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A barrier to or an opportunity for promoting
the use of timber resources of legal origin?

REPORT

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List of abbreviations

ALC	Annual Logging Certificate
ANCOVA	<i>Association Nationale du Collectif des Vendeurs et Assimilés de Bois</i>
ASFOCKA	<i>Association des Forêts Communautaires de la Kadey</i>
BPW	buildings and public works
CERAD	<i>Centre de recherche et d'action pour le développement</i>
CF	community forest
CIFOR	Center for International Forestry Research
COPAL	<i>Coopérative des Paysans de la Lékié</i>
DTM	domestic timber market
EIA	environmental impact assessment
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDA	French Development Agency
FLEGT	Forest Law Enforcement, Governance and Trade
MINFOF	<i>Ministère des Forêts et de la Faune</i>
PEBO	<i>Permis d'Exploitation du Bois d'œuvre</i> (timber exploitation permit)
PPRA	Public Procurement Regulation Agency
RWE	roundwood equivalent
SMP	simple management plan
VPA	Voluntary Partnership Agreement
WTP	willingness to pay

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Executive summary

Domestic timber consumption in Central Africa, which is predominantly fed with sawnwood of informal origin, is important both economically and socially. No one has yet addressed the information needed in order to develop the conditions that will improve the legality of timber trade and practices. This report aims to fill that gap by reviewing the demand and supply of different wood products in the Cameroonian domestic market (Yaoundé and Douala) in order to identify the opportunities that would promote the consumption of sawnwood and furniture of legal origin, which would strengthen the sustainable management of timber resources and encourage long-term, green economic growth.

Private and public demands for timber are mainly for three uses: construction material for the building and public works (BPW) sector, for frames and for furniture. These demands are expressed at four marketing levels:

1. The urban markets: Approximately 830,000 m³ of sawnwood are sold per year, mainly in the form of planks, formworks, laths and rafters. This sector's characteristics have undergone little change over the last decade, with identical products, prices and species each year. The average price of 1 m³ charged in the urban markets for all sawnwood categories combined is about XAF 80,000. Products that are declared to be of legal origin (as they come from industrial mills) represent between 12 and 18% of the volume sold. However, between 15 and 34% of customers reported that they would purchase legal timber if their income increased by between 20 and 100% in the next 5 years. In addition, half of the buyers interviewed stated that they would pay 10% more in order to acquire timber from legal origins. This estimate depends on the occupation of the buyer, the product bought and the timber species of the product. Finally, the interviewed buyers stated that they could bear a 45% increase in current sawnwood prices before substituting them with alternative products. So, demand would exist even if the supply price of timber increased in urban markets, which would at least improve the legality and the quality of certain types of sawnwood in the short and medium term.
2. The joinery workshops: A total of 515 interviewed workshops produce about 130,000 items of furniture per year, for a total volume of 22,000 m³ of timber after fourth transformation and a turnover of more than XAF 8 billion. Cabinets, beds and doors are the best-selling products, in terms of value and volume. Urban consumers are interested in getting the best prices for wooden furniture. There is a lack of interest in sourcing sawnwood of legal and sustainable origin; only 19 joinery workshops met a demand for wood of legal origin in 2015 for a total sale of just 61 items of furniture.
3. The furniture shops: From January to October 2015, 166 shops surveyed sold 22,282 items of furniture, corresponding to a sawn volume of 5788 m³ and a turnover of XAF 3.33 billion. Beds were the main piece of furniture sold by these shops. The legality of the material used for the manufacturing of furniture sold in the shops is an extremely rare concern for buyers in Yaoundé and Douala. Since their creation, only 10% of the sampled shops have reported any demand for wood from legal sources. During the survey period, the shops sold only 78 items of furniture to buyers who were concerned about the legality of the raw material.
4. Public contracts: National and international public agencies have almost not developed a strategy towards promoting the legal origin of the timber used in public contracts. Yet between July 2015 and June 2016, 1029 calls to tender including timber works were published in the *Journal of Public Contracts of Cameroon*, for 2134 sites for construction or renovation of public infrastructure. Classrooms make up the majority of this category of tenders. This public demand for sawnwood is close to 13,000 m³ per year, making the Government of Cameroon the main buyer of sawnwood and furniture in the domestic market.

To meet these different demands, there are four supposedly legal sources of sawnwood and furniture in the Cameroonian domestic markets:

1. Community forests (CF): after the provisions of the Forest Act of 1994, the CF were successful in the early 2000s but ultimately had a low impact

on legal production of sawnwood, due to the many procedures imposed by the government. On the basis of the annual permits granted by the government and under the assumption of a legal production of 60 m³/year/CF, the total production of the CF has never reached 10,000 m³ of timber per year. The cost price of 1 m³ of sawnwood charged by a CF and sold in the market is at least XAF 150,000.

2. The timber exploitation permit (PEBO) allows for the exploitation of about 160 m³ of sawnwood each. After having been suspended for nearly a decade, the ministry in charge of forests launched two calls to tender in 2012 for 159 PEBOs, out of which only 51 were successful, indicating a maximum volume of 8000 m³ of potentially exploitable timber. Implementing the PEBO procedures is expensive as the cost price of 1 m³ of timber is estimated at XAF 280,000. This explains why many PEBO holders were not engaged in production, at least for the domestic market.
3. Industries: Tracking the sales of sawnwood in the urban markets of Yaoundé and Douala in 2009–10 showed that approximately 145,000 m³ of timber came from industrial sawmills. Yet, very few industrial mills stated that they were active on the domestic market. Their sales in this market remain focused on white wood of non-exportable quality. However, even for these low-quality products, company prices in the urban markets are 30 to 50% higher than current sawnwood prices. There is also a large quantity of scrap from industrial sawmills, for which there is no monitoring on the part of these companies.
4. Wooden furniture imports have doubled since 2007, reaching a turnover of XAF 5.3 billion in 2015, which corresponds to 10,000 m³. This trend indicates an inability of the domestic producers to meet new demands,

due to a lack of equipment and technical and commercial training.

There are two major obstacles to the emergence of a domestic market of legally sawnwood in Cameroon. Buyers' acceptance to purchase sawnwood at higher prices due to the legalization of the sector will not be sufficient to cover the current cost prices of legally sawnwood, whether they come from the CF, the PEBO or industries. The maximum production of sawnwood of legal origin today can only meet the needs of a few consumers. The legalization of the national market of timber in Cameroon therefore faces a double constraint of price and volume.

Reducing the cost of production of legal sawnwood for the domestic market is the approach most often mentioned and tested to some extent. This supply-side support policy is difficult to implement for many reasons linked to the cost of implementation of the PEBO, bad governance, which spoils CF or the lack of interest by the timber industries in this market that is considered to be less profitable. However, measures have been considered and tested by the government to force companies into increasingly supplying urban markets, particularly from their allotted concessions.

A complementary approach of supporting private and public demands of sawnwood of legal origin could be promoted. Some consumers are already willing to pay more to acquire legal products, including products and species that are currently identified. Increasing the income of the middle class will only reinforce this trend in the medium term. Finally, the Cameroonian government is promoting the idea of requiring the supply of legal timber in all public markets that would have a significant impact not only on the general public, but also on the global economy.

Table 1. Annual volumes, prices and turnover in production of sawnwood in the Cameroonian domestic market

	Sawnwood				Furniture		
	CF (2012, maximum)	PEBO (2012, maximum)	Industry (2010)	Informal (2010)	Joinery workshops (sample in 2015)	Showrooms (sample 2015)	Imports (customs statistics 2015)
Volume (m ³)	9,060	8,000	144,156	668,354	22,000	6,946	10,600
Market price (XAF/m ³)	150,000	281,250	–	80,993			
Turnover (millions XAF)	1,359	2,250	–	49,647	8,000	3,992	5,300

Résumé

L'importance économique et sociale de la consommation domestique de bois est aujourd'hui reconnue en Afrique centrale, mais elle est largement alimentée par des sciages d'origine informelle.

Personne n'a encore développé une compréhension globale de ces filières afin d'élaborer les conditions d'améliorer la légalité de ce commerce et de ces pratiques. L'objectif de ce rapport est de passer en revue les différents types de demande et d'offre de produits bois sur le marché intérieur camerounais (Yaoundé et Douala) pour identifier les possibilités de promouvoir une consommation de sciages et de meubles d'origine légale, qui renforcerait la gestion durable des ressources ligneuses et une croissance économiquement verte à long terme.

Les demandes privées et publiques visent principalement trois usages du bois : un matériau de construction pour le secteur du bâtiment et des travaux publics, les huisseries, et l'ameublement. Ces demandes s'expriment à quatre niveaux de commercialisation:

1. les marchés urbains : 830,000 m³ de sciages y sont vendus par an, principalement sous forme de planches, de planches de coffrage, de lattes et de chevrons. C'est un secteur dont les caractéristiques ont peu évolué durant la dernière décennie, les produits, les prix et les essences étant quasiment identiques. Le prix moyen d'un mètre cube débité sur ces marchés urbains est d'environ 80,000 F.CFA tous sciages confondus. Les produits supposément d'origine légale, car provenant directement et indirectement des scieries industrielles, ne représentent qu'entre 12 et 18% du volume vendu. Toutefois, entre 15 et 34% des clients se tourneraient vers l'achat de sciages légaux si leur revenu augmentait entre 20 et 100% dans les cinq prochaines années. De plus, la moitié des acheteurs interrogés accepteraient de payer 10% plus cher pour acquérir des sciages d'origine légale. Cette estimation varie en fonction des métiers, des produits et des essences. Enfin, les acheteurs interrogés pourraient supporter une hausse de 45% des prix actuels des sciages avant de les substituer par des produits alternatifs. Il existe donc une acceptation réelle des demandes urbaines pour une certaine augmentation du
2. les ateliers de menuiserie: les 515 ateliers interrogés produisent environ 130 000 meubles par an, pour un volume total de 22,000 m³ de sciage après quatrième transformation, et un chiffre d'affaires dépassant 8 milliards F.CFA. Les armoires, les lits et les portes sont les produits les plus vendus, en valeur comme en volume. La quasi-totalité des consommateurs urbains recherche le meilleur rapport qualité/prix pour les meubles en bois. Il y a un manque d'intérêt presque complet pour l'origine légale ou durable des sciages : seulement 19 ateliers de menuisier ont eu à répondre à une demande de bois d'origine légale pendant l'année 2015, et pour une vente totale de 61 meubles.
3. les boutiques de vente de meubles: de janvier à octobre 2015, les 166 boutiques enquêtées ont vendu 22,282 meubles, correspondant à un volume scié de 5788 m³ et un chiffre d'affaires de 3.33 milliards F.CFA. Le lit est le principal meuble vendu par ces boutiques. La légalité du matériau utilisé pour la fabrication des meubles vendus dans les boutiques reste une préoccupation extrêmement rare pour les acheteurs de Yaoundé et de Douala. Depuis leurs créations, seules 10% des boutiques échantillonnées ont eu à répondre à une demande de bois d'origine légale. Sur la période d'enquête, seuls 78 meubles ont été vendus par ces boutiques à des acheteurs soucieux de connaître la légalité du matériau d'origine.
4. les marchés publics: les organismes publics nationaux et internationaux n'ont quasiment pas développé de stratégie promouvant l'origine légale des sciages utilisés pour répondre à des marchés publics. Pourtant, entre juillet 2015 et juin 2016, 1029 appels d'offre comprenant des travaux utilisant du bois d'œuvre ont été publiés dans le Journal des Marchés Publics du Cameroun, portant sur 2134 « chantiers » de construction ou de rénovation d'infrastructures publiques. Les salles d'école constituent la classe majoritaire de ces appels d'offres. Cette demande publique de sciages avoisine 13,000

m³ par an, faisant de l'Etat camerounais le principal acheteur de sciages et de meubles sur le marché intérieur.

Pour répondre à ces différentes demandes, il existe quatre offres de sciages et de meubles d'origine supposée légale sur le marché intérieur camerounais :

1. les Forêts Communautaires (FC): consacrées dans la loi forestière de 1994, les FC ont connu beaucoup de succès dans les années 2000 mais ont finalement un faible impact sur la production légale de sciages, les nombreuses procédures imposées par le gouvernement empêchant un décollage effectif de l'activité. Sur la base des Certificats Annuels d'Exploitation accordés par le gouvernement et sous l'hypothèse d'une production légale de 60 m³/an/FC, la production totale des FC n'a jamais atteint 10,000 m³ de sciages par an. Le coût de revient d'un mètre cube de bois débité par une FC et rendu sur le marché est au minimum de 150,000 F.CFA.
2. les Permis d'Exploitation du Bois d'œuvre (PEBO) permettent d'exploiter environ 160 m³ de sciages chacun. Après avoir été suspendus pendant presque une décennie, le Ministère en charge des forêts a lancé deux appels d'offre en 2012 pour 159 PEBO, dont 51 seulement ont été fructueux, soit un volume maximal de 8000 m³ de sciages potentiellement exploitables. Les procédures de mise en œuvre des PEBO demeurent coûteuses, puisque le coût de revient d'un mètre cube de bois débité est estimé à 280,000 F.CFA. Ce montant explique que de nombreux détenteurs de PEBO ne se soient finalement pas engagés dans la production, au moins vers le marché intérieur.
3. les industries: le suivi des ventes de sciages sur les marchés urbains de Yaoundé et de Douala en 2009–10 a montré qu'environ 145,000 m³ provenaient plus ou moins directement de scieries industrielles. Pourtant, très peu de

scieries industrielles se déclarent actives sur le marché intérieur. Leurs ventes restent centrées sur des bois blancs de qualité non exportable. Or, même pour ces produits de bas de gamme, les sociétés industrielles pratiquent des prix de 30 à 50% plus élevés que les sciages exposés sur les marchés urbains. A côté de ces ventes officielles sur le marché intérieur par les entreprises, il y a un grand nombre de rebuts des scieries industrielles qui se retrouvent sur les marchés urbains, pour lesquels il n'existe aucun suivi de la part des entreprises.

4. les importations de meuble en bois ont doublé depuis 2007 et atteignent un chiffre d'affaires de 5.3 milliards F.CFA en 2015, soit environ 10,000 m³. Cette tendance indique un décrochage des producteurs nationaux pour répondre à de nouvelles demandes, en raison de carence d'équipement et de formation technique comme commerciale.

Le tableau suivant récapitule les volumes annuels, les prix et les chiffres d'affaires liés à la production des sciages et de meubles commercialisés sur le marché intérieur camerounais.

Il existe deux obstacles majeurs à l'apparition d'un marché domestique du sciage légal au Cameroun. D'une part, l'acceptation par les acheteurs d'une augmentation des prix des sciages liée à leur légalisation ne sera pas suffisante pour couvrir les coûts de revient actuels des sciages d'origine légale, qu'ils proviennent des FC, des PEBO ou des industries. D'autre part, la production maximale de sciages artisanaux d'origine légale ne permet aujourd'hui de répondre qu'à une faible partie des besoins des consommateurs. La légalisation du marché intérieur du bois au Cameroun se heurte donc à une double contrainte de prix et de volume.

Diminuer le coût de production des sciages légaux à destination du marché domestique est l'approche

	Sciages				Meubles		
	FC (2012, maximum)	PEBO (2012, maximum)	Industrie (2010)	Informel (2010)	Menuiserie (échantillon en 2015)	Boutique (échantillon en 2015)	Importation (stats douane 2015)
Volume débité (m ³)	9,060	8,000	144,156	668,354	22,000	6,946	10,600
Prix de revient rendu marché (F.CFA/m ³)	150,000	281,250		80,993			
Chiffre d'affaires (millions F.CFA)	1,359	2,250		49,647	8,000	3,992	5,300

la plus souvent citée et, dans une certaine mesure, expérimentée. Cette politique de soutien à l'offre reste difficile à appliquer pour de nombreuses raisons qui tiennent au coût de mise en œuvre des PEBO, à la mauvaise gouvernance qui gangrène les FC ou au faible intérêt de l'industrie de s'attaquer au marché intérieur jugé peu rémunérateur. Des mesures sont toutefois envisagées et testées par le gouvernement pour contraindre les entreprises à davantage alimenter les marchés urbains, notamment à partir de leurs concessions aménagées.

Une approche complémentaire pourrait être promue, celle de soutenir les demandes privées et

publiques de sciages d'origine légale. Certains consommateurs sont déjà prêts à payer davantage pour acquérir des produits légaux, notamment pour des produits et des essences maintenant identifiés. L'augmentation à moyen terme des revenus des classes moyennes ne fera que renforcer cette tendance. Enfin, le gouvernement camerounais plébiscite l'idée d'une contrainte d'approvisionnement en sciages légaux pour tous les marchés publics qui, à défaut de jouer directement sur de gros volumes, pourrait avoir une portée symbolique sur le grand public, tout en ayant un effet de levier sur le monde économique.



A sample of wooden furniture in Cameroon.

1 Introduction

Over the past 20 years, the reforms in the Congo Basin forestry sector have aimed to promote and implement good management standards in industrial concessions, most of whose production is meant for exportation. However, the small-scale chainsaw-logging sector, which mainly nourishes the home markets and the subregion, hasn't been addressed. The work of CIFOR in Central African markets has underscored the importance of timber consumption in the urban centers of the countries of the Congo Basin (Lescuyer and Cerutti 2013). In Cameroon, most of the timber consumed locally comes from informal sources. The proportion of timber from legal sources is estimated at 27% of the total volume of timber circulating in the markets of the major cities of the country (Cerutti and Lescuyer 2011).

By signing a Voluntary Partnership Agreement (VPA) of the FLEGT (Forest Law Enforcement, Governance and Trade) Action Plan, Cameroon is committed to exporting timber and timber derivatives to the European Union (EU) in compliance with existing regulations. Authorities have made the same commitment to timber that is destined for the local market. In this context, in 2010, the Cameroonian forest management authorities undertook measures to regulate the sector by enacting a joint mandate on the organization and functioning of the domestic timber market (DTM). A unit dedicated to the organization of the DTM was set up within the ministry in charge of forestry and a procedures manual that outlined the terms of transactions/handling of timber products in DTM sites, was developed.

Government measures to organize the DTM are trying to supply local markets with timber products from legal sources. In Cameroon, the timber exploitation permit (PEBO – *permis d'exploitation du bois d'oeuvre*) and community forests (CF) are regulations aimed at fostering the supply of legal timber in the local market. In practice, the procedure for obtaining the PEBO and its cost place these logging titles beyond the reach of the majority of chainsaw millers. Elsewhere, Nzoyem et al. (2010) showed that the authorized volume for all CF in Cameroon was largely insufficient to supply the market in which, according to Cerutti and Lescuyer

(2011), timber needs are estimated at 702,000 m³ per year. A significant quantity of sawnwood sold on the internal market is therefore from informal sources. Yet, two other sources of legal timber could be used to meet the domestic demand for wood products: (1) industrial mills who could devote a part of their production to the domestic market; and (2) several shops who import wooden furniture – supposedly from legal sources since they have been controlled by customs – to meet the requirements of their urban customers.

Little is known about the current total volume of sawnwood and wooden furniture supply and there is scant information on the available proportion of timber from legal sources on the internal market. The main objective of this report is to identify the different types of small-scale chainsaw sawmills from legal sources on the Cameroonian domestic markets by identifying the existence of (or the conditions for developing) consumer demands for these products, which constitute the best incentive to the formalization of sawnwood production.

To find out to what extent the production and importation of sawnwood and wooden furniture from legal sources is compatible with national demands for these products, the following four steps have been put in place:

- identify and categorize the diversity of national demand for timber products in terms of products, quantity and prices. The demands are differentiated by the type of consumer (e.g. individual, government or company), the use of the product (e.g. buildings and public works, furniture, windows or doors) and the products' transaction point (e.g. market, joinery workshop, shop or showroom) (Figure 1)
- for each of these specific demands, estimate the proportion of buyers who are or would be interested in the procurement of products from legal sources
- estimate sawnwood/furniture production from legal sources supplied on the domestic market through small-scale operating permits (CF, PEBO) by industrial operators and through importations

- compare the level and requirements of ascertained or potential demand from legal sources to current supplies

After a detailed presentation of the methods of survey and analysis used, Chapter 3 characterizes the various types of demand for timber and furniture in Cameroon. It begins with a reminder of the data published by Cerutti and Lescuyer (2011) on the sales of sawnwood in the domestic markets of Cameroon, focusing on the cities of Yaoundé and Douala. A part of these data was updated in 2015 to establish the present state of the sold products and the practiced prices. Additional surveys were also conducted with buyers to determine their propensity to buy timber from legal origin if: (1) their income was increased in the medium term; or (2) there was an increase in the price of sawnwood from legalized sources.

A significant quantity of furniture sales also takes place in joinery workshops or in furniture shops and showrooms. Two survey campaigns were conducted to characterize these purchasing practices in 2015 and 2016. They were held with actors at the fourth wood processing stage (according to Decision No. 0353/D/MINFOF 27/02/2012 on the Categorization of the Processing Units and the

Determination of the Degree of Processing of Wood Products), i.e. manufacturers of door and window frames, furniture and any other finished and/or ready-for-use product. Surveys were also conducted with shops selling handmade and imported furniture.

Finally, as public governments are bulk buyers of timber products, two studies were carried out to estimate the quantity of timber used in procurement contracts and the potential strategies used by these governments to maximize the use of timber of legal origin.

Chapter 4 looks at four possible sources of timber supply to domestic consumers. First, it estimates the cost price of legally sourced sawnwood from either a CF or a PEBO to determine the minimum price of the different types of legally sourced sawnwood once it is on the market. The global quantities of sawnwood produced with these types of permits are evaluated. Second, we assess the current capacities of the industrial sawmills to address the domestic market. Finally, we estimate the amount of wooden furniture imports. The official statistics are completed by a study of the factors that may explain the intense interest for such products by Cameroonian buyers.

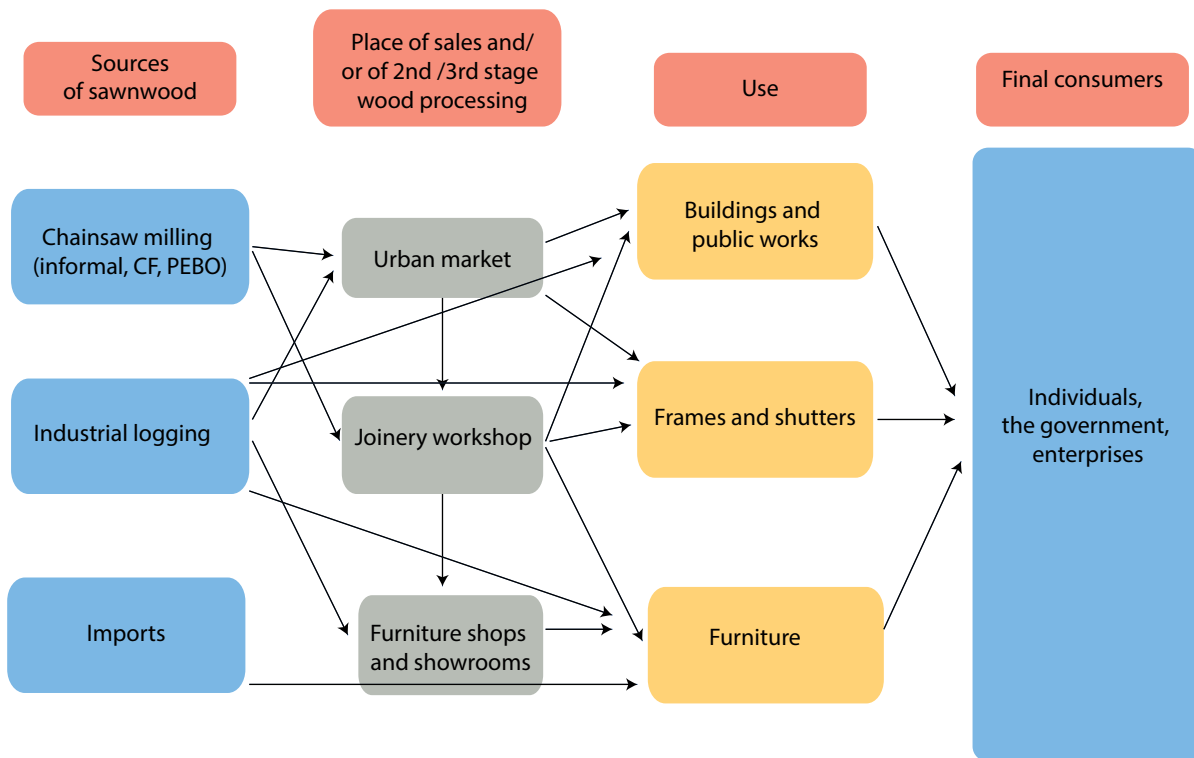


Figure 1. Possible ways of meeting domestic timber demand in Cameroon

Chapter 5 summarizes the current state of demand and supply of timber products on the DTM and reviews their possible developments in the medium term. Even in the case of a favorable scenario, it is unlikely that the increase in domestic demand for sawnwood of legal origin can be satisfied by the existing supply due to price and volume issues.

Finally, we review the relevance of implementing measures in order to promote the emergence of demand for timber products from legal sources in addition to the current policy so as to support the legal production of sawnwood for the Cameroonian domestic market.

2 Survey and data analysis methods

Several surveys and methods of analysis were used for this study and they have three things in common. First, inquiries and the interpretation of the results were inspired by the existing literature on the subject, which is unfortunately quite limited. Second, all survey instruments were tested at least once (and up to four times) then adjusted before starting the data collection. Finally, the data were entered in a Microsoft Access database format and Stata Version 12 was used for econometric analysis.

2.1 Tracking the consumption of wood in urban markets

CIFOR followed the timber markets in the major cities of Cameroon for 12 months between 2009 and 2010. These data were presented in Cerutti and Lescuyer (2011). This data was used in order to present the detailed state of the timber trade in the cities of Yaoundé and Douala. The information on the variety of products sold, their prices and their uses were updated through new surveys conducted in the markets. These survey results were combined with a group discussion with members of the Joint National Timber Sellers and Related Services Association (ANCOVA – *Association Nationale du Collectif des Vendeurs et Assimilés de Bois*) in each of the markets; individual questionnaires on the sales of timber were administered to each market seller during one day a week in March 2016. This estimation does not allow us to assess the volumes sold in one year but gives us a current picture of the products sold, their prices and uses.

2.2 Estimation of the propensities of private timber demand from legal origin in urban markets

Two phenomena significantly influence private consumers in their decisions about buying or not buying sawnwood from legal sources in urban markets: the retail price of the sawnwood of legal origin and an increase in their levels of income. The

influence of these two variables can be estimated by calculating:

- the price elasticity of these demands, i.e. the rate of change of sawnwood quantities purchased/rate of change of the price of these products
- their income elasticity, i.e. the rate of change of sawnwood quantities purchased/rate of change in their incomes.

However, calculating price elasticity requires knowledge of the extent to which timber prices change, including the extra cost inherent in the passage from sawnwood of informal origin to sawnwood of legal origin, in order to evaluate its impact on demand. Yet, it was difficult to develop scenarios of changes in the price of sawnwood sold in urban markets since the assessment of the cost of legal, small-scale chainsaw milling through CF/PEBO and the estimation of the elasticities were done together. An alternative would be to use the prices of industrially milled timber but the difference in cost is too vast (Cerutti and Lescuyer 2011) to be credible to the buyers interviewed. Nevertheless, it is possible to estimate the buyers' propensity to acquire legally sawnwood by assessing their maximum willingness to pay (WTP) in order to get these products. It is no longer about estimating the change in quantity of sawnwood demanded at various price levels but knowing the maximum price that the buyers would be willing to pay to ensure that the timber they buy comes from a legal source. The average level of the WTP will be compared to the average cost of a legal small-scale chainsaw milling operation so as to analyze to what extent the current supply of these products could satisfy these demands in terms of price and quantity.

In February and March 2016, a survey was carried out among a sample of 440 buyers in 20 urban markets of Douala and Yaoundé to discover their WTP for sawnwood of legal origin and the evolution of their demands if their incomes increased in the medium and long term (Annex I). We decided to conduct this survey in urban markets because it is here that the largest number of transactions in small-scale chainsaw milling takes place.

The respondents were chosen randomly but had to meet two overall criteria. First, surveys were conducted to cover the diversity of the specialties characteristic of the markets or of the sawnwood depots in order to best represent the different types of customers. Respondents belonged to the Cameroonian middle classes, as their income increases will have a major long-term impact on the demand for small-scale chainsaw milling (Fung 2016). For this, three socioeconomic subclasses were selected on the basis of the criteria of the African Development Bank (Ncube et al. 2011):

- A “floating class” characterized by a daily consumption level of between USD 2 and 4 per person. This corresponds to a monthly income of less than or equal to XAF 62,000. Our survey was conducted with 104 people from this social class.
- A lower middle class, with a level of consumption per day per person of between USD 4 and 10, or a monthly income of between XAF 62,000 and XAF 155,000. These consumers were able to save and buy non-basic goods. Our survey was conducted with 227 people from this social class.
- An upper middle class, with a level of consumption per day and per person of between USD 10 and 20, or a monthly income found between XAF 155,000 and 310,000. Our survey was conducted with 109 people from this social class.

The questionnaire was developed, tested in the field and revised three times so as to avoid most of the biases associated with surveys that aim to estimate the WTP (Arrow et al. 1993):

- The WTP and the income elasticity estimation were based on the products that the respondents bought during the survey. The information on the goods was therefore realistic and credible.
- A summary of the DTM in Cameroon, as well as the low percentage of sawnwood of legal origin was presented at the beginning of the interview. The idea that the Ministry of Forests and Fauna (MINFOF) wished to promote the legal production of small-scale chainsaw milling based on existing rules was also presented.
- The respondents were told that their budget was limited and that if they had an increase in their income, they would probably want to increase their consumption of other products.
- The 5-year horizon of revenue increases is in line with the *Growth and Employment Strategy Paper* put in place by the Government of Cameroon.

- The WTP was based on the consensus that market prices should be increased due to the legalization of small-scale chainsaw milling, which was the most credible scenario in a competitive market of free prices.
- The survey was carried out in sawnwood markets using direct interviews with the consumers.
- The total sample size (440 people) and the breakdown of respondents according to their professions and their social classes permitted the setup of subgroups of average sizes (10–34 individuals) where each individual response influenced the result in a reasonable manner (i.e. neither too much, nor too little). It is the best configuration to obtain a non-strategic answer from the interviewee.
- The reasons behind a null WTP were explained in order to ensure that it was actually consented and not an indirect refusal to give answers to the interview.
- Given the low percentage sale of legal timber in the domestic market (Cerutti and Lescuyer 2011), it is unlikely that many buyers of sawnwood are sensitive to sustainable forest management, which reduces the risk of getting a WTP for a good cause rather than specifically for getting the sawnwood from legal origin (warm glow effect).

2.3 Estimation of wooden furniture production in the joinery workshops, showrooms and shops

To estimate the volume of furniture purchases by consumers of Yaoundé and Douala, two separate surveys were conducted in the joinery workshops, showrooms and shops. The questionnaires used for these surveys are presented in Annexes II and III. The same team of enumerators conducted the surveys during the same period (September–December 2015). Due to the recurrent lack of accounting standards among the carpenters, quantitative data was collected for the 2 months preceding the date of survey for these joinery workshops. For the shops and showrooms, the estimate was for most of 2015, i.e. from January to October or November 2015.

It was not always easy to classify workshops as joinery workshops or as shops and showrooms. We defined shops and showrooms as all places with a specific surface area dedicated to sales, where at least some products were permanently displayed.

Conversely, joinery workshops used all their space for the manufacture of furniture and did not display their products. Joinery workshops with an exhibition space were classified in the category of shops and showrooms.

To date there is no catalogue of the joinery workshops, shops and showrooms selling wooden furniture in Yaoundé or Douala. Unlike the categories of the first, second and third stage timber processing units, the fourth stage processing unit category are not listed in Decision No. 0353/D/MINFOF of 27/02/2012. Previously, JMN (2005) identified more than 1000 sites for timber processing in Yaoundé, including five categories of actors: (1) artisans and industrial manufacturers of furniture; (2) artisans and industrialists for frames; (3) subcontracting artisans (standardization of rural timber and scraps from industrial sawmills); (4) carpenters, assemblers of scaffolding and framers; and (5) craftsmen. This study covered a wider range than our survey and we could not construct a rigorous sample, as there

was no information on the total number of joinery workshops, shops and showrooms in Yaoundé or Douala. In both cities, two teams (of two enumerators each) scouted each district to identify and interview joinery workshops, furniture shops and showroom owners. A total of 515 joinery workshops and 166 shops and showrooms in the different districts of the two cities (Figure 2 and Figure 3) agreed to fill out our questionnaire (Table 2).

While the rate of refusal to participate was low by managers of the joinery workshops, it was higher for owners of wooden furniture shops and showrooms. Despite support from MINFOF for these surveys, the large shops mostly sold imported furniture and usually refused to tell us the volume and the value of their sales. Thus, our data do not include information from most of the large shops. To make up for this deficiency, we got the official import statistics on wooden furniture from the

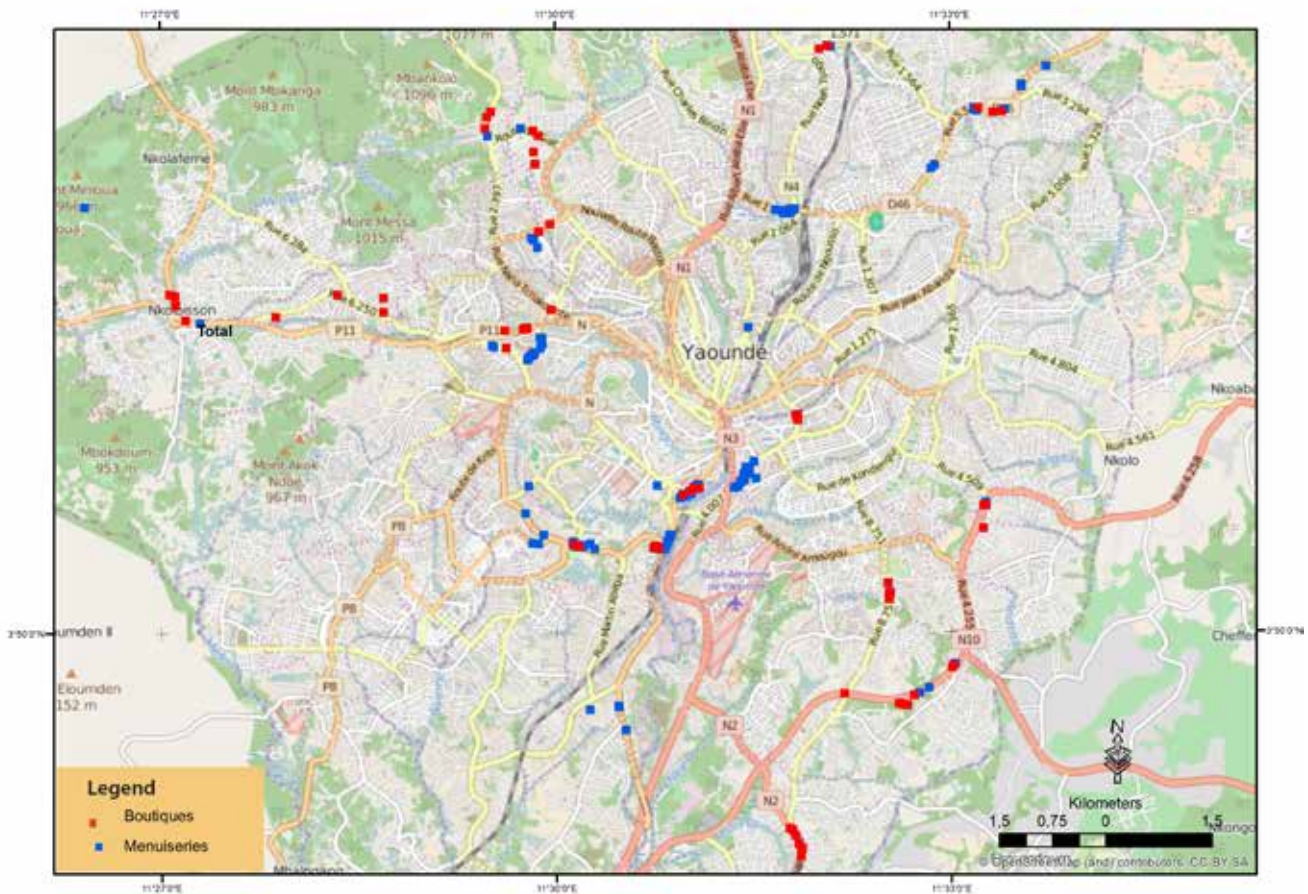


Figure 2. Location of joinery workshops, showrooms and shops surveyed in Yaoundé

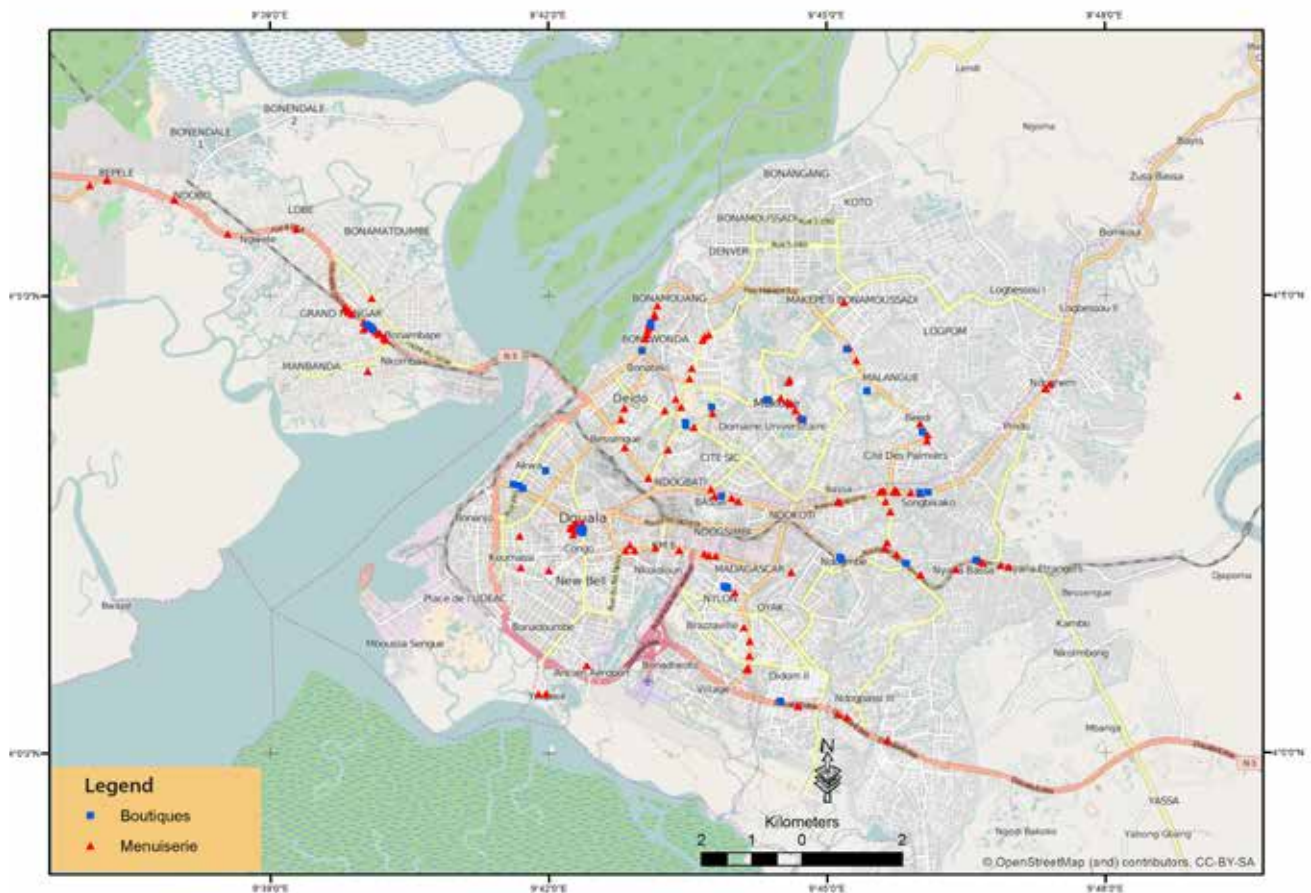


Figure 3. Location of joinery workshops, showrooms and shops surveyed in Douala

Table 2. Sample of joinery workshops, shops and showrooms surveyed

	Joinery workshops	Shops and showrooms
Douala	242	48
Douala I	84	23
Douala II	11	
Douala III	60	14
Douala IV	45	6
Douala V	42	5
Yaoundé	273	118
Yaoundé I	37	10
Yaoundé II	30	15
Yaoundé III	7	1
Yaoundé IV	58	30
Yaoundé V	16	16
Yaoundé VI	72	15
Yaoundé VII	53	31
TOTAL Cameroon	515	166

National Institute of Statistics (NIS 2015) and from the Customs Department.

The data collection was more satisfactory for the shops – typically smaller ones – selling locally produced furniture. In Yaoundé, very few shops refused to participate. In Douala, however, about 60% of the contacted shops did not fully complete the questionnaire they were given by our enumerators. We were unable to extrapolate the data collected across the sector because of lack of an estimate of the total number of enterprises involved, but the large number of surveys no doubt reveals the importance and dynamics of fourth stage wood processing in Cameroon.

In order to ensure efficient filling out of questionnaires on furniture sales, a further study was conducted in the joinery workshops, shops and showrooms in order to estimate the unit volume of the different types of furniture. Two

enumerators led this study in 12 production or sales sites and calculated the volume of 17 types of wooden furniture. These are unit volumes that were used to evaluate the total volume of timber in the furniture sold.

2.4 Estimation of government demand for timber

The estimation of government demands for timber came from two surveys that were carried out between February and June 2016.

The first survey conducted by MINFOF identified the practices of the major government agencies sourcing timber in Cameroon and particularly timber from legal sources. Initially, the relevant target agencies were identified. Sixteen national government bodies (Ministry of Forests and Wildlife, Ministry of Basic Education, Ministry of Secondary Education, Ministry of Public Contracts, Ministry of Public Health, Ministry of Public Works, Ministry of Urban Development and Habitat and Douala and Yaoundé urban councils) and seven international organizations (ADB, AFD, Delegation of the European Union, GIZ, USAID, World Bank and WWF) were selected. A correspondence from MINFOF together with a questionnaire (Annex IV) was sent to inform them of this study and inform them of the details of the visit by the enumerators. They were then visited and the interview was conducted according to the framework that had been initially forwarded. Altogether, six public governments out of nine and five international organizations out of seven filled out the questionnaires.

This first qualitative survey was supplemented by a systematic review of the contracts of the Public Procurement Regulation Agency (PPRA) of Cameroon between 22 July 2015 and 9 June 2016¹ that shows all of the calls to tender launched by Cameroonian Government bodies. This review helped to estimate the number of public contracts involving the use of timber, appreciate diversity and attempt to quantify *a posteriori* the volumes of timber used by government bodies. In this list, we identified tenders, which refer to the use of softwood, hardwood, poles and wooden furniture or timber used in carpentry. This systematic review was complemented by 13 interviews with companies

having obtained and executed some of these public contracts in order to accurately estimate the amount of timber used for each site. In all cases, we have retained conservative estimates for the volumes of timber used in these public works.

2.5 Production estimates of legally sawnwood for commercial purposes through small logging permits

2.5.1 Case of community forests (CFs)

This estimate is based on secondary data from the scientific literature and on primary data collected in two CFs. Secondary information comes from scientific publications such as technical reports assessing the costs incurred by the community forest managers over several years. Two case studies were equally carried out on the field in the East and Centre regions:

1. The CF of the Amwedon association located in the village of Nzeng. It is a member of the Association of the Community Forests of Kadey (ASFOCKA), which was created in 2011 to combine 26 community forests and which has benefited from the financing of the European Commission since 2014. In 2015, 560 m³ produced from diverse species were granted to the Nzeng CF, but only 38 m³ were finally marketed.
2. The CF of the Cooperative of the Farmers of Lékié (COPAL). This cooperative signed a convention of management with the State of Cameroon in 2007. The convention of management concerns a portion of the nonpermanent forest domain of a 4800 ha surface area. The forest managed by COPAL is situated in the district of Sa'a (of the Lékié Division), 100 km from Yaoundé. The space requested to establish the forest extends over the customary land area of 10 villages. It is a relatively degraded area due to the intense agricultural activities, particularly as a result of cocoa farming.

In both sites, management and marketing documents were consulted. Exchanges also took place with the administrators of the CFs to complete or verify the recorded information. The necessary data for the estimation of the cost price of sawnwood encompasses three stages in order to value the resources of the community forest. It is made up of

¹ [available on the website <http://armp.cm/JDM.php#tzM8>]

costs connected to the allocation of the forest, those relative to the elaboration of the simple management plan (SMP) and finally the operating expenses of timber logging. The analysis structured the costs into two main categories, which are the fixed costs and the variable costs. The fixed costs integrate expenses relative to the process of creating and functioning of the CF whereas the variable costs concern the logging, the processing and the marketing of the timber resources.

2.5.2 Timber exploitation permit (PEBO)

A survey was carried out with the successful bidders of the PEBO to find out the cost prices for their production of sawnwood bound for the domestic market. This was spread out over several months (in December 2015 – June 2016) because of the difficulty in identifying, then reaching the holders of the PEBO. First we requested a list of the successful bidders of the PEBO proposed in 2012 from the MINFOF, the timber syndicates (the Cameroon Timber Industry Grouping and the Labor Union of Loggers and Processors Exporting Industrial and Special Timber Products of Cameroon) and from sellers of the ANCOVA. A partial list of

the successful bidders was drawn up from these three sources.

Second, we contacted the successful bidders identified and asked them to fill out a questionnaire about their *modus operandi* and the yield on their operation (Annex V). Only five successful bidders agreed to fill out this questionnaire in full (Table 3).

Contrary to the method of survey initially conceived, these exchanges were not followed by a visit to the logging sites because no operator had reached the stage of logging to produce the volume of timber granted by the PEBO. The declarations of the

Table 3. List of PEBO subscribers interviewed (May 2016)

Subscriber	PEBO number	Locatiown
Ets Amougou Aboui	08 048	Mbam and Kim
Ets MEKOGECAM	08 070	Upper Sanaga
TTC Sarl	08 034	Mefou and Akono
ONITRAS	08 060	Upper Sanaga
Ets KMC et Fils	08 072	Mbam and Kim

Table 4. Variables influencing the purchase of imported furniture

Age of the client	Definition and nature of explaining variable
Age of the client	Age of the interviewee in number of years
Right period for the purchase	The right period to purchase furniture which takes the value 1 if yes and 0 if no
House owner	Is the interviewee is the owner of his/her house? Value 1 if yes and 0 if no
Monthly income of the client	What is the monthly income of the interviewee?: 1=below XAF 62,000, 2=XAF 62,000–155,000, 3=XAF 155,000–310,000, 4=above XAF 310,000
Gender of the client	Variable with two codified modalities: 1=male, 2=female
Marital status of the client	Variable with two codified modalities: 1=married, 2=single
Household size of the client	What is the number of persons living in his/her house?
Comfort of the furniture	How would you rate the quality of the seats? Variable with five codified modalities: 1=very bad, 2=bad, 3=good, 4=very good, 5=excellent
Elegance of the furniture	How elegant is the piece of furniture i.e. how well made is it? Is the sewing regular? Variables in five modalities are coded as follows: 1=very bad, 2=bad, 3=good, 4=very good, 5=excellent.
Durability of the furniture	What is the durability of the wood used to produce the piece of furniture? Variables in five modalities are coded as follows: 1=very bad, 2=bad, 3=good, 4=very good, 5=excellent.
Safety of the furniture	The piece of furniture must be safe i.e. must present no risk of damage to the user. Variables in five modalities are coded as follows: 1=very bad, 2=bad, 3=good, 4=very good, 5=excellent
Stability of the furniture	What is the stability of the piece of furniture i.e. does it fall over if it is loaded with heavy objects? Variables in five modalities coded as follows: 1=very bad, 2=bad, 3=good, 4=very good, 5=excellent

operators were verified and confirmed by discussions with the Chief of Service for Approvals and Forest Taxation of the MINFOF and with the Centre Regional Chief of the Control Brigade.

2.6 Assessment of the factors influencing the choice of purchasing imported furniture

The primary data used for this specific study were collected by Embolo Ahanda (2016) in the city of Douala with a sample of 100 households according to the following quotas: 53 households living in popular neighborhoods with poor status, 24 households living in neighborhoods with average status and 23 households in living neighborhoods with high status.

The dependent variable of the model used is a dichotomous variable. It concerns the demand for imported furniture (e.g. a set of chairs in this case) which takes the value 1 if the investigated person buys an imported piece of furniture and 0 if otherwise. The explaining variables of the model are qualitative or quantitative, as indicated in Table 4.

The logit binary model was chosen for the analysis, as the dependent variable (i.e. demand for the imported furniture) is a dichotomous variable (i.e. the modalities of answers are yes or no) and as most independent variables have a qualitative character. This model is preferred to other binary models because it does not establish a linear function between the dependent and independent variables and does not affect homoscedasticity. Finally, its use does not require a normal distribution of variables.

3 Categorization of national demands for sawnwood and for wooden furniture in Cameroon

3.1 Sale of sawnwood in the urban markets of Yaoundé and Douala

3.1.1 The proportion of sawnwood of legal origin in the urban markets

The volume, the products, the species and the origins of the sawnwood sold in the urban markets of Yaoundé and Douala were estimated from three sources: (1) permanent follow-up of sales in the timber markets for one year between 2009 and 2010; (2) survey of timber sellers in 2016 to update the list of sawnwood, their prices and their uses; (3) survey of a sample of 440 buyers in 2016 to update the list of sawnwood, their prices, their uses and their sources. These three data sets are presented and the information is triangulated.

For 12 months and in a systematic way, CIFOR followed up the sales realized in the timber markets implanted in the main cities of the country in 2009–10 (Cerutti and Lescuyer 2011). Table 5 presents a synthesis of these data for the cities of Yaoundé and Douala. The total sales of sawnwood in one year in these markets were about 830,000 m³, of which 145,000 m³ came from industrial sawmills, most probably from timber of legal origin. The average price of 1 m³ of sawnwood in the urban market was about XAF 80,000 for all products combined.

On average, products from the industrial sawmills and of presumed legal origin represented only 18% of the sales volume of the sawnwood in the markets in 2010, an estimation close to that of JMN (2005) in the early 2000s. However, the legal origin of the

Table 5. Sale of sawnwood in the markets of Yaoundé and Douala for 12 months from 2009 to 2010

Product	Average unit volume (m ³)	Main wood types used (local name)	Average unit price (F.FCA)	Total volume sold (m ³)	From industrial mills	% from sawmills (%)	Main users
Basting	0.0259	dabema, sapelli, iroko	2,798	48,141	8,726	18	BPW, furniture
Frame	0.0224	iroko, bilinga, sapelli	2,313	17,785	553	3	door frame
Square	0.0181	sapelli, iroko, eyong	839	891	651	73	door frame
Rafter	0.0307	ayous, sapelli, dabema	2,388	65,468	13,179	20	BPW, furniture
Formwork	0.0472	ayous, frake, fromager	2,458	191,074	7,835	4	BPW
Short wood strip (<i>courson</i>)	0.0247	bubinga, padouk, movingui	2,220	458	253	55	door frame
Batten	0.0167	ayous, movingui, ilomba	289	1,056	850	80	BPW
Paneling	0.0194	sapelli, padouk, iroko	577	931	231	25	door frame
Slat	0.0084	ayous, iroko, eyong	387	120	120	100	door frame
Floorboard	0.0048	ayous	858	80	80	100	BPW
Lath	0.0159	sapelli, iroko, ayous	1,333	116,114	39,149	34	BPW, furniture
Lintel	0.0101	iroko, sapelli	1,021	3,382	632	19	door frame
Beam	0.0589	dabema, bubinga, iroko	6,075	30,581	495	2	BPW, crafts, furniture
Plank	0.0472	ayous, bilinga, movingui	4,239	352,800	70,782	20	furniture, BPW
Crossbeam	0.0132	iroko, sapelli, padouk	766	437	424	97	BPW, door frame
Board	0.0174	azobé, iroko, ilomba	917	251	196	78	BPW, door frame
TOTAL				829,568	144,156	18%	

sawnwood depended on the type of product. Most of the small-sized sawnwood (e.g. slats, floorboards, short wood strips, squares, crossbeams, boards) came from the industrial sector because they required sophisticated equipment and dried wood. These products represented a low sales volume. On the contrary, the most sold products (e.g. planks, laths and formworks) came from industrial sawmills. In general, higher volumes of sawnwood were less likely to have come from industrial sawmills.

Three main uses characterized the sawnwood sold in the urban markets in 2010: most of the white

wood was used in the building and public works (BPW) sector and the red wood was mainly bought for the production of furniture and of door and window frames.

The update of the estimates of the sawnwood sales in the markets of Yaoundé and Douala in March 2016 (Table 6) does not present a different image: (1) it is always planks, rafters and laths which make up the most part of the volume sold; (2) the prices of products have not varied much in global terms; (3) it is always the same tree species that the buyers look for; and (4) their uses are identical.

Table 6. Sale of sawnwood in the markets of Yaoundé and Douala in March 2016

Product	Average unit volume (m ³)	Main species used	Average unit price (XAF)	% of sales (%)	Main uses
Basting	0.0247	dabema, iroko	2,735	3.9	BPW
Frame	0.022	iroko, movingui	2,163	0.3	BPW
Rafter	0.032	ayous, bilinga, iroko, sapelli	1,974	37.4	BPW, furniture, crafts
Formwork	0.045	ayous, frake	3,313	1.9	BPW, furniture
Lath	0.016	frake, dabema, sapelli, iroko	1,461	24.0	BPW, furniture, craft
Lintel	0.010	dabema, sapelli, iroko	1,060	0.2	BPW
Beam	0.075	bibolo, iroko	5,000	0.2	BPW
Plank	0.054	ayous, movingui, moabi, bilinga	4,925	31.3	BPW, furniture, craft
Board	0.009	tali	700	0.7	BPW

Table 7. Unit price of the timber purchased by 440 clients sampled in 2016 (in XAF)

Species (local name)	Basting	Rafter	Formwork	Slat	Lath	Plank	Board
atui	2,600	2,124			1,586	2,000	
ayous		1,700	2,812		1,280	2,958	1,200
azobé				700			
bibolo						5,356	
bidou'	6,000					5,750	
bilinga	2,500				2,833	5,131	
bosse					625	4,650	
bubinga						6,890	
Others	2,450		2,700		1,650	4,346	
ekok					1,550		
eyong					1,380	2,500	
frake		1,700			1,112	3,017	
iroko	2,500	2,533			1,473	4,750	1,667
makoré					1,000		
moabi						3,290	
movingui					2,000	4,632	
padouk	2,586	3,375		2,000	1,560	4,229	1,200
sapelli	2,450	2,207			1,448	3,582	1,100
tali	6,000				1,500		
Average price	2,820	2,304	2,797	1,133	1,466	4,153	1,253

The third survey was carried out between January and March 2016 using a sample of 440 buyers of sawnwood in the urban markets of Douala and Yaoundé. The list of the types of sawnwood they bought, the species and the average prices of this sawnwood are presented in Table 7. The various uses for which this sawnwood was bought are indicated in Table 8.

There have been very few changes in the sales of sawnwood in the urban markets since 2010. Planks, laths, formworks, rafters and bastings by far remain the most sold products. The uses of these various products are similar. Their prices have evolved a little, except for slats and boards which almost always come from industrial sawmills and which represent a very low volume of transaction.

These buyers were also questioned about the legal origin of the products they bought. According to them, only 12% of the products had a legal origin. This is even lower than that established in 2010 (18%) and which remains minimal. This perception reveals the absence of naivety of the customers when it comes to the sawnwood they buy and which

are nevertheless almost all stamped by the forest government and thus appear to be legal. It indicates the low current demand for timber of legal origin in the urban markets.

3.1.2 Elasticities of private demand for sawnwood in urban markets

Profile of people surveyed

The 440 interviewees presented rather conventional socioeconomic profiles. As shown in Table 9, the population of this sample follows a normal distribution, where the median slice of income represents 52% of the sample and both extreme slices are around 24% each.

Several categories of jobs come to the urban markets to buy sawnwood and the joiners was the largest group by far; they were followed by carpenters, entrepreneurs, technicians and bricklayers. These latter, if less numerous, carried out purchases which were on average 60% in value more than those of joiners. Irrespective of the sector, a big majority (87%) of these buyers occupy informal employment.

Table 8. End uses of the timber purchased by 440 clients sampled in 2016

Use	Basting (%)	Rafter (%)	Formwork (%)	Slat (%)	Lath (%)	Plank (%)	Board (%)
BPW	88.7	94.6	100.0	100.0	80.9	36.8	100.0
Others	3.0	0.1	0.0	0.0	2.0	1.7	0.0
Frames		0.0	0.0	0.0	6.9	1.9	0.0
Furniture	8.3	5.2	0.0	0.0	10.2	38.2	0.0
Door		0.2	0.0	0.0	0.0	21.4	0.0

Table 9. Socio-professional categories of the people surveyed

	Monthly income brackets (XAF)			Total
	≤ 62,000	62,000–155,000	155,000–310,000	
Trade				
Carpenter	19	34	12	65
Trader	4	8	4	16
Others	4	13	10	27
Cabinetmaker	3	8	2	13
Entrepreneur	2	2	3	7
Student	4	5	5	14
Bricklayer	3	12	4	19
Joiner	60	133	45	238
Technician	5	12	24	41
Total	104	227	109	440

Very few women (i.e. just 5 people) came to buy sawnwood from the markets. The male customers were generally married (56%), 72% of them were between 25 and 40 years old and 60% of them received training of up to secondary school level. Finally, the Bamileke and the natives of the Centre region represented 42% and 27% of the sample, respectively.

Estimation of income elasticity of the sawnwood sold in urban markets

The economic growth of Cameroon and its determination to become an emerging country by 2035 suggest an increase of the level of medium- and long-term income for the citizens of the lower and middle classes. This increase in income will impact on the sale of chain-sawn timber in the urban markets. Four possible answers were proposed to the people surveyed that might reflect the impact of an increase of their income on their purchase of sawnwood:

- no modification of their purchase level
- a modification of X% of the quantity of sawnwood bought but without changing its quality. The variation of the bought quantity can be positive or negative. It is negative, for example, when a customer stops buying sawnwood to replace it with a substitute product.

- a modification of the quality of the sawnwood bought but without changing its quantity
- a modification of the origin (informal to legal) of sawnwood bought but without changing either its quality or its quantity.

The answers obtained are presented in Figure 4, by distinguishing three classes of increase of the quantities bought (+ 6% to 30%; + 35% to 75%; and more than 80% increase).

The income elasticity of the demands of sawnwood is calculated by considering the ratio of the variation in the quantity of products bought and the variation in the income of the customer. Thus, it focuses on the consumers who are going to modify their behavior by buying more or less sawnwood, but does not integrate those who are going to change their purchase practices by favoring the quality or the legality of the products bought. Table 10 presents the estimates of income elasticity obtained according to three scenarios of medium-term income increases of the buyers.

The sawnwood sold in the urban markets of Yaoundé and Douala is categorized as normal goods, which have an income elasticity of between 0 and 1. Their consumption rises as income increases but to a lesser extent. The fall in the value of income elasticity as

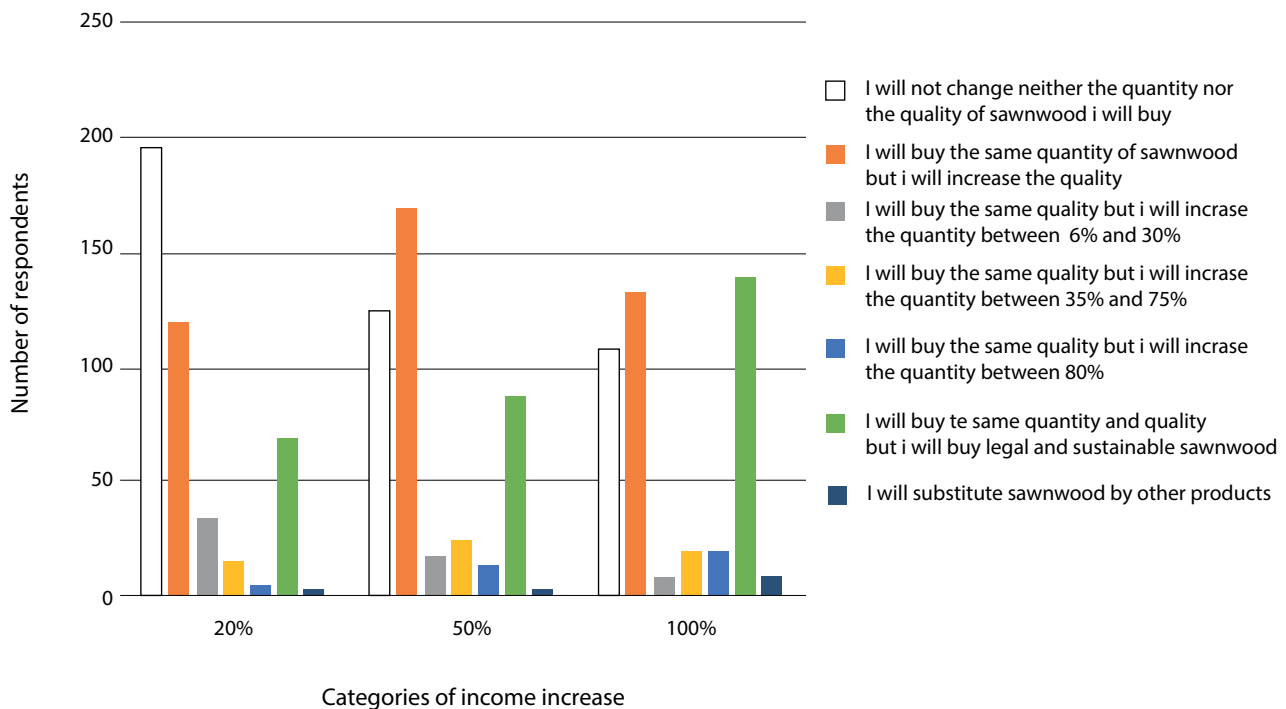


Figure 4. Effects of an increase in consumers’ income on the purchase of sawnwood in urban markets

Table 10. Income elasticities of private demands for sawnwood in urban markets

	Increase in consumer's income (%)		
	20	50	100
Number of persons who answered	251	183	165
Income elasticity	0.9	0.78	0.62

income increases confirms sawnwood as normal goods. However, this value does not turn to zero or become negative (which would indicate it had changed to inferior goods); very few people replace sawnwood with other products if their income increases.

The adjustment of purchasing behaviors is made by the choice of sawnwood of better quality or of legal origin. As shown in Table 11, after an income increase of 50%, the consumers' behavioral change is a change in the quality and the legality of the products bought, not a change in the acquired quantity.

Whatever the scenario of consumers' income growth, an improvement in the quality of the products bought is the first or second choice of the buyers. In the hypothesis of income doubling in the medium- or long-term, acquiring sawnwood of legal origin becomes the first choice of the buyers, particularly the carpenters (for 50% of the sampled population).

Estimation of buyers' willingness to pay for sawnwood from legal sources

Out of 440 respondents, 211 expressed a nil WTP to purchase the same quantity and the same quality of the sawnwood, which they had just bought but by guaranteeing their legal origin. Two main reasons explain their decisions. On one hand, a large number of buyers face a tight budgetary constraint and are unable to pay more for these products. On the other hand, many complain that the price of sawnwood in the urban markets is already too high. Four other justifications are also given: (1) the end customers (in particular for furniture or construction) do not request the use of timber from legal sources; (2) there is no scarcity of timber resources in Cameroon; (3) future generations will use other trees species than those that are being sold on the markets today; (4) paying more will only promote corruption which characterizes this activity.

Table 11. Propensities of private buyers to consume quality sawnwood or sawnwood of legal origin

	Increase in consumer's income (%)		
	20	50	100
% of persons choosing the improvement of quality of bought sawnwood	27	38	31
% of persons choosing the purchase of legally sourced sawnwood	15	20	34

However, in spite of these constraints, a slight majority of respondents (229 people) express a positive WTP, which would ensure the legality of the sawnwood they had just bought, without modification of their quantity and quality. The customers surveyed said they would pay 10% more in order to procure sawnwood from legal sources. However, this estimation varied according to the professions (Table 12) and the types of product being bought (Table 13).

The BTW professionals, such as technicians and carpenters, were the most positive with respect to the purchase of legally sourced sawnwood and showed an average of 13% WTP more than current prices for it. This can be explained partly by the type of sawnwood they use today – laths and white wooden boards of second or third grade quality – whose prices are relatively low today. A similar reason can be advanced to explain why buyers with the lowest income usually expressed the highest WTP: they often used the cheapest products and could envisage paying higher prices in spite of their strong budgetary constraints. On the contrary, the purchasing power level of the well-to-do buyers would enable them to bear an 11% increase in prices so to ensure that the sawnwood was from legal sources.

For the most sold types of sawnwood on the urban markets, the level of the WTP is relatively homogeneous: it varies between 8.4% and 10.7% for planks, laths, formworks and rafters. The case of boards, for which the WTP is around 60%, seems to indicate the scarcity of this product on the current market and demonstrates the existence of niches in the domestic market for the industrial sector.

WTP expressed by the buyers varied more when we considered the timber species used to produce sawnwood. Two groups of species presented WTP beyond 10%. On one hand, sawnwood of limba

Table 12. Estimate of the willingness to pay by profession

	Willingness to pay (%)			Average
	Monthly income brackets (XAF)			
	62,000 ≤	62,000– 155,000	155,000– 310,000	
Business				
Carpenter	13.4	15.5	9.4	13.8
Trader	9.5	12.5	19.1	13.4
Others	13.5	3.0	8.9	6.7
Cabinetmaker	0.0	2.4	11.7	3.3
Entrepreneur	11.5	7.5	10.7	10.0
Student	0.0	12.5	15.1	9.8
Bricklayer	8.8	5.6	3.8	5.8
Joiner	12.0	7.5	9.7	9.0
Technician	30.8	4.9	14.1	13.4
Average	12.2	8.3	11.0	9.9

Table 13. Estimate of the willingness to pay by types of sawnwood

Species (local name)	Basting (%)	Rafter (%)	Formwork (%)	Slat (%)	Lath (%)	Plank (%)	Board (%)	Average (%)
atui	4.1	5.8			8.5	1.0		6.2
ayous		8.5	7.9		8.8	7.2	66.7	8.2
azobé				6.3				6.3
bibolo						8.7		8.7
bilinga	20.0				6.7	7.1		7.6
bosse					0.0	1.8		1.5
bubinga						12.4		12.4
divers	8.2		11.3		13.1	9.5		10.1
eyong					17.4	8.0		14.2
frake		22.9			16.1	21.5		18.3
iroko	0.0	6.3			7.4	10.4	4.0	8.4
moabi						3.3		3.3
movingui					25.0	7.7		8.5
padouk	3.9	3.6		0.0	10.2	10.0	66.7	10.3
sapelli	11.3	19.1			10.2	13.8	79.2	14.3
tali	8.3				0.0			4.2
Average	6.6	10.7	8.4	4.2	10.0	9.1	59.1	9.9

(*Terminalia superba*) and that of eyong (*Eriobroma oblongum*) presented affordable prices for numerous buyers that could be increased to assure the legality of the supplies. On the other hand, sapelli (*Entandrophragma cylindricum*), bubinga (*Guibourtia tessmannii*) and padouk (*Pterocarpus soyauxii*) are prestigious, sometimes rare timber and are often used in joinery. The high level of the average WTP for these three species can be explained by the final consumers who have the means and the desire to pay

more for legal and quality products, for use in luxury furniture for example.

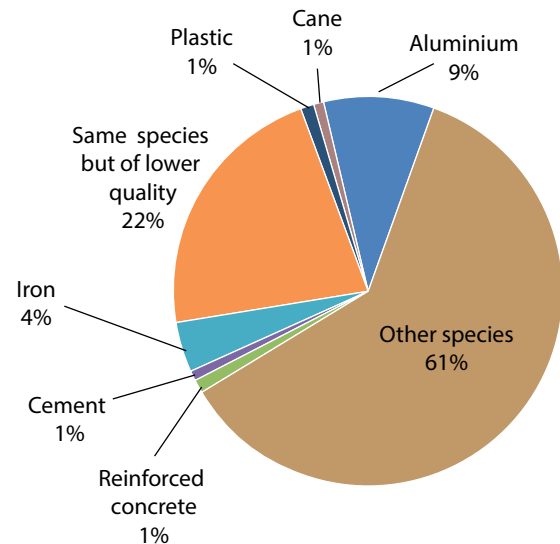
Ensuring the legality of the sawnwood is a valid reason to accept an increase in prices of these products for the majority of the buyers of our sample population. Many more reasons might incite buyers to accept an increase in the prices of sawnwood – in the hypothesis of a constant income. However, beyond the highest increases in prices (as indicated in

Table 14. Maximum willingness to pay before substitution of chain-sawnwood

Species (local name)	% maximum increase in the current price of the sawnwood before substitution
atui	27.2
ayous	39.4
azobé	115.0
bibolo	51.6
bidou	49.2
bilinga	83.2
bosse	27.1
bubinga	32.8
Others	25.9
ekok	29.0
eucalyptus	12.0
eyong	43.2
frake	35.9
iroko	40.4
moabi	48.4
movingui	22.7
padouk	61.3
sapelli	60.4
tali	20.8
Average	45.4

Table 14), the customers will replace the bought sawnwood with substitute products. These WTP for substituting sawnwood are significantly higher than those that aim at ensuring the legal source of the sawnwood, in particular for the red wood species. As long as on average it remains lower than 45%, the increase in the price of sawnwood resulting from the legalization of these products should have a limited impact on the quantities bought in the urban markets. This observation is reinforced by the substitute products the buyers would get if there was a very steep increase in the prices of the sawnwood they had just bought (Figure 5) because it would, for 83% of respondents, be replaced by sawnwood from other timber species or of lower quality.

The study of the WTP confirms the observation of a low degree of substitutability between chain sawnwood and alternative products, which was previously indicated from the estimates of income elasticity of demand.

**Figure 5. Substitutes for chain-sawn products**

3.2 Sale of furniture in the joinery workshops of Yaoundé and Douala

This analysis is based on data collected between September and December 2015 in 515 joinery workshops in Yaoundé and Douala.

3.2.1 General features of joinery workshops

Homemade wooden furniture production is not a recent activity in Cameroon because the average duration of the activities of the joineries visited was 9 years. The majority of these workshops were created between 2005 and 2010 (Figure 6). Yet, 12 years ago, the study led by JMN (2005) counted hundreds of joinery workshops in Yaoundé, which appear little in our census if we consider the inception dates of the current joinery workshops. This diachronic analysis indicates a high turnover of joinery workshops each with a relatively short life cycle. This observation is confirmed by the average age of the managers of the workshops, which, the same as per 12 years ago, was less than 40 years old (Figure 7). The informal nature of substantial quota of these workshops does not favor their permanency. And the difficult nature of a joiner's work might explain the presence of few owners who were more than 45 years of age.

As in 2004 (JMN 2005), the Bamileke ethnic group was the best represented among the joiners (Figure 8). Strangely, ethnic groups of the native

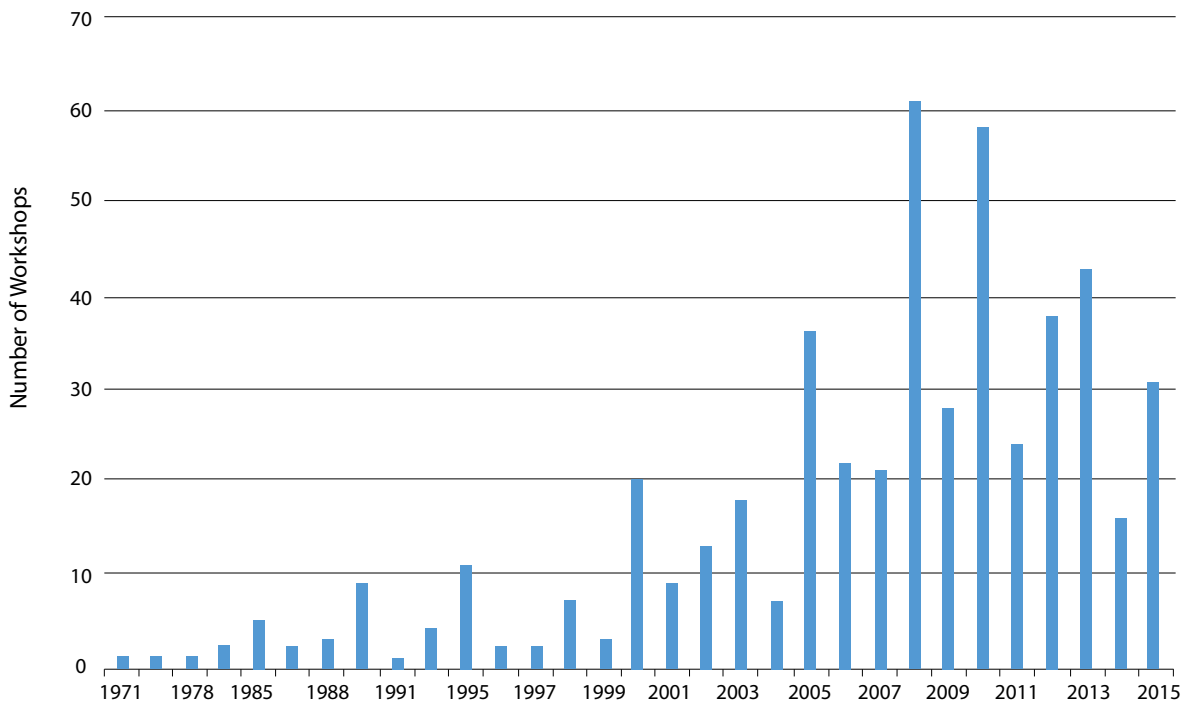


Figure 6. Creation dates of the joinery workshops

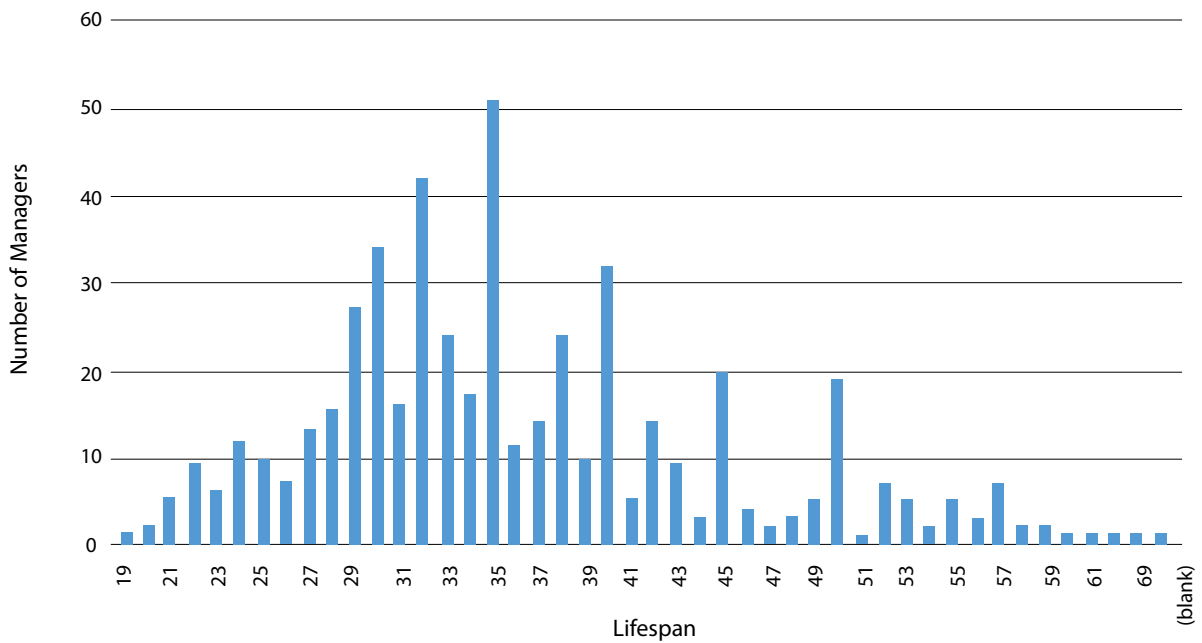


Figure 7. Age of joinery workshop manager

forest regions of Cameroon, such as the Beti-Boulou or Bassa, only represented a quarter of the workforce in this timber profession.

If joinery workshops remain a dynamic and attractive sector, the size of shops indicate that it is still a craft activity because only 21% of workshops cover a surface area greater than 50 m² (Figure 9) whereas

43% have a surface area lower than or equal to 20 m². The small size of a significant part of these workshops prevents them from storing significant quantities of wood and from carrying out several processing operations that require bulky equipment. These two factors strongly limit the capacity of numerous craftsmen to produce quality furniture because they would need to carry out processing

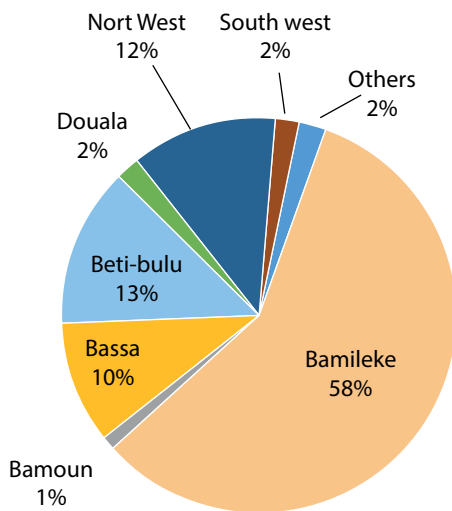


Figure 8. Ethnicity of joinery workshop managers

operations of sawnwood away from their workshops (Embolo Ahanda 2016). JMN (2005) made a similar observation in Yaoundé 12 years ago.

The horizontal integration of this sector is minute, with an active competition in the sale of furniture between the numerous workshops of modest size. Moreover, 82% of the workshops were not a member of a professional association (Ndoh 2016). There were obviously few possibilities

for the joiners to produce furniture in greater quantities, for example in response to government procurement contracts.

The joinery workshops were not only specialized in the production of furniture but also produced frames and upholstery of furniture, or supplied other sectors such as the BPW sector (Figure 10). We counted as many workshops specialized in a single trade as those combining several trades.

Whatever their specializations, these joinery workshops used similar equipment – the manual saw was quoted as the main tool by almost half of the workshops. The electric equipment represented only 22% of declarations, as access to and cost of electricity was a key constraint for many joiners. The equipment lasted on average for 7 years for both electric and manual equipment. Embolo Ahanda (2016) shows that in Douala, the number and the age of equipment used in joinery workshops were among the variables that most directly influenced furniture production. The importance of having access to adequate equipment was confirmed in Yaoundé by Ndoh (2016) who showed that, of the 41% of the joiners who said they were capable of producing similar furniture to the imported furniture, 75% of them could not compete on the final sale prices because of the cost of intermediate consumption of materials.

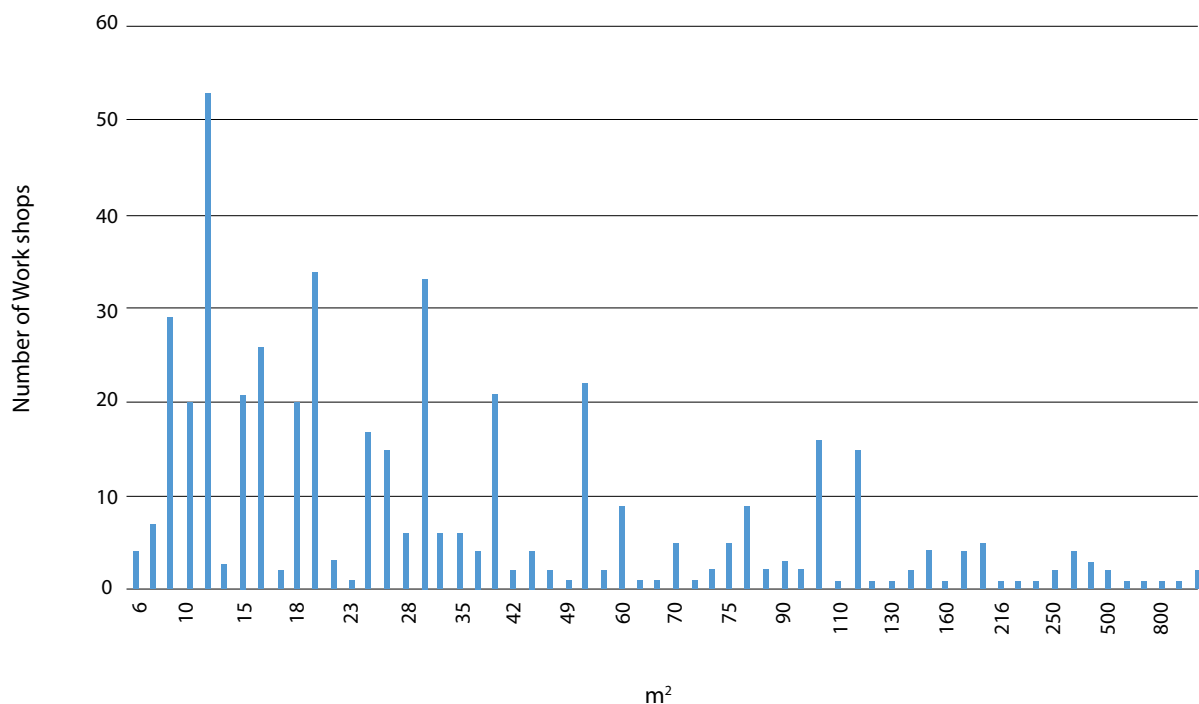


Figure 9. Surface area of the joinery workshops

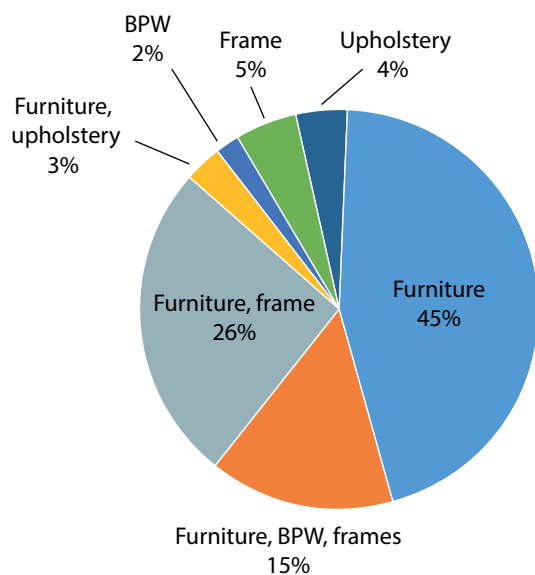


Figure 10. Specialization scenario of the joinery workshops.

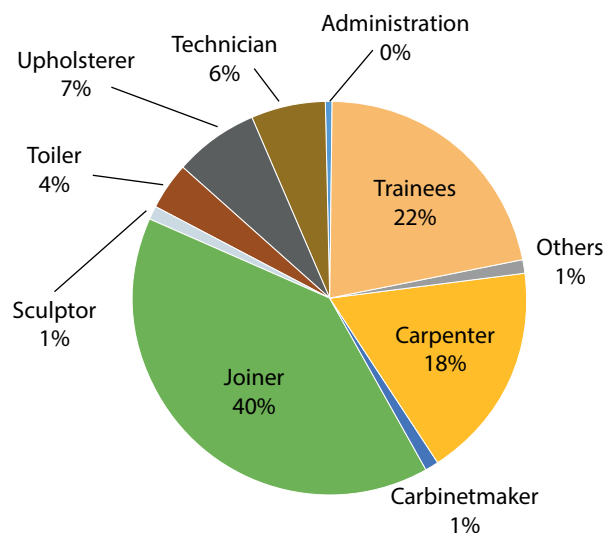


Figure 11. Professions in the joinery workshops

Table 15. Methods of remuneration in the joinery workshops (in persons)

	Man-ager	Appren-tice	Others	Carpen-ter	Cabinet-maker	Joiner	Sculptor	Job-ber	Uphol-sterer	Tech-nician	Total
% sale	3	121	5	352	9	730	10	83	123	105	1541
Motivation by boss		292		1		9			2		304
Salary	6	8	2	7		40		2	13	6	84

The 515 workshops visited offered 1970 direct jobs, or almost 4 jobs per workshop. This was the same ratio as that estimated by JMN (2005) 12 years ago. Only 11% of these jobs were temporary and 3% were part-time; these two variables were often correlated. These temporary part-time jobs were more common with the upholstery makers and the technicians because their skills in many workshops were not required all the time.

Ten professions were represented in these workshops, but the joiners, apprentices and carpenters represent 80% of the workforce (Figure 11).

There were different methods of payment in the sampled joinery workshops (Table 15), but remuneration was usually related to turnover. Few employees benefited from a fixed wage. A large number of the apprentices were paid according to the goodwill of the owner of the workshop, in particular because they were supposed to work in the workshop for free in order to learn the craft.

3.2.2 Products and turnover

The products sold in the 2 months period preceding the survey (i.e. August and September 2015) were examined. For these 2 months, 515 surveyed workshops produced 21,532 items of wooden furniture, corresponding to a timber volume of after the fourth processing of 3644 m³ and a turnover of XAF 1350 billion (Table 16). If we hypothesize that August and September represent normal furniture consumption months, we can estimate the importance of this sector on an annual basis, with approximately 130,000 items of furniture made from a total volume of 22,000 m³ of sawnwood after fourth processing and with sales exceeding XAF 8 billion. In comparison, in 2004, JMN (2005) estimated the annual turnover of all the timber craft processing professions in Yaoundé at XAF 6 billion, with an estimated 40% error margin.

Whatever the considered criterion, three types of products constitute at least a total production of 63% of the sector: cupboards, beds and doors.

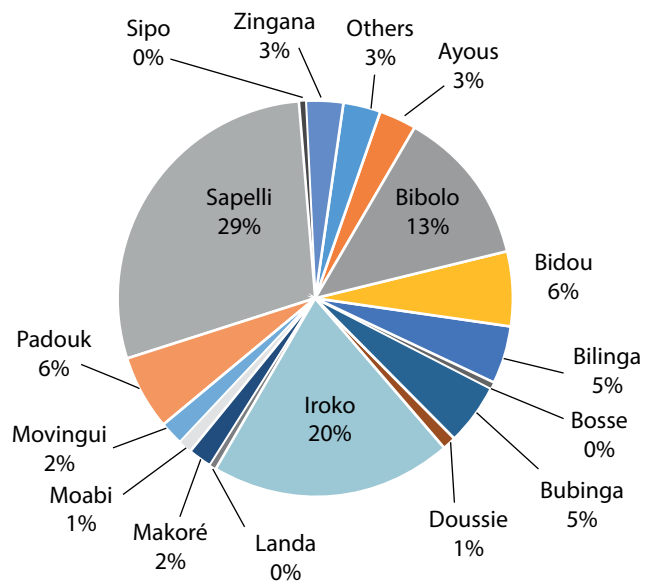
Table 16. Furniture sold by the sampled workshops between August and September 2015

Type of furniture	Number produced	Volume (m ³)	Sales (XAF)
Cabinet	4,476	1,090	416,656,000
Others	193	14	2,885,000
Bench	931	150	16,197,500
Cradle	10	1	525,000
Office	304	57	76,645,000
Coffin	53	11	5,905,000
Chair	2,277	38	34,872,500
Shelf	14	1	565,000
Window	291	15	8,536,000
Paneling	138	3	205,500
Bed	4,032	1,624	275,634,000
Closet	73	14	6,114,000
Placard	266	70	4,170,000
Door	5,068	375	244,458,500
Dining table	116	26	25,870,000
Salon	989	102	192,000,500
Table	2,301	55	39,648,000
Total	21,532	3,644	1,350,887,500

There was a similar concentration of timber species used in producing these items of furniture: out of about 20 species used by the joiners, three species constituted 62% of the volume produced: sapelli, iroko (*Milicia excelsa*) and bibolo (*Lovoa trichilioides*). They were followed by four other species, each representing 5–6% of the total volume. Apart from iroko and bilinga (*Nauclea diderrichii*), all were red wood species, which are highly sought after by the joiners and their customers (Figure 12). We noticed that although the government suspending the logging of bubinga in 2012, it was still commonly found in the joinery workshops and furniture shops/showrooms.

Joiners essentially stocked up on timber of first and second qualities (Figure 13), 89% of which they bought from urban markets. Certain joiners also stocked up with the chainsaw millers from rural areas or from other workshops, but these practices were minor. Because of their need to use good quality timber, very few joiners stocked up on timber scraps from industrial sawmills.

The majority of the customers of joinery workshop were individual purchasers (Figure 14), who placed individualized orders with workshops. This

**Figure 12. Timber species used for the manufacture of furniture (based on volume)**

observation confirms the low capacity of these craftsmen – especially the small-sized workshops – of filling larger furniture orders from the government or from large companies.

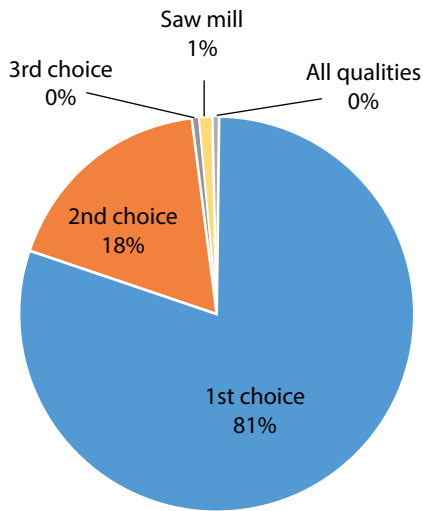


Figure 13. Quality of the timber purchased by carpenters and joiners

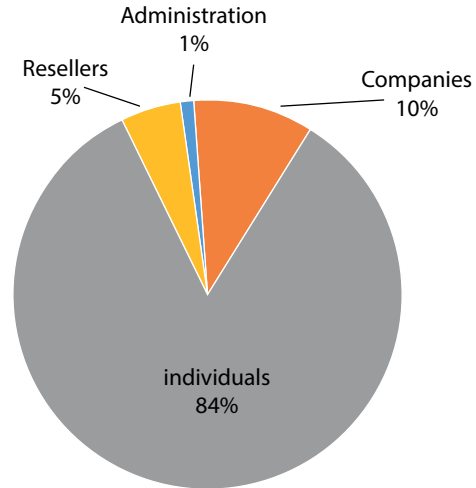


Figure 14. Types of customers for the joinery workshops (based on sales)

3.2.3 Demands for furniture from legal sources

According to interviews carried out with those in charge of joineries, almost all the urban consumers sought the best quality/price ratio for wooden furniture. There was almost a complete lack of interest in buying sawnwood from legal or sustainable sources. Our studies indicate that only 19 joinery workshops (4%) were asked to provide their customers with timber from legal sources during 2015 and this was for orders of a low volume. These demands concerned just 61 products (i.e. 52 doors, 3 sets of chairs, 3 cupboards, 2 wardrobes and 1 dresser) for a total volume of less than 9 m³ of sawnwood.

Several sources were used to prove the legality of the timber used in making this furniture: purchase of the timber either from the industrial sawmill (for 25 doors) or from the Douala seaport (1 cupboard) or logging of the timber from private domains (2 sets of chairs, 1 door, 1 dresser) or from the buffer zone of the government applied to the sawnwood sold in the urban markets (for all the other products). Most of these proofs of legality were weak with regard to the current practices in the forest sector in Cameroon (Cerutti et al. 2013). This general failure to trace and to certify the legality of the chain-sawn wood in Cameroon however has not influenced these customers much, who asked for sawnwood from legal sources as a guarantee the quality of the

wood rather than concerns about their actual legality of production.

In spite of the current absence of demand for sawnwood from legal sources, 47% of the interviewed joiners claimed to be ready to stock up on legal timber but said they were hampered by three constraints: the price of sawnwood from legal sources (73% of responses), the difficulty in getting these products (25% of responses) and the time it took for it to be delivered (2% of responses).

3.3 Sale of wooden furniture in the shops of Yaoundé and Douala

This analysis is based on data collected between November and December 2015 in 166 furniture shops in Yaoundé and Douala.

3.3.1 General features of the shops

The sale of wooden furniture is not a recent activity in Cameroon (Koffi 2005); this activity takes place on roadsides or at storefronts. Most of the sampled shops were in business for the past 8 years. Most of the existing shops were created between 2008 and 2012 (Figure 15), which confirms the dynamism of this sector in recent years.

The distribution histogram of the surface areas of these shops shows two groups, each containing a

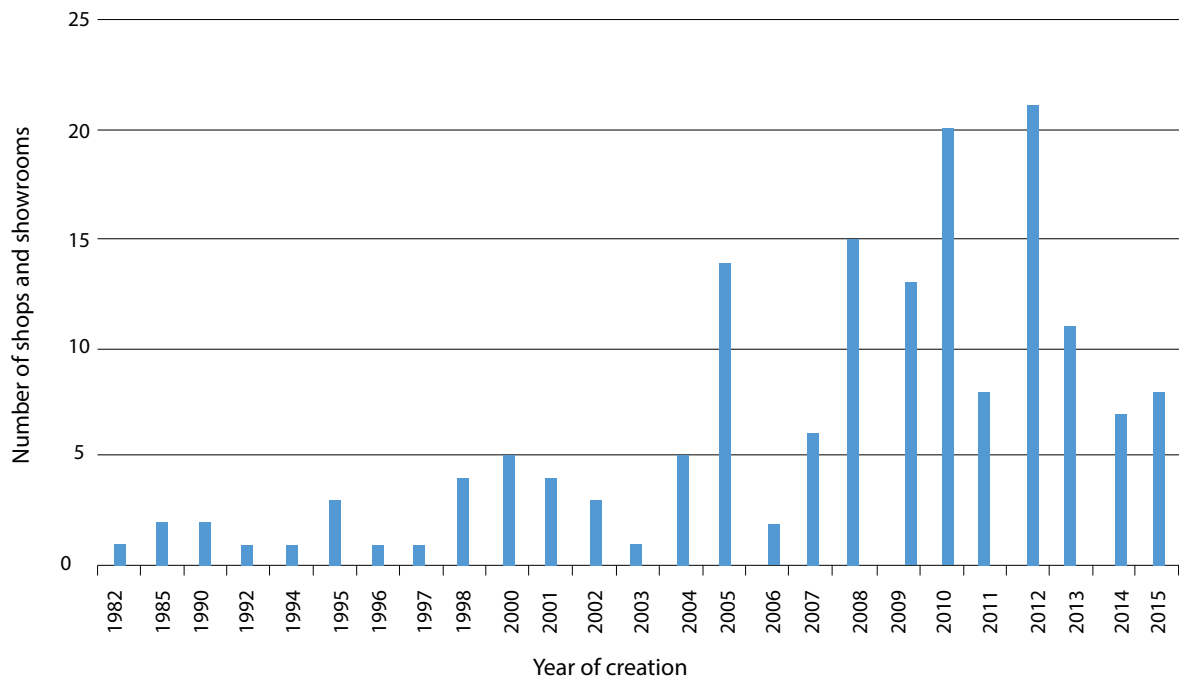


Figure 15. Creation dates of furniture shops and showrooms

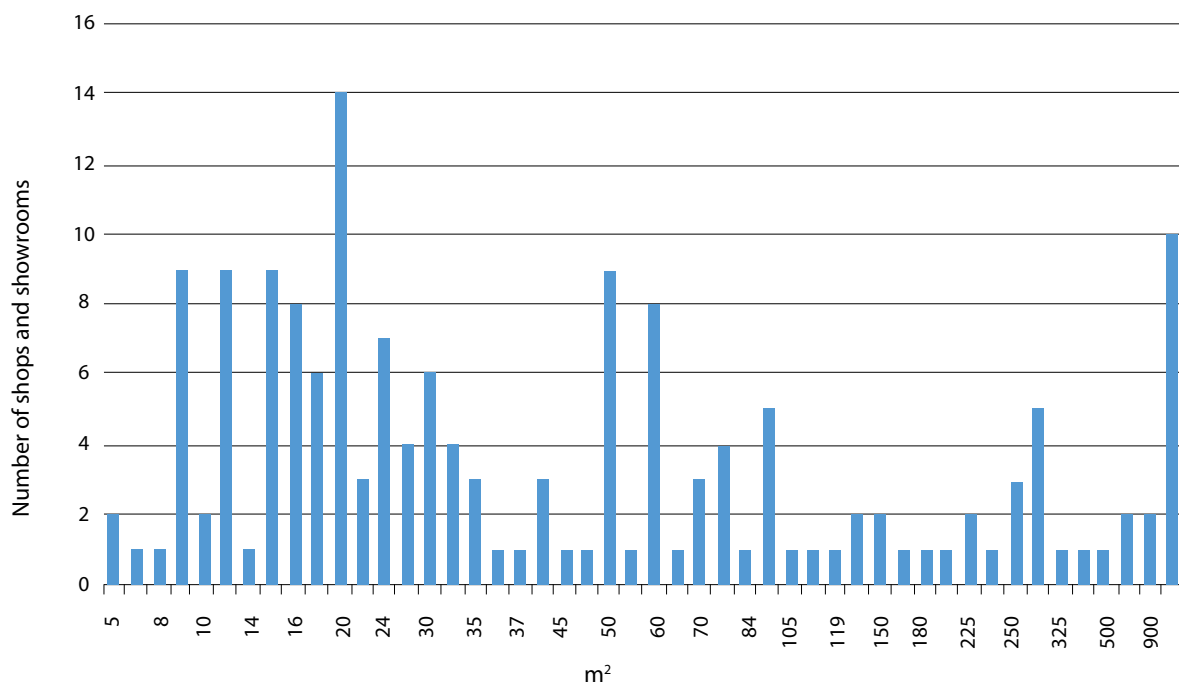


Figure 16. Surface area of furniture shops

similar number of shops (Figure 16). The shops with a surface area of less than or equal to 35 m² were light structures without a permanent structure and whose activity could be easily moved around or suspended for a given period. The main tax paid by these small shops was for the temporary occupation of the public freeway. Their average turnover was XAF 2.9 million per year. The more established shops

benefited from a sales area of greater than 35 m² and were generally located in permanent structures. Their annual turnover was estimated at XAF 4.2 million. They were subject to a greater number of formal taxes, such as VAT. Irrespective of the size and the legal status of these different shops, they all paid the withholding tax to the council areas in which they were located.

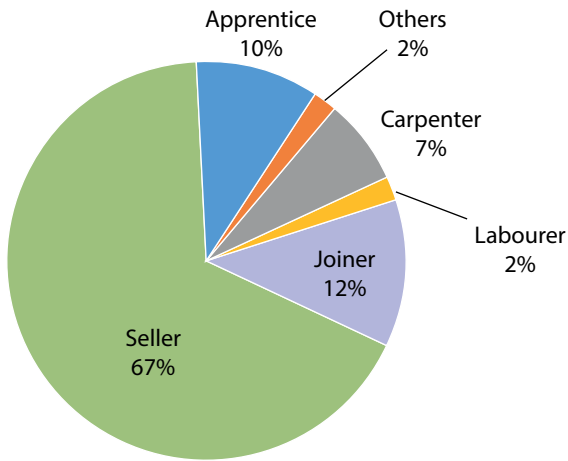


Figure 17. Jobs done in furniture shops

Most of these shops specialized in the sale of wooden furniture, which was their unique (54%) or main (37%) activity. The sale of furniture was a secondary activity – i.e. these sales covered less than 50% of turnover – only for 9% of the sampled shops. Moreover, 36% of the sampled shops and showrooms were connected to a joinery workshop.

In total, three types of furniture shops and showrooms were distinguished:

- very small shops, which focus only on selling locally produced furniture and are not physically attached to a joinery workshop
- small and medium-sized shops, which are often attached to joinery workshops and which only or mainly sell locally produced furniture
- large shops, whose furniture sale is a significant or secondary activity, very few of which are integrated in the upstream furniture manufacture and frequently deal in imported furniture.

The 166 sampled shops and showrooms create 298 jobs, almost all of which were full-time and permanent, giving about 1.8 jobs per shop. The majority of these employees had a selling function but shops and showrooms that also had a furniture manufacturing workshop offered jobs to joiners and apprentices (Figure 17).

There was a roughly equal distribution between the employees on a fixed salary and those who were paid based on the sales made, regardless of the type of job done. Wages varied between XAF 48,000 and XAF 60,000 per month on average, except for the carpenters whose average salary was XAF 75,000.

Unlike the joinery workshops, no employee was paid based on the motivation or goodwill of the owner, which indicated a formalization of the furniture sales sector.

3.3.2 Products sold by shops and showrooms

Quantification of furniture sold by shops and showrooms was done for the period of January to October 2015. For these ten months, the 166 surveyed shops sold 22,282 items of furniture, corresponding to a sawn volume of 5788 m³ and a turnover of XAF 3.33 billion (Table 17). These numbers are to be increased by 16% for annual estimates, assuming that in the months of November and December there are normal purchases of furniture in the shops and showrooms.

The variety of furniture sold in the shops and showrooms was less than that sold in the joinery workshops as the latter also produced frames or supplied the building sector. The bed was the main piece of furniture sold by these shops and showrooms, regardless of the classification criterion. Cupboards and tables were also valued products. The lounge suites also contributed to a significant part of turnover, but they represented only a percentage of the volume of wood used.

A third of the shops and showrooms – especially the small and very small – only sold locally made furniture and 70% of the shops and showrooms also sold imported furniture. Reducing taxes and improving importation procedures that are too complex and costly could develop the sale of imported furniture. Most (77%) of the sampled shop owners thought that it would be possible to replace imported furniture with locally produced furniture, as the high-quality wood and technical expertise were available in Cameroon. But 20% of the shops stated that such substitution would only be possible with a significant improvement in the quality of the products, better knowledge and more efficient equipment. Only a handful of shops and showrooms stated that local production could not match the finishing/quality of imported furniture in Cameroon.

3.3.3 Demands for furniture manufactured with wood from legal origin

Just as in the case of the joinery workshops, the legality of the material used for the production of the furniture sold in the shops and showrooms was not a large concern for most of the buyers in Yaoundé

Table 17. Furniture sold between January and October 2015 by the sampled shops and showrooms

Type of furniture	Number of items of furniture	Volume (m ³)	Turnover (XAF)
Cupboard	4,269	1,119.19	708,944,475
Office desk	323	60.15	109,330,750
Coffin	372	74.40	63,880,000
Chair	2,349	46.00	126,420,834
Other	11	2.82	6,631,750
Bed	6,845	3,411.97	792,607,005
Wardrobe	347	144.93	54,665,000
Door	3,617	267.89	389,415,000
Dining set	162	34.09	77,650,000
Lounge suite	1,873	192.91	877,683,000
Table	2,114	433.63	119,742,500
Total	22,282	5,787.97	3,326,970,314

and of Douala. Since their creations, only 10% of the sampled shops were asked to provide their customers with wood of legal origin. Between January and October 2015, only 78 items of furniture (i.e. 60 tables, 15 doors, 2 lounge sets and 1 bed) were sold by these shops to buyers who were concerned about the legality of the sourced wood. Several reasons motivated people to buy furniture produced from supposedly legal timber sources. For example, in order to ensure the quality of the wood, a company ordered 50 tables from legally sources wood. Two individuals required a document demonstrating the legality of the doors they bought in order to comply with regulations. Finally, a customer wanted to buy a piece of furniture of legal origin as a matter of personal taste. In all cases, the official stamp by the forestry government on sawnwood was used to demonstrate the legality of the timber source.

There were no reported cases of a customer buying a piece of imported furniture to guard against the supposed illegality of the furniture produced by Cameroonian joiners.

3.4 Consumption of sawnwood and wooden furniture in public contracts

3.4.1 Procurement strategy of legal timber by public institutions

The interviews conducted by MINFOF with national and international bodies showed low concern for the origin of the timber used in public contracts (Akagou 2016). No national organization had internal regulations requiring or encouraging the

use of sawnwood of legal origin. It was the same for almost all international organizations surveyed, who said they simply complied with the national legislation in this area. Only the World Bank and the French Development Agency (FDA) had operational guidelines that required the use of timber of legal origin in the projects that they funded. However, tangible and systematic enforcement of these directives was not shown, especially when we recall that in Yaoundé, the World Bank built a new headquarters building in 2011 and FDA renovated its buildings in 2014, very probably using informal timber for formwork and scaffolding.

There is however a few cases of projects where the funder required that the timber used was from a concession (for GIZ) or FSC certified timber (for WWF). These exceptions can be explained by the sensitivity of project managers and not by the institutional will to source only timber of legal origin.

In general, public bodies are positioning themselves as project supervisors or contracting authorities and leave the responsibility for the choice of sawnwood to service providers or foremen. The latter are reluctant to provide information on the quantities and qualities of timber used in government contracts.

Most of the encountered bodies support the idea of putting a regulation in place that encourages or forces the use of sawnwood of legal/sustainable origin in government contracts. Several ministries believe that it would be sufficient to introduce a specific provision in all dossiers of public contract calls to tender. Special technical specifications, requiring the service providers to prove the legal origin of used timber,

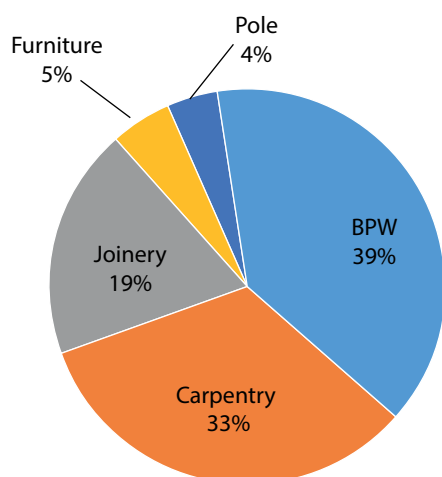


Figure 18. Major uses of sawnwood in public contracts

could be provided before the signing of contracts. This measure would be tantamount to a domestic due diligence which would indicate that at any moment and in any place on the national territory, a service provider should be able to justify the legal origin of the wood he uses or has used.

3.4.2 Estimation of the timber volume used in the Cameroonian Government contracts

Between 20 July 2015 and 9 June 2016, 1029 calls to tender based on timber works were published in the *Journal of the Public Procurement Regulation Agency* (PPRA). These tenders required the building of 2134 construction sites or the renovation of public infrastructure and were mainly in the sectors of BPW, carpentry and joinery (Figure 18).

The construction and renovation of classrooms constituted the major category of these calls to tender (Table 18). The municipalities and/or by the Ministries of Basic Education and Secondary Education funded this work. The Ministry of Territorial Government and Decentralization plays a prominent role in the construction of public buildings that are not under education.

On the basis of public contracts offered by the PPRA and of unit estimates obtained from a sample of entrepreneurs, we evaluated the public demand for sawnwood at about 13,000 m³ per year. This estimate is modest when compared to the total sales in the urban markets, but it is likely that many public contracts – especially the small sized or those proposed by international organizations

Table 18. Volume of sawnwood used in public contracts for 11 months

Type of project	Number of projects	Volume of sawnwood used (m ³)
Construction workshop	23	92
Construction of government building	107	1070
Construction of block latrine	22	22
Construction of shop	108	684
Construction of community hut	49	196
Construction of health center	48	192
Construction of fence	16	64
Construction of regional and divisional delegation	15	90
Construction of central food market/shed	68	995
Construction of council hall/divisional office	14	140
Construction of building	13	1417
Construction of stand-by building	103	618
Construction of market	14	210
Construction of bridge	28	222
Construction of divisional officer's residence	5	50
Construction classrooms	1024	4028
Construction of classroom & furniture	132	1323
Rural electrification	1	36
Office furniture/school	64	234
Government building rehabilitation	59	177
Rehabilitation of shop	24	38
Rehabilitation of community hut	2	4
Rehabilitation of health center	26	52
Rehabilitation of fence	2	4
Rehabilitation of regional/divisional delegation	15	60
Rehabilitation of central food market/shed	1	4
Rehabilitation of council hall/divisional office	12	48
Rehabilitation building	1	4
Rehabilitation of bridge	13	42
Road rehabilitation	10	50
Classrooms rehabilitation	112	224
Highways department	4	7
Total	2134	12 397



Surveys with joiners.

– do not go through the contracts journal. We have also restricted our sample to public contracts with a proven necessity for sawnwood. In all cases, none

of these tenders required the use of sawnwood of legal origin and none of the surveyed entrepreneurs assured the legality of the materials used.

4 Sources of sawnwood of legal origin in Cameroon

There are four sources of sawnwood and furniture of legal origin in the Cameroonian domestic market: CFs, PEBO, industries and imports.

4.1 Community forests (CFs)

4.1.1 Context and wood production by the community forests

The introduction of community forests (CFs) into the legislation was a significant innovation in the Cameroonian forestry sector reforms that took place in the early 1990s. Community forestry introduced participatory management to local communities in order to open up the forestry sector (that had been previously monopolized by multinationals) and restore a form of equity in access to income generated through the development of forest resources.

The approach enshrined in the law of 1994 and subsequent texts was to develop social forestry, i.e. forestry oriented towards the improvement of the well-being of local populations (Bigombe Logo 2004). This approach was part of the overall process of decentralization of forest management. Within the context of Law No. 94/01 of 20 January 1994 establishing the forests and wildlife system, the CF is a space of nonpermanent forest area subject to a convention of management between the government and village community. The management convention is established for a period of 25 years and covers a maximum area of 5000 ha. Resources from the development of the community forest belong to the community and are used in the improvement of the well-being of local populations.

The exploitation of CFs was based on the requirements of a simple management plan (SMP) developed by the populations with technical assistance from the Department of Forestry. Several CF operational procedures have been identified by Decree No. 95/531 of 23 August 1995, giving responsibility to local communities to determine the modalities of the attribution. The legal arsenal relating to community forestry was consolidated by:

(i) Circular Letter No. 0677/LC/MINEF/DF/CFC of 23 February 2001 on the prohibition of industrial exploitation in community forests; (ii) Order No. 0518/MINEF/CAB of 21 December 2001 setting up attribution modalities by giving priority to the indigenous communities for making a community forest; and (iii) Decision No. 1985/D/MINEF/SG/DF/CFC of 26 June 2002, for setting up the exploitation modalities within the framework of the implementation of the CF SMPs. The measure was further expanded by the development of acquisition procedures and management standards manual for the CF adopted in 1998 and revised in 2009.

All these legal texts, which aimed to effectively organize logging in the CF, were complex during their implementation phase and sometimes inadequate in some of their provisions. A joint mission of independent observers and the Ministry of Forests (REM 2007) identified the following constraints to the implementation of both the legal and regulatory frameworks: (i) fraudulent use of bills of lading; (ii) the expensive nature of the attribution procedure and the lack of technical assistance by the government; (iii) exploitation beyond limits; and (iv) poor control activities by local services of the forest government. In addition, Cuny (2011) identified a poor level of control by the communities, a limited capacity of the management bodies and a lack of knowledge of regulation by the different actors. More recently, the confrontation of the practices in CFs to the criteria of legality grids appended to the VPA has shown that no CF fully met the requirements of the agreement; all things that tended to exclude or make the insertion of timber from these spaces in the FLEGT process were difficult (Julve et al. 2013).

The development of community forestry has benefited from the support of technical and financial partners as well as the civil society at the national and international level. The combination of multifaceted support from donors and the civil society has sparked a certain enthusiasm among the populations of forest areas. The first applications for the CF were in 2000, with 82 applications for a total estimated area of 272,935 ha (Djeumo 2001). More than a

Table 19. Evolution in the allocation of community forests from 2010 to 2014

	2010	2011	2012	2013	2014
Cumulative number of applications	477	494	510	539	510
Requested area (thousand ha) (cumulative)	1,502	1,562	1,617	1,684	1,743
Cumulative number of validated SMP	291	299	302	306	320
Cumulative number of final contracts	182	209	262	263	267
Number of ALCs	142	141	151	117	117
Surface in effective management (thousand ha)	497	494	529	410	410

Source: MINFOF

Table 20. Evolution of community forests production from 2010 to 2014

Year	ALC		Production of sawnwood (m ³)		
	Number	Surface area (ha)	Volume authorized by the ALCs	Exploited volume according to the bills of lading	Volume exploitable (under assumption 60 m ³ /CF)
2010	142	21 643,93	139 567	16 412	8 520
2011	141	21 643,93	146 579	31 366	8 460
2012	151	22 337,95	147 106	9 452	9 060
2013	117	17 562,51	119 527	13 529	7 020
2014	117	16 443,54	120 114	32 794	7 020

Source: MINFOF

decade later, applications from communities has progressed significantly and it was estimated to cover approximately 1.7 million ha in 2014 (Table 19). However the number of applications for CF does not have an identical increase in formal activities of community forestry on the ground. Only about half of these applications resulted in a final management contract and only half of these contracts were followed by the issuance of an Annual Logging Certificate (ALC), which officially allows for the exploitation of the resources of the CF.

The increase in the CF surface area does not automatically correspond to an increase in the production of timber (Table 20). This is due to the limited number of ALCs which are issued every year by the government and which allow for the exploitation of timber according to the estimated volumes during the inventories recorded in the SMP. Although the exploitable volume may seem important, it is based on many species that are very difficult to market, although the exploited volume focuses on a dozen of species in the best of cases. The exploited volume – calculated by aggregating the volume of timber transported – at best represents 25% of the theoretically exploitable volume. Moreover, this exploited volume is very often different from the commercially exploitable volume in areas of CF; many publications denounce

the traffic of security documents allowing laundering of timber illegally harvested outside CFs (Lescuyer et al. 2016). In fact, projects that followed up CF for several years showed that it was rare for a CF to legally produce more than 60 m³ of sawnwood per year (Nzoyem et al. 2010; Cuny 2011). We take this average estimate of legal production of sawnwood and apply it to the ALC awarded between 2010 and 2014: over this period, at no time has credible legal production of the CF reached 10,000 m³ of timber per year.

4.1.2 Cost price of sawnwood from community forests

Three approaches were used to estimate the cost of sawnwood produced in Cameroonian CFs under two assumptions: (1) the exploitation met legal standards; and (2) the exploitation of timber resources was done directly by the communities (stewardship).

First, Kana et al. (2015) published a recent estimate of the operational costs of exploitation and transportation of timber in 11 CFs located in South and East regions of Cameroon (Table 21). However their assessment remains partial, because it does not take into account the fixed or transaction costs associated with the functioning of the CF.

Second, we carried out a broader literature review to determine the average costs of production of sawnwood in the CFs. However, the implementation of community forestry is not homogeneous: its implementation and its results depend on many variables that must be simplified for the purposes of economic analysis. For example, we assumed 3440 ha to be the average size of a CF, which was the assigned average size of the CF until 2011. Several assumptions must be made on the development and implementation of CF costs:

- The definition phase of a CF requires several steps (e.g. sensitization, training of the management entity, arranging meetings, demarcation, submission of the CF allocation dossier, signing of the interim management contract) and the cost is estimated at XAF 5 million (Julve et al. 2007; Cuny 2011).
- The development of the SMP costs 1000 F/ha while the implementation of the environmental impact assessment costs about 2000 F/ha (Julve et al. 2007; Cuny 2011).
- The functioning of the management entity costs 8000 F/m³ (Julve et al. 2007).

Similarly, some assumptions are needed to estimate the variable costs of exploiting the trees:

- Preparation of the operation (inventory, demarcation of the blocks, transecting etc.) requires an investment of 10,000 F/m³ (Cuny 2011).
- Real timber production is often very different from the maximum volume outlined in the SMP and retained in the ALC. Nzoyem et al. (2010) noted that the ratio of the volume of harvested timber compared to the volume authorized was

15%. We retain a 20% rate of use of the permitted volume in the ALC or about 180 m³ per year per CF. This roundwood equivalent (RWE) volume allows for an annual production of 60 m³ of sawnwood with a standard processing rate of 30%. Such a rate of production can be reached in 3 months for a team of 12 people or about three full-time jobs generated by each CF.

- White wood constitutes half of sawnwood production and the other half comes from red wood. The logging/sawmilling of red wood costs XAF 90,00/m³ (Julve et al. 2007) and costs XAF 62,000/m³ for white wood (Cuny 2011).
- The sale of timber encompasses various administrative costs (e.g. initialing of the bill of lading and local sales commission) – an average of XAF 2000/m³ (Castadot 2007; Julve et al. 2007).
- Transport costs were not evaluated because of their great variability (Ezzine et al. 2009).

These unit estimates are brought together in Table 21 and applied in the context of a CF operated in an average acreage of 3440 ha and for an annual production of 60 m³ of sawnwood, half of which is of white wood and the other half is of red wood.

Finally, we collected primary data of the fixed and variable costs of sawnwood production in two CFs (COPAL in the Centre region and Nzeng in the East region).

These different estimates of the cost price of locally sawnwood products in the CFs are relatively homogeneous, though those of Kana et al. (2015) are low. Altogether, it appears difficult to produce locally sawnwood for a cost price of less than XAF 100,000/

Table 21. Cost price of 1 m³ of sawnwood produced in a community forest

Annual costs in XAF/m ³	Kana et al. 2015	Literature review	COPAL CF	Nzeng CF
Preliminary studies and allocation		3,333	1,158	2,077
Drawing up a SMP		2,293	8,836	3,077
Environmental impact assessment (EIA)		4,587	0	10,000
Subtotal of fixed costs		10,213	9,994	15,154
Preparation of the operation		10,000	6,575	23,269
Timber harvesting and processing	54,000	76,000	111,609	81,508
Running of management entity		8,000	5,918	
Miscellaneous administrative expenses		2,000	7,014	1,923
Transportation of sawnwood to the market	17,300		17,534	42,308
Subtotal of variable costs	71,300	96,000	148,650	149,008
Total forest gate costs		106,213	141,110	121,854
Total costs price in town			158,644	164,162

m³ when the sale takes place at the roadside. When the timber is transported to urban markets, the average cost is unlikely to be less than XAF 150,000/m³. These two estimates do not include the profit that the chainsaw operator and/or intermediary who will supply timber for the urban traders can hope for.

4.2 Exploitation permit for timber

4.2.1 Characteristics of this exploitation permit

The PEBO is also granted for the nonpermanent forest estate. Under the terms of Decree No. 95/531 of the forestry law, the PEBO is issued to people who are certified logging operators. The duration of the permit may not exceed one calendar year and the logger cannot produce more than 500 m³ of timber or 160 m³ of sawnwood. No maximum area is given but it is rare that a PEBO would cover an area of more than 150 ha. This permit is intended for small-scale timber exploitation. The holders of these titles must pay a felling tax and an annual forest fee. The holder of this title also pays the sawmill entry tax to the Directorate General of Taxation. Such products are destined for the domestic market and can therefore under no circumstances be subject to exportation.

In 1999, the MINFOF decided to suspend the use and the granting of all small-scale titles as they stated they had become a major source of corruption and for illegal forest activities. The suspension remained in effect until 2006, when it was lifted by Circular Letter No. 0131/LC/MINFOF/SG/DF/SDAF/SN of 20 March 2006 on the Procedures for Licensing and Monitoring of the Implementation of Small Forestry Logging Titles. This decision was probably influenced by negotiations between Cameroon and the European Union for the signature of the VPA. Indeed, the agreement initiated in 2010 covers the DTM and endorses the provisions, such as the PEBO, to put the legal production of wood within the reach of small operators.

It was not until May and then November 2012 that the forestry authorities launched two calls to tender on 91 and then 68 PEBO, respectively for a maximum volume of 79,500 m³ of roundwood. Yet, out of the 159 proposed permits, 108 were declared unsuccessful, either due to the lack of a candidate or because of a defect in formality.

4.2.2 Cost price of sawnwood products through the PEBO

To evaluate production costs of wood products in the PEBO – assuming that forestry profession accreditation is obtained – we grouped the expenses into five categories:

The bidding dossier. It consists of 11 documents to file in 10 copies with the MINFOF. The interviewed operators estimated it as costing XAF 1,500,000 for them to complete and file.

Financial bid. The financial bid had a minimum price of XAF 4500/m³ for white wood and XAF 6500/m³ for red wood. The allocation of the PEBO was usually done on the basis of the highest financial bid. In the five cases studied, the average bid for 1 m³ of white wood was XAF 4500 and XAF 8000 for red wood. On average, the average financial bid was about XAF 6000/m³ or a total amount of XAF 3 million per PEBO.

Inventories and demarcations. The demarcation and inventories were the responsibility of the bidder and were validated by the regional delegate of the locality where the permit was found. In our sample, these two operations were executed in a week and triggered expenses of XAF 300,000 for data collection, mapping, writing of the report and of XAF 100,000 for its validation by the forestry authorities.

Costs related to the demands of the neighboring populations and the council. The dues to the neighboring populations were modeled on the sales of standing volumes, where XAF 1000/m³ was usually paid, i.e. XAF 500,000 per PEBO. The council usually imposed a royalty fee of XAF 200/m³ on the timber going out of their council area.

The cost of production and transportation costs of sawnwood could not be estimated as none of the interviewed operators as granted by the PEBO had reached the stage of trees harvesting. These operational costs were probably between XAF 150,000/m³ of sawn timber for community logging (Table 20) and XAF 430,000/m³ borne by industrial companies (Ngouhouo Poufoun et al. 2013). We therefore retain the conservative assumption of XAF 200,000/m³ in the case of the PEBO by semi-industrial companies.

In addition to these start-up and operating costs, the operator usually had to make an estimated margin of around 20% for the industrial timber sector (Eba'a Atyi et al. 2013) that is included in the calculation of the total cost of sawnwood produced by a PEBO (Table 22).

The cost price of a sawnwood produced through the PEBO was high for domestic market prices in Cameroon. This may explain why many PEBO holders are not finally engaged in production, at least for the domestic market. However, similar to the CF, it is likely that security documents issued under the PEBO have been used for other timber destinations. So today, it is very difficult to precisely assess the importance of sawnwood in the DTM from the exercise of the PEBO. For a maximum of 160 m³ of sawnwood produced per title, the 51 PEBOs granted since 2012 would have supplied approximately at most 8000 m³. It is probably a lot less in reality.

4.3 Sawnwood and scraps from the timber industry

The tracking of sawnwood sales in the urban markets of Yaoundé and Douala in 2009–10 has shown that about 150,000 m³ came more or less directly from industrial sawmills. A study conducted by Dubiez et al. (2015) indicates however that very few industrial logging companies are today active in or intend to supply, the domestic market. Only a few semi-industrial companies (e.g. LFM, Bofor Sarl and Cush Compagnie Cameroun) market up to 25% of their products on the local market. These sales are still centered on white wood of non-exportable quality and consequently, are small in terms of volume and turnover. Among the companies encountered during

this study, only Cush stated that they would like to increase the value of secondary white wood (as frake) on the local market by offering reasonably priced furniture.

The lack of enthusiasm by the industrial and semi-industrial enterprises for the Cameroonian DTM does not clearly explain the significant volume of sawnwood of industrial origin found in the urban markets. As in the Democratic Republic of the Congo (Chevignon et al. 2016), this misalignment lies in the lack of follow-up of a large number of timber scrap by the industrial companies, which ends up in the urban markets. Such a transfer of sawnwood from the waste of industrial sawmills to urban markets relies on internal and external networks of the companies that have never been documented.

Three reasons for not positioning their formal sawnwood production in the domestic market are generally given by companies. First, the very competitive timber sold in urban markets is produced informally and so, their prices do not include the cost of sustainable forest management borne by formal enterprises. However, this constraint is less true for semi-industrial operators who use timber permits without the need for sustainable forest management.

Second, timber companies produce some export quality sawnwood that involves a cost of production, which is higher than that of wild sawnwood, which is offered mainly in urban markets or used by carpenters.

Finally, today, there is a very low demand for legal and quality but much higher priced timber. Even for non-exportable sawnwood (due to the low quality

Table 22. Cost price of sawnwood produced by a PEBO (in XAF)

Elements of cost price	Total amount (XAF) for 160 m ³ of sawnwood	Cost/m ³ sawnwood (XAF)
Bidding dossier	1,500,000	9,375
Financial bid	3,000,000	18,750
Validated inventories and demarcations	400,000	2,500
Neighboring populations and the council	600,000	3,750
Production cost	32,000,000	200,000
Cost price	37,500,000	234,375
Normal margin (20%)	7,500,000	46,875
Sales price	45,000,000	281,250

of the product or timber species that is unknown in the international market), industrial timber prices are 30% to 50% higher than those offered on the domestic market. In addition to the higher prices of their sawnwood, industries appear not ready to sell small amounts of timber to their customers as they are primarily structured to provide large amounts of timber for export. These two constraints of price and quantity today explain the fact that the government, international companies and even semi-industrial joinery workshops buy sawnwood from timber industries on a regular basis. Similarly, despite various attempts for its promotion in Central Africa, the market of timber-structured houses did not take off in Cameroon (SOREPS 2012).

With the increase in the population of Central Africa and the uncertainty about Asian and European imports, the marketing of timber on the local market will be a key challenge for the Cameroonian industry. This strategic choice is perhaps not so hard to carry out, because some small-sized products (e.g. plywood, slats, floorboards) can only be produced by industrial means. Also, many companies already supply domestic markets with their scrap timber without their knowing and the MINFOF and its partners support a greater involvement of the industrial sector in the DTM. Unlike exports that require the constitution of large stocks of timber and the long-term payment of the invoices, sales on the local market could enable many companies to speedily realize cash flows, which would help

to resolve the recurring problems of liquidity in these societies.

In the future however, the development of the DTM for the industrial companies of Cameroon should be achieved primarily through an enhanced upgrading to quality and legal origin products. Mandatory regulations on the legality of the timber used in public contracts, tax incentives or the development of corporate social and environmental responsibility strategies for big private companies would be important levers.

4.4 Imports of wooden furniture

According to Foleu (2008), during the period 2004–08, the turnover from the sale of the furniture went from 7.7 billion to 16 billion, i.e. an annual increase of 20%, with about 40% being satisfied by furniture importation. This upward trend continued in recent years as according to the statistics of the NIS (2015) the importation of household and medical furniture rose from XAF 15 billion in 2010 to 26.4 billion in 2014. However, wooden furniture represents only a quarter of those imports, with a value of 5.3 billion in 2015. These imports have doubled since 2007 and are mainly supplied in Cameroon by Asian and European countries (Figure 19).

Embolo Ahanda (2016) studied the factors that explained the choice of buying imported furniture

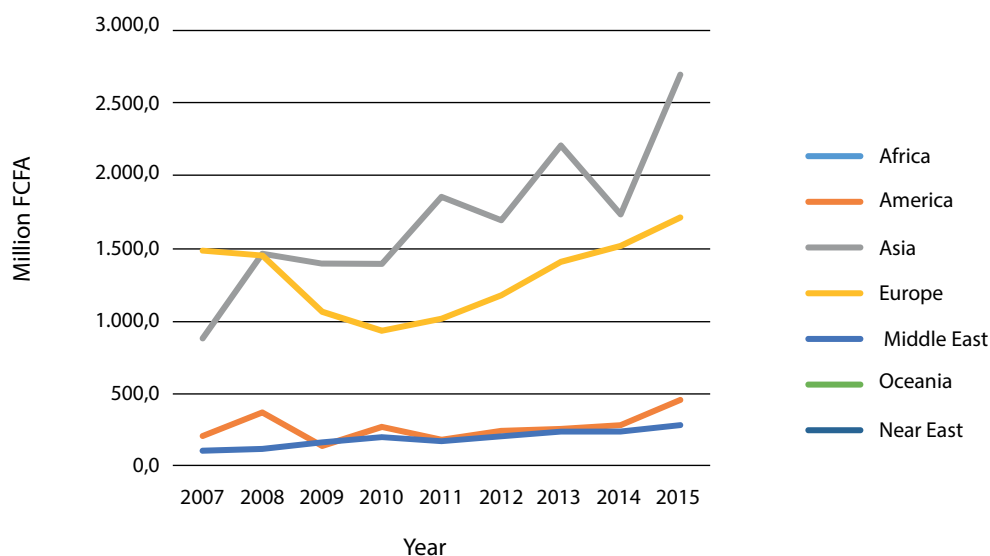


Figure 19. Importation of wooden furniture in Cameroon (in million XAF)

Table 23. Regression results and the estimation of the marginal effects

Variables	Coefficients	Standard error	t-statistic	Probability	Marginal effects (dy/dx)
Age of client	1.1348	0.0926	1.55	0.121	0.0127
Favorable period	8.6883	13.5781	1.38	0.167	0.2180
Homeowner	3.3639	3.4514	1.18	0.237	0.1223
Income of client	1.7831	0.5926	1.74	0.082**	0.0583
Sex of client	19.5340	25.3021	2.29	0.022*	0.2996
Marital status	58.6963	100.5575	2.38	0.017*	0.4106
Household size	0.3501	0.1551	-2.37	0.018*	-0.1058
Safety of furniture	0.0410	0.0820	-1.6	0.11	-0.3219
Stability of furniture	145.0327	314.0058	2.3	0.022*	0.5018
Comfort of furniture	10.8099	15.2585	1.69	0.092**	0.2400
Durability of furniture	4.5407	0.0001	-0.01	0.994	-1.9370
Longevity of furniture	1.4307	3.631	0.01	0.995	1.6609
Elegance of furniture	1.8742	1.7487	0.67	0.501	0.0633

(* indicates that the variable has a significant effect on the threshold of 5%; * indicates a significant effect on the threshold of 10%)



Measurement of the unit volume of a closet.

by consumers in Douala, on the basis of a survey of 100 sampled clients. Several factors that influenced the socioeconomic characteristics of buyers and the characteristics of imported furniture were considered. A set of chairs was selected as a representative piece of furniture of this category of goods. A logit model was

used to identify the influential variables and the type of influence they had on the buying decision.

The overall significance of this logit model is proven because it gets satisfactory results in the LR-statistical test based on the likelihood ratio (the probability of

the LR statistic is 0.0000 which is less than 0.05) and the Hosmer-Lemeshow analysis of the quality of the adjustment (0.755, which is well above the threshold of 0.05 – the probability for the HL statistic to the 5% threshold) (Table 23). Finally, the explanatory power of the model is shown by the value of R^2 of McFadden at 0.5033. The overall significance of the model indicates that this set of variables has an effect on demand for imported wooden furniture in Douala.

However the individual significance test of these different variables shows that only the comfort and stability of furniture, income, sex, marital

status and the size of the buyer's household, could explain the decision to buy the imported sets of chairs. The sign (positive/negative) of the marginal effect parameter shows the type of influence for each of these variables. In our case, only the size of the household negatively and significantly influenced choice. The purchase decision of an imported set of chairs was often made by married men who had a few dependent people in their care and with a certain income who is focused on comfort and strong furniture. This type of client and product must be targeted for future action in order to replace imported furniture with locally produced furniture.

5 Discussion – Current and future situation of sawnwood of legal origin

Compiling data on supply and demand of sawnwood and furniture makes it possible to establish the current panorama of this sector in Cameroon. Figure 20 represents the main exchange channels required to meet the private and public demands of these products.

This sector has been dynamic for at least a decade but this rise is problematic for the sustainable management of forest resources and for the green economic growth of Cameroon. On one hand, the products from informal sources are dominant in these exchanges and the industrial or legal sawnwood operators turned away from this market for reasons of competitiveness. On the other hand, the private and public demands for these products are less sensitive to their legal sources, which is what maintains the upstream informal practices

in the sector. Finally, the importation of wooden furniture in recent years has grown at an impressive rate, indicating the loss of competitiveness of the national producers. Several options to respond to these difficulties are envisaged, which entail a modification of the supplies of sawnwood/furniture and changing demands.

5.1 Support national supply of chain-sawnwood of legal origin

Informal production and importation are the two main supply sources of sawnwood and furniture in the Cameroonian market today. As shown in Table 24, the urban markets meet the demand for the BPW and the joinery sectors and are widely supplied by sawnwood of informal origin, even

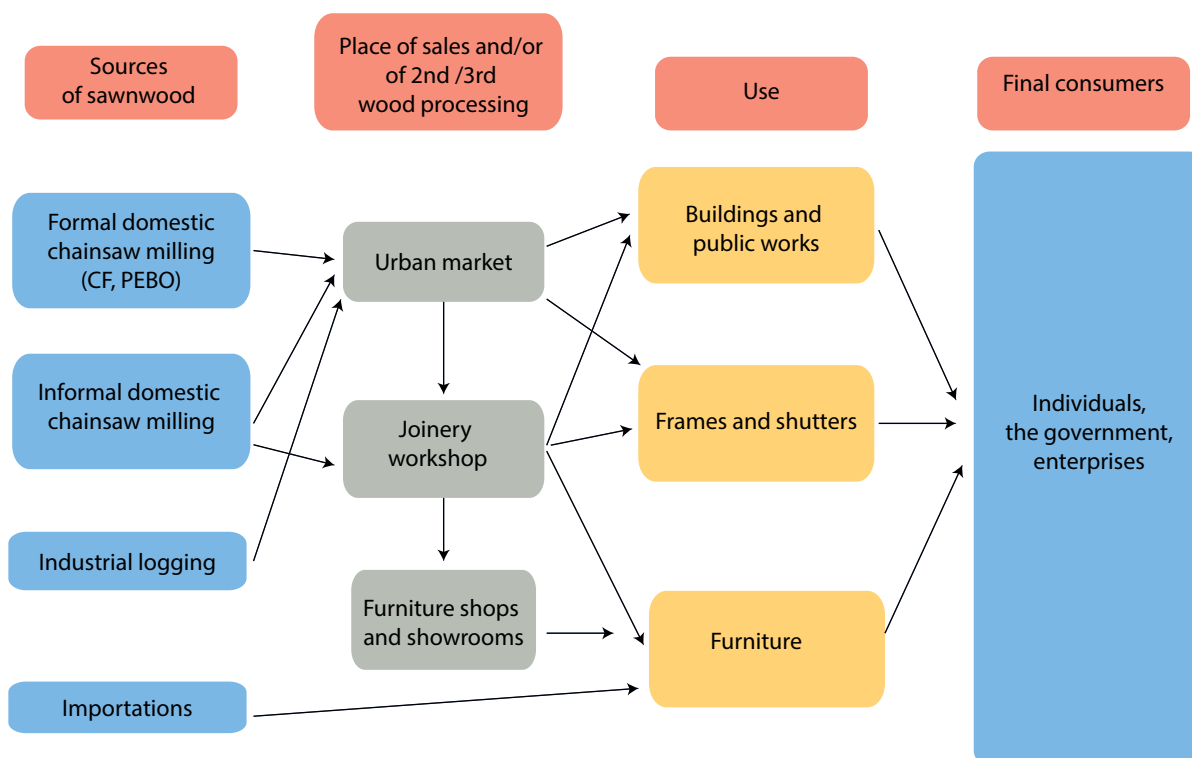


Figure 20. Real flows of supply for domestic demands for sawnwood and furniture

Table 24. Estimated annual supply of sawnwood and furniture in Yaoundé and Douala

	Sciages				Meubles		
	CF (2012)	PEBO (2012)	Industry (2010)	Informal (2010)	Joiners (2015 sample)	Shops (2015 sample)	Importation (stats customs 2015)
Volume charged (m ³)	9,060	8,000	144,156	668,354	22,000	6,946	10,600
Market rendered cost (XAF/m ³)	150,000	281,250		80,993			
Sales (million XAF)	1,359	2,250		49,647	8,000	3,992	5,300

when the highest estimations of flows from the CF, from PEBO and from the industry are considered.

Also, national production of furniture today undergoes real competition due to importation of wooden furniture, which is sold directly by joineries and/or indirectly in specialized shops. Based on our studies in Yaoundé and at Douala, two major reasons prevent us from estimating the annual turnover of national furniture production. On the one hand, we do not know the total number of joinery workshops and furniture shops in the two cities, which made it difficult for us to extrapolate our sampled data. On the other hand, there is a risk of double counting the furniture sold by joinery workshops to the furniture shops. Nevertheless, on the basis of the data collected in both cities and from the information from customs, we note that imported furniture represents a significant part of this market, which has been growing for a decade.

Thus, national production of artisanal sawnwood faces a double challenge: replacing the timber from informal sources with timber from legal sources; and replacing imports with homemade wooden furniture. Cameroonian legislation considers two possibilities when it comes to producing and selling chain-sawnwood on its domestic market: logging from a CF or the implementation of a PEBO. In both cases, it is necessary to find measures to decrease the cost price of these products.

CFs are the main option for legal chain-sawnwood production, given their precedence and potential scale. Several options could allow for the decrease of production costs of sawnwood from the CFs:

- Reduce the administrative costs of CF allocation. Since 2005, these forests are subjected to the requirement for an environmental impact assessment (EIA). According to the literature, an EIA costs between XAF 6 and 13 million. In addition there are administrative costs. According

to the Decree of 2013, the scrutiny of the terms of reference by the government is estimated at XAF 1,500,000 whereas the inspection of the impact assessment itself is fixed at XAF 3 million. The 2 February 2016 Order defining the model of the terms of reference and the contents of the environmental impact notice should allow for a substantial reduction in the administrative costs. Article 2 for this purpose specifies that “the environmental impact notice is defined as the report drawn up with respect to small sized projects or facilities/installations which are not subjected to an environmental and social impact assessment, or an environmental and social impact audit, but which could have non-negligible effects on the environment.”

- Article 10 mentions the CF on the list of projects subjected to an environmental impact notice. The new order reduces the administrative costs of EIA from XAF 4,500,000 to 150,000. Furthermore, the decentralization of the environmental impact notice at the municipality level also ought to decrease the transaction costs.
- Favor the logging inventories: according to Julve et al. (2007), logging inventories are considered to be relevant because they are relatively inexpensive and concentrate only on species with a proven commercial potential. On the contrary, the management inventories are used only to a very small extent in the elaboration of the SMP. Furthermore, analyses of the reconstitution rates would appear unnecessary for surface areas as small as the CFs because these analyses are only relevant for surface areas above 2000 ha according to Durrieu de Madron (2004). In terms of costs, if we consider that the management inventory costs between XAF 600 and 800/ha, abandoning this activity would result in a gain of XAF 2,752,000 for a forest with an approximate surface area of 3440 ha.
- Simplify the procedure for obtaining the ALC: CF managers are today required to deal with

the forestry government from the central to the decentralized levels before this authorization is granted. At each level, some documents must be obtained in exchange for informal payments that lead to additional cost burdens on the local communities.

- Improve governance of the sector: the informal payments along the roads are also to be taken into account when it comes to decreasing the production costs of the CF. Since the transportation circuit is long, these operators have to deal with a significant level of control over the main highways. In one of the forests in the sample, these levies came up to 50% of the transportation cost.

The PEBO is the second option for legal sawnwood production but it also presents significant difficulties that considerably increase the cost of its execution:

- The requirement for the applicant for a PEBO to be accredited as a professional forester seems unsuitable when a PEBO is concerned with chainsaw milling. Several operators were obliged to rent accreditations or to associate with those accredited in their submission in order to bid, so this contributes to increasing the costs of starting up and discourages the smaller operators. This requirement should be extensively lightened or entirely nullified in the drafting of future forest laws.
- The PEBO is often likened to the sale of a standing volume permit, both by the government which grants them through calls for tender on the basis of the most competitive financial proposal and by local populations who demand substantial financial compensation due to the depletion of their trees in the nonpermanent forest domain. Yet, the PEBO is meant to be used by a small-scale entrepreneur for a moderate volume of sawnwood; they do not generally have the funds to carry out such expenditure. Thus it would be necessary to redefine a fiscal policy adapted to the financial capacities of small-scale entrepreneurs and to recognize the ownership of trees in the nonpermanent forest domain so as to reduce transaction costs between the holders of PEBOs and the customary owners of the trees to be cut (Lescuyer et al. 2013).
- The PEBOs are put up for auction without either having been delineated or inventoried; the bidders (often unqualified) pay for these activities. The decentralized forest government could carry out a fast inventory of the available resources and indicate their estimates when calling for tenders

rather than the PEBO holders asking service providers to undertake these tasks for them. In the current system, certain bidders found themselves in areas where there were no exploitable trees, after they had signed contracts with consultancy firms to carry out inventories and demarcations. There is therefore much temptation for the PEBO holders to use the secure administrative documents in an illegal way so as to make up for the expenditure already made.

- Finally, it would be appropriate to regularize the PEBO calls for tender so that the operators and the government learn to manage this title in a reasoned and reasonable way. In 2012, the two PEBO tender calls resulted in the government setting floor rates comparable to those applied to industrial operators, while the operators made financial offers that were completely disconnected from the prices of sawnwood on the urban markets. These diverse speculations misfired because most of the PEBOs were not executed due to the lack of financial profitability.

The impact of these technical measures in reducing the acquisition and implementation costs of these two methods of chain-sawn wood production is difficult to quantify, unless a more complete socioeconomic database on these types of permits is established. However, in spite of such efforts to achieve simplification, it is unlikely that the cost price of sawnwood of legal origin would adequately decrease to a level equal to the wild sawnwood that flood the urban markets today.

But substituting sawnwood of informal origin with legal sawnwood remains a secondary preoccupation for the majority of sawnwood or furniture sellers, especially with regard to the competition the wooden furniture sector undergoes as a result of importation. In fact for the last decade, the joinery workshop subsector has known little progress qualitatively and has lost its market shares to imported furniture from Asia and Europe. As demonstrated by Embolo Ahanda (2016) for the consumers of Douala, it is the attributes of imported furniture – mainly the comfort and stability – that justify the choice of the buyers, as price is not a decision-making variable in imported furniture consumption.

The difficulty of producing quality furniture reveals the lack of adequate equipment and training for the great majority of Cameroonian joiners. Ndoh (2016) highlights a correlation between the public policies of Cameroon in the past 10 years that encourage

more elaborate timber processing methods, and a certain improvement of equipment used by the joiners; but these measures do not seem to have been effective enough to avoid the technological gap faced by the joiners. Access to large equipment for drying and processing is problematic for numerous joiners, although this is a variable that strongly influences the level and the quality of production (Embolo Ahanda 2016). The grouping of joiners into clusters, as introduced by the World Bank Competitiveness of Growth Sectors project, should at least partially overcome this lapse. This initiative should also encourage craftsmen to form federations so as to be in a better position to meet large volume orders. Such measures are also supported by a new national program of support for the processing of forest products, which was launched at the beginning of 2015 in Yaoundé. It is hoped that, apart from its technical support, this public policy will build the marketing capacities of joiners and tackle the currently unresolved problem of illegal origin of the sawnwood used by them.

5.2 Promotion of the emergence of demands for sawnwood of legal origin

Whatever the sector (BPW, frame, furniture), there is currently a significant and increasing demand for sawnwood on the Cameroonian domestic market. Private buyers and entrepreneurs account for the bulk of the sales because the listed procurement contracts consume only approximately 13,000 m³ of sawnwood a year. However the State remains the highest buyer in terms of timber volume and value on the domestic market.

While the volumes of sawnwood bought by Cameroonian consumers increased in the past decade, consumers' tastes have evolved very little. The products bought and the timber species used are the same as those described by JMN (2005) in the early 2000s. This long-term trend unfortunately strengthens selective logging of the timber resources. The 'promotional' species remain little known by both craftsmen at the technological level and by clientele from the potential products viewpoint. Worse still, the new demands of quality wooden furniture by the elite urban classes are currently widely satisfied by imported European and Asian products.

Finally, private and public demands remain insensitive to the legal origin of sawnwood. The

finding is identical to that of JMN (2005) and highlights the influence of general public discussions and the attempts of implementing the VPA in Cameroon. The few customers who require products of legal origin do so to guarantee the quality of the furniture they buy, convinced of the advantages of good quality (i.e. well-sawn, well-seasoned) wood.

Due to the very low level of demand for wood products of legal origin, the current supply of legally sourced sawnwood – by the CF, the PEBO or the industries – are sufficient in volume to satisfy demand. However, the major issue is to determine the conditions of a transformation of the current demands of wild sawnwood into future demand for sawnwood of legal origin. From this point of view, the study of the elasticities of private demands offers three interesting perspectives:

- The medium-term increase in the consumers' income levels will cause an increase in the purchases of sawnwood. It will also increase buyers' propensity to acquire sawnwood of legal origin. According to our survey, a 20% increase in the buyers' income in a 5-year horizon would lead to 15% of the customers acquiring sawnwood of legal origin.
- Half of the interviewed buyers would agree to pay 10% more than current prices to make sure that the sawnwood is of legal origin. The acceptance to pay a higher price varies according to the profession but is particularly noticeable with carpenters, technicians and traders. Also, the acceptance to pay a higher price varies according to timber species; it is in particular significant for three species of red wood (used in the manufacture of high-quality furniture) and two species of white wood (used for BPW and of modest price today).
- Buyers in the urban markets could tolerate a 45% increase in current sawnwood prices before substituting these products with alternative materials, the latter often being lower quality sawnwood.

These results demonstrate that the majority of private consumers in the urban markets are willing to modify their current and future purchase practices of sawnwood. A modest increase in sawnwood prices as a result of legalization could already be accepted by a small section of consumers, which will only grow as their income increases. A price increase of chain-sawn wood will have no major impact on the level of demand because of the relative absence of substitute products. This possibility should allow for

an improvement in the quality of sawnwood without a significant decrease in private demand. Beyond this general observation, certain market niches in terms of products, profiles of consumers and species can be targeted to encourage such evolutions in the short term.

The public demand for sawnwood can equally evolve towards more legality. Most of the public agencies and governments we contacted expressed an interest in imposing a constraint on the supply of timber from informal sources, even if today, none of them

put this into practice in any significant way. Most stated that they would support a decision from the prime ministry to impose this constraint on all the governments. Nothing however would prevent a ministry from taking such a measure now, which would only strengthens the scope of the legality of its activities. Such a decision taken by both Ministries of Education, for example, would create a leverage (and symbolic) effect because they represent more than half of the volume of timber used in procurement contracts published by the PPRA.

6 Conclusion – What long-term convergence of demand and supply of artisanal sawnwood of legal origin?

The inclusion of the domestic timber market in the VPA signed by Cameroon requires a long-term legalization process for the products sold to Cameroonian consumers. Yet, the internal market today is dominated by sawnwood of informal origin. There are two major obstacles to the emergence of a legal sawnwood domestic market in Cameroon today. The acceptance by buyers of a sawnwood price rise as a result of their legalization will not be sufficient to cover the current cost prices of sawnwood of legal origin from the CFs, the PEBO or the industries. The maximum production of chain-sawn wood of legal origin would meet the needs of only a small proportion of consumers. The legalization of the DTM thus faces a double constraint of price and volume.

Reducing the production cost of legally sourced sawnwood bound for the domestic market is the approach most often quoted by the MINFOF. However, this policy, which was aimed at supporting supply, is difficult to implement because of the compliance costs of the PEBO, the bad governance that blights the CF and the low interest of the

industry in the DTM. The only success in the supply of timber products to Cameroonian consumers came from the increasing the levels of importation of furniture, but this goes against the public policy led by the MINFOF to improve on the third and fourth stage processing of timber. Support for national providers of legally sourced sawnwood will take time to become effective, given the volumes that have to be supplied to the urban buyers and the weak current competitiveness of these products.

A complementary approach could be promoted, i.e. supporting the private and government demands for sawnwood of legal origin. Our studies show that certain consumers are willing to pay more in order to acquire legal products. Furthermore, the expected medium-term increase in the income of the middle classes will strengthen this trend. Niche markets have already been identified to initiate the process of legalization. Finally, the Cameroonian government approves of supplying legally sourced sawnwood for all government contracts, which could also have a symbolic effect on the general public while having a significant leveraging effect on the economy.

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Annex I. Questionnaire for buyers of sawnwood in the urban markets of Yaoundé and Douala

Date:

Place of survey:

Name of enumerator:

Introduction to the survey

Today, the sale of timber is a dynamic activity as it meets the needs of many urban consumers. However, most of the timber sold in markets is not produced in a sustainable way and tends to deplete the forest resource. We have to get further and further into the forest in order to get trees for small-scale chainsaw milling.

Making this activity legal and sustainable is likely to result in an increase in the prices of sawnwood in the markets. The purpose of this survey is to find out to what extent you would agree or not agree to pay more expensively for sawnwood sold in urban markets to ensure that it was produced legally and sustainably.

This survey is conducted in collaboration with the MINFOF, but no personal information will be transmitted to the public authorities. The information that you give us is strictly confidential.

The MINFOF and actors in this sector are thinking about the future of this activity in Cameroon. The purpose of this survey is to take into account the views of buyers, who would otherwise be ignored.

The questionnaire takes approximately 30 minutes to complete. Do you agree to give answers our questions?

Socioeconomic characteristics of the respondent

Name of the respondent:	
Sex:	Age :
Profession:	Employment status: 1. Salaried; 2. informal; 3. unemployed
Level of education:	Region of origin:
Marital status:	Number of people living in the household:
Monthly income: (XAF) 1. Less than 62,000 2. 62–155,000 3. 155–310,000 4. More than 310,000	Number of sawnwood purchases in the last 2 months:
Location of residence (quarter):	House ownership:

Characteristics of the purchase (what are the characteristics of the product you have just bought?)

	Product
Product (and dimensions)	
Wood type	
Quality of sawnwood	1st choice - 2nd choice - 3rd choice -Others:
Number of pieces	
Total price	
Product use	
Geographical origin of product	
Legal or informal product?	

Assessment of the price elasticity of demand

Currently the local market in Cameroon is supplied mainly by small-scale chainsaw milling products that were usually harvested without a permit. This results in a significant risk of a reduction in the number of tree species that are harvested today and a strong increase in the price of these products in the medium and long term.

To deal with this risk, small-scale chainsaw milling product operators plan to legalize their activity, particularly through the acquisition of operating permits. This approach would ensure the sustainability of the resource, which is now being exploited and the legality of the sector, but would increase the price of the products of small-scale chainsaw milling in the markets.

Based on the product you have purchased, what would be the maximum increase of price you would be willing to accept to be sure the timber is produced in a legal and sustainable way?

We remind you that the money you would spend to deal with the increase in the price of timber would limit your possibilities for other expenses.

Maximum consent to pay (with respect to the total volume of the last product purchased)	
Reasons for the null WTP:	

From what maximum price would you rather replace the timber that you just bought with other substitutes?

Type of sawnwood purchased	Maximum price of sawnwood before substituting it with other products	Substitutes

Assessment of income elasticity of demand

Economic projections in the medium- and long-term for Cameroon indicate the emergence of a middle class and the development of a higher class, whose purchasing power will increase significantly. Therefore, we would like to know how the likely increase in your income in the next 5 years would affect your purchases of sawnwood in urban markets.

Income increase of 20%		I would change neither the quantity nor the quality of sawnwood I would buy
		I would buy the same quality of sawnwood, but I would vary by ____% the quantity I would buy
		I would buy the same quantity of sawnwood, but I would increase the quality I would buy
		I would buy the same quantity and quality of sawnwood, but I would buy it from legal and sustainable sources
		I would stop buying sawnwood and I would replace it with other products:

Income increase of 50		I would change neither the quantity nor the quality of sawnwood I would buy
		I would buy the same quality of sawnwood, but I would vary by ____% the quantity I would buy
		I would buy the same quantity of sawnwood, but I would increase the quality I would buy
		I would buy the same quantity and quality of sawnwood, but I would buy it from legal and sustainable sources
		I would stop buying sawnwood and I would replace it with other products:

Income increase of 100%		I would change neither the quantity nor the quality of sawnwood I would buy
		I would buy the same quality of sawnwood, but I would vary by ____% the quantity I would buy
		I would buy the same quantity of sawnwood, but I would increase the quality I would buy
		I would buy the same quantity and quality of sawnwood, but I would buy it from legal and sustainable sources
		I would stop buying sawnwood and I would replace it with other products:

Thank you for your participation in this survey.

Do you have a final comment or one last question about this work?

For more information, please contact the coordinator of this study: Mr Edouard Essiane Mendoula, researcher at CIFOR, Nkolbisson, Yaoundé

Tel: 696 50 32 14; email: e.essiane@cgiar.org

Annex II. Questionnaire for joinery workshop managers

Enumerator:

Date:

Activity sheet of joiners and carpenters

Town:

District:

Neighborhood:

GPS location:

Name of owner:

Age of owner:

Ethnicity:

Creation date of workshop:

Surface area of workshop:

Working days and hours:

Membership in a professional association (formal or informal): :

- Active employees in the workshop

Type of work	Number	Permanent/Temporary	Full/part time	Method of remuneration

- What are the specialties of your production and their percentages in your overall activity?
 - Furniture
 - Construction and public works (carpentry, scaffolding, palisade,...)
 - Frames (doors, windows, moldings, mantels...)
 - Other (describe):

- What steps of wood processing are completed outside of your workshop?
- Key equipment used in the workshop

Equipment	Purchase date	Origin	Products

- What were the products manufactured and sold by the workshop in August and September 2015?

Product	Wood material used	Quality of wood material	Source of wood material	Wood species	Number of products sold	Price of product	Main buyers

- Are there demands for products from legal sources?

Product	Type of buyer	Motivation(s) of buyer	Number of products sold in 2015	Source of the wood

- How do you explain the current state of demand for legal timber products?
- What are the constraints to legal wood materials access?
- How will activity in the sector evolve in the next 5 years?
- How will activity in the joinery workshop evolve in the next 5 years
- Final comment?

Annexe III. Questionnaire for managers of shops selling wooden furniture

Enumerator:

Date:

Activity sheet of shops and showroom

Town:

District:

Neighborhood:

GPS location:

Name of enterprise:

Name and title of the person contacted:

Name of the owner (or manager) of the enterprise:

Creation date of enterprise:

Main purpose of the enterprise:

Main taxes paid by the enterprise:

Approximate surface area of the enterprise:

Working days and hours:

Active employees selling furniture in the enterprise:

Type of work	Number	Permanent/Temporary	Full time/part time	Monthly salary

Turnover in 2014 linked to the sale of furniture:

Proportion of shops/showrooms' contribution to the total turnover:

What are the items of furniture exhibited in the shop?

Product	Wood species	Geographical origin	Legal origin	Number of products sold in 2015	Price of product	Main buyers

What are the items of furniture that are not on display in the shop but which we can order from the shop?

Product	Wood species	Geographical origin	Legal origin	Number of products sold in 2015	Price of product	Main buyers

Do you have demands for furniture that require proven sustainable timber harvesting?

Furniture	Type of buyer	Motivations of buyer	Number of furniture sold in 2015	What is the evidence of sustainability?

How do you explain the current state of demand for products of legal and/or sustainable origin? Do you respond to furniture supply calls to tender?

Date	Client	Types of furniture	Number or volume	Value	Who won the CT contract?

Do furniture importation procedures meet any difficulties?

Could some imported furniture be replaced by nationally manufactured furniture?

What will be the evolution of this sector activity in the next 5 years?

Final comment?

Annexe IV. Questionnaire on legal timber sourcing strategies by national and international bodies

1. Identification of the respondent

1.1 Body:

1.2 Name:

Function:

2. Existence of a policy for the promotion of legally sawnwood

This study aims at identifying the existence of modalities and the strategies put in place by government organs in supporting the purchase of legally sawnwood, either through their public contracts or through the projects they fund. Two sectors using a large volume of sawnwood are considered in this study: **Buildings/public works and furniture**.

2.1 Can you tell us how many calls to tender your organization opened and/or surveyed in 2015 which either directly or indirectly concern the two targeted areas?

	≤ XAF 30 million	[30; XAF 200 million]	[200; XAF 1 billion]	≥ XAF 1 billion
Call to tender				
Project				

2.2 Does your organization have a formal or informal policy encouraging or forcing your providers to use timber of legal/sustainable origin?

If Yes, go to Section 3; If No, go to Section 4.

3. Categorization and implementation of a policy for legal sawnwood

3.1 What is the nature of this policy (directive, code of conduct, organizational routine, individual choice...)?

3.2 For how long has this policy existed?

3.3 What are the reasons justifying the adoption of this policy? Are these reasons specific to your organization and its operation in Cameroon?

- 3.4 Are the requirements of this policy explicitly mentioned in your calls to tender or in the conditions for project funding? Otherwise how is the existence of this policy known?
- 3.5 How do your service providers comply with this policy?
- 3.6 How do you check the legality/sustainability of the sawnwood used by your service providers?
- 3.7 What other challenges do you face in the implementation of this policy?

4. Reasons for the absence of a policy for legally sawnwood

- 4.1 4.1 What are the main reasons for the lack of a strategy for promoting legally sourced sawnwood in your calls to tender and projects?
- 4.2 Do you have sites requiring the use of sawnwood at moment? How do you appreciate their method of sawnwood supply?
- 4.3 From your knowledge, do other national or international public organizations have policies for legally sourced sawnwood? If so, how were they motivated to make this choice?
- 4.4 Is it anticipated and realistic that your organization will develop and apply such a policy in the next 5 years?

Comments on the remainder of this study?

Identification and classification of public contracts that involved the use of sawnwood in 2014 and 2015

Body: National International CTD

Designation of the public contract	
Objective of public contract	Furniture <input type="checkbox"/> Buildings <input type="checkbox"/> Infrastructure <input type="checkbox"/> Others () <input type="checkbox"/>
	National <input type="checkbox"/> International <input type="checkbox"/>
Source of funding	2014 <input type="checkbox"/> 2015 <input type="checkbox"/>
Publication date of public contract	
Total amount for the public contract	

Service provider having won the public contract	
Activities requiring sawnwood	Yes <input type="checkbox"/> No <input type="checkbox"/> If Yes, please specify (in the contract, specifications or others):
Presence of environmental clauses	
Types of environmental clauses	Yes <input type="checkbox"/> No <input type="checkbox"/>
Requirement for the legality of sawnwood	Yes <input type="checkbox"/> No <input type="checkbox"/>
Requirement for the sustainability of sawnwood	Material of construction (formwork, laths, rafters, poles, etc.): Carpentry (doors, windows, ceiling, etc.): Furniture:
Approximate volume of sawnwood used for the public contract	Material of construction (formwork, laths, rafters, poles, etc.): Carpentry (doors, windows, ceiling, etc.): Furniture:
Approximate value of sawnwood used for the public contract	
Main types of sawnwood used to carry out the activities required by the public contract	

Annexe V. Survey form for PEBO bidders

1. Personal details of the respondent

- 1.1 Company name
- 1.2 Name and title of the respondent:
- 1.3 Age and sex:
- 1.4 Level of education:
- 1.5 When were you certified in the forestry profession?

2. Features of the last call to tender awarded

- 2.1 Date
- 2.2 Location of permit:
- 2.3 Total surface area of permit:
- 2.4 Financial offer (XAF/ha):
- 2.5 Documents required by the commission in charge of evaluating the offers:
- 2.6 Waiting period between dossier deposits and results publication?
- 2.7 Was the dossier completed?
- 2.8 Other levies?

3. Quantity of timber actually produced

Type	Products (logs, sawnwood, other)	Production time	Time at the park	Time taken to transport	Total volume	Buyer

4. Cost of production?

Category	Number	Amount/month	Duration of construction site	Observation?
Machines rental				
Salaries				
Timber skidding				
Transport				
Specifications				
Other costs				

5. What is your view of logging using the PEBO compared to other exploitation permits in Cameroon?

Final comment?

By signing the Voluntary Partnership Agreement of the FLEGT Action Plan, Cameroon made a commitment to supply its domestic timber market with sawnwood produced in compliance with the legislation. This report reviews the various types of demands and supplies of sawnwood on the Cameroonian internal market (in Yaoundé and Douala) in order to identify the possibilities of promoting the long-term consumption of sawnwood and furniture of legal origin.

The private and public demands of the national market target three main uses of timber: construction material for the building and the public works sector, door and window frames and furniture. These demands are expressed at four levels of trade: (1) the urban markets, where 830,000 m³ of sawnwood are sold per year; (2) the joinery workshops, which produce a minimum of 130,000 items of furniture a year, for a total volume of 22,000 m³ of sawnwood after the fourth stage transformation and for a turnover in excess of XAF 8 billion; (3) the furniture sales shops and showrooms, which sold at least 22,282 items of furniture in 2015, corresponding to a sawnwood volume of 5788 m³ and a turnover of XAF 3.33 billion; (4) the government procurement contracts, where the demand for sawnwood stands at around 13,000 m³ a year, making the State the main buyer of sawnwood and furniture on the internal market.

To meet these various demands, there are four supplies of sawnwood and furniture of supposed legal origin: (1) the community forests, whose total legal sawnwood production has never reached 10,000 m³ a year since their creation; (2) the timber exploitation permits (PEBOs), which were launched in 2012 but with limited success as they only allow a maximum sawnwood volume of 8000 m³; (3) the industries, which supply the domestic market with 145,000 m³ of sawnwood – mainly in the form of sawmill scrap – but without monitoring the volumes by these companies; (4) the imports of wooden furniture, which have doubled since 2007 and reached a sales level of XAF 3 billion in 2015, for approximately 10,000 m³.

By matching these sawnwood demands and supplies, we realize that there are today two major barriers to the emergence of a legal sawnwood domestic market in Cameroon. On one hand, the buyers' acceptance of an increase in sawnwood prices as a result of their legalization will not be sufficient to cover the current costs of sawnwood from legal sources. On the other hand, the maximum production of artisanal sawnwood from legal sources will cover only a small part of consumers' needs. Thus the legalization of the domestic market of timber in Cameroon faces a double constraint of price and volume.

To address these problems, the most often quoted and, to a certain extent, experimented approach is a decrease in the production cost of legally sawnwood destined for the domestic market. A complementary approach of supporting the private and government demands of sawnwood of legal origin could also be promoted.

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