensis* and *Alstonia boonei*. *Mangifera indica*, *Psidium guayava*, *Persea americana* and *Citrus* spp are the most common exotic fruits in cocoa plantations. These fruits are also the ones most commonly marketed in the rural and urban areas of southern Cameroon. Cocoa agroforests are even the preferred habitat of some NTFPs in southern Cameroon (Dijk & Wiersum, 1999), as well as including food crops, such as bananas and plantains. In addition to the income they produce, NTFPs are also a significant source of nutrition (Leakey, 1999) and contribute substantially to the diet of rural and urban households in southern Cameroon (Schreckenber *et al.*, 2000). The NTFP supply system in southern Cameroon is highly developed, and supports the 1100 traders involved in marketing. The

ban on the individual exploitation of NTFPs for sale in community forests opens the way for greater valorisation of those to be found in cocoa agroforests.

Timber is also a significant resource in cocoa agroforests. Species such as *Chlorophora excelsa*, *Terminalia superba* and *Triplochiton scleroxylon* are frequently found in cocoa plantations. The timber is either used for construction or sold by the owners. Indeed, timber from cocoa agroforests contributes greatly to the satisfaction of national demand. Although it may damage some cocoa trees, the way in which trees are felled using chain saws, is in fact less harmful than the felling of trees in production forests. Judicious management of this timber would produce money for the farmers, in the same way as timber exploitation in community forests.

Strengthening the individual financial capacity of the managers of cocoa agroforests in communities which also manage community forests should be encouraged. This is particularly necessary since the individual exploitation of community forest resources for sale is not permitted. Organising farmers into groups to gather and sell these products can be problematic. Planting on individual plots (such as cocoa agroforests) can be more profitable than group labour in community forests. The money made from the cocoa plantations can also help to strengthen the farmers' financial status, thus making them less vulnerable in negotiations with other partners in community forestry.

## **CONCLUSION**

The farmers of southern Cameroon have managed cocoa agroforests for more than 70 years. They obtain food, medicinal plants and income from their land. Community forestry, which was introduced to Cameroon with the concept of community forests, just seven years ago, has objectives which could partially be met through the management of cocoa agroforests. These have a structure similar to that of the forest, and are managed sustainably. They conserve carbon, act as a buffer zone around the forests, and are a source of timber that is exploited in a way that causes minimum environmental damage. They benefit from management that is socially equitable. Although still in its infancy, organisation for joint marketing of cocoa could help to strengthen local capacities. Cocoa agroforests are the source of a diverse range of income-earning products, which can help to strengthen farmers' financial status, thus making them less vulnerable in negotiations with forestry exploiters.

There may, therefore, be complementarity between community and rural forestry (particularly as practised in the cocoa agroforests). This study therefore recommends that: (1) community forestry projects be designed to form part of a broader land management concept which includes cocoa agroforests; (2) NTFPs be domesticated in cocoa agroforests in order to reduce pressure on forests; and (3) domestication projects take account of intra- and inter-specific diversity in local forests.

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## ACRONYMS

ASB	Alternatives to Slash and Burn
FCFA	Currency in French-speaking West and Central Africa. Exchange rate: 100 FCFA = 1 FRF 750 FCFA = 1 USD
CIFOR	Center for International Forestry Research
CIG	Common Initiative Group
DDA	Direction de la coopération au développement et de l'aide humanitaire
ICRAF	International Centre for Research in Agroforestry
IRAD	Institute for Agricultural Research for Development, Cameroon
IITA	International Institute of Tropical Agriculture
NTFP	non-timber forest product
ONCPB	National Commodities Marketing Board
SODECAO	Cocoa Development Company
WWF	World Wide Fund for Nature



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