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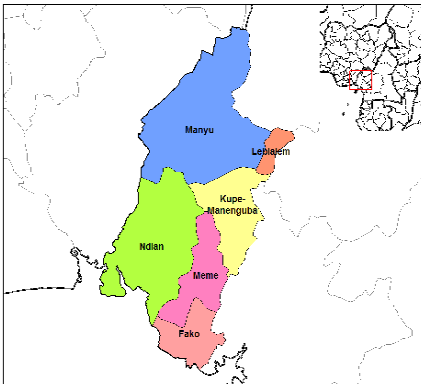
FOOD FORESTRY, ENVIRONMENT PROTECTION AND CONSERVATION SOCIETY (FFE_PCS)

- P O BOX 64 Kumba, South West Region
- ffepcs@yahoo.com
- Tel : +237 77264154/+237 691893441

FFE_PCS

FAO FLEGT PROJECT: "Integrating carpenters in a legal timber value chain in the South West Region**".**



Analysis of the Challenges and opportunities for developing a domestic legal timber supply chain in the south west region:

ACT 1.1: SURVEY OF THE POTENTIAL AND TREND OF THE DEMAND AND SUPPLY OF TIMBERS OF CARPENTERS WITHIN THE SOUTH WEST REGION OF CAMEROON

BY: *FOOD FORESTRY, ENVIRONMENT PROTECTION AND CONSERVATION SOCIETY (FFE_PCS)*

OCTOBER 30, 2016

FOREWORD

This report presents the results of the survey of the potential demand and trend of timbers of carpenters and transporters that was undertaken in the South West Region of Cameroon in the framework of the implementation of FAO FLEGT Program 2015.

The results discussed in the subsequent sections reveal what such a survey can show when undertaken to get a picture on carpenter profiles, the quantity and quality of timbers that they need, the sources of those timbers, their integration into an legal timber trade. A more detailed analysis of the results can provide useful pointers and suggestions towards improvement of timber supply, and more important set in place a credible base for sustained dialogue between legal timber suppliers and carpenters.

The survey provides new dimensions of beneficiary in understanding their opportunities and threats, strengths and weaknesses in timber value chain at the regional and local level,

We wish, at this juncture, to express our gratitude to the FAO FLEGT Program authority for providing the financial assistance for the survey, the Office of the Senior Divisional Officer of Kumba for providing authorizations, the Offices of all the Regional and Divisional Delegations of Forestry and Wildlife for guiding us on forestry law and FLEGT action plan at the local level, NGOs, field data collectors, key informants and external consultants who really contribute to the survey and reporting.

Our thanks also go to the entire staff of FFE_PCS who worked days and nights to supervise all the survey operations on the field and to arrange this report. They include: Madam Petsa Charlotte, Madam Tchenga Rabiatou Bakari, Lekeumo Eveline, Dongmo Chantal, Ahanda Jules, Zambou justin.

Special thanks go to the forest engineer for his diligent and committed work in all stages of execution of the survey, including data analysis and report writing. Also particular thanks to Vandenhaute Marc (FOA), Guilavogui Elena (FOA),Simpson Robert (FOA) Fumey, Sarah (FOA), Abdirizzak Tania (FOA) for their devotion to disburse the fund needed.

More thanks to ENOW Kenneth Eyong, DDMINFOF, MEME, Abang Margaret Enege, Chief of wood transformation, Meme, Antoine Bidina, regional Chief of forest, Mekembom Yves Nathan, regional Chief of domestic timber market for all their administrative supports to us.

Finally, we owe the results to all individuals, carpenters, apprentices and general public who offered wonderful cooperation and spared time to answer all our questions, numerous and probing as they have been. We thank in advance all those who will comment and make use of this report. We sincerely thank them all.

Tefack Pierre Marie

Project manager.

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LIST OF ABBREVIATIONS

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CIFOR	:	Center for International Forestry Research	
MINFOF	:	Ministry of Forestry and Wildlife	
MINCOM	:	Ministry of Commerce	
MINEPAT		Ministry of Economy. Planning and Regional Development	
RDMINFOF	:	Regional Delegation of the Ministry of Forestry and Wildlife	
DDMINFOF	:	Divisional Delegation of the Ministry of Forestry and Wildlife	
FAO	:	Food and Agriculture Organization for the United Nation	
FLEGT	:	Forestry Law Enforcement Governance and Trade	
VPA	:	Voluntary Partnership Agreement	
EU	:	European Union	
FFE_PCS	:	Food Forestry, Environment Protection and Conservation Society	
CDC	:	Cameroon Development Corporation	
CF	:	Community Forest	
	:		

EXECUTIVE SUMMARY

Cameroon forest is estimated at 22 million ha. Logging and processing activities related to that forest produce a lot financial resources in the form of taxes that the state collects every year and uses for fostering socio-economical development and for alleviating poverty.

But within these last past 10 years, illegal logging and trade has deprived the state and local communities from those resources. It has also contributed to the fast deforestation and degradation of forests resources. At this rate, Cameroon could shift from the forest country to a desert country.

In 2007, Cameroon signed a Voluntary Partnership Agreement in the framework of Forest Law Enforcement Trade and Governance which is now at its phase of implementation. The main focus is to promote a legal timber and wood product demand and supply value chain within the country and between the country and international market and particularly between Cameroon and European Union.

The main objective of this survey carried out within the carpenters in the South West Region aims to integrate them in a legal timber supply value chain. The specific objective was to discover their demand and supply. At this juncture, the survey has identified at least 1024 of them and 900 apprentices dispersed throughout the region with a higher density in Meme, Fako and Manyu divisions and a lower density within Ndian, Kupe manengouba and Lebialem Divisions. It has discovered that Iroko, Sapelli, Bilinga, Sipo, Dabema, Kosipo, Moabi Padouk, Ekop etc constitute about 87% of the species they need. That the estimated annual volume they need is 235239.60 m^3 which values 15 172.48 million in the rural area and in 19 413.38 million in the urban space with an annual growth of about 10%. That the flows of timbers they need are hereby arranged from the most used as follows: Timber 1 (1 x 12 inch), Timber 4 (2 x 4 inch), Timber 5 (2 x 3 inch), Timber 6 (2 x 2 inch) Timber 2 (2 x 8 inch) and Timber 3 (2 x 6 inch).

That the existing 19 community forests can supply annually **655142.22** m^3 of timbers which can cover 2.8 times the demand of carpenters on a long period of at least 25 years. But that, till know only 5 and specifically 2 of these community forests are operational. That this poor operational rate is due to bad governance (management conflict, poor administrative management...)

That the only existing sawmill (WJMA) can also supply quality and enough quantity of timber to carpenters within the region if and only if they can be well organized and contracted themselves with the sawmill.

CHAPTER I: GENERAL INTRODUCTION

I.1 CONTEXT AND JUSTIFICATION

Rampant illegal logging and trading of wooden forest products deprive the state of Cameroon, councils and forest neighboring populations from the useful resources that they need for achieving socio-economical and environmental development in order to alleviate poverty.

In 2007, Cameroon signed a VPA agreement with the EU in order to promote legal timber and trade within the country and with European Union. In Cameroon's South West Region, carpenters face significant challenges regarding forestry regulation, compromising their involvement into the VPA process. The main challenges are: access to and use of legal timbers for their activities, access to markets and technical information on timber for furniture. Cameroon forestry law and FLEGT framework, particularly the obligatory to use only legally source verified timbers and trade have put unprecedented burdens on carpenters. Within these ten past years, the rate of forest offences and penalties upon them has been increased of about 60% and has been worsened by the implementation of FLEGT action plan since last two years and this could take such a rate to about 80% by the end of next year.

The EU FAO FLEGT Program promotes the implementation of the FLEGT Action Plan by improving forest governance, providing technical assistance, and building capacity through funding projects in eligible countries. In pursuit of these objectives, the EU FAO FLEGT Program has agreed to support the project entitled ***Integrating carpenters in a legal timber value chain in the South region.***

Such a project has been designed and executed by Food Forestry, Environment protection and Conservation Society (FFE-PCS). It has been declined into 4 outputs and related activities to be implemented within 15 months following a good planning.

The achievement of the project output 1 entitled: <<***Challenges and opportunities for developing a domestic legal timber supply chain in the South West Region are analyzed>>*** requires the implementation of 3 activities. The first one named activity 1.1 and titled: *Survey the potential and trend of timbers demand of carpenters and transporters* constitutes the object of this work.

I.2 PROBLEM

- South West Region does not have relevant information and statistics based on good data enabling to strengthen the making of a decision for the development of domestic legal timber markets within the region.

I.3 OBJECTIVES

- To provide regional findings on the demand, supply and trend of timbers in the subsector of wood products.
- To build a regional data base of carpenters, producers of legal timbers and transporters

I.4 IMPORTANCE OF THE STUDY

This survey will enable:

- The Ministry of Forestry and Wildlife (MINFOF) to access and to enhance its policy aiming at satisfying the demand and supply of legal timbers to the sub-sector of wood products at the local and regional levels from community forests.
- The Ministry of Forestry and Wildlife (MINFOF), the Ministry of Commerce (MINCOM) and councils to create and run legal timber supply markets at the local and regional levels.
- The Government, Councils and local communities to improve tax and income recoveries from their forest timbers.
- To elaborate a responsible and participatory policy for a transparent and sustainable use of forest resources.

I.5 ORGANIZATION OF THE DOCUMENT

This report is structured in 4 chapters.

- Chapter 1 which serves as introduction briefly describes the context and justification of the survey, the problem, objectives and the importance.
- Chapter 2 describes the project site while insisting of its location, socio-economic and environmental aspects, scope and coverage of the survey, survey field instruments, capacity building of field data collectors, conduct of the survey and data processing
- Chapter 3 deals with the presentation of findings, analysis, discussions and interpretation, trend. It is structured into a) section 1: population and spatial distribution of carpenters and apprentices within the region; b) section 2: demographic status of carpenters and apprentices, c) section 3: formal status of carpenters, d) section 4: processing capacity of carpenters enterprises, e) section 5: characteristics of timber demanded by carpenters, f) section 6: analysis of the demand and supply of carpenters' timbers
  Each section is made of relevant questions and answers related to carpenters.
- Chapter 4 which serves as conclusion presents the lessons learned and recommendations

CHAPTER II: SURVEY METHODOLOGY

II.1 LOCATION OF THE PROJECT SITE

The South West Region is located in the South west part of Cameroon. Its lies in between Latitude: 5.417 and Longitude: 9.333 (coordinates in decimal degrees (WGS84)). It shares international boundaries at West by Nigeria and at the South by Atlantic Ocean. It shares regional boundaries at East by Littoral Region and the North by the West and North West regions.

The administrative capital of the region is Buea. The region is also divided into 31 councils and 6 Divisions (Figure 1) known as Fako, Koupé-Manengouba, Lebialem, Manyu, Meme, Ndian, Fako, Koupé-Manengouba. Major towns found are: Kumba, Buea, Limbe, Bangem, Fontem, Mamfe ,Muyuka, Tombel, Muea, Tiko, Mbonge, Akwaya…

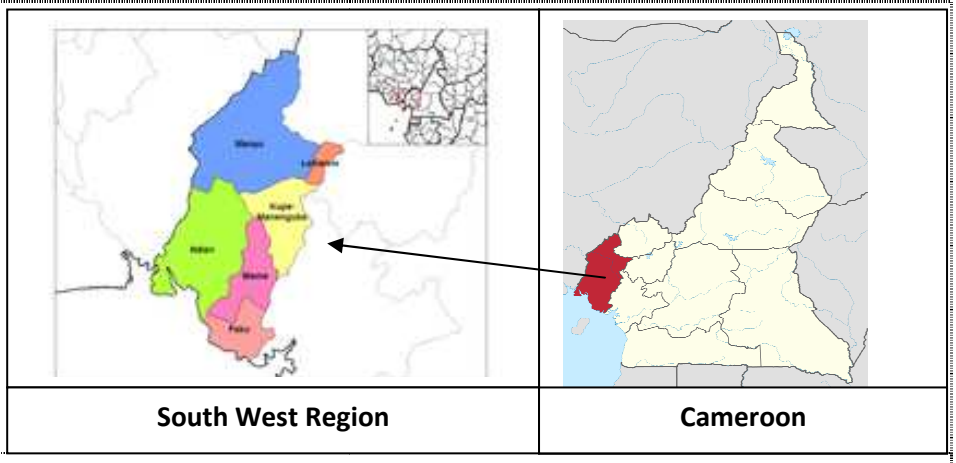


Figure 1: South West Region and its 6 Divisions

II.2 SOCIAL, CULTURAL AND ECONOMIC AND ENVIRONMENTAL ASPECTS OF THE PROJECT SITE

The region covers an area of 25,410 km^2 with a fast growing population which stood at 1,481,433 inhabitants in 2013 with a density of 58/ km2 and with an average growth rate of 3.0 % per annum.

The economics of the region is driven by traditional and modern agricultures. Traditional agriculture concerns the culture of Cacao, Coffee, Palm trees, Rubbers and cassava. Agro-industries is dominated by CDC, Pamol, Heracle, Mukete estate, Tole tea farms. The cohabitation of these two agricultural practices have resulted on a rampant deforestation and environmental degradation in the region in one side.

In the other side the implementation of the new forestry policy has enabled to save 1235364 ha of permanent forest estates and 50 000 ha of non permanent forests shared into 27 community

forests.

These forests have contributed to a fast development of forest exploitation and wood transformation. But a part WIJMA which is the only operating sawmill, the processing of wood is dominated by cabinet marking. This project has contributed to survey about 573 carpenters.

II.3 SCOPE AND COVERAGE OF THE SURVEY.

The survey involved a sample survey of carpenters in all the 6 administrative divisions (Meme,Fako, Manyu, Kupe manegouba, Lebialem, Ndian) which form the south west region of Cameroon. Within those 6 divisions and based on the existence of electricity connection and good economic level, 15 enumeration areas (towns) were selected- 4 from Meme, 5 from Fako, 2 from Ndian, 2 from Manyu, 2 from Kupe manengouba, 1 from Lebialem. In sum, 1024 carpenters were selected from all the 6 divisions. 316 from Fako, 272 from Meme, 185 from Manyu, 86 from Ndian, 62 from Kupe Manengouba, 83 from Lebialem,

II.4 SURVEY FIELD INSTRUMENTS

Two distinct field instruments were employed. The GPS(Garmin 60 x) and the survey instrument. The GPS helped to locate each carpenter. The survey instrument (questionnaire form) had 7 sections on issue related to carpenters to survey: a) identification section (location, details of interview), b) demographic information (age, sex, marital status, education), c) formal status of business(registration, tax situation), d) processing capacity(type of machine, volume of timbers, number of apprentices), e) characteristics of timbers (name, dimensions, grade, quantity), used by carpenters, f) timber flow (type of species, supply lines, availability, markets, evolution of the demand and supplies, g) Characteristics of timbers producers and transporters (nature, means, documents, contacts, volume, legal status).

II.5 CAPACITY BUILDING OF FIELD DATA COLLECTORS

01 day capacity building workshop was organized at FFE_PCS office to train field data collectors on surveying techniques, behavior regarding carpenters, guiding the carpenters to fill the questionnaire form.

II.6 CONDUCT OF THE SURVEY

The field survey was conducted from October 3, 2016 to December 31, 2016. FFE_PCS was responsible for the entire field operations. It employed 6 data collectors, 6 key informants (translating pidgin to English) and 01 forest consultant to assist. Their roles and responsibilities were described in the term of reference elaborated by FFE-PCS.

The field survey was performed in two phases as follows:
Phase I: during this 1st phase which took 01 week, a pre-test survey on 70 carpenters was carried out in the town of Kumba to test the applicability and effectiveness of the questionnaire elaborated. Obstacles and suggestions recorded helped to review the formal version of the questionnaire and

came out with the new version which was viewed to be more effective, applicable and suitable for the phase II.

Phase II: during this second phase, the survey evoked extremely positive response from carpenters. Since the questions were straightforward and easy to understand, the respondents were more than willing to cooperate and answer all queries. A duration of 15 minutes was allocated to each carpenter to answer all the questions, a key informant and a data collector guided each carpenter throughout the entire questionnaire. The key informant was there to translate the questions written in English into pidgin so that carpenters understood and answered them easily while the field data collector was there to guide the carpenters on the questions.

II.7 DATA PROCESSING

Field data were first manually edited and consolidated per enumeration areas, which were then consolidated per divisions and at the end per region. After the consolidation, they were entered into a customized data program (SPSS). The framework for data analysis was developed in consultation with the consultant and templates for frequency counts and cross-tabs were designed **and used.**

CHAPTER III: FINDINGS, ANALYSIS, DISCUSSION AND INTERPRETATION

III.1 SECTION 1: POPULATION AND SPATIAL DISTRIBUTION OF CARPENTERS AND APPRENTICES WITHIN THE REGION

III.1.1 How *many carpenters and apprentices are in the South West Region of Cameroon and where are they located?*

III.1.1.1 FINDINGS

Table 1 below gives the potential, location and the distribution of the existing numbers of carpenters and apprentices within the region. The percentage of carpenters expressed within the table has been calculated in relation to the division and region only. The one of the enumeration areas been very small, it was wiser to indicate only the numbers of carpenters and apprentices found there instead of their percentage.

Table 1: Potential and distribution of carpenters and apprentices within the region.

Region	Divisions	Enumeration areas	Carpenters		Apprentices	
			Quantity	Percentage(%)	Quantity	Percentage(%)
South West Region	Fako	Buea	156			
		Limbe	96			
		Muyuka	34			
		Tiko	30			
		Subtotal 1=	***316***	***30.86***	***320***	***35.55***
	Meme	Kumba I	146			
		Kumba II	82			
		Kumba III	37			
		Mbonge	27			
		Subtotal 2=	***292***	***28.51***	***323***	***35.88***
	Manyu	Mamfe	87			
		Akwaya	68			
		Eyumodjock	30			
		Subtotal 3=	***185***	***18.07***	***186***	***20.66***
	Ndian	Mundemba	34			
		Ekondo titi	52			

		Subtotal 4=	***86***	***08.39***	***43***	***4.77***
	Lebialem	Fontem	83			
		Subtotal 5=	***83***	***08.11***	***9***	***1.00***
	Kupe Manengouba	Bangem	30			
		Tombel	32			
		Subtotal 6=	***62***	***06.05***	***19***	***2.11***
	Grand total(1+2+3+4+5+6)		***1024***	100.00	**900**	100.00

Figure 1: Zone of density of carpenters and apprentices within the region

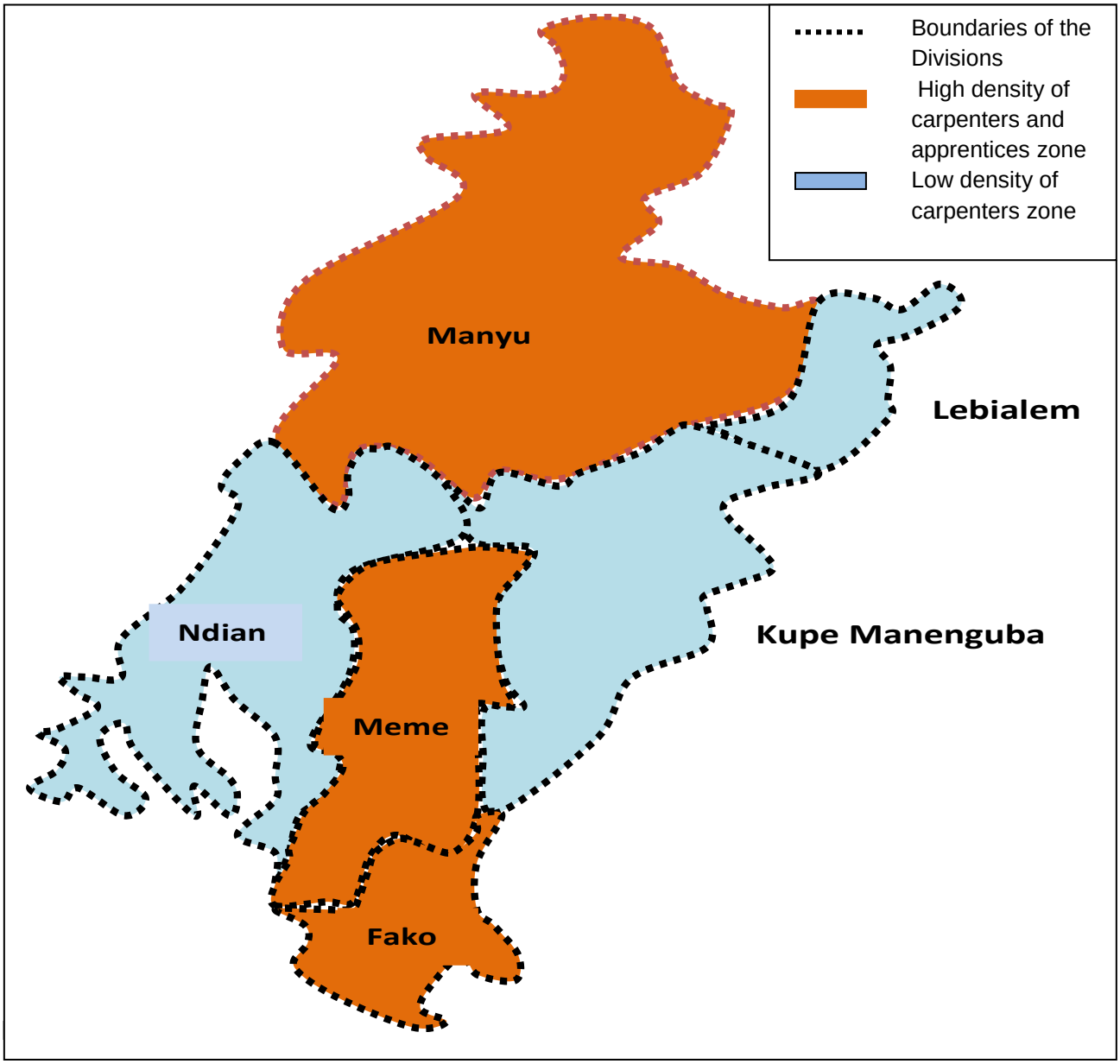


Table 1 above reveals that:

- There is at least a potential of 1024 carpenters and 900 apprentices within the region. This could be viewed as the existence of an important socio-professional actors in the subsector of wood products and therefore constitutes an opportunity for the development of a legal domestic timber and wood products markets at the divisional and regional levels.

- The most concentrated density of carpenters and apprentices is found in the zone (figure 1) made of Fako, Meme and Manyu divisions at the rate of (30.86%), (28.51%) and (18.07%) respectively. All cumulated reaches (77.44%). Those divisions are also the most socio-economical developed areas within the region because of the great dynamic of their urbanization, agriculture, agro-industries, services and active sub-regional market activities between Nigeria and Manyu. Once more, those three divisions are important for the development of legal domestic timbers.

- A low concentrated density of carpenters and apprentices is found in the zone (figure 1) made of Ndian (08.39%), Lebialem (08.11%) and Kupe Manengouba (06.05%) divisions. All cumulated makes 22.56%. Infact, those divisions are enclaved and less socio-economical developed and therefore are not economical attractive for the development of wood products.

  Based on the findings cited above, the great potential, location and distribution of carpenters and apprentices depend on the socio-economic development of the area and the existence of timbers.

III.1.1.2 TREND.

- There is a horizontal growth of the number of carpenters and apprentices from the less economical developed division (Kupe manengouba) to the most developed one (Fako division).
- The programme of competiveness of wood product sector which is now implemented by MINEPAT and which aim to integrate more carpenters in the wood product value chain constitutes a driver for the augmentation of the number of carpenters in the year to come. Basing on the vision of such a programme, we could estimate this rate of increase at about 10% per year.

III.2 SECTION 2: DEMOGRAPHIC STATUS OF CARPENTERS AND APPRENTICES

III.2.1 *What are the ages of carpenters and apprentices in the South West Region?*

III.2.1.1 FINDINGS

The processing of data related to the age of carpenters within the region has enabled to produce the following findings:

Table 2: Potential and distribution of carpenters per age.

		Age (years)			
		<18 (%)	**[18-25] (%)**	**]25-50] (%)**	**>50 (%)**
Divisions	Fako	1.00	50.00	90.00	13.00
	Meme	0.50	42.00	88.00	8.00
	Manyu	0.50	29.00	80.00	9.00
	Ndian	0.12	4.00	69.50	10.00
	Lebialem	1.00	1.00	59.50	1.00
	Kupe Manengouba	0.00	2.76	37.16	1.96
Region	South west Region	**0.52**	**21.46**	**70.86**	**7.16**

III.2.1.1 ANALYSIS, DISCUSSION AND INTERPRETATION OF FINDINGS

The survey reveals in table 2 above that:

- Below 18 years old, only 0.52 % of people do cabinet working. This is because at that age, many young carpenters are still in school.
- Between 19 and 25 years old, the proportion of carpenters increases to 21.46 %. This is because at this period, most of the youths are ready to create their own business.
- Between 26 to 50 years old, the proportion of carpenters increases to 70.86%. This proportion is high because at that age, many carpenters do cabinet making activities. This is the period during which most of them are mature and start working with their apprentices.
- Above 50 years old, the proportion of carpenters falls to 7.16%. This is because by that age, many carpenters have lost this sight or go on retirement.

III.2.2 *What is the sex of carpenters in the South West Region?*

The survey has revealed that 99.65% of carpenters are male while only 0.35 % is female. Moreover all the women met and surveyed in the workshop said that they like the professional but that, they afraid because timbers are heavy to transport and that cabinet making machines are very dangerous.

However they said that they would like to integrate the profession and work in the Department of finishing (sand papering, vanishing, painting…) or marketing of wood products.

III.2.3 *What is the marital status of carpenters within the region?*

III.2.3.1 Findings

The processing of data related to marital status of carpenters within the region has enabled to produce the following findings

Table 3: Marriage status of carpenters.

		Marital status of carpenters			
		Single (%)	**Married (%)**	**Widowed (%)**	**Divorced (%)**
Divisions	Fako	60.73	77.50	1.00	1.00
	Meme	49.50	68.50	0.20	1.20
	Manyu	39.25	63.46	0.00	0.25
	Ndian	30.00	56.50	0.00	0.75
	Lebialem	22.34	50.50	0.00	0.50
	Kupe Manengouba	27.50	49.00	0.00	0.50
Region	South west Region	**38.22**	**60.91**	**0.17**	**0.70**

III.2.3.2 ANALYSIS, DISCUSSION AND INTERPRETATION OF FINDINGS

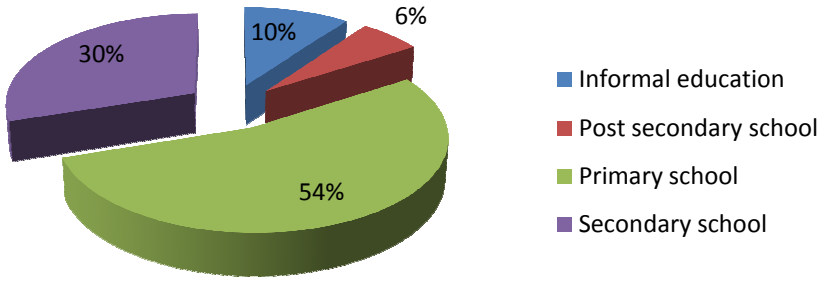
- The low percentage (0.70%) of “Divorce” and the high percentage of “Married” (60.91%) within carpenters express the good health of their business and their high degree of confidence.
- The percentage of 38.22% “Single” explains the youth status of carpenters within the region. It also expresses the degree of commitment and seriousness that youth has vis- a-vis of carpentry work.

III.2.4 *What is the educational level of carpenters within the region?*

III.2.4.1 FINDINGS

The survey has enabled to understand the educational level of carpenters within the region which is illustrated by figure 2 below:

Figure 3: Educational level of carpenters within the region.



III.2.4.1 ANALYSIS, DISCUSSION AND INTERPRETATION OF FINDINGS

Figure 2 drawn above shows that:

- 54 % of carpenters completed primary school. It implies that they can write and read. They can also construct simple furniture like (tables, chairs, doors frames, windows frames, benches…) which are highly demanded at rural areas and medium scale towns.
- 30% of carpenters completed secondary school which implies that they can read and interpret customer's design of furniture; they can also make an estimate and train other carpenters. Moreover, they can construct difficult structure like roofing, flooring and wooden houses.
- 6% of carpenters attended post secondary school. This implies that they can conceive and design complicated wooden structure. They can also participate in the elaboration, implementation, monitoring and evaluation of policies related to the subsector of wooden products. Moreover, they can do preventive and simple curative maintenance of their machines and other infrastructures.
- 10% did not attend formal education. They have learned working through pure practices. They cannot therefore easily innovate or manage their own workshop.

III.2.4.2 TREND

- A percentage of 6% of carpenters who attended post secondary school remains very low and could jeopardize the capacity of this subsector to make competitive furniture for EU-market. So, more effort has to be done to take it up to at least 60%.

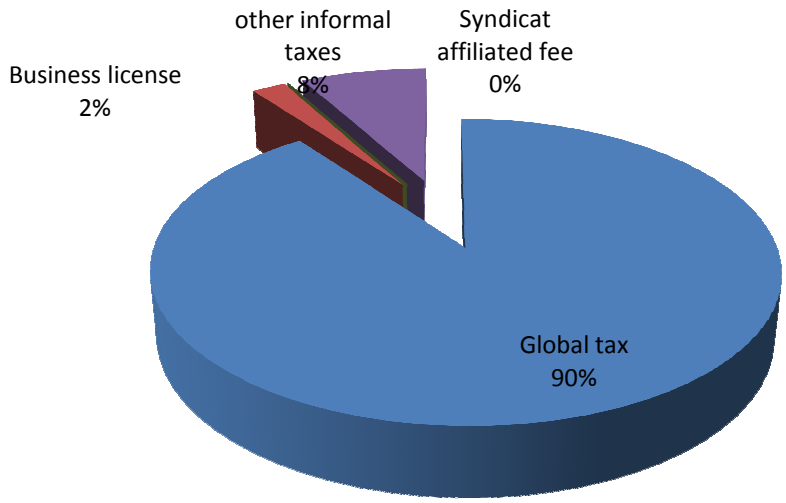
III.3 SECTION 3: FORMAL STATUS OF CARPENTERS

III.3.1 *What is the formal status of carpenters within the region?*

III.3.1.1 FINDINGS

The survey has enabled to understand the formal status of carpenters within the region which is illustrated by figure 3 below:

Figure 4: Tax status of carpenters



III.3.1.1 ANALYSIS, DISCUSSION AND INTERPRETATION OF FINDINGS

Figure 4 drawn above shows that:

- 90% of carpenters pay global tax. They are therefore demonstrating their good will to carry out legal and sustainable business and also to shift from informal to formal business sector.
- 2% of carpenters pay business license. This is not enough regarding the number of carpenters existing in the area. But it is already a positive sign towards good business practices.
- 0% of carpenters are affiliated to syndicate. This shows that this sector is not well organized and various actors working here cannot easily claim their rights.
- 8% of carpenters pay other taxes. They include the taxes related to the temporal occupation of public space, the environment clean up etc.

In sum, there is a positive trend of carpenters to work within the framework of the law.

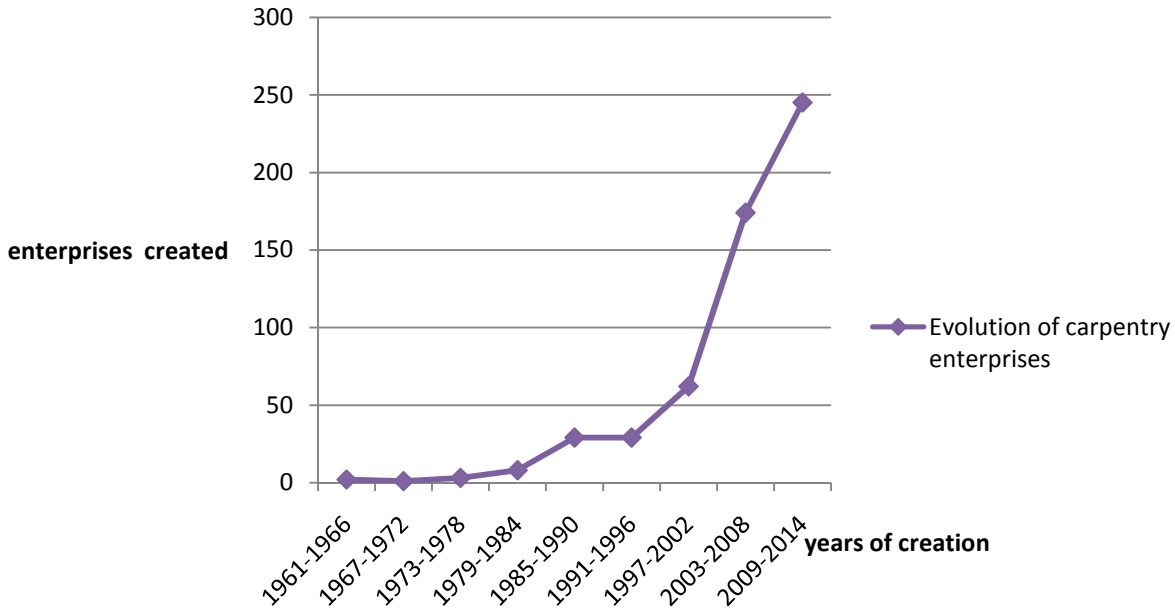
III.4 SECTION 4: PROCESSING CAPACITY OF CARPENTERS ENTERPRISES

III.4.1 *How does the creation of carpentry enterprises grow within the south west region?*

III.4.1.1 FINDINGS

The survey has enabled to understand the evolution of carpenters' enterprises within the region which is illustrated by figure 4 below:

Figure 5: Evolution of carpentry enterprises



III.4.1.2 ANALYSIS, DISCUSSION AND INTERPRETATION OF FINDINGS

Figure 5 drawn above reveals that:

- From 1961 to 1984, the rate of creation of carpentry enterprises was constant. By that period, there was not a clear forestry policy encouraging the development of the secondary transformation within the country and even the region.
- From 1984 to 2002, the rate of creation of carpentry enterprises increases to at least 40% each year. This is due to the implementation of the new forestry policy of 1994 which really encouraged the development of the secondary transformation of wood.
- From 1984 to 2014, the rate of creation of carpentry enterprises increases to at least 45% each year. This is due to the fact that, this sector has been earmarked by the state of

Cameroon as one of the sector of growth and economical competiveness. A vast program for the improvement of processing capacity (training, subventions, support on equipment, basics tools etc,) of carpenters is ongoing. All these incentives have made the sector to be more attractive to investors.

In sum, the rate of the creation of carpentry enterprises is increasing within the region.

III.4.1. *What is the processing capacity of carpenters within the region?*

III.4.1.1 FINDINGS

The survey has enabled to understand the processing capacity of carpenters' enterprises within the region which is illustrated by table 4 below:

Table 4: Processing capacity of carpenters` enterprises

Region	Divisions	Enumeration areas	Minimum machines of the production line in the carpentry workshop									
			Sawing machines	Rough machining	Molding machines	Tenoners	Mortisers	Drills	Turners	Sandpapering	Spraying cabinets	Sharpenings
South West Region	Fako	Buea	58	47	48	28	10	40	10	56	9	4
		Limbe	24	5	18	11	9	17	7	27	1	
		Muyuka	23	6	12	6	7	10	4	15	2	6
		Tiko	9	6	7	4	7	1	6	6	1	
		Subtotal 1=	***114***	***64***	***85***	***49***		***68***		***104***	***13***	***117***
	Meme	Kumba I	40	34	39	24	5	28	5	39	4	2
		Kumba II	27	10	8	16	3	10	7	26	5	8
		Kumba III	3	4		2	2	3	8	2		1
		Mbonge	6	3	4	2		1		10		1
		Subtotal 2=	***76***	***51***	***41***	***34***		***42***		***77***	***9***	***12***
	Manyu	Mamfe	20	16	25	16	4	14	4	23		5
		Akwaya	2				3		3	1		
		Eyumodjock	0									
		Subtotal 3=	***22***	***16***	***25***	***16***		***14***		***24***		***5***

	Ndian	Mundemba	8	6	6			7		5		
		Ekondo titi	13	5	14	7		13		20		1
		Subtotal 4=	***21***	***11***	***20***	***7***		***20***		***25***		***1***
	Lebialem	Fontem	3	3								
		Subtotal 5=	***3***	***3***								
	Kupe Manengouba	Bangem	3	2	3	3		3		8		
		Tombel	5	2	2	2		4		6		
		Subtotal 6=	***8***	***4***	***5***	***5***		***7***		***14***		
GRANDTOTAL (1+2+3+4+5+6)			***241***	***149***	***176***	***111***	***50***	***151***	***54***	***244***	***22***	***51***

III.4.1.2 ANALYSIS, DISCUSSION AND INTERPRETATION OF FINDINGS

It is observed on table 4 drawn above that:

- At least the minimum machines (sawing machines (241), roughing machining(149), molders (176), mortisers(111), drills(50), turners (151),sandpaper machines (54), spraying cabinet (244) ,spraying machines(22), sharpeners(51) which constitutes a complete line for furniture processing in the cabinet making enterprises exists. It implies that the subsector of wooden products enterprises is capable at least to produce good furniture for local market only.
- There is also a general trend towards good finishing through the existence of sandpaper machines (54), sharpeners (51) and spraying machines (22). But the total absence of kiln could really cancel this effort of good finishing because the level of moisture content of the wood is a precondition for a good finishing.
- Most of the machines are concentrated within Fako, Meme and Manyu divisions all the same as the carpenters and apprentices for socio-economical reasons.
- There is a total number of 1249 machines for 1024 carpenters. That corresponds to a ratio of 1.2 machines per carpenters which is far behind to make a line of production. So, the region needs more machines again in order to make best use of the huge number of carpenters and apprentices available now.
- Tools needed are: at least 40 kilns and systems for the treatment of some timbers against insect and fungus attacks.

III.5 SECTION 5: CHARACTERISTICS OF TIMBER DEMANDED BY CARPENTERS

III.5.1 *What are the names of timbers that carpenters have used within these past 12 months in their activities of furniture production?*

III.5.1.1 FINDINGS

The survey has enabled to know the nature of the timbers, their group and the percentage of carpenters who has used them in their activities within these past 12 months within the region. Findings are presented in table 5 below:

Table 5: Quality of timbers demanded by carpenters

NO	SCIENTIFIC NAMES	COMMON NAMES	GROUP	PERCENTAGE OF CARPENTERS USING THE WOOD (%)
1	Entandrophragma Cylindricum	Sapelli	I	14.72
2	Nauclea diderrichii	Bilinga	I	12.52
3	Millicia excels	Iroko	I	11.48
5	Entandrophragma Utile	Sipo	I	7.47
6	Piptadeniastrum africanum	Dabema	I	7.18
7	Entandrophragma Candolei	Kosipo	I	6.47
8	Baillonnella toxisperma	Moabi	I	6.08
9	Pterocarpus soyauxii	Padouk	I	5.05
10	Newtonia	Ekop	I	4.56
11	**Guibourtia demeussi**	**Bubinga**	I	**3.69**
12	Microberlinia bisculcata	Zingana	I	2.88
13	Eucalyptus saligna	Eucalyptus	I	2.78
14	Afzelia bipendensis	Doussie	I	1.39
15	Khaya grandifoliola	Acajou	II	0.78
16	Berlinia bbracleosa	Ebiara	II	0.32
17	Guarea cedrata	Bosse	II	0.26
18	Syzygium rowlandi	Bibolo	III	0.23
19	Distemonanthus benthamianus	Movingui	III	0.23
20	Terminalia Superba	Frake	III	0.23
21	Staudtia kamerunensis	Niove	III	0.19
22	Mansonia altissima	Bete	III	0.16
23	Eribloma oblongum	Eyong	III	0.13
24	Speleopsis Hylodendron	Osanga	III	0.10
25	Diospyros crassiflora	Ebene	III	0.06
26	Autranella congolensis	Mukulungu	III	0.06
27	Cyculidiscus Gabonensis	Okan	III	0.06

29	Lophira alata	Azobe	III	0.06
30	Milletia Laurenti	Wenge	VI	0.06
31	Eylicodiscus gabonensis	Tali	VI	0.03
32	Triplochiton Scleroxylon	Ayous	V	0.03

III.5.1.2 ANALYSIS, DISCUSSION AND INTERPRETATION OF FINDINGS

It is observed on table 5 drawn above that:

- 3.69% of carpenters of the region are still using Bubinga which was banned since about 10 years. They said that it was the old stock they made before MINFOF decision.
- 86.27% of carpenters use timbers from the species of Group I. Group I species were classified since 1991 by the Ministry of Forestry and Wildlife as the most known and appreciated wood in the international timber market. They are about 1100 and are known as species with a tendency of scarcity and that their exploitation should be under control. But, at this present rate of use they will soon enter in the endangered list of tree species because all come from illegal sources and therefore escape from the control of MINFOF.
- 2.87% of carpenters use timbers from the species of Group II. This Group is made of 1200 species known both in the national and international timber market with an existence of a regular and sustained demand. They are viewed as species of current market. But the low rate of use could be due to their scarcity and therefore requires a research effort to produce and publish information on their substitute because there are about 300 species in Cameroon.
- 10.86% of carpenters use timbers from species of Group III, IV and V. These Groups are made of 1300 species on promotion. Here, species are abundant and cheap. They are to be exploited for local market. The low rate of use here could be due to the administrative bottleneck to issue exploiting documents.

A redeployment of carpenters on the species from Group II,III, IV and V will enable them to have access to abundant, cheap and quality raw materials which will therefore make them to be competitive within a legal framework.

III.5.2 *What are the volumes of timbers that carpenters have used within these past 12 months in their activities of furniture production?*

III.5.2.1 FINDINGS

The survey has enabled to estimate the volumes and sizes of the timbers demanded per day, month and year by carpenters per divisions within the south west region for the past 12 months. Findings are presented in table 6, table 7 and figure 6 below:

Table 6: Volumes, distribution and sizes of timbers demanded by carpenters per day

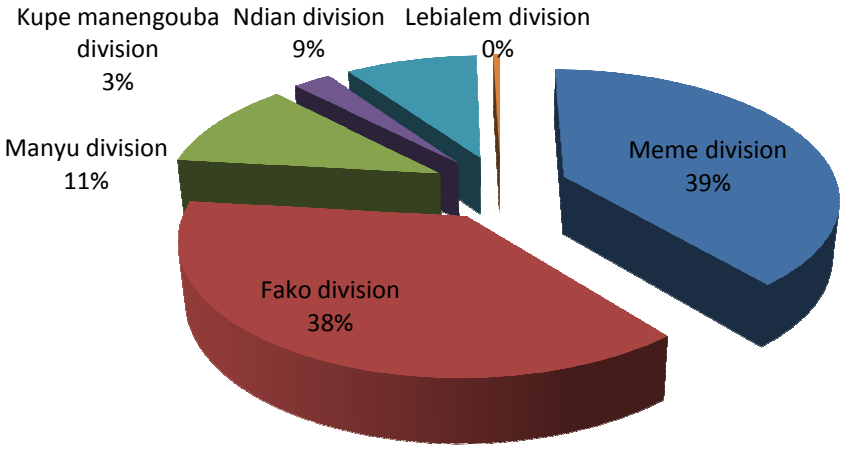
	Timber 1 (1 x 12 inch)(m^3)	Timber 2 (2 x 8 inch)(m^3)	Timber 3 (2 x 6 inch)(m^3)	Timber 4 (2 x 4 inch)(m^3)	Timber 5 (2 x 3 inch)(m^3)	Timber 6 (2 x 2 inch)(m^3)	TOTAL/day
Meme	46.63	44.37	44.55	53.90	39.90	25.73	255.09

Fako	46.47	35.08	45.51	53.33	38.91	27.39	246.70
Manyu	20.43	16.84	15.29	12.97	10.58	6.00	77.55
Kupe manengouba	4.45	3.33	3.90	2.85	1.82	1.04	17.40
Ndian	10.59	10.25	7.80	16.23	11.36	3.56	59.82
Lebialem	2.86	-	-	-	-	-	2.86

Table 7*:* Estimate volumes and distribution of timbers demanded by carpenters per month and year

Area	Volume (m^3) / day	Volume (m^3) / month	Volume (m^3) / year
Meme division	255.09	7652.90	91834.80
Fako division	246.70	14802.19	88814.40
Manyu division	77.55	2146.60	25759.20
Kupe manengouba division	17.40	522.10	6265.20
Ndian division	59.82	1794.60	21535.20
Lebialem division	2.86	85.90	1030.80
South west region	**659.42**	**27004.29**	**235239.60**

Figure 6: Distribution of the volumes of timbers used per year by carpenters



III.5.2.2 ANALYSIS, DISCUSSION AND INTERPRETATION OF FINDINGS

It is observed on table 6 and table 7 and figure 6 drawn above that:

- Carpenters from the south west region consume at least **235239.60 m^3** of timber in their cabinet making activity every year. This volume represents 27.35% of the national volume of domestic wood recorded by CIFOR in 2011. It also corresponds to an average consumption of 0.62 m^3 per day and per carpenter within the region.
- Carpenters from Meme Division consume at least 91834.80m^3 of timber every year in their cabinet making activity. Such a volume represents 39 % of the total volume regionally

needed by carpenters and therefore makes Meme Division to be at the top of carpenter timber consumption within the region.

- Carpenters from Fako Division consume at least 88814.40 m^3 of timber every year. Such a volume represents 38 % of the total volume regionally needed by carpenters and therefore makes Fako Division to be at the second position of carpenter timber consumption within the region.
- Carpenters from other Divisions (Kupe Manengouba, Ndian, Lebialem and Bangem) consume at least 28831.20 m^3 of timber every year. Such a volume represents 12 % of the total volume regionally needed by carpenters and therefore makes these three divisions to be at the third position of carpenter timber consumption within the region.
- Carpenters from Manyu Division consume at least 25759.20 m^3 of timber every year. Such a volume represents 11 % of the total volume regionally needed by carpenters and therefore makes Manyu Division to be at the fourth position of carpenter timber consumption within the region.

III.5.3 *What are the various flows of timbers that carpenters have been used for these past 12 months in their activities of furniture production within the region?*

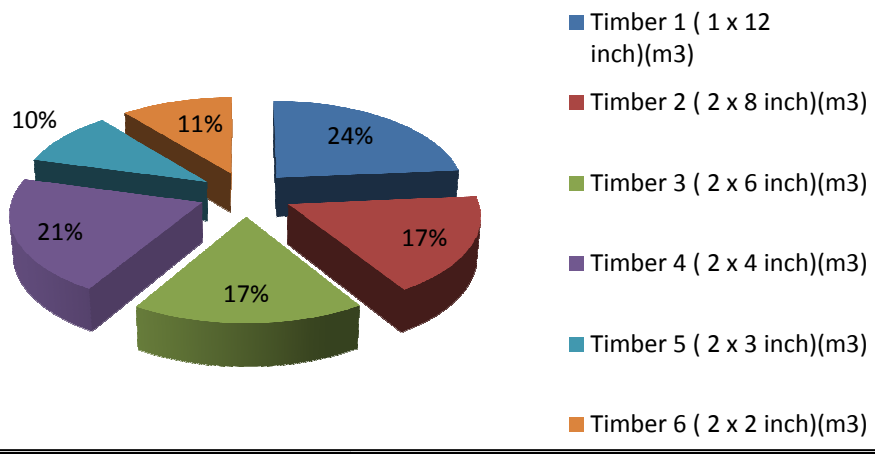
III.5.3.1 FINDINGS

The survey has enabled to identify and present in table 8 and figure 7 the various flows of timbers that carpenters have used within the region for the past 12 years. They are as follows::

Table 8: Distribution of the flows of timbers used by carpenters per divisions

	Timber 1 (1 x 12 inch)(m^3)	Timber 2 (2 x 8 inch)(m^3)	Timber 3 (2 x 6 inch)(m^3)	Timber 4 (2 x 4 inch)(m^3)	Timber 5 (2 x 3 inch)(m^3)	Timber 6 (2 x 2 inch)(m^3)
Meme	20019.95	19195.05	16260.75	19673.50	1456.35	9391.45
Fako	16961.55	12804.2	16611.15	19465.45	14202.15	9997.35
Manyu	7456.95	6146.6	5580.85	4734.05	3861.70	2190.00
Kupe manengouba	1624.25	1215.45	1423.50	1040.25	664.30	3796
Ndian	3865.35	3741.25	2847.00	5923.95	4146.40	1299.40
Lebialem	1043.90	0.00	0.00	0.00	0.00	0.00
Region	50971.95	43102.55	42723.25	50837.2	24330.9	26674.2

Figure 7: Importance of each flow of timbers used by carpenters thin the region



The flow of timber 1 (1x12inch)-boards measuring 2.54 cm on the thickness, 30.48 cm on the width and 4 m on the length come first. It represents 24 % of all the timbers demanded by carpenters. This is true because carpenters need large pieces of wood in order to take out the maximum materials for furniture.

- Timber 4 (2 x 4 inch)- boards measuring 5.08 cm are the second most demanded wood by the carpenters in each division and within the whole region. This is certainly driven by the fast growing construction of houses which is now going on within the region and of the fact that these dimensions completed by Timber 5 (2 x 3 inch) and Timber 6 (2 x 2 inch) are used for roofing and ceiling.
- Both timber 2 (2 x 8 inch) and Timber 3 (2 x 6 inch)-boards measuring 5.08 cm on the thickness, 20.32 cm on the width and 4 m on the length and boards measuring 5.08 cm on the thickness, 15.24 cm on the width and 4 m on the length respectively are demanded for doors and windows frames, flooring and heavy roofing, heavy furniture and fabrication of wood paneling.

III.5.4 *What is the total cost of timbers that carpenters have used within these past 12 months in their activities of furniture production within the region?*

III.5.4.1 FINDINGS

The survey has enabled to estimate the cost and distribution of the regional timbers demanded by the carpenters based on the various sizes and unit cost of timbers demanded. Findings are recorded in table 9 and table 10 below.

Table 9: Total cost and distribution of timber supplied to carpenters at the rural area level

Area	Volume (m^3) / year	Unit cost (FCFA)	Total cost (in million FCFA) in the rural area
Meme division	91834.80	64 498	5 923.16
Fako division	88814.40	64 498	5 728.35
Manyu division	25759.20	64 498	1 661.42
Kupe manengouba division	6265.20	64 498	404.09
Ndian division	21535.20	64 498	1 389.00
Lebialem division	1030.80	64 498	66.48
South west region	**235239.60**	64 498	**15 172.48**

Table 10: Total cost and distribution of timber supplied to carpenters at the urban level

Area	Volume (m^3) / year	Unit cost (FCFA)	Total cost (in million FCFA) in the urban area
Meme division	91834.80	82 526	7 578.75
Fako division	88814.40	82 526	7 329.49
Manyu division	25759.20	82 526	2 125.80
Kupe manengouba division	6265.20	82 526	517.04

Ndian division	21535.20	82 526	1 777.21
Lebialem division	1030.80	82 526	85.00
South west region	**235239.60**	82 526	**19 413.38**

III.5.4.2 ANALYSIS, DISCUSSION AND INTERPRETATION OF FINDINGS

It is observed on table 9 and table 10 drawn above that:

The regional demand of timbers of carpenters in the areas is estimated annually at at least FCFA **15 172.48 millions distributed** in FCFA 5 923.16 millions for Meme Division, FCFA 5 728.35 millions for Fako Division, FCFA 1 661.42 millions for Manyu Division and FCFA 3 520.99 millions for Lebialem, Ndian and Kupe manengouba Divisions.

The regional demand of timbers of carpenters in the urban areas is estimate annually at least FCFA **19 413.38 millions distributed** in FCFA 7 578.75 millions for Meme Division, FCFA 7 329.49 millions for Fako Division, FCFA 2 125.80 millions for Manyu Division and FCFA 2 379.25 millions for Lebialem, Ndian and Kupe manengouba Divisions.

All the money cited above does not enter in the investment budget of the state. It enters in illegal timber exploiters pockets and therefore prevents the state from necessary resources for alleviating poverty.

III.5.5 *Where are the various sources of timbers from which carpenters get their supply?*

III.5.5.1 FINDINGS

The survey has enabled to identify the sources of timber supply at the rural and urban area. They are described on figure 8 and figure 9 below.

Figure 8: Sources of timber supply at the rural level

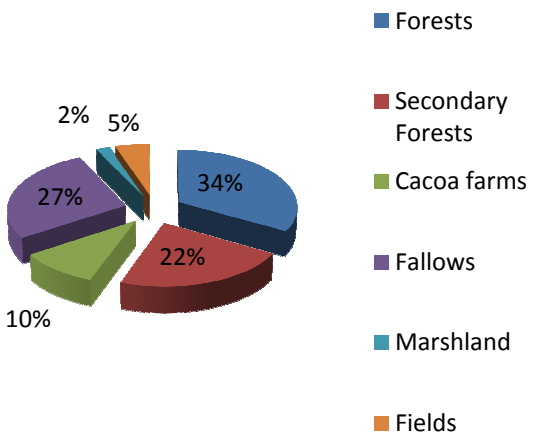
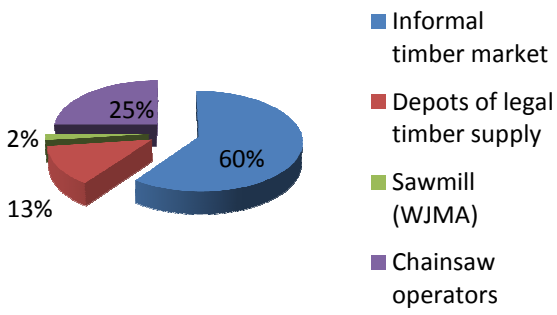


Figure 9: Sources of timber supply at the urban level



III.5.5.2 ANALYSIS, DISCUSSION AND INTERPRETATION OF FINDINGS

It is observed on figure 8 and figure 9 drawn above that:

- In the rural area, about 83% of the timbers supplied to carpenters come directly from the forests, secondary forests and fallows. It implies that those timbers are sawn and supplied by chainsaw operators who don`t have any authorizations. So those timbers are illegal and contribute to the destruction of the forests and also to the lost of financial resources that the council, the local communities and state can use for alleviating poverty.
- In the urban area, about 85% of the timbers supplied to carpenters come from the informal timber market and from chainsaw operators. Those sources are also illegal because none of the timber dealers has legal document barking the origin of their timbers. So, they contribute to the destruction of the forests and also to deprive the state from the relevant financial for the socio-economical development of the country.
- In the urban area, at least 15% of timbers supplied to carpenters come from a registered sawmills or legal depots. This shows the will of carpenters to work in a legal framework.

III.6 SECTION 6: ANALYSIS OF THE DEMAND AND SUPPLY OF CARPENTERS TIMBERS FROM LEGAL SOURCES

III.6.1 SCENARIO 1: *Can the existing community forests within the region satisfy the demand in timbers of carpenters within the regions every year?.*

In the south west region, there are 19 community forests (annual report of RDMINFOFon forest exploitation, 2016) with a total area of 53 134 ha. Now, Gic Nlormac Community Forest (CF) no 288 and Gic Akwem-Agborkem (CF) No 1104086 are operational and their annual exploitation certificates of 2014 and 2015 respectively enables to situate their total area at 261 ha for a total annual timber supply capacity of 3218.444 m^3. Based on these two data, we could broadly estimate the average timber supply capacity of a community forest through a ratio of its timber supply capacity (m^3) over its area (ha) and it will give 12.33m^3/ha/year. Considering that the broad average timber capacity supply of 1 ha of a community forest is estimated at 12.33 m^3/year and knowing that the total area of the 19 community forests within the region is 53 134 ha, we can easily deduce that their total annual timber supply capacity is estimated at least at 655 142.22 $m^{3.}$

Moreover, our survey of the regional and annual demand of timbers for carpenters has estimated it at **235239.60 m^3. On comparing this annual demand and** the annual supply capacity of all the 18 existing community forests within the region estimated at **655142.22** m^3 through a ratio Supply/Demand. We find that such a ratio is 2.8. It therefore means that these 18 community forests can really supply the demand of carpenters 2.8 times not only annually but for a duration of at least 25 years if they are well managed..

Furthermore our analysis also enables us to understand that these 18 community forests can not only satisfy the demand of carpenters in quantity but also in term of the variety of species.

But because of problems of good governance (resource management conflict, poor organization, poor administrative management…), only 2 over 18 community forests are effectively operational. So, a lot of work has to be done to make all of them to be effectively functional.

III.6.2 SCENARIO 2: *Can the existing depots of legal timber within the region satisfy the demand in timbers of carpenters within the regions?.*

Our survey has indicated that only 13% of carpenters get their supply from legal depots, reasons been the insufficient quantity and the poor qualify of timbers because timbers sold here mostly come from the wastes of the sawmills or they are made of pieces recuperated from the slabs. So the quantity and quality are not really guaranteed for the production of good furniture.

III.6.3 SCENARIO 3: *Can the existing sawmill (WJMA) within the region satisfy the demand in Timbers of carpenters within the regions?*

According to the sales Department of WJMA, the sale of timber strategy of WJMA targets the external market because selling prices are far better than the one of local market. He added that, the external market is also very large and that most of the timber needed there for example AZOBE and TALI are not demanded in the local market. Moreover, He said that, they already have their customers with whom they have signed long term contracts.

Concerning the supply of timbers to the local market, the sales Department officer said that, WJMA has been supplying the waste of timbers to the local middlemen who thereafter re-saw before selling to carpenters. Moreover, he said that, local population settled around the sawmill also produce and market charcoal to earn their life. Furthermore, he said that, timber market with carpenters is interesting based on the findings produced by the project and that there are secondary tree species which can be exploited, converted and sold to carpenters, that, the company is ready to work with carpenters if they are serious in term of organization, that the company has a processing capacity which can cover the needs of carpenters.

CHAPTER IV: LESSONS LEARNED AND RECOMMENDATIONS

IV.1 LESSONS LEARNED

No	• **Lessons learned**
001	• That, Within the South West Region, the subsector of wood product exists. It is very dynamic with at least 1024 professional carpenters and 900 apprentices. The growth rate is at least 10% annually.
002	• That, within the South West Region, the minimum annual demand in quantity of timbers for carpenters is distributed as follows: ✓ at least **235239.60** m^3 for the whole region ✓ at least 91834.80 m^3 for Meme Division ✓ at least 88814.40 m^3 for Fako Division ✓ at least 25759.20 m^3 for Manyu Division ✓ at least 28831.20 m^3 for Lebialem,Ndian and Kupe Manengouba divisions • That, the growth rate of this demand of timbers of carpenters is estimated at 10% annually.
003	• That, within the South West Region, carpenters process about 32 different species of trees in their activities. They most used ones are: Sapelli, Bilinga, Iroko, Sipo, Dabema, Kosipo, Moabi, Padouk, Ekop, Zingana…
004	• That, within the South West Region, although the exploitation and processing of Bubinga has been banned, carpenters are still using it. This could be perceived as a sign of the persistent illegal exploitation or insufficient sensitization.
005	• That, within the South West Region, the minimum annual value of the demand of timbers for carpenters supplied in the rural area is distributed as follows: ✓ at least FCFA **15 172.48 millions** for the whole region ✓ at least FCFA 5 923.16 for Meme Division ✓ at least FCFA 5 728.35 for Fako Division ✓ at least FCFA 1 661.42 for Manyu Division ✓ at least FCFA 3 520.99 for Lebialem,Ndian and Kupe Manengouba divisions • That, the growth rate of this demand of timbers of carpenters is estimated at 10% annually
006	• That, within the South West Region, the minimum annual value of the demand of timbers for carpenters supplied in the urban area is distributed as follows: ✓ at least **19 413.38 millions** for the whole region ✓ at least FCFA 7 578.75 millions in Meme Division ✓ at least FCFA 7 329.49 millions in Fako Division ✓ at least FCFA 2 125.80 millions in Manyu Division ✓ at least FCFA 2 379.25millions in Lebialem,Ndian and Kupe Manengouba Divisions. • That, the growth rate of this demand of timbers of carpenters is estimated at 10% annually.
005	• That, at least 87% of carpenters get their supply from illegal sources (chainsaw

	operators, informal timbers markets, cacoa farms…)
006	• That, there are 19 community forests within the region and that only 5 could be operational and only 2 are effectively functional. That if all the 19 community forests were operational they could supply at least **655142.22** m^3 each year and this volume could cover 2.8 times the annual demand of timbers of carpenters for about 25 years with a surplus which could also cover the need of new carpenters.

IV.2 RECOMMENDATIONS

No	Recommendations
001	• Based on the numbers of carpenters identified and the volumes of timbers demanded, we are recommending to MINFOF, MINCOM and the Councils to create ,organize and operate 3 legal and domestic timber markets for carpenters within the region in the following divisions o Meme Division o Fako Division o Manyu Division
002	• Considering the potential and the capacity of the community forests to satisfy the demand in legal timbers of carpenters within the region, we are recommending to MINFOF to give technical support or to enable all the community forests to be operational
003	• Considering the potential and the capacity of the community forests to satisfy the demand in legal timbers of carpenters within the region, we are recommending to NGOs to really build the elements of good governance (transparency on resource management, profit sharing, participation of villagers to the management of their forests, respect of the management plan…) in order to enable all the community forests to be operational and to satisfy the needs of carpenters sustainably.
004	• Considering the potential and the capacity of the community forests to satisfy the demand in legal timbers of carpenters within the region, we are recommending to carpenters and community forests leaders to sign legal timber demand and supply contracts.
005	• Considering the potential and the capacity of the community forests to satisfy the demand in legal timbers of carpenters within the region, we are recommending to MINFOF to build a simple system of traceability of timbers from the community forests to the domestic wood market and finally to carpenters.
006	• Considering the potential and the capacity of the community forests to satisfy the demand in legal timbers of carpenters within the region, we are recommending to carpenters and community forests leaders to organize themselves in associations in other to negotiate good prices for their timbers.
007	• Considering the high demand of timbers of carpenters and their value, we are recommending to WJMA to process relevant timbers to address this need.
008	• Considering the low use of timbers in the South West Region, we are recommending to Buea University to conduct research and disseminate relevant information on less use tree species within the region.

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