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## **STOCK TAKING OF COMMUNITY FORESTRY ENTERPRISES INVOLVED IN COMMERCIALIZATION OF TIMBER IN CENTRAL AFRICA**

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## LIST OF ACRONYMS

ASCIBA	Association des Scieurs de Bois d'Akoeman (Cameroon)
ASL	Autorisation de sciage de long (Gabon)
CF	Community Forest
CHL	Certificate of Harvesting License (Cameroon)
DACEFI	Développement d'Alternatives Communautaires à l'Exploitation Forestière Illégale (Gabon)
DFCOM	Direction des Forêts Communautaires (Gabon)
DRC	Democratic Republic of Congo
MECNET	Ministère de l'Environnement et de la Conservation de la Nature (RDC)
NPFE	Non-Permanent Forest Estate (Cameroon)
NTFP	Non-Timber Forest Product
PGG	Permis de Gré à Gré (Gabon)
SMP	Simple Management Plan (Cameroon and Gabon)
SSFE	Small scale forest enterprises

## SYNTHESIS

### CONTEXT: INDIVIDUAL CHAINSAW MILLING VERSUS SMALL FORESTRY ENTERPRISES

For twenty years, the Congo Basin countries have been implementing policies aimed at the sustainable management of their forest resources and at poverty reduction. These policies target the major timber concessions, whose production is exported, but overlook the informal small-scale chainsaw milling sector, which supplies domestic and regional markets. Yet this sector has taken the lead in terms of the volume of timber produced: today, in the Central African countries, the annual volume of timber from informal chainsaw milling consumed on domestic markets or unofficially exported to nearby countries is greater than that of sawn wood from the industrial sector.

Most of this artisanal sawn wood is produced by individual chainsaw millers, which mainly operate in the informal economy. The timber volume and the turnover generated by this sector make it a promising ground for developing and supporting small scale forest enterprises (SSFE) operating in compliance with regulations. There are two possible ways to promote SSFEs in Central Africa, particularly in Cameroon, Gabon and DRC.

On the one hand, in these three countries, the enactment of new forest codes since 1994 has endorsed the community forestry approach. Cameroon has experienced this approach for nineteen years, Gabon for two years while the DRC is preparing to apply this approach soon. This innovative approach is frequently promoted by many international and local organizations, but the results on the ground call for a more mixed judgment, considering the areas actually (and legally) used or the effective socio-economic achievements. The extent of community forestry in Central Africa is today incomparable with that of artisanal individual logging. Artisanal sawn wood feeds the urban demands and those of neighboring countries, while (legal) community forestry occupies at best a few market niches.

On the other hand, associations or groups of chainsaw millers constitute another opportunity to build and promote SSFEs. However, in the three countries targeted by the study, there are very few associations of artisanal sawyers, and when they exist, they are very often one-off operations for a limited period.

This report provides a quick overview on these two approaches in view of promoting SSFE in Central Africa and identifying the main enabling and impeding factors to their development on the basis of a literature review and a few case studies conducted in the three countries.

### ENABLING AND IMPEDING FACTORS OF COMMUNITY FORESTRY AND GROUPED CHAINSAW MILLING

The three sampled countries have many similarities in both the design and implementation of community forestry and of grouped chainsaw milling. These similarities make it possible to take stock of progress, obstacles and prospects of application of these two modes of SSFE (Table 1 and

Table 2). These findings are based on literature review and on the information drawn from studies conducted in the three countries.



TABLE 1 – ENABLING AND IMPEDING FACTORS OF COMMUNITY FORESTRY IN CENTRAL AFRICA

Advances	Obstacles	Areas of improvement
<ul style="list-style-type: none"> <li>Legal and regulatory framework is available (but often incomplete)</li> </ul>	<ul style="list-style-type: none"> <li>Procedures are complicated, and very costly</li> <li>Very few CFs have been established without external funds</li> <li>Some crucial regulations remain to be set</li> </ul>	<ul style="list-style-type: none"> <li>Simplification of the procedures to create and operate CFs</li> <li>Free assistance of the forestry administration</li> <li>Financial and technical support to CF initiatives</li> </ul>
<ul style="list-style-type: none"> <li>Artisanal logging has been experimented in dozens of CFs in Cameroon and in a few CFs in Gabon</li> </ul>	<ul style="list-style-type: none"> <li>A low profitability, with little impact on poverty at the individual or collective scales</li> <li>Logging in CFs is mostly subcontracted by the communities to private entrepreneurs or companies</li> <li>Many administrative documents are used for laundering illegal timber</li> <li>Competition with illegal timber in domestic markets</li> <li>Probably not enough timber resources available at the CF scale to produce a significant volume of timber to regularly provide market demands</li> </ul>	<ul style="list-style-type: none"> <li>Economic feasibility study to match logging revenues with planned expenses</li> <li>Identify and develop market niches for legal artisanal sawn wood in the foreign and domestic markets</li> <li>Grouping CFs to produce enough timber to supply regular demands (but with risks of high transaction costs)</li> <li>Need for independent monitoring of CFs management</li> </ul>
<ul style="list-style-type: none"> <li>Some CFs aim at rural development instead of logging, through the promotion of other activities like agroforestry or agriculture</li> </ul>	<ul style="list-style-type: none"> <li>Most CFs still focus on timber exploitation as a major and quick source of revenue</li> <li>Agriculture is usually an individual (or household) activity and farmers may be reluctant to comply with collective and formal rules</li> </ul>	<ul style="list-style-type: none"> <li>Consider CF to promote sustainable development at the local level, without necessarily focusing on timber</li> <li>Support CFs development in low-forested areas</li> <li>Allow individual activities together with collective activities in CF areas.</li> <li>Improve the integration of CF into the land management process at the local level</li> </ul>
<ul style="list-style-type: none"> <li>In ongoing CFs, local capacities have been increased and institutionalized</li> </ul>	<ul style="list-style-type: none"> <li>Capacity building is strongly dependent on external financial and technical supports</li> <li>At the village level, proliferation of committees that sometimes aim at overlapping purposes</li> </ul>	<ul style="list-style-type: none"> <li>Institutional support to CF committees but with a view they become self-governing over the long term</li> <li>Rely on existing local organizations to manage CF instead of creating new committees dedicated to CF</li> </ul>
<ul style="list-style-type: none"> <li>Simple Management Plan may valorise customary institutions and regulations</li> </ul>	<ul style="list-style-type: none"> <li>All customary institutions do not comply with democratic requirements</li> <li>Use of CF revenues is not as efficient as expected</li> <li>CF areas may sometimes be very large and question the capacities of communities to enforce management rules</li> </ul>	<ul style="list-style-type: none"> <li>Need for external monitoring of (1) the enforcement of good governance in committees in charge of CFs; (2) actual investments at the community level</li> <li>Need to strengthen community control of the CF area through external partnerships/delegations</li> </ul>

TABLE 2 – ENABLING AND IMPEDING FACTORS OF GROUPED CHAINSAW MILLING IN CENTRAL AFRICA

Advances	Obstacles	Areas of improvement
<ul style="list-style-type: none"> <li>The legal framework recognizes chainsaw milling</li> </ul>	<ul style="list-style-type: none"> <li>A complex, fickle and partly suspended regulation</li> <li>Application costs for small-scale logging permit are high</li> <li>No legal possibility to valorise secondary species left in the concessions by industrial loggers</li> </ul>	<ul style="list-style-type: none"> <li>Simplification of regulation : at least one title for chainsaw milling must be defined and actually granted under clear and fair procedures</li> <li>Consider how artisanal and industrial logging can be combined in logging concessions</li> <li>Grouped chainsaw millers could be given access to the abandoned timber that logging companies leave on the ground along trails or log yards.</li> </ul>
<ul style="list-style-type: none"> <li>The legal framework proposes several options for grouped chainsaw milling</li> </ul>	<ul style="list-style-type: none"> <li>Procedures are complex and costly to legalise a professional group or association</li> <li>Public authorities are sometimes reluctant to officialize chainsaw millers' groups</li> </ul>	<ul style="list-style-type: none"> <li>Simplification of regulation regarding associations and professional groups</li> <li>Professional associations can easily be committed in the land-use management process at the local and meso scales</li> </ul>
<ul style="list-style-type: none"> <li>In most rural areas, there are enough chainsaw millers to justify the creation of professional groups</li> </ul>	<ul style="list-style-type: none"> <li>For chainsaw millers, the creation of associations or groupings will not resolve the most important hurdles they face to develop their business</li> </ul>	<ul style="list-style-type: none"> <li>Emphasize how associations and groupings may diminish some operating costs (like access to logging permits or corruption) or increase financial return (through joint sales for instance) of chainsaw milling</li> </ul>
<ul style="list-style-type: none"> <li>A few groupings of chainsaw millers have been experienced</li> </ul>	<ul style="list-style-type: none"> <li>Such groupings remain infrequent and usually informal</li> <li>Their profit margin is below the average profit for individual chainsaw millers</li> <li>The main purpose of existing associations is not to promote a legal activity but to lobby on external partners</li> <li>Access to domestic timber markets does not require legal and grouped chainsaw milling</li> <li>Even in existing groupings, timber production and trade are usually not done collectively</li> </ul>	<ul style="list-style-type: none"> <li>Design and test financial incentives for legal grouped chainsaw milling: <ul style="list-style-type: none"> <li>- Facilitate competition for public contracts</li> <li>- Facilitate access to credit</li> <li>- Tax exemption</li> </ul> </li> <li>Develop adequate technical extension services (access to permits or to good quality equipment, transportation facility...)</li> </ul>
<ul style="list-style-type: none"> <li>External partners (funders, administration, companies) are willing to favor chainsaw millers' groupings</li> </ul>	<ul style="list-style-type: none"> <li>Groupings of chainsaw millers depend on external stakeholders</li> <li>When they exist, associations of urban sellers of timber might put a brake on chainsaw millers' groupings</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that chainsaw millers associations become self-governing over the long term</li> <li>Involve timber sellers into the creation of chainsaw millers' associations</li> </ul>



## WAYS FORWARD

The vast majority of sawn wood that is sold on the markets of Central Africa is produced by tens of thousands of individual chainsaw millers, who operate informally. These domestic markets today are insensitive to the legality of such products, which explains the negligible place of community forestry and chainsaw millers' associations.

Community forestry, as conceived in the forest codes enforced in Central Africa, still faces significant challenges to achieve the objectives that were initially set. Although enshrined in the forestry law and having received various financial supports, formal community forestry is a relative failure in Cameroon. The number of active CFs remains low, most are operated by private operators under contract, and management still faces many malfunctions. In general, there is a wide gap between the legal requirements for granting and ruling a CF and the capacities of communities to sustainably manage CF and derive income from it. Experiments currently implemented in Gabon seem to follow the same path, while the DRC hardly operationalize its community forestry approach, thirteen years after it was introduced in the Forest Code. The persistence of these blockages, already reported ten years ago in Cameroon, tends to support the assumption of a political resistance to promote decentralized forest management in the Congo basin countries. Without a massive simplification of procedures for creating and managing CFs, it is unlikely that communities use this option to sustainably manage their forest resources and raise their living standards through the commercialization of timber and NTFP.

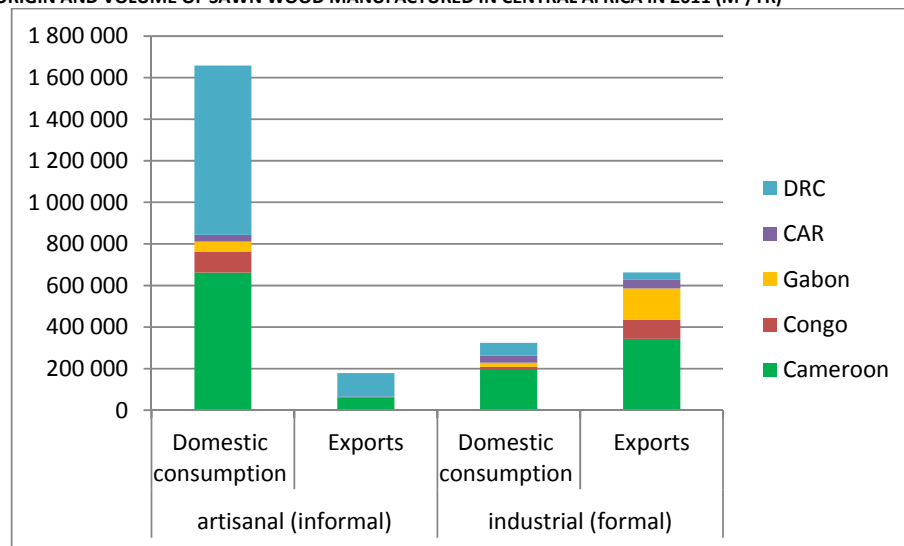
As an alternative to community forestry, the development of chainsaw millers groups often appears as a promising way to make their business legal and more professional. Several programmes predicate access to permits, training and credit on membership in a formal professional association. However, groupings of chainsaw millers are scarce in Central Africa. All surveys show that chainsaw millers very seldom combine forces in logging operations or to fill a purchase order. It is highly unlikely that the creation of professional unions will change the – essentially competitive – relationship between these micro-entrepreneurs any time soon. The professional associations can only function properly if their aims are clearly defined. The creation of cooperatives for independent entrepreneurs may be recommended in order to defend the common interests of all the loggers through, for instance, simplification of procedures, clarification of tax levies, etc. If these formal groups were eligible for the commercial, technical and fiscal facilities granted by the State, they would appeal more to the chainsaw millers.

Promoting formal SSFEs in Central African countries requires above all establishing regulatory mechanisms and incentives at individual operators so that they can legalize their activities. Such measures fall into two categories: technical options to improve methods in the field in the short term – like multifaceted support for the small-scale operators working legally – and political options which require substantial changes, e.g. in governance and behaviour at the national level, like increasing the volume of timber of legal origin on the national markets or amendment to the legal and regulatory framework.

## Introduction

For twenty years, the Congo Basin countries have been implementing policies aimed at the sustainable management of their forest resources and at poverty reduction. These policies target the major timber concessions, whose production is exported mainly to Europe and Asia, but overlook the informal small-scale chainsaw milling sector, which supplies domestic and regional markets. Yet this sector has taken the lead in terms of the volume of timber produced: today, in the Central African countries, the annual volume of timber from informal chainsaw milling consumed on domestic markets or unofficially exported to nearby countries is greater than that of sawn wood from the industrial sector (Figure 1, source: Lescuyer and Cerutti 2012).

FIGURE 1 – ORIGIN AND VOLUME OF SAWN WOOD MANUFACTURED IN CENTRAL AFRICA IN 2011 (M<sup>3</sup>/YR)



Most of this artisanal sawn wood is produced by individual chainsaw millers, which mainly operate in the informal economy. The timber volume and the turnover generated by this sector make it a promising ground for developing and supporting small scale forest enterprises (SSFs) operating in compliance with regulations. There are two possible ways to promote SSFs in Central Africa, particularly in Cameroon, Gabon and DRC.

On the one hand, in these three countries, the enactment of new forest codes since 1994 has endorsed the community forestry approach. Cameroon has experienced this approach for nineteen years, Gabon for two years while the DRC is preparing to apply this approach soon. This innovative approach is frequently promoted by many international and local organizations, but the results on the ground call for a more mixed judgment, considering the areas actually (and legally) used or the effective socio-economic achievements. The extent of community forestry in Central Africa is today incomparable with that of artisanal individual logging. Artisanal sawn wood feeds the urban demands and those of neighboring countries, while (legal) community forestry occupies at best a few market niches.

On the other hand, associations or groups of chainsaw millers constitute another opportunity to build and promote SSFs. However, in the three countries targeted by the study, there are few or very few associations of artisanal sawyers, and when they exist, they are very often one-off operations for a limited period.

The aim of this report is to provide an overview on these various approaches in view of promoting SSFE in Central Africa. In this purpose, the report relies on case studies at the national level in Cameroon, Gabon and the DRC, where there are formal community forestry initiatives and a significant sector of individual or collective artisanal logging. The contents of these three chapters are relatively similar: (1) literature review; (2) description of two case studies of community forestry; (3) description of two case studies of grouped chainsaw milling; (4) identification of impeding and enabling and factors; (5) conclusion.

These chapters are followed by a general conclusion which outlines several ways to promote SSFE in Central Africa.

## **COUNTRY STUDY: CONTRIBUTIONS OF COMMUNITY AND SMALL-SCALE LOGGING TO SUSTAINABLE TIMBER MANAGEMENT AND INCOME GENERATION FOR LOCAL POPULATION IN CAMEROON**

### **INTRODUCTION**

The revision of the forestry laws in Central Africa from the mid-1990s placed Sustainable Forest Management in the heart of the forest policies. In practice, the implementation of Sustainable Forest Management has mainly resulted in the management of logging concessions by export-oriented industrial companies (Leroy et al. 2013). Instead of a complete Sustainable Forest Management, Central African States have opted for Sustainable Timber Management in which the focus is on a sustained yield of timber over long time periods through investment in rational harvesting and regeneration (Pearce et al. 1999). This type of exploitation of forest resources in Cameroon provides valuable economic benefits and it has also helped to maintain a high level of forest cover (Bruggeman et al. 2015) although its impacts on biodiversity are discussed (Nasi et al. 2012, Karsenty and Gourlet-Fleury 2006). Conversely, the contribution of Sustainable Forest Management to poverty alleviation and to social issues is vividly debated (Counsell et al. 2007, Leroy et al. 2013, Eisen et al. 2014, Samyn et al. 2011). The weak social performance of logging concessions can be partly explained by the philosophy that guided the development of the forestry code in 1994. While the concession was the model to maximize financial income and to maintain forest cover, the Community Forest (CF) was created to offer communities the opportunity to exploit forest resources for their own benefit and, to some extent, according to their own rules (Ekoko 2000, Topa et al. 2009). If environmental considerations are not totally absent, the objective assigned to community forestry is primarily social (Etoungou 2003, Cuny et al. 2004, Oyono 2005). In this purpose, timber exploitation in CFs must remain artisanal and be carried out collectively over a maximum area of 5000 hectares. The sustainability of this use is theoretically guaranteed by the development and implementation of a Simple Management Plan (SMP) approved by the forest administration. This new form of social forestry has enjoyed international support since the late 1990s. In 2010, out of 291 validated SMPs, 182 of them had been completed with the signature of a letter of agreement with the public authorities covering 677 233 hectares. However, 140 of them were actually active as they benefitted from a Certificate of Harvesting License. Twenty years after their creation, it is only about 1% of the national area of Cameroon which is operated under CF status, and 2% of the national land area that is allocated to CF (most of which is not active).

The mitigated success of community forestry in Cameroon is to be compared with the boom of informal individual logging over the same period (Cerruti and Lescuyer 2011). The growth of the individual chainsaw milling sector dates back to the second half of the 1990s, when the gradual improvement in economic conditions, particularly in the cities, coupled with the absence of alternative sources of income in rural areas, pushed many Cameroonians to become artisanal sawyers. Their production replaced that of industrial companies to supply urban markets (Plouvier et al. 2002) and to export to neighbouring countries. In 1999, the Ministry of Forests took the decision to suspend the use and provision of all "small scale" logging titles on the pretext that they had become a major source of corruption and illegality. The suspension remained in force until 2006, but chainsaw logging continued unabated (Cerutti and Tacconi 2008). In fact, instead of reducing illegal logging, the suspension has forced an entire sector to operate informally, without access to legal logging titles. Since 2006, when the suspension was lifted, a very limited number of permit applications was

received at the Ministry, not only because the conditions for access to permits are now centralized and expensive, but also because the entire sector is now organized on the basis of informal practices (Cerutti et al. 2013).

Thus, besides the industrial exploitation of concessions, there are today two artisanal modes of timber logging and milling whose performances to implement Sustainable Forest Management practices are little known. These two modes have several points in common: they mainly rely on chainsaws for felling and processing timber, they are carried out by rural communities, and they are located in the Non-Permanent Forest Estate. They also differ on two issues: community forestry is collective and formal while chainsaw milling is an informal practice usually carried out by individuals, although chainsaw millers sometimes constitute groups, syndicates or associations. Between these three models, community forestry is generally regarded as the most promising approach in terms of social and environmental impacts, as shown by the support of international donors for CFs in Cameroon for twenty years (Cuny 2011, Eisen et al. 2014).

This report provides an introductory analysis of the financial and social impacts of timber production and trade by community forests versus by individual chainsaw milling models on the basis of a review of scientific and technical literature. Then two case studies of grouped chainsaw milling are presented with a focus on their performances and drawbacks. The conclusion synthesizes the importance of these three modes of artisanal logging and explains why grouped chainsaw milling remains an infrequent option in Cameroon.

## BACKGROUND

### ECONOMIC AND SOCIAL IMPACTS OF TIMBER EXPLOITATION AND TRADE BY INDIVIDUAL CHAINSAW MILLERS IN CAMEROON

The annual production of informal sawing amounts 715 000m<sup>3</sup>, most of which being produced by individual chainsaw millers (Cerutti and Lescuyer 2011). Selling prices vary according to quality, type and origin of the product, as well as to the tree species. The average price of a cubic meter of sawing is around €130 on Cameroonian urban markets, including all species and all products (Cerutti and Lescuyer 2011). This value is also used to estimate the selling price on the Chadian and Nigerian markets. Under this assumption, the total turnover of individual chainsaw milling is around €93 million per year. It generates around 44 000 full- and part-time jobs, with 90% in rural areas (Cerutti and Lescuyer 2011). These authors also evaluated the main components of the sale price of one cubic meter of informal sawing in the Cameroonian market (Table 3).

TABLE 3 - COMPONENTS OF SALES PRICE OF SAWN WOOD IN DOMESTIC MARKETS (€/M<sup>3</sup>)

Components of final sales price	Estimation (€/m <sup>3</sup> )	%
Wages (rural and urban areas)	43,6	34%
Transportation and equipment	23,1	18%
Consumables and miscellaneous in rural areas	17,0	13%
Informal payments (rural and urban areas)	16,3	13%
Payment to customary owners	6,8	5%
Official taxes	0,1	0%
Rent for outlet	0,5	0%
Profit (rural and urban areas)	22,0	17%

By multiplying the average profit per cubic meter by the total volume, the annual net benefit of the individual chainsaw milling sector is estimated around 15,7 million €. Its added value amounts to 63 million € per year.

Four categories of actors derive income from informal chainsaw milling in Cameroon (Cerutti and Lescuyer 2011): rural communities, urban populations, representatives of the authorities and of municipalities (Table 4).

**TABLE 4 - DISTRIBUTION OF ANNUAL REVENUES DRAWN FROM INDIVIDUAL CHAINSAW MILLING**

<b>Beneficiaries</b>	<b>Sources of revenues</b>	<b>Amount (million €/yr)</b>
Rural populations	Wages, sale of trees, profit from chainsaw milling	30,55
Urban populations	Wages, outlet rental, profit on sale of sawing to end users	17,63
Representatives of government or council authorities	Informal payments at council level, during transport and in urban markets	10,78
Councils	Official taxes	0,07

Artisanal logging has a direct economic impact on rural economies since half of the operating costs are made in the villages where the trees are felled. Rural people are not the only ones to benefit from chainsaw milling. On the one hand, urban populations capture a significant portion of revenues from the sale of artisanal sawing. On the other hand, about 13% of timber price is unduly paid to various forms of public authority. This wide distribution of revenues from individual chainsaw milling strengthens social legitimacy of this informal activity.

Apart from its financial impact, individual chainsaw milling is based on traditional land tenure that frames the sale of trees to sawyers. Artisanal sawing provides an opportunity for customary owners to assert their rights to exploit timber resources and to draw new revenues (Oyono 2004, Lescuyer *et al.* 2013).

Artisanal logging remains a largely individualized activity and there are very few experiences of formal sawyers grouping in Cameroon. The literature review did not identify any assessment of collective artisanal chainsaw milling.

#### **ECONOMIC AND SOCIAL IMPACTS OF TIMBER EXPLOITATION AND TRADE BY COMMUNITY FORESTS**

The alternative and legal alternative to informal chainsaw milling is Community Forest, but this latter model is not homogeneous (Ezzine *et al.* 2009): its implementation and its impacts depend on many variables that must be simplified to assess its economic impact on stakeholders. Therefore, four sets of assumptions are made to calibrate the scale of community forestry in Cameroon, to assess the start-up costs of a CF, to estimate its operating costs and to calculate the financial benefits of logging.

#### **HYPOTHESES ON THE IMPLEMENTATION OF COMMUNITY FORESTRY IN CAMEROON**

- The average size of a CF is 3 440ha, according to official statistics ;
- The number of active CF is 150, i.e. the average number of Certificates of Harvesting Licence (CHL) delivered annually by the forestry administration since 2010;
- 75% of the active CFs are operated under contract by private operators (Cuny 2011) whereas 25% are directly by communities.

#### HYPOTHESES ON THE START-UP COSTS OF A CF

- The inception phase of a CF requires to follow many administrative steps, which cost is estimated at 7 630€ (Julve *et al.* 2007, Cuny 2011);
- The design and writing of the SMP cost 0,15 €/ha and the application of the Environmental Impact Assessment amounts to 3€/ha (Julve *et al.* 2007, Cuny 2011);
- These start-up costs are assumed to be paid off during twenty five years – the duration of the SMP – and to generate revenues that are equally shared between administration and private operators (consultancy firms, NGOs...).

#### HYPOTHESES ON THE OPERATING COSTS OF A CF

- Preliminary steps of logging generate expenses of 15 €/m<sup>3</sup> (Vermeulen *et al.* 2006, Cuny 2011) ;
- The management committee of the CF costs 12 €/m<sup>3</sup> (Julve *et al.* 2007) ;
- Logging and processing costs for hardwoods are evaluated at 137 €/m<sup>3</sup> (Julve *et al.* 2007), and at 95 €/m<sup>3</sup> for softwoods (Cuny 2011) ;
- Trade of timber is submitted to various « administrative » charges, with an average expense of 3 €/m<sup>3</sup> (Castadot 2007, Julve *et al.* 2007).

#### HYPOTHESES ON THE PRODUCTIVITY AND INCOME OF A CF

- The actual timber production is often very different from the maximum possibility established in the SMP and the CHL. Nzoyem *et al.* (2010) noted that the total roundwood equivalent volume for CFs at the country scale was around 57 000 m<sup>3</sup> – an average of 900 m<sup>3</sup> per CF – while the average operating rate never exceeded 27% and was actually around 15 %. A 20% rate of use of the authorized timber volume in the CHL is thus assumed, i.e. an annual volume of about 180m<sup>3</sup> per FC or 60m<sup>3</sup> of sawings with a conventional processing rate of 30% (Cerutti and Lescuyer 2011). Such a production can be done in three months of work for a team of 12 people, i.e. about 3 full time jobs generated by each FC (Nzoyem *et al.* 2010).
- Half of timber production is done with softwood species and half with hardwood species (Cuny 2011);
- In the case of a community-controlled CF, all sawing is exported and sold at the Free on Board price, that is estimated at 140 €/m<sup>3</sup> for softwood and 221 €/m<sup>3</sup> for hardwoods (Julve *et al.* 2007);
- CFs operated by communities frequently provide additional income from the sale of secured documents – for instance waybills – to launder illegally produced timber. Ndume Engone (2010) estimated that, on a basis of a survey in 4 CFs, trafficking documents increase income by 25% for communities. The administration also takes advantage of this traffic as much as communities (REM 2007, Cuny 2011).
- In the case of CFs operated under contract, the average selling price of sawn wood by communities to private operators is 23 €/m<sup>3</sup> (Cuny 2011) while the operator makes a supposed benefit of 46 €/m<sup>3</sup>.

All these unit estimates are summarized in Table 5 for the two possible modes of timber harvesting in a CF for an average surface of 3 440ha.

Table 5 - Costs and benefits of timber production and trade in CFs for a community (€/m<sup>3</sup>)

€/m <sup>3</sup>	Timber exploitation by the community	Timber exploitation subcontracted
Turn over	181	23

Start-up costs		
Administrative procedures	5	0
Elaboration of SMP	4	0
Environmental Impact Assessment	7	0
Operating costs		
Preparation of logging	15	0
Logging and processing of softwood species	47	0
Logging and processing of hardwood species	69	0
Management committee	12	0
Other costs	3	0
Profit		
Formal benefit for the community	19	23
Formal and informal benefits for the community	23	23
Benefit for the subcontracted company	0	46

If timber exploitation and trade by communities seem a profitable business, in reality the start-up costs are out of their reach: it is indeed necessary to spend more than €15 000 even before signing the CF management agreement with the administration. The requirement to carry out an Environmental Impact Assessment survey – until now not applied (Julve et al. 2013) – would increase this cost by €10 700. This prohibitive cost to operate community forest as a business in Cameroon explains the frequent dependence of communities vis-à-vis external actors that can financially and technically support the creation of a CF and the commercialization of timber.

Assuming that all timber production from CFs is exported, annual turnover of community forestry in Cameroon is estimated at €1,63 million and the net annual benefit around €0,52 million. The added value of this sector amounts to €1,17 million per year.

Financial revenues from timber harvesting in CFs should not obscure some economic benefits that may provide this type of management. Four economic benefits are mentioned in the literature: Non-Timber Forest Products (NTFPs) extraction (Akoa Akoa 2007, Beauchamp and Ingram 2012), reduction of carbon emissions (Minang et al. 2007, Karsenty et al. 2010), biodiversity conservation (Beauchamp and Ingram 2012) and maintenance of soil fertility (Beauchamp and Ingram 2012). However, assimilating these economic benefits to CF management requires to demonstrate that they would disappear or be severely degraded in the absence of CF, which is rarely obvious (Ingram *et al.* 2012, Lescuyer 2013).

Community forestry has been designed to help increase livelihoods of rural people through collective and individual income. Based on the assumptions above, Table 6 summarizes the revenues from logging in CFs for the three main stakeholders.

TABLE 6 - DISTRIBUTION OF ANNUAL REVENUES DRAWN FROM COMMUNITY FORESTRY

Beneficiaries	Sources of revenues	Amount (€yr)
Local populations	Wages, profit from timber sale	861 800
Administration	Formal and informal costs	142 600
Private operators (logging companies, consultants, NGOs)	Profit from timber sale, design of CF management documents	452 200



Local people are the primary beneficiary of community forestry, mainly due to individual income that is generated from logging in CF. The individual incomes are on average twice as important as the collective benefits (Nzoyem et al. 2010) and constitute about 60 % of the cost of felling and wood processing (Castadot 2007, Julve et al. 2007). Private operators also earn substantial income from community forestry. In addition to revenues, community forestry enables local people to value at least partially their customary rights. On one hand, the delimitation of a CF is a way to endorse the possession of a terroir by the community, even if this recognition covers only the area inside the NPFE. On the other hand, SMPs may include provisions for individual customary owners, such as financial compensation for use of resources that belong to them (Oyono et al. 2006, Poissonnet et al. 2006).

Groupings of chainsaw millers may constitute an intermediate option between community forestry and individual logging. Two case studies below describe the actual scope and performances of this activity in Cameroon.

## CASE STUDIES OF GROUPED CHAINSAW MILLING

Artisanal chainsaw milling is a largely informal activity in Cameroon and there is no statistical source to know the number of active chainsaw millers groups. Primary data collected by Cerutti and Lescuyer (2011) in 44 councils with 261 millers interviewed indicated that the groups of chainsaw millers were very rare: only four cases were reported. Two heterogeneous examples below were selected out of the four cases to reflect the diversity of sawyers' groupings. In these two case studies, data was gathered through semi-structured interviews by phone calls and direct discussions.

There are very few cases of chainsaw millers groups in Cameroon. However, the two selected cases, one at Akoeman district and the second one at Mbang district, show that certain (positive or negative) circumstances can encourage chainsaw millers to come together formally or informally to promote or to defend their interests.

### **ASSOCIATION DES SCIEURS DE BOIS D'AKOEMAN (ASCIBA)**

#### ORIGIN

The rural council of Akoeman located at 98 km from Yaoundé was created in 1995 covering 16 villages with a population of 12 390 inhabitants. The total area of the council is 487 km<sup>2</sup>. The forest of Akoeman is one of the main providers of Yaoundé timber markets by individual sawyers. As a matter of fact, individual exploitation of timber is a predominant activity in that area because this forest is rich in timber species and located near Yaoundé city. Although carried out without a permit, chainsaw milling is an important source of tax revenue for the municipality of Akoeman. The *Association des Scieurs de Bois d'Akoeman* (ASCIBA) was created in order to get rid of informal taxes imposed by the mayor of the locality. This sawyers association aims at finding alternative routes to evacuate timber without being subject to the (informal) communal taxation and at lobbying the local authorities to recognize and facilitate chainsaw milling within the municipality.

#### STRUCTURE AND MANAGEMENT

The ASCIBA was created in February 2014 and its status and regulations abide by the legal requirements for associations. It is managed by a Board of Trustees that includes at least a President, a Secretary and a Treasurer. However, in 2015, this association was not still legalized. At the beginning of 2014, the ASCIBA was formed of three chainsaw millers and

several regular customers from Yaoundé. One year later, 26 chainsaw millers were members of the association.

#### PRODUCTS, MARKETS AND BENEFIT SHARING MECHANISMS

The creation of ASCIBA did not aim at changing the operational processes of individual sawyers but aimed at resisting to the increased tax pressure by the council of Akoeman. It was initially conceived as a lobbying group to defend the interest of individual chainsaw millers. It had little impact on the logging and milling processes but it has facilitated timber trade and transportation to Yaoundé with two measures:

- timber sale is sometimes organized in Akoeman by ASCIBA. There are several cases where chainsaw millers gathered their sawn wood for collective sale. In return, each member of ASCIBA must return a small percentage (3-5%) of his sale to ASCIBA;
- The association has also set up a guarantee fund to support potential unexpected expenses related to timber transportation to Yaounde.

#### ASSOCIATION THE *GREENS OF MBANG*

##### ORIGIN

The village of Mboumdel is located at 2 km of the city of Mbang in the Eastern region of Cameroon with about 300 inhabitants and more than 1000 inhabitants when adding the employees of two logging companies surrounding the village (SFID, GRUMCAM).

For twenty years, the populations of Mboumdel played a significant role in logging operations in various forms. While SFID was waiting for the allocation of its concessions by public authorities, the factory kept on functioning and timber was partly supplied by local subcontractors in the early 2000s. At that time, the industrial company obtained several Sales of Standing Volume (*Vente de coupe*) in the Non-Permanent Forest Estate (NPFE): although the first harvest of timber was done out by the company, 20 small-scale loggers were then authorized to enter the SSV to valorize timber scraps with official logging permits. The production of chainsaw millers was bought by the logging company. This activity became important in and around Mboumdel and sawyers ended up in constituting an association called the *Greens of Mbang*, with the financial and technical support of SFID. The main objectives of the association were the harmonization of prices per cubic meter of timber sold to the company, the control and monitoring of activities of all sawyers involved and the advocacy with the local authorities to facilitate chainsaw milling.

##### STRUCTURE AND MANAGEMENT

The association *Greens of Mbang* was created in 2002 and legalized thanks to the technical support of the logging company. Its status and regulations abided by the legal requirements for associations. It is managed by a Board of Trustees that includes at least a President, a Secretary and a Treasurer. More than twenty individual chainsaw millers were full members of this association between 2002 and 2006.

#### PRODUCTS, MARKETS AND BENEFIT SHARING MECHANISMS

THE ASSOCIATION *GREENS OF MBANG* WAS CREATED TO PROVIDE THE LOGGING COMPANY (SFID) WITH LEGAL PRODUCTS HARVESTED IN AUTHORISED LOGGING AREAS (SALES OF STANDING VOLUME). THE MEMBERS WERE SUB-CONTRACTED BY SFID AND EACH CONTRACTED SAWYER WAS GRANTED A FEW EQUIPMENT AND CONSUMABLES FOR EVERY PRODUCTION OF 25M<sup>3</sup> (CF. TABLE 7). THE CHAINSAW WAS GIVEN TO THE SAWYER AFTER A FEW DELIVERIES. THE TOTAL COST FOR THE COMPANY IS PRESENTED IN

Table 7 for a production of 100m<sup>3</sup>, i.e. 4 deliveries.

TABLE 7 - COSTS OF PRODUCTION OF 100M<sup>3</sup> OF SAWNWOOD FOR THE COMPANY

Item	Quantity	Unit price €	Total amount €
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Chainsaw	1	1 300	1300
Fuel	4*250 litres	0.76	764
Oil	4*25 litres	1.07	108
Limes	4*7	2.3	64
Chains	4*4	30.5	488
Purchase of sawnwood	4*25	91	9 100
TOTAL			11 824

The average cost for the company of 1 m<sup>3</sup> of sawings through contracting with individual sawyers is around 120€ Most timber exploited by the *Greens of Mbang* was harvested in the Sale of Standing Volume, but part of the volume was also extracted from farmers' fields and forests. Traditional owners were then entitled to get 1.53 €/m<sup>3</sup>. Under the assumption that half of the production comes from non-permanent forests and that artisanal logging was still done individually by each member of the *Greens*, Table 8 shows the costs and profits of this timber production.

TABLE 8 - COMPONENTS OF SALES PRICE OF SAWN WOOD BY THE GREENS OF MBANG TO THE LOGGING COMPANY (€/M<sup>3</sup>)

Components of sale price	Estimation (€/M <sup>3</sup> )
Wages	43,1
Equipment	Logging company
Transportation	15,5
Consumables and miscellaneous in rural areas	Logging company
Payment to customary owners	3,4
Official taxes	Logging company
Profit	29,6

The profit margin is 32% and the profit is about 30€/m<sup>3</sup>. However, the arrangement and subsidies provided by the logging company had run only until the logging company got its concession in 2006.

#### ENABLING ENVIRONMENT AND CONTEXTUAL BARRIERS FOR THE TWO CASE STUDIES

Although Cameroonian laws provide the possibilities to get a small-scale logging permit or to be organized into formal groups (in the form of association for example), the vast majority of artisanal chainsaw milling remains informal and individual. In both cases, access to logging licenses and the creation of professional groups are complicated without external technical support and costly<sup>1</sup>, with an uncertain impact on profits earned by operators. As a matter of fact, grouped chainsaw milling is not considered by the operators as a key solution to improve the efficiency of this commodity chain (Cerutti and Lescuyer 2011).

There are very few experiences of grouped chainsaw milling in Cameroon, but when chainsaw milling operators work as a group or an association, they may be in better position to build arrangements with logging companies, like in Mbang, or to resist additional costs, as shown with the case of Akoeman. However, these two case studies also show the limits of grouped chainsaw milling. In Mbang, the association disappeared when the logging company relied on its own sources of timber. In Akoeman, the creation of ASCIBA aims to protect the

<sup>1</sup> Formal and informal costs to acquire a small-scale logging permit in Cameroon is estimated around 2,5 million F.CFA (from the interviews with respondents), i.e. well above the financial capacities of individual chainsaw millers.

interests of economic actors and not to engage them in the path of legality. And in both cases, these professional associations have been designed to support individual activities of chainsaw millers and not to organize them as a collective exploitation of timber resources.

Contrary to what happens on the upstream of this commodity chain where sawyers groups are scarce, urban sellers of sawn wood have created their associations and federations in Douala and Yaoundé in recent years. They buy timber largely from individual sawyers, who can be more easily subdued, e.g. by imposing purchase prices. Thus, the existence of these professional groups in cities is not necessarily favorable to the emergence of sawyers organized groups in rural areas.

## CONCLUSION FOR CAMEROON

Individual chainsaw milling is an important economic activity for tens of thousands of Cameroonians in both urban and rural areas (Cerutti and Lescuyer 2011). In terms of timber volume, employment and income, this sector does at least as well for rural economies as industrial logging and far surpasses community forestry. This finding challenges the relevance of the CF model promoted in Cameroon and, more generally, it questions the compatibility between sustainability and legality, at least for small-scale exploitation of timber resources (Ndume Engone 2010, Julve et al. 2013).

The two case studies of grouped chainsaw milling indicate both the advantages of such groupings (social acceptance and legitimacy to contract with external actors, lobbying, easiness of trade) and the limits of this approach: dependency on external stakeholders and no commitment to go legal. Grouped chainsaw milling would become a more convincing option when there is a clear evidence of increased financial benefits on short and medium terms for operators.

## COUNTRY STUDY: STOCK TAKING OF COMMUNITY FORESTRY ENTERPRISES IN GABON AND THEIR CONTRIBUTIONS TO INCOME GENERATION FOR LOCAL POPULATION

### INTRODUCTION

In Gabon, timber exploitation and trade account for 42% of non-oil exports and employ about 14 000 people (Chevalier et al. 2009). As in other countries in the sub-region, nearly all timber produced in the official sector is exported. One species, okoumé (*Aucoumea klaineana*), comprises more than 80% of Gabon's exports, and most exports are logs (1.5–2 million m<sup>3</sup> per year until 2009). Until 2010, most of the okoumé logs have been exported to Asia, in particular China. Gabon's forest policy aims to boost the contribution of the forestry sector to 10% of gross domestic product whilst developing an effective model for sustainable forest management. In 2001, the Forestry Code was renewed and set the basic tenets of forest management. In 2010, a presidential decision banned logs exports to maximize timber processing, value-adding and employment at the nation scale.

Until today, the Gabonese forest policy has mainly focused on industrial timber production for export. Nevertheless, there is also a domestic timber market that is supplied by thousands of formal and informal small-scale loggers who operate in the rural domain. A few years ago, Gérard (2007) and Chevalier et al. (2009) hypothesized that large informal timber exploitation and processing sector exists. A complete survey of this sector was done by Lescuyer et al. (2011): based on sales figures for a sample of outlets and for chainsaw products entering Libreville, monitored between July 2008 and December 2009, the annual consumption of artisanal sawnwood in Gabon was estimated at about 70 000 m<sup>3</sup>, of which at least 50 000 m<sup>3</sup> was produced in the informal sector. Products from informal chainsaw milling operations were estimated to account for less than 20% of the sawnwood exported from Gabon in 2008. Nevertheless, in 2008 and 2009, chainsaw milling sales created at least 1000 direct, permanent and semi-permanent jobs in Libreville and generated at least 3.5 billion F CFA in added value. This study confirmed preliminary assessments by the forestry administration: according to Mabiala (2004), there were 213 small-scale processing enterprises operating in Libreville, Owendo and Ntoum council areas, out of 305 across all of Estuaire Province (Diwassa 2007).

Because of its informality, timber production for the domestic market remains largely ignored by the forest policy. These small and very small timber enterprises have the following characteristics: (1) labour is provided mainly by the entrepreneur; (2) technology is simple with little mechanisation; (3) capital is minimal; and (4) managerial and technical skills are limited. Before the Forestry Law No. 16/01, small-scale logging was carried out through a specific permit called *Coupe Familiale* (Family Felling Permit). According to the Law No. 1/82 of 22 July 1982, this permit allowed small-scale timber operations within a 5 km radius around villages. This permit applied to no more than 100 trees and was reserved for Gabonese citizens. Logs obtained under this permit could be processed by holders of an *Autorisation de Sciage de Long* (Chainsaw Logging Authorisation), issued under Order No. 228 of 19 January 1993. The *Coupe Familiale* does not appear as such in the 2001 Forestry Code, although the code allows a 4-year transitional period for felling quotas covered by that permit (Art. 292). The *Coupe Familiale* was permanently suspended in 2005 (Decree No. 666) and replaced, in theory, by two new logging titles: the *Forêts Communautaires*

(Community Forests permit) and the *Permis de Gré à Gré* (PGG). Today, there are thus two legal options for small-scale logging: individual or joint chainsaw milling through the PGG – or other alike logging permits – and the community forest that is a formal collective logging title but that has been only recently applied. This report reviews the respective advantages and drawbacks of these two options of small-scale logging in Gabon.

## BACKGROUND

### COMMUNITY FORESTRY IN GABON: CURRENT SITUATION AND CHALLENGES

Sections 156 to 162 of Forestry Law 016/01 define several decentralized management tools of the forest in order to boost socio-economic development in rural areas. This new approach gives rural communities the opportunity to exploit timber and non-timber products through the establishment of CFs. This commitment by the Gabonese government to involve local people in the management of CFs is materialized by the creation of a Direction des Forêts Communautaires (DFCOM) in 2013 and by three main regulations:

- Decree n°001028 of 1 December 2004 on the conditions to create a CF ;
- Order n°18 of 31 January 2013 on the procedures to grant and manage a CF ;
- Order n°106 of 8 May 2014 on the right to reserve a CF on behalf of a community.

According to these regulations, a CF is a portion of the rural domain assigned to a local community to conduct activities for the sustainable management of natural resources on the basis of a simple management plan and of an agreement signed between the Forestry Ministry and the community organized in a legal entity. A CF covers a maximum of 5 000 ha for one village and 10 000 hectares for a group of villages, although these areas are still subject to discussion. Some areas within the CF can be dedicated to conservation or agriculture.

The community forestry approach has been discussed in Gabon since the completion of a feasibility study in May 2000 by Pierre et al. (2000). Six years after this study, the concept is implemented mainly with the support of the project « Développement d'Alternatives Communautaires à l'Exploitation Forestière Illégale » (DACEFI<sup>2</sup>). This project tested out the CF approach between 2006 and 2008 (Vermeulen & Doucet, 2008). The second phase (2010-2014) aimed at implementing (Meunier & Boldrini, 2008). In the CFs supported by DACEFI, 14 trees were supposed to be logged every year – i.e. 70 trees in a five year planning – to comply with the communities' means and capacities (ONFI Cameroun, 2014). A major objective of this project was to establish simple management and operational rules so that they are actually applied by communities.

At the same period, the DFCOM conducted another project to promote the CFs, thanks to ITTO funds. Lastly, the DFCOM has received several applications for creating CFs.

The total number of active and requested CFs in Gabon is presented in Table 9.

TABLE 9 - NUMBER OF ACTIVE OR REQUESTED CFS IN GABON (APRIL 2015)

	With the support of DACEFI	With the support of DFCOM-ITTO	Followed by DFCOM	Total
<i>Definitive agreement</i>	1 (A2E)	1 (Nkang)	1 (Laboka)	3
<i>Provisinal agreement</i>	3 (Hendjé, Massaha, Nze Vatican)	1 (Ongam)	2 (Nyamezélé, Balem)	6

<sup>2</sup> [https://www.omnispace.fr/dacefi2/module\\_fichier/index.php?id\\_dossier=10](https://www.omnispace.fr/dacefi2/module_fichier/index.php?id_dossier=10)

<i>Other steps</i>	4 (Ekoredo, Mimbalé Mibe, Engongom, Afock-bidzi)	1 (Yiétsou)	21	26
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In total, the cost of creating a CF exceeds 3 million F.CFA (ONFI, 2014), less than 5% being supported by the communities.

#### ENABLING AND IMPEDING FACTORS FOR COMMUNITY FORESTRY IN GABON

Table 10 summarizes the main advances and obstacles of community forestry in Gabon, based on literature and surveys in the two studied sites that are presented in the next section.

TABLE 10 – ENABLING AND IMPEDING FACTORS OF CF IN GABON

Advances	Obstacles	Perspectives
<ul style="list-style-type: none"> <li>Legal and regulatory framework is available (but incomplete)</li> </ul>	<ul style="list-style-type: none"> <li>Procedures are complicated, and costly</li> <li>No CF has been established without external funds</li> </ul>	<ul style="list-style-type: none"> <li>Simplification of the procedures to create and operate CFs</li> <li>Free assistance of the forestry administration</li> <li>Financial and technical support to CF initiatives</li> </ul>
<ul style="list-style-type: none"> <li>Artisanal logging has started in a couple of CFs</li> </ul>	<ul style="list-style-type: none"> <li>A very low profitability</li> <li>Competition with illegal timber</li> <li>Probably not enough timber resources available at the CF scale to produce a significant volume of timber to regularly provide market demands</li> </ul>	<ul style="list-style-type: none"> <li>Identify and develop market niches for legal artisanal sawing</li> <li>Grouping CFs to produce enough timber to supply regular demands (but with risks of high transaction costs)</li> </ul>
<ul style="list-style-type: none"> <li>CF can focus on rural development instead of logging, through the promotion of other activities like agroforestry or agriculture</li> </ul>	<ul style="list-style-type: none"> <li>What is the added value of CF in comparison to other committees dedicated to local development?</li> </ul>	<ul style="list-style-type: none"> <li>Consider CF to promote sustainable development at the local level, without necessarily focusing on timber</li> </ul>
<ul style="list-style-type: none"> <li>In ongoing CFs, local capacities have been increased and institutionalized</li> </ul>	<ul style="list-style-type: none"> <li>What will be the effectiveness of the local management committees over the long term?</li> </ul>	<ul style="list-style-type: none"> <li>Long term institutional support to local committees</li> <li>Make sure the formal committees rely on customary decision-making processes</li> <li>Allow individual activities together with collective activities in CF areas.</li> </ul>

### CHAINSAW MILLING IN GABON

For fifteen years, the chainsaw milling sector has attracted many young men who struggled to find a job in town or to generate adequate income in rural areas. At least during the first decade of 2000s, Lescuyer et al. (2011) showed a substantial growth in chainsaw milling production, mainly in the informal sector, to meet urban demand. But the domestic timber market underwent a drastic transformation in recent years. CIFOR (Proformal project<sup>3</sup>) indicate that the domestic consumption of artisanal sawnwood decreased by almost half between 2008-2009 and 2011-2012 (Table 11), and that more timber than in the past is now supplied by industrial scraps, as industrial production for the national market increased during the same period.

TABLE 11 – SAWN WOOD VOLUME ON THE DOMESTIC MARKET OF LIBREVILLE

Sawnwood (m3/yr)	2008-09	2011-12
Libreville (markets-recorded sales)	51 100	22 382
Libreville (road-recorded entries into the city)	60 000	32 300
Industrial production	280 000	439 000
Persons employed by informal timber (urban) sector	1 000	504
Contribution to local economies	€M2.7	€M1.6
Profit per m3 harvested	€36.7	€18.6
Profit margin	32%	14%

Several reasons could explain this trend. First, the adoption of a log-export ban introduced by a Presidential Decision in November 2009 (with effect beginning of 2010, later reported to mid-2010). The ban was unexpected by the timber industry, which had to take quick measures to process 100% of their production in Gabon. The Decision thus increased the amount of sawnwood produced locally, with a direct impact on the volumes of (non-exported) timber scraps available for the domestic timber market. Also, some logging companies that were exporting logs before the ban, had now to process those logs and sell them on the domestic market as sawn timber, because they did not yet have an established international network of clients requesting such sawn timber. This could however be a short-term source of timber for the domestic timber market, as companies develop new international trade channels for their sawnwood. Second, data collection in 2008-2009 was likely done in a peculiar period, as many large infrastructures (e.g. roads, bridges, stadiums) were being realised to host the African Cup of Nations which took place in 2010. In this sense, consumption in 2011-2012 could be closer to demand by the domestic market in normal times. Third, interviews held by the CIFOR team seem to indicate that the Ministry has increased control and enforcement effort.

The legal framework, throughout several changes over time, has long been sympathetic to the chainsaw milling sector, as shown by the following law and regulations.

First, to meet their individual or collective requirements for sawnwood, village communities may exercise their customary user rights (Forestry Code, Art. 14). The members of village communities may exercise these rights in the rural forest estate freely and free of charge. The products obtained from the exercise of these rights are for non-commercial purposes only.

<sup>3</sup> <http://www1.cifor.org/pro-formal/home.html>



Therefore these rights cannot be used by chainsaw millers to provide domestic markets with timber. However, the Order n°118/2008 completed the Forestry Code with the concept of economic use right, that allows communities to trade at the local scale part of the resources they customarily harvest. But this clause has never been applied, due to a lack of implementation documents.

Over the last decade, four types of small-scale logging permits were granted from the forestry administration to chainsaw millers to legalize their activities and business (Worah 2013):

- the Special Permit (*Permis spécial*) was established by Decree No. 180/PR/MEF of 4 March 1969 and authorized by the Forestry Law No. 1/82 of 22 July 1982. Until the beginning of 2010s, this permit was issued by the forest services, although it did not appear in the current Forestry Code. The permit has the following characteristics: (1) it grants felling rights for 3 trees with an estimated volume of 8 m<sup>3</sup> sawnwood; (2) it is valid for 1-3 months and is renewable; (3) it is issued on an individual basis by the provincial delegation after the exploitation zone has been identified and the forestry officer has hammer-marked the harvestable trees; (4) products made under the permit may be used only in the province of origin; and (5) a 6000 F CFA tax is levied for each tree. The Estuaire Provincial Delegation, a regional administrative body, issued 245 in 2009 and about 100 between January and June 2010, at which time the Directorate General for Water and Forests suspended the Special Permit.
- the Chainsaw Logging Authorisation (*Autorisation de sciage de long*, *ASL*) were officially suspended in 2005, as it does not appear in the present Forestry Code; nevertheless, nationwide, about 12 permits were issued in 2007 and 2008. They are still being granted in 2015. This small-scale operating permit had the following characteristics: (1) it granted maximum felling rights for 15 trees with an estimated volume of 75 m<sup>3</sup> sawnwood; (2) it was valid for 3 months; and (3) products made under the permit were authorised for sale throughout the country.
- the Special Authorizations of Logging (*Autorisation spéciale de coupe*, *ASC*) was created in 2010 to regulate timber harvesting by the communities to meet their needs. This logging title was granted for 2 months only and for a maximum of 15 m<sup>3</sup>.
- the Authorisation of Timber Harvesting for Ripsawing (*Autorisation de coupe de bois pour le sciage de long*), have been recently created (Order n°104 of 6 May 2014), but its status is not very clear with regard to the ASL and ASC. Like the other chainsaw milling permits, this title is not explicitly mentioned in the current forestry law but it originated from an interpretation of the article n°297 of the Forestry Code that states that new “regulations determine, as necessary, provisions of any kind that are necessary for the implementation of this Act”. This logging permit is granted by the General Direction of Forest for a 2 month period and for a maximum of 15 trees to be cut in the rural estate. It is an individual permit that cannot be transferred. However, this exploitation permit has not yet been granted by the forestry administration.

In addition to these timber harvesting authorisations created by administrative decisions, there is one small-scale logging title that is explicitly mentioned in the 2001 Forestry Code: the mutual agreement permit (*Permis de Gré à Gré*, *PGG*). This permit was initially thought to replace all the earlier exploitation permits for small-scale and semi-industrial operations. It had the following characteristics: (1) it grants maximum felling rights for 50 trees to a physical person (who cannot transfer it); (2) it is awarded through an annual call for tenders; (3) it is awarded to national operators by the Minister of Forests for an area demarcated by the government in the rural forest estate; (4) products made under the permit are authorised for sale throughout the country; and (5) a 6000 F CFA tax is levied for each tree. The first

call for applications took place in 2009 but was suspended in 2010. In 2011, the Order n°136 established new implementation rules for this permit: (1) the PGG holders must constitute a group of at least 5 members; (2) timber harvesting may be contracted to an external operator; (3) revenues must be shared between the operators (65%), the PGG holders (15%), and the communities (20% for local development activities). Still, this new version of the PGG was suspended in July 2012 and has never been applied.

Finally, in 2015, there are three valid small-scale logging titles but only the ASL is granted. On the other hand, the Authorization of Timber Harvesting for Ripsawing has not been enforced and the PGG is suspended. This probably explains why a significant part of individual chainsaw milling remains informal.

## CASE STUDIES OF COMMUNITY FORESTS

The reports and articles produced by projects supporting CF in Gabon were analyzed. In addition, a number of interviews were conducted in Libreville with key people engaged in community forestry to identify the most interesting (validated) CFs. On these bases, two CFs were sampled and visited for 5 days each. At the village level, surveys were done through (1) consulting of management documents; (2) 2 focus group discussions with the members of the CF management committee; (3) 7 personal semi-structured interviews with persons more or less concerned by the management of the CF's resources and revenues.

The following two CFs were selected to analyze the socio-economic impact of community forestry in Gabon (Table 12): the CF A2E covering the group of villages Ebyeng-Edzuameniene-Mbess and the CF MATEMANGUE MA NZE covering the village of Nze Vatican. Both CFs are located in the north-eastern province of Ogooué-Ivindo, and they received support from DACEFI project and from the NGO Africa IDRC (Hamelin and Lanteigne 2011).

TABLE 12 - MAIN CHARACTERISTICS OF THE TWO SAMPLED CFS

Studied sites		
Name of the legal entity in charge of CF	A2E	MATEMANGUE MA NZE
Names of concerned villages	Ebyeng-Edzuameniene-Mbess I & II	Nze Vatican
Creation of the legal entity	2002	2008
Surface	1 256 ha	5 000 ha
Main activities	Valorization of NTFP, Agriculture	Small-scale logging

### CF A2E (COVERING THE GROUP OF VILLAGES EBYENG-EDZUAMENIENE-MBESS)

#### ORIGIN

The CF A2E was created in 2013 and dedicated to the collection of NTFP and agroforestry. It benefitted from the technical and financial support of the DACEFI project since 2011. ONFI (2014) assesses the total cost of creating the CFA2E above 3 million F.CFA, less than 5% being supported by the community.

## STRUCTURE AND MANAGEMENT

The CF A2E is ruled by a management committee that has been established according to the national regulations and with the support of the Dacefi project. The few candidates to manage this committee were elected. Our surveys show that the CF management is actually centralized by the members of the legal entity, but that does not prevent the clear understanding and ownership of the process by the population. Two reasons seem to justify a satisfying governance of the CF A2E: (1) the villages grouping requires sharing information between representatives of the villages concerned; (2) agriculture and NTFP gathering probably interest a significant number of the inhabitants of these villages, in opposite to the usual focus on logging. The involvement of many feminine NTFP collectors in the CF may explain this good performance.

The creation of the management committee for the CF has had the indirect benefit to attract two external financing on related activities such as agriculture and agroforestry (PRODIAG and PAGDRFG projects). These donors seek above all to rely on organized and dynamic structures to implement their activities, and community forestry provides an opportunity to establish such village organizations. Their effectiveness, legitimacy and long-term utility are not however acquired, particularly when these local associations are created at the request of external operators (Lescuyer 2006; Tsanga et al. 2014).

## PRODUCTS, MARKETS AND BENEFIT-SHARING MECHANISMS

The CF A2E focuses on the valorization of NTFP, on agriculture and on agroforestry. The activities of this CF includes:

- gathering and trading of some NTFPs (maranthacea leaves, andock (*Irvingia gabonensis*), nkoumou (*Gnetum africanum*), « nuts » (*Coula edulis*) and “yellow mushrooms”) by a group of women on the Makokou market;
- Agriculture with plantain plantation of 8 hectares supported by the PRODIAG project that covers most of inception and investment costs;
- Agroforestry on a 3 hectares area and supported by the PAGDRFG project for all investment and operational costs except for upkeeping. The agroforestry combines fruit trees species like ozigo, avocado and citrus with timber species like andock, moabi, douka, afo).
- 

Apart from the collection of NTFPs that is active, these activities are starting up and it is only possible to estimate the expected benefits that are summarized in Table 13.

TABLE 13 – EXPECTED ANNUAL INCOME FROM THE CF A2E (IN F.CFA)

Activities		Rough income	Operational costs	Net income
NTFPs income)	gathering (actual			
Maranthacea leaves		480 000	144 000	336 000
Nkoumou		192 000	144 000	48 000
Yellow mushroom		6 000		6 000
« Nuts »		30 000		30 000
Andock		255 000	13 000	242 000
Sub-total NTFPs		708 000	301 000	407 000
Exploitation of a 8 hectares plantain plantation (forecast)		38 400 000	3 280 000	35 120 000

Exploitation of a 3 hectares agroforest (forecast)	2 4000 000	1 250 400	1 149 600
TOTAL (FCFA)	41 763 000	4 831 400	36 931 000

The forecasts predict an annual net profit of 37 million CFA francs to the community, nearly 95% from the plantain plantation, 3% from agroforestry and 2% from NTFPs. However, this CF would bring an annual income of nearly 130 000 FCFA / capita, a relatively small amount compared to rural incomes in Gabon (Lescuyer et al. 2015). Moreover, all these activities benefit from external project grants that covered the initial costs.

These revenues must finance local development projects. However, the practical implementation of activities in CF with funds drawn from the CF has not yet started and may be difficult, as seen elsewhere in Gabon for similar initiatives (Massoukou 2007).

### CF MATEMANGUE MA NZE (COVERING THE VILLAGE OF NZE VATICAN)

#### ORIGIN

The CF MATEMANGUE MA NZE of Nze Vatican was created in 2008. It received the support of the DACEFI project through several steps: sensitization and information meetings, concertation meeting, elaboration of SMP, and the application of the SMP to forestry administration. However, its SMP was rejected because it lacked the multi-resource inventory that had to be done by the administration. Still, this community did logging and timber processing operations in 2014 thanks to a special cut decision of 14 trees of bilinga and kossipo granted by the forestry administration for training needs.

#### STRUCTURE AND MANAGEMENT

The CF of Nze Vatican is ruled by a management committee which members were elected. Today, only a few (male) members master the process and management of revenues from this CF.

#### PRODUCTS, MARKETS AND BENEFIT-SHARING MECHANISMS

Timber harvesting and processing are the key products of this CF. Out of the 14 trees that might have been cut, only five trees were actually logged with a view to train the CF members between July and October 2014. The equipment - chainsaws and gruminette - was made available by the DACEFI project. The sawing was sold on the market of Makokou. Benefits and costs of this action are presented in Table 14.

TABLE 14 – ESTIMATION OF FINANCIAL BENEFITS AND COSTS OF LOGGING IN THE CF MATEMANGUE MA NZE

Income				
Species	Products	Volume (m3)	Unit price (F.CFA/m3)	Income (F.CFA)
Bilinga	Beam	0,564	80 000	45 120
Kossipo	« Basting »	2,010	167 000	335 670
Kossipo	Plank	0,184	100 000	18 400
Kossipo	Rafter	6,016	65 000	391 040
Kossipo	Lath	2,808	84 000	235 872
Sub-total of income				1 026 102
Costs				Costs (F.CFA)

Salary				77 100
Oils				164 000
Transport forest-roads				377 900
Transport to Makokou				292 000
Transport of CF representatives				31 000
Sub-total of cost				942 000
Total of net income				84 102

Artisanal logging in this CF has mean physical performance but a low financial return. First, the 5 logged trees provided only 11m<sup>3</sup> of sawing, which is a bit below the average yield of informal sawyers (Lescuyer et al. 2011). On the other hand, the average cost of production and sale of sawing exceeds 85 000F.CFA/m<sup>3</sup> (i.e. 942 000 F.CFA / 11 m<sup>3</sup>) – far above the operational costs of informal chainsaw milling – although costs for equipment, para-taxation, and CF establishment were not included.

The total profit of artisanal logging is below 8 000F.CFA/m<sup>3</sup> (i.e. 84 102 F.CFA / 11 m<sup>3</sup>), which seems incompatible with the development initiatives identified by the community from the funds generated by the CF (funds for emergency assistance, material to build schools, solidarity funds). In 2014 however, the CF has provided some of the material necessary for the construction of the school.

## CONCLUSION FOR GABON

The Gabonese forestry code defined two logging permits to replace the prior Family Felling Permits: the PGG for an individual exploitation of trees in the rural domain without sustainability constraint, and the CF for a collective logging within a delimited area and under management constraint. These two legal options of artisanal logging have encountered many difficulties. On one hand, the regulations for individual chainsaw milling have undergone many changes in recent years and its implementation has been and remains complicated. On the other hand, community forestry has started in 2013 but there are only 3 active CFs in 2015. None of these legal options can meet domestic demand for sawn wood, and artisanal logging is still largely informal.

Community forestry has been a fashionable approach in Gabon for several years but, as in Cameroon previously, current experiences are not up to expectations. In the current state of the regulatory framework, this approach is complicated, expensive and generally not financially successful if it focuses on logging. The first revenues from existing FC are low and do not allow to finance the ambitious development projects at the village scale. Moreover, even with an optimistic scenario, it is unlikely that CFs could supply a significant part of the urban demand for sawing. At least in the short and medium term, this demand will remain supplied by formal and informal chainsaw millers. The legalisation of artisanal small-scale logging depends more on the formalization of individual operators than on a promotion of community forestry.

In theory, no legal impediment prevents individual sawyers from grouping to increase their efficiency or to better cope with business uncertainties. In practice, access to the legal permits and formal recognition of associations or micro-enterprises constitute insurmountable obstacles, which would require a revision of regulations and of administrative practices. In addition, several measures could be put in place to support the grouping of individual sawyers, as easier access to credit or training, specific treatment in public tenders or formal agreements with forestry companies.

Community forestry is also a way to organize collective artisanal logging, but this approach is subject to many constraints that make it inefficient and little attractive in Gabon. The issue is probably more to combine logging with other development activities, as several experiences have begun to do (Meunier et al. 2014). In such a perspective of multiple-use forest management, artisanal logging is considered a secondary activity, which would better reflect the limited opportunities to derive significant income from this use.

## **COUNTRY STUDY: STOCK TAKING OF COMMUNITY FORESTRY AND ARTISANAL CHAINSAW MILLING AND THEIR CONTRIBUTIONS TO INCOME GENERATION TO LOCAL POPULATION IN THE DEMOCRATIC REPUBLIC OF CONGO**

### **INTRODUCTION**

The Democratic Republic of Congo initiated a forestry reform in the 2000s and adopted the forestry code contained in the law N° 11/2002 of August 29, 2002. This law tends to increase the contribution of the forestry sector to the development of the country, without disregarding the social and environmental roles of this ecosystem. For this purpose, the forestry law proceeded to a new delimitation of forest lands, to allow the implementation of sustainable management of timber concessions. The formal production of timber remains weak, despite a forest cover estimated at 159.529 millions of hectares. In 2012, logging was estimated at 147 376 m<sup>3</sup>, which is only half of the 300 000 m<sup>3</sup> per year produced in the 1990 decade.

Besides industrial logging, there is an informal artisanal logging sector, which supplies local and sub-regional markets since the 1970s. Artisanal logging is one of the modalities specified by the forest code. According to article 8 of the order n°35 of October 05 2006, permit for artisanal logging is: 1) attributed to individual with Congolese nationality, 2) holder of an agreement, 3) for whom long saw or chain saw constitutes the work tool and 4) is accepted in a local community's forest concession. In 1991, the study of Gerken et al. already showed that the total production of timber produced through informal logging (525 000 m<sup>3</sup>/year) was far higher than the one produced through formal industry (132 000 m<sup>3</sup>/year). In 2002, Djire (2003) realized a study on 103 timber sale depots in Kinshasa, Matadi and Boma. He estimated that artisanal traders produced between 1.5 and 2.4 million of m<sup>3</sup> per year. A study of Lescuyer et al. (2014) on a full year at Kisangani and surrounding Kinshasa estimated that artisanal sector produces an average of 1 023 732 m<sup>3</sup> of sawn timber. Artisanal sawing develops differently between the East and the West of the country. In the Bas Congo and the Bandundu, authorities have suspended sawing in 2009 before reestablishing it in 2013. This suspension did not stop exploitation, which was still ongoing without logging titles. In Kisangani, on the contrary, some sawyers work on the basis of authorizations delivered by authorities.

Lastly, community forestry is a new measure of the Forestry Code. Its article 22 describes the general approach to request a CF while the articles 111 to 113 explain how forest resources may be harvested and managed. DRC Forestry Code has been completed in August 2014 by the Decree 14/018 detailing how CF are granted to local communities. This decree remains debated in DRC and needs to be clarified or completed in the framework of the political process of decentralization. Due to this lack of legal clarity since 2002, many pilot projects of CFs were conducted in DRC but none of them has succeeded in establishing a formal CF.

### **BACKGROUND**

#### **CURRENT STATE AND CHALLENGES OF COMMUNITY FORESTRY IN DRC**

Community forestry is part of a comprehensive approach to involve local stakeholders in the management of natural resources. Forests of communities has the objectives to (i) reinforce capacities of rural populations, (ii) contribute to rural economic development, (iii) reinforce land security, biodiversity conservation and (iv) improve carbon storage (Maindo and Kapa

2014). This is the reason why community forestry is being seen as a leverage of local development, in a context where industrial logging weakly contributes to the country incomes (Debroux et al. 2007). The law has organized the access of local communities to natural resources management, using the form of forests of local communities.

Community forestry has slowly evolved in DRC since its creation in 2002 in the Forestry Code. These latest years, the development of community forestry has been promoted by two pilot initiatives supported by donors and civil society: (1) the FORCOM project implemented in four sites; (2) the FORCOL project aimed to develop a model of community forestry that combines sustainable management and fight against poverty. Lessons learned from these projects played a laboratory role, for reflections that allowed in 2014 the signature of the Decree of application related to attribution of forest concessions to local communities. According to this recent regulation, a local communities' forest is a part of protected forests area belonging to the community according to traditional rules. A CF refers to a forest freely and indefinitely allocated to a community, based on the forests it owns according to the customs, to satisfy its economic and social needs. Inside this CF area, a community concession can be delineated with a maximum area of 50 000 hectares, which is to be used with sustainable management rules. Logging of this forest is done via (1) communities themselves; (2) through artisanal chainsaw millers; or (3) by third parties under a management contract approved by forestry administration. The exploitation of these concessions concerns forest resources and may be extended to ecotourism and conservation projects. However, the lack of (consensual) implementing regulations has prevented the establishment of any official CF in DRC so far.

#### **SCOPE OF CHAINSAW MILLING IN DRC**

According to the article 8 of Decree 035 of 5 October 2006, artisanal logging permits is granted to individuals with Congolese nationality, holder of an agreement, whose long saw or chain saw constitutes the work tool and is valid only in a CF concession. Legal framework related to artisanal logging is difficult to apply since texts are incomplete and sometimes contradictory.

The law stipulates that artisanal logging permits are valid in CFs and cover a maximum area of 100 ha. This type of exploitation is conditioned to the elaboration of a forest management plan (art 71, forest code). These provisions are inoperative insofar as no CF has yet been assigned in DRC. The obligation of a forest management plan in a so reduced area requires financial and technical constraints, which make difficult the access to artisanal permit.

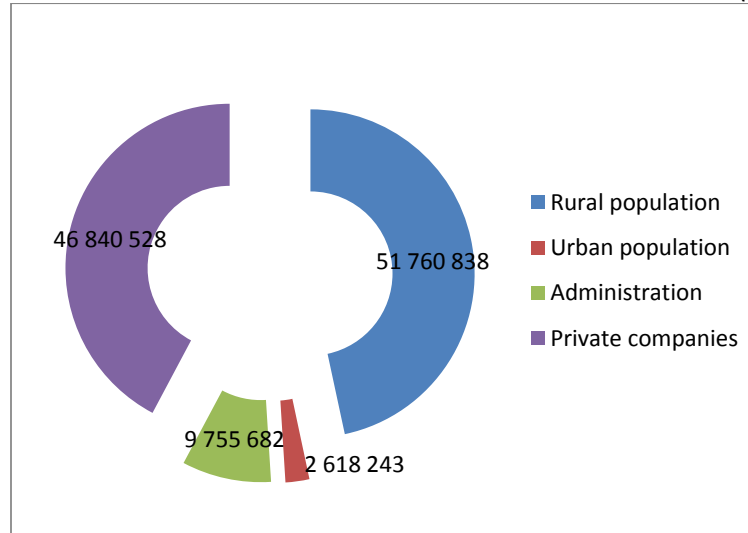
Even under these unfavorable circumstances, the study of Lescuyer et al. (2014) showed that artisanal logging is profitable. In Kinshasa, the profit rate is 24% and can go up to 46% in Kisangani. This high profit rate in Kisangani is mainly explained by a lower purchase price of lumber to chainsaw millers as compared to Kinshasa.

Totally, artisanal sector generates a turnover of \$ 100 million per year and more than USD 25 million benefits. Artisanal logging benefits to people in urban and rural areas, administrations and the private sector (



Figure 2). In rural areas, people derive income from the sale of trees and wages for porters and other assistant sawyers. In urban areas, the rental of storages and wages generate benefits. Forest administration levies formal and informal taxes on timber. Net revenues received by the administration are estimated at 10%. Most chainsaw milling revenues remain in rural areas. Indeed the population in rural areas and some local leaders in the territories and districts are the main beneficiaries of this activity.

FIGURE 2 - REPARTITION OF NET REVENUES BETWEEN 4 MAIN CATEGORIES OF ACTORS (USD/YR)



The artisanal sector is an important provider of jobs in urban and rural areas. Nearly 2,000 permanent jobs depend on the sector in Bas-Congo and Badundu and 3,000 in Eastern Province. In Kinshasa, the number of jobs is estimated at 9 400 permanent and temporary. In any case, the combination of urban and rural employment suggests that the artisanal sector employs at least 25 000 people in DRC.

Contrary to the province of Bas Congo where chainsaw milling was suspended from 2007 to 2014, it has remained possible to request a small-scale logging permit in the Oriental province. Most chainsaw millers decided to run an informal activity, but around 40% of the operators interviewed in 2010-13 tried to get logging permits from the authorities (Lescuyer et al. 2014). Among these operators, some decided to create an association to facilitate their relationships with the administration, to potentially receive external supports from NGOs, and to increase their chance to obtain logging permits with a reasonable cost.

## METHODS AND SELECTION CRITERIA FOR SITES

Several pilot projects have tested the CF approach described in the Forestry code and regulations, but they usually did not focus on financial performance and feasibility. Another constraint was the availability of the persons in charge of CF initiatives for an extended interview. For these two reasons, only the case study of Uma CF in the Oriental province was selected. The analysis is done through a review of the technical reports and a phone interview of the responsible of this project.

It was more difficult to meet and collect data on associations of chainsaw millers for several reasons: some of them were inactive due to the suspension of the artisanal logging permits in the province of Bas Congo (Belesi et al. 2013) while most others remain informal and can hardly be reached by phone calls. The study relied on data that CIFOR collected in 2010-12 and identified one informal association of chainsaw millers in the Irumu district (Oriental province). Seven members of this association were interviewed using a semi-structured interview grid that included their motivation, the harvested species, the use of income generated by this activity, difficulties encountered, and solutions envisaged. These sawyers

were also asked to make a list of costs and benefits from their most recent timber production operations.

## CASE STUDY - THE UMA COMMUNITY FOREST

### ORIGIN

The creation of a community forest in Uma area was supported by the FORCOM project. The Uma area covers 49 995 ha and 14 villages. Unlike other areas located in the outskirts of the city of Kisangani, the Uma site is weakly affected by deforestation (Boyemba 2015).

A draft simple management plan divides the forest in four areas dedicated to agriculture, timber production, ecotourism and conservation. The CF management board has recently submitted: (1) a request to provincial authorities, for attribution of the forest, (2) a request for license, and (3) a request for an authorization for artisanal logging. However these requests have been suspended until the national regulation is clarified.

The pilot initiative of the Uma CF provides valuable information on the costs to establish a CF and to write a simple management plan (Table 15). The donor, with a technical contribution of a local NGO, covered most of these charges.

TABLE 15 - INCEPTION COSTS OF UMA COMMUNITY FOREST

Activity	Total cost (USD)
<i>Baseline studies</i>	
Information and validation meeting	4 700
Installation of management organs	9 980
Delimitation and cartography	66 470
Inventory	14 825
Elaboration of Simple Management Plan	4 000
<i>Administrative costs and miscellaneous</i>	
Constitution and depot of the request for logging permit	3 150
Costs for venue of provincial and national authorities	9 300
<i>Total</i>	<i>112 425</i>

### STRUCTURE AND MANAGEMENT

The Uma CF is managed by a Local Committee of Development, which was created with the support of a local NGO. Each clan has two representatives in this committee. Its status and internal regulations were validated by the public authorities. Moreover, a formal management board including customary stakeholders and decentralized authorities exists since 2011.

### PRODUCTS, MARKETS AND BENEFIT SHARING MECHANISMS

Most of the CF area is dedicated to chainsaw milling and timber production is the main outcome of the CF. CF management board plans a rough income of 65 264 USD per year, with an assumption of 200 USD per cubic meter. This money will be managed by the CF board for general investments in the villages.

Around one third of the CF area will be used for conservation and agriculture. Local agricultural practices should remain unchanged and regulated by customary rules.

### **ENABLING ENVIRONMENT AND CONTEXTUAL BARRIERS FOR UMA COMMUNITY FOREST**

The evolution of the legal framework for community forestry in DRC has allowed launching innovative initiatives such as that in the area of Uma. This approach has been substantially supported by international donors and civil society, as it was the case in Cameroon. But, contrarily to the Cameroonian model which focuses on timber, the DRC model is open to agriculture, ecotourism and conservation. This approach allows adapting the concept to specificities of each region of the country and increase potential revenue sources.

Another major advantage provided by the CF approach for the Uma communities is the recognition of customary ownership in a context where the state owns forestland. Similarly, customary authorities (through clan representatives) are really engaged in the management of the CF, even if the problem of the legitimacy of these representatives could sometimes arise. The recognition of customary rights and authorities through the CF approach is reinforced by the perpetual nature of the concession granted to communities (Vermeulen and Karsenty 2015).

However, the Uma CF will face two major obstacles before being operationalized. First, there is a need to publish additional implementing texts to precise management rules and modalities of intervention of public actors. Today the allocation of CF concessions to local communities is granted by the provincial governor but it remains unclear how the establishment of CFs will be anchored in the decentralization process, regarding their interactions with decentralized territorial entities.

The second barrier relates to the cost of the CF approach. As illustrated in Uma, the high cost of starting a CF process is far beyond the local population's capacities. Besides, the free of charge support of community forests by the administration is unrealistic. In this context, the development and extension of CFs in DRC is much dependent on external sources of funding.

## **CASE STUDY – ASSOCIATION OF CHAINSAW MILLERS IN IRUMU**

### **ORIGIN AND STRUCTURE**

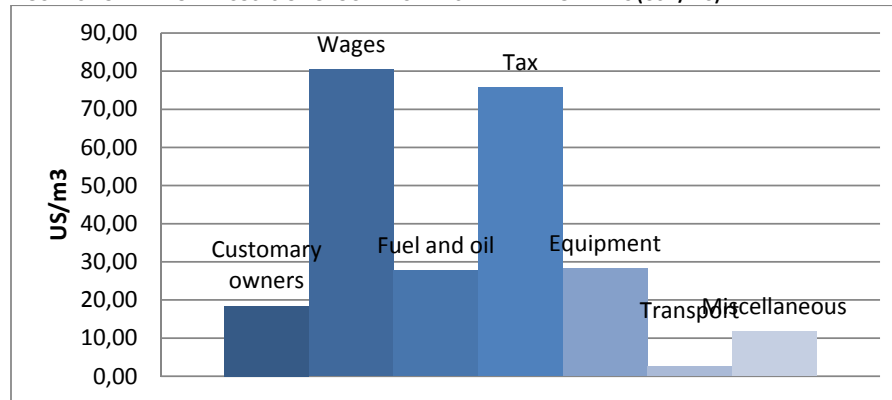
A dozen of chainsaw millers based in the Irumu territory decided to reassemble in 2009 in a professional association but their association was never validated by the public authorities. However the local representative of the Ministry of Forestry put forward the existence of this group to support their requests of legal permits in Kisangani.

### **PRODUCTS, MARKETS AND BENEFIT SHARING MECHANISMS**

Timber is the main product of this CF. The financial performances of the associated chainsaw millers of Irumu are below the average assessments done by Lescuyer et al. (2014) for the Kisangani region. Although the selling prices of sawn wood are similar, operational costs in Irumu appear to be 40% higher than the regional average. Such discrepancy is mainly explained by the informal and formal taxes paid by the associated chainsaw millers (

Figure 3).

FIGURE 3 - OPERATIONAL COSTS OF GROUPED CHAINSAW MILLING IN DRC (USD/M3)



This case study shows that legal and regrouped production of sawn wood is not profitable, at least in Irumu. The creation of the association helps chainsaw millers to get official logging permits but this is a costly approach, from two points of view. First, requesting a permit implies additional costs that significantly increase the total operational cost. Second, the delivery of legal permit does not decrease the level of informal taxes paid by these chainsaw millers. Besides, the additional costs of getting a permit through an association are not compensated by an increase in the timber price on the domestic markets of Kisangani or in Kivu.

#### MAIN ENABLING AND IMPEDING FACTORS FOR GROUPED ARTISANAL LOGGING

Small-scale chainsaw milling remains an individual activity in DRC and this association in Irumu mainly aimed to facilitate the access to chainsaw milling permits. For the chainsaw millers interviewed in Irumu, groupings of chainsaw millers function poorly or with difficulty<sup>4</sup> and it is not worth investing more time and money to strengthen their (today informal) association.

There are thousands of chainsaw millers in rural areas of DRC and their large presence in the forested areas allows considering the establishment of associations or unions, as it was done in Irumu. The main aim of this association was for their members to be recognised as trustworthy interlocutors by the administration and the partners, in order to be in a better position to defend their operators' rights. In Irumu, the (even informal) creation of the professional association has facilitated access to the logging licenses.

Yet, all too often, the formation of millers groups seems to be the only way to make their business legal and more professional. By contrast, the case study in Irumu shows that the chainsaw millers assembled to facilitate their access to permits but they never combined their forces in logging operations or to fill a purchase order. It is highly unlikely that the creation of professional unions would change the – essentially competitive – relationship between these micro-entrepreneurs any time soon. The professional associations can only function properly if their aims are clearly specified. Even under these conditions, the procedures to formalise a professional association remain hard to respect for chainsaw millers, as shown in Irumu. The legal context is little favourable to legalise associations, and the incomplete and

<sup>4</sup> Mayange Nkubiri (2012) depicted similar perceptions in the Mambasa territory. To the question 'What do you think of the head of the group?', 56% of the members of the local millers' association said that they thought he drank too much and 50% said that he was too authoritarian. To the question 'What do you think about your meetings?' most of the members said they were improvised, unproductive and irregular.

confused regulations on CF – where legalised chainsaw milling must operate, according to the Forestry Code – accentuate these difficulties to meet legal requirements.

However, these institutional and legal constraints are of secondary importance in comparison to the prohibitive financial cost of running a legal activity for chainsaw millers. The case study in Irumu demonstrates that obtaining a legal permit through a joint request by a professional association increases the operational costs of chainsaw milling without raising the selling price of sawn wood.

## CONCLUSION FOR DRC

In DRC, there is not a short-term alternative to individual (very often informal) chainsaw milling. Indeed, the development of community forestry and the promotion of chainsaw millers' associations face similar constraints. On the one hand, they do not benefit from a complete and clear legal framework. Secondly, these options generate weighty operating costs that prevent local stakeholders from engaging in these approaches. Reducing these costs requires the implementation of short-term technical measures but also significant governance improvement that can at best happen over the long run. Finally, because of their spatial extent and socio-economic importance, the development of community forestry and of associations of chainsaw millers require a better integration in the development of rural areas and in the process of political decentralization.

## CONCLUSION – LESSONS DRAWN FROM THE NATIONAL CASE STUDIES

These country studies illustrate the three complementary approaches to promote and support SSFE in Central Africa: formal CFs, grouped chainsaw milling and individual chainsaw milling. However, these options have not the same visibility on the agenda of governments and international donors in the sub-region. To date, community forestry appears as the main way to develop the SSFE for the benefit of local people and many projects have supported and still support this approach. Secondly, the grouped chainsaw milling is considered by several major donors, such as FAO and the World Bank, as an attractive alternative to formalize and professionalize this commodity chain. Finally, although its practice is known, individual chainsaw milling is still often seen as an informal, unsustainable activity, with low profit for the actors. The review of these three sectors in Cameroon, Gabon and DRC provides a broad pictures of the situation and related challenges in view of exploring solutions to promote sustainable small scale forest enterprises in Central Africa

Community forestry, as conceived in the forest codes enforced in Central Africa, still faces significant challenges to achieve the objectives that were initially set. Although enshrined in the forestry law and having received various financial supports, formal community forestry is a relative failure in Cameroon. The number of active CFs remains low, most are operated by private operators under contract, and management still faces many malfunctions. In general, there is a wide gap between the legal requirements for granting and ruling a CF and the capacities of communities to sustainably manage CF and derive income. Experiments currently implemented in Gabon seem to follow the same path, while the DRC hardly operationalize its community forestry approach, thirteen years after it was introduced in the Forest Code. The recent publication of the implementing decree does not necessarily favor small-scale loggers, nor ensure a sustainable harvesting of timber resources. The persistence of these blockages, already reported ten years ago in Cameroon, tends to support the assumption of a political resistance to promote decentralized forest management in the Congo basin countries. Without a realistic simplification of procedures for creating and managing CFs, it is unlikely that communities use this option to sustainably manage their forest resources and raise their living standards through the commercialization of timber, NTFP, or ecosystem services.

As an alternative to community forestry, the development of chainsaw millers groups often appears as a promising way to make their business legal and more professional. Several programmes predicate access to permits, training and credit on membership in a formal professional association. However, groupings of chainsaw millers are scarce today in Central Africa: several (formal and informal) professional associations operate in DRC (Belesi et al. 2013, Benneker et al. 2012) but they are almost inexistent in Cameroon and in Gabon. All surveys show that chainsaw millers very seldom combine forces in logging operations or to fill a purchase order. It is highly unlikely that the creation of professional unions will change the – essentially competitive – relationship between these micro-entrepreneurs any time soon. The professional associations can only function properly if their aims are clearly defined. The creation of cooperatives for independent entrepreneurs may be recommended in order to defend the common interests of all the loggers through, for instance, simplification of procedures, clarification of tax levies, etc. If these formal groups were eligible for the commercial, technical and fiscal facilities granted by the State, they would appeal more to the chainsaw millers.



As a matter of fact, the vast majority of sawn wood that is sold in the domestic markets of Central Africa remains produced by tens of thousands of individual chainsaw millers, who operate informally. These domestic markets today are insensitive to the legality of such products, which explains the negligible place of community forestry and chainsaw millers' associations. Promoting formal SSFEs in Central African countries requires above all establishing regulatory mechanisms and incentives at individual operators so that they can legalize their activities. Such measures fall into two categories: technical options to improve methods in the field in the short term and, political options which require substantial changes, e.g. in governance and behaviour at the national level. A pragmatic step forward would be to attempt to improve current practices, with a view to identifying and then testing good practices that could thereupon be used in revising both the law and public policy.

Several technical options may then be considered in Central Africa:

1. Develop channels of information in rural areas on the state of the domestic markets for sawn wood.
2. Offer technical, commercial and financial training adapted to the needs of the chainsaw millers who would like to work as individual operators, especially young people in the rural areas.
3. Facilitate access to credit for small-scale chainsaw millers.
4. Facilitate access to sawing equipment and consumables for chainsaw millers.
5. File applications for small-scale logging permits with the most decentralised State forestry service.
6. Draw up and then popularise a model for the preparation of simplified social provisions for the small-scale chainsaw millers.
7. Convince the forestry services to keep official records of the volumes of timber sold on the national markets.

These practical measures can be completed with longer term efforts to improve the business environment and governance of SSFE in Central Africa, like:

1. Guarantee that the public contracts and contracts connected to funding from international sources are supplied with timber that has been chain sawn, transported and processed according to legal standards.
2. Harmonise, consolidate and popularise the fiscal system that is applicable to the small-scale timber operations. A clear explanation of the taxation system should lead to lower financial costs for issuing permits which are prohibitively expensive and keep the 'legal' chainsaw millers in an escalating spiral of debt.
3. Amend the legislation on small-scale chainsaw milling and draw up simple rules for sustainable management of the areas given to small-scale logging.
4. Increase control of the legality of chainsaw millers' practices through the four measures combined: (1) pay an appropriate salary to the government employees in the field; (2) mete out effective sanctions for misdemeanours and offences committed by representatives of the decentralised State offices; (3) simplify and broadly publicise the applicable regulations and tax information; (4) introduce a performance bonus for State agents, linked to the application of the principles of legality.

Although targeting the formalization and the professionalization of individual chainsaw millers, and thus the legalization of most timber sold on domestic markets, this package of measures will also encourage community forestry and the rise of professional associations to buttress the development of SSFE in Central Africa.

## REFERENCES

- Akoa Akoa R.J. 2007. *Economic analysis of community forest projects in Cameroon*. MSc thesis, Georg-August University of Goettingen, Faculty of Forest Science and Wood Ecology, Germany.
- Beauchamp, E. and Ingram, V. 2011. Impacts of community forests on livelihoods in Cameroon: Lessons from two case studies. *International Forestry Review* 13 (3): 1-13.
- Belesi H., Enyuka G., Kiyulu J., 2013. *Filière bois artisanal dans la province du Bas-Congo. Interactions des acteurs et impact environnemental dans les territoires de Mbanza Ngungu, Songololo, Seke Banza, Lukula, Tshela et Moanda*. Rapport UICN-AFD, Kinshasa.
- Benneker C., Assumani D-M., Maindo A., Bola F., Kimbuani G., Lescuyer G., Esuka J.C., Kasongo E., Begaa S. (éds.), 2012. *Le bois à l'ordre du jour. Exploitation artisanale de bois d'œuvre en RD Congo : Secteur porteur d'espoir pour le développement des petites et moyennes entreprises*. Tropenbos International, Wageningen, Pays Bas.
- Boyemba F. 2015. *Rapport d'évolution de la mise en œuvre de la foresterie communautaire dans le terroir d'Uma, secteur Bakumu-Kilinga*. Rapport Adikis-Terroir, Kisangani, RDC.
- Bruggeman, D., Meyfroidt, P. and Lambin, E.F. 2015. Production forests as a conservation tool: Effectiveness of Cameroon's land use zoning policy. *Land Use Policy* 42 : 151-164.
- Castadot B. 2007. *Analyse des filières formelle et informelle de sciages issus des forêts communautaires dans la province de l'est au Cameroun*. Grade de Bio-ingénieur Nature, Eaux et Forêts. Université des Sciences Agronomiques de Gembloux, Belgique.
- Cerutti, P.O., Tacconi, L. 2008. Forests, illegality, and livelihoods: The case of Cameroon. *Society and Natural Resources* 21 (9): 845 - 853.
- Cerutti P.O., Lescuyer G., 2011. *The domestic market for small-scale chainsaw milling in Cameroon: present situations, opportunities and challenges*. CIFOR Occasional Paper 61, Bogor, Indonesia, 56p
- Cerutti, P.O., Tacconi, L., Lescuyer, G. and Nasi, R. 2013. Cameroon's hidden harvest: Commercial chainsaw logging, corruption and livelihoods. *Society and Natural Resources* 26 (5): 539-553.
- Chevalier J.F., Nguema Magnagna V., Assoumou S., 2009. Les forêts du Gabon en 2008. In « *Les forêts du Bassin du Congo : Etat des Forêts 2008* », de Wasseige C., Devers D., de Marken P., Eba'a Atyi R., Nasi R., Mayaux Ph. (ed.), Observatoire des Forêts d'Afrique Centrale & Partenariat pour les Forêts du Bassin du Congo, Kinshasa, DRC.
- Counsell S., Long C., Wilson S. (eds.), 2007. *Concessions to poverty. The environmental, social and economic impacts of industrial logging concessions in Africa's rainforests*. Rainforest Foundation UK and Forests Monitor, London, 144p.

Cuny P., Abe'ele P., Nguenang G.M., Eboule Singa N.A., Eyene Essomba A., Djeukam R. 2004. *Etat des lieux de la foresterie communautaire au Cameroun*. MINEF & DFID, Yaoundé.

Cuny P. 2011. *Etat des lieux de la foresterie communautaire et communale au Cameroun*. Tropenbos International, Wageningen, Pays-Bas.

Debroux, L., Topa, G., Kaimowitz, D., Karsenty, A., Hart, T. 2007. *Forests in post-conflict Democratic Republic of Congo*. CIFOR, Banque mondiale, CIRAD, Bogor, Indonésie.

Diwassa J.A.C., 2007. *Rapport d'enquête sur la consommation et la production de bois oeuvré*. Observatoire Economique de la Filière Bois, Libreville, Gabon.

Djiré, A. 2003 *Étude sur le secteur informel du bois d'œuvre en RDC. Rapport d'appui à la revue du secteur forestier en RDC*. Rapport technique, CIRAD, Montpellier, France.

Eisen J., Counsell S., Thornberry F., 2014. *Rethinking community based forest management in the Congo Basin*. Rainforest Foundation report, « Under the Canopy » series, London, 59p.

Ekoko, F. 2000. Balancing politics, economics and conservation: The case of the Cameroon forestry law reform. *Development and Change* 31 (1): 131-154.

Etoungou P. 2003. *Decentralization viewed from inside: The implementation of community forests in East Cameroon*. Environmental Governance in Africa Working Paper n°12, J.Ribot & A.Larson (ed.), WRI, Washington D.C.

Ezzine de Blas, D., Ruiz Pérez, M., Sayer, J.A., Lescuyer, G., Nasi, R. and Karsenty, A. 2009. External influences on and conditions for community logging management in Cameroon. *World Development* 37 (2): 445-456.

Gérard J., 2007. Importance, contraintes et tendances prévalentes de la filière bois des six pays forestiers d'Afrique centrale. In « *Les forêts du Bassin du Congo : Etat des Forêts 2006* », Devers D. & Vande weghe J.P. (ed.), Observatoire des Forêts d'Afrique Centrale & Partenariat pour les Forêts du Bassin du Congo, Kinshasa, DRC.

Hamelin C., Lanteigne F., 2011. *Étude diagnostic de la mise en place d'une Forêt modèle au Gabon et identification des utilisateurs et des enjeux sur le territoire*. Rapport présenté au Secrétariat du Réseau africain des forêts modèles. Université Laval, Québec, Canada.

Ingram V., Ndoye O., MidokoIponga D., Chupezi Tieguhong J., Nasi R. 2012. Les produits forestiers non ligneux : contribution aux économies nationales et stratégies pour une gestion durable. In « *Les forêts du bassin du Congo - Etat des Forêts 2010* ». Eds : de Wasseige C., de Marcken P., Bayol N., HiolHiol F., Mayaux Ph., Desclée B., Nasi R., Billand A., Defourny P., Eba'a R. (Eds.). Office des publications de l'Union Européenne. Luxembourg. pp 137-154.

Julve C., Vandenhoute M., Vermeulen C., Castadot B., Ekodeck H., Delvingt W. 2007. Séduisante théorie, douloureuse pratique: la foresterie communautaire camerounaise en butte à sa propre législation. *Parc et Réserves*, 62(2), 18-24.

Julve, C., Tabi Ekebil, P.P., Nzoyem Saha, N., Tchantchouang, J.C., Kerkhofs, B., Beauquin, A., Mbarga Mbarga, J.P., Vermeulen, C., Cerutti, P.O. and Lescuyer, G. 2013. Forêts communautaires camerounaises et FLEGT : quel prix pour la légalité ? *Bois et Forêt des Tropiques* 317: 71-80.

Karsenty A. and Gourlet-Fleury S., 2006. Assessing Sustainability of Logging Practices in the Congo Basin's Managed Forests: the Issue of Commercial Species Recovery. *Ecology & Society*, 11(1): 26, URL: <http://www.ecologyandsociety.org/vol11/iss1/art26/>

Karsenty A, Lescuyer G., Ezzine de Blas D., Sembres T., Vermeulen C. 2010. *Community forests in Central Africa : present hurdles and prospective evolutions*. Article presented at the conference "Taking stock of smallholder and community forestry: where do we go from here?" organized by CIFOR-IRD-CIRAD, March 24<sup>th</sup>-26<sup>th</sup>, Montpellier.

Leroy M., Derroire G., Vendé J., Leménager T. 2013. *La gestion durable des forêts tropicales. De l'analyse critique du concept à l'évaluation environnementale des dispositifs de gestion*. Document AFD, collection "A Savoir", n°18, Paris, France.

Lescuyer G, 2006. Formes d'action collective pour la gestion locale de la forêt camerounaise: organisations "modernes" ou institutions "traditionnelles" ? *VertigO*, 6(3). [online] URL: <http://vertigo.revues.org/index8029.html>

Lescuyer, G. 2013. Sustainable forest management at the local scale: A comparative analysis of community and domestic forests in Cameroon. *Small-scale Forestry* 12 (1): 51-66.

Lescuyer G., Cerutti P.O., 2012, Prendre en compte le secteur informel. *Perspectives*. CIRAD, Montpellier, 4pp.

Lescuyer G., Cerutti P.O., Ndotit S., Bilogo Bi Ndong L. 2011. *The domestic market for small-scale chainsaw milling in Gabon: present situations, opportunities and challenges*. CIFOR Occasional Paper 65, Bogor, Indonesia.

Lescuyer, G., Cerutti, P.O. and Robiglio, V. 2013. Artisanal chainsaw milling to support decentralized management of timber in Central Africa? An analysis through the theory of access. *Forest Policy and Economics* 32: 68-77.

Lescuyer G., Cerutti P.O., Tshimpanga P.C., Biloko F., Adebu Abdala B., Tsanga R., Yembe Yembe R.I., Essiane Mendoula E., 2014. *The domestic market for small-scale chainsaw milling in the Democratic Republic of Congo: Present situation, opportunities and challenges*. CIFOR Occasional Paper 112, Bogor, Indonesia, 62p.

Lescuyer G., Mvongo-Kene B.N., Monville G., Elanga-Voundi M.B., Kakundika T., 2015. Promoting Multiple-use Forest Management: Which trade-offs in the timber concessions of Central Africa? *Forest Ecology and Management*, 349, 20-28

Mabiala N., 2004. *Missions de recensement dans les communes de Libreville, d'Owendo et de N'toum des PME & PMI exerçant dans la 2<sup>e</sup> et la 3<sup>e</sup> transformation du bois (Menuiseries/Ebénisteries)*. Rapport pour la Direction Générale des Forêts, Ministère de l'Economie Forestière, des Eaux, de la Pêche, de l'Environnement et de la Protection de la Nature, Libreville, Gabon.

Maindo A., Kapa F., 2014. *La foresterie communautaire en RDC. Premières expériences, défis et opportunités*. Tropenbos International RD Congo, Kisangani, DRC.

Massoukou L., 2007. *La rétrocession des revenus de l'exploitation forestière aux populations locales gabonaises : efficacité, équités et pérennité*. Mémoire de Master « Foresterie Rurale et Tropicale », AgroParisTech-ENGREF, Montpellier, France.

Mayange Nkubiri B. 2012 *L'exploitation artisanale du bois en territoire de Mambasa face aux impôts*. Dans « Le bois à l'ordre du jour. Exploitation artisanale de bois d'œuvre en RD Congo : Secteur porteur d'espoir pour le développement des petites et moyennes entreprises », Benneker, C., Assumani, D-M., Maindo, A., Bola, F., Kimbuani, G., Lescuyer, G., Esuka, J.C., Kasongo, E., Begaa, S. (éds.). Tropenbos International, Wageningen, Pays Bas, p. 50-68.

Meunier Q., Boldrini S., 2008. *Principes fondateurs d'une forêt communautaire au Gabon : outils de vulgarisation et de sensibilisation*. Projet DACEFI-2, WWF, Faculté Universitaire des Sciences Agronomiques de Gembloux, Belgium.

Meunier Q., Boldrini S., Moumbogou C., Morin A., Ibonga S., Vermeulen C., 2014. Place de l'agriculture itinérante familiale dans la foresterie communautaire au Gabon. *Bois et Forêts des Tropiques*, 319, 65-69.

Minang, P., Bressers, H.T., Skutsch, M.M. and McCall, M.K. 2007. National forest policy as a platform for biosphere carbon management: The case of community forestry in Cameroon? *Environmental Science and Policy* 10: 204-218.

Nasi, R., Billand, A. and van Vliet, N. 2012. Managing for timber and biodiversity in the Congo Basin. *Forest Ecology and Management* 268: 103-111.

Ndume Engone H.C. 2010. *Analyse financière des impacts de l'exploitation du bois d'œuvre dans les économies villageoises du Sud-Cameroun*. Thèse de Master, ENGREF, Montpellier, France

Nzoyem N., Vabi M., Kouokam R., Azanga C. 2010. *Forêts communautaires contre la pauvreté, la déforestation et la dégradation des forêts : en faire une réalité au Cameroun*. Article présenté à la conférence "Taking stock of smallholder and community forestry: where do we go from here?" organisée par CIFOR-IRD-CIRAD, 24-26 mars, Montpellier, 14p.

ONFI Cameroun, 2014. *Analyse économique de la filière bois issus des forêts communautaires au Gabon*. Projet DACEFI-2, Libreville, Gabon.

Oyono R.P. 2004. *Institutional deficit, representation, and decentralized forest management in Cameroon. Elements of natural resource sociology for social theory and public policy*. Environmental Governance in Africa Working Papers 15, WRI & CIFOR, Washington D.C.

Oyono, P.R. 2005. Profiling local-level outcomes of environmental decentralizations: The case of Cameroon's forests in the Congo Basin. *Journal of Environment and Development* 14 (2): 1-21.

Oyono P.R., Ribot J.C., Larson A.M. 2006. *Green and black gold in rural Cameroon: Natural resources for local governance, justice and sustainability*. WRI, Environmental Governance in Africa, Working paper n°22, Washington D.C.

Pearce D., Putz F., Vanclay J.K., 1999. *A Sustainable Forest Future*. CSERGE Working Paper GEC 99-15, University College London & University of East Anglia

Pierre J.P., Okoue F., Zomo Yebe G., Zeh Ondoua J., Ngoye A., Kialo P., 2000. *Etude de faisabilité des forêts communautaires au Gabon*. Rapport final, Programme Forêt Environnement, LUTO, CIRAD, Libreville, Gabon.

Plouvier D., Eba'a Atyi R., Fouda T., Oyono R., Djeukam R. 2002. *Etude du sous-secteur du sciage artisanal au Cameroun*. MINEF, Yaoundé, Cameroun.

Poissonnet, M., Parmantier, A., Wyngaarde, B., Bifane Elle, E., Demenois, J. and Lescuyer, G. 2006. Espoirs et difficultés du transfert de la gestion forestière à deux communautés de Guyane et du Cameroun. *Bois & Forêts des Tropiques* 289: 5-16.

REM. 2007. *Mission conjointe BNC-Observateur indépendant : Forêts communautaires du Haut-Nyong, Lomié*. Rapport de l'Observateur indépendant N° 080/OI/REM, Yaoundé.

Samyn, J.M., Gasana, J., Pouse, E., Pousse, F., 2011. *Secteur forestier dans les pays du Bassin du Congo : 20 ans d'intervention de l'AFD*. Agence Française de Développement, Paris,

Tsanga R., Lescuyer G., Cerutti P.O., 2014. What is the role for forest certification in improving relationships between logging companies and communities? Lessons from FSC in Cameroon. *International Forestry Review*, 16(1), 14-22.

Topa G., Karsenty A., Megevand C., Debroux L., 2009. *Forêts tropicales humides du Cameroun. Une décennie de réformes*. Banque Mondiale, Washington D.C., 197p.

Vermeulen C., Doucet J.L. (eds.), 2008. *Les premières forêts communautaires au Gabon. Récits d'une expérience pilote*. Projet DACEFI, Faculté Universitaire des Sciences Agronomiques de Gembloux, Belgium.

Vermeulen C., Vandenhoute M., Dethier M., Eckodek H., Nguenang G.M., Delvingt W. 2006. De Kopia à Djolempoum : sur les sentiers tortueux de l'aménagement et de l'exploitation des forêts communautaires au Cameroun. *VertigO*, 7(1).

Vermeulen C., Karsenty A., 2015. Les concessions forestières des communautés locales: une avancée potentielle pour la foresterie sociale en RDC. *Cahiers Africains - Afrika Studies*, 86, 97-112.

Worah J., 2013. *Analyse de la gouvernance et de la légalité des titres d'exploitation artisanale du bois d'œuvre au Gabon*. Mémoire de Master, Université de Dschang, Cameroun.