

Commercialization of Fuel Wood in Bamenda II Subdivision, North West Region of Cameroon

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Abstract: The mid-1980s' economic crisis in Cameroon led to poverty and high rates of unemployment. This phenomenon forced many people to fuel wood exploitation as a source of income and employment. More than 3/4 of the population of Bamenda II has limited access to modern energy sources such as domestic gas and so has resorted to the use of fuel wood as their major source of cooking energy. The objective of this study is to examine the various actors involved in the marketing and consumption of fuel wood in the Bamenda II. The methodology consisted of using questionnaire, interview of stakeholders, direct observations and data collected from secondary sources; it was revealed that the fuel wood in Bamenda II is supplied more from outside the Sub- Division than local sources like Bali, Santa, amongst others. The results also show that over 128,544 tons of firewood is commercialized per annum. The beneficial aspects of firewood consumption are manifested in its socio-economic gains by vendors such as improvement in living standards and stimulation of savings. The major negative implication noted was that of loss of resources and air pollution which can be ameliorated via afforestation and the use of improved stoves.

Key Words: Commercialization, fuel wood, resources, air pollution.

I. INTRODUCTION

Energy constitutes one of the most important aspects of human life. It is a commodity that is vital for the existence of modern life (Bhattarai, 2014). This is because in every economy, all economic activities ranging from residential, manufacturing, agriculture, transport as well as services sectors depend to a large extent on various energy sources to function. It is generally agreed that the household sector is one of the most important energy consumption sector. For instance, energy consumption of the residential sector accounts for approximately 30% of the total world energy consumption (Agyarko, 2009). About half of global wood production is used for energy (FAO, 2016). One-third of households worldwide and two-thirds of those in Africa use wood as their main fuel for cooking, heating and water boiling. Wood fuel provides more than half of the energy supply in 29 countries, of which 22 are in sub-Saharan Africa.

Mastering the economic and social impact of fuel wood is of paramount importance in a bid to mitigate forest degradation and fight against poverty. In fact, over 80% of the energy supply in African countries comes from wood. Fuel wood

accounts for about 90% of the total wood consumption in Africa and 81% of African households use solid fuels while 70% depend on them as their primary energy source for cooking (AFREA 2011). About 60% of urban dwellers also use woody biomass as an energy source for cooking (IEA, 2010). Africa, especially Central Africa, is one of the southern continents where wood consumption will continue to grow as a household source of energy in the coming decade's fuel (Ekouevi and Tuntivate, 2011), although it will stay important for the other developing regions of the world. In many developing countries, inadequate access (due to both income and supply-side constraints) to modern and clean (green) energy is a characteristic feature of both urban and rural households resulting in heavy dependence on biomass energy.

Cameroon is no exception to this general situation as 83% of Cameroon's populations depend on woody biomass as a source of energy. Primary uses for biomass in the country include cooking, heating and lighting for the majority of the rural population (MINEE, 2010).

Bamenda II Municipality corresponds to the Bamenda II Sub Division, one of the three Sub-Divisions of Bamenda Town. At household level, fuel wood is mainly used for cooking and heating. There are several alternatives to fuel wood in urban areas. Within Bamenda II, the most common alternatives are electricity, kerosene and gas. Despite its importance, the fuel wood sector in Cameroon has not been a subject of intense scientific research. Most information on the subject is contained in technical reports and grey literature. This study therefore, focuses on the assessment of fuel wood supply chain as a potentially viable and sustainable income generation activity and consumption in the study area.

II. MATERIALS AND METHODS

A. Study area

Bamenda II Council Area is located between latitude 5° 6' and 5° 8' North and longitude 10° 9' and 10° 11' East of the Greenwich Meridian (figure 1). It has a surface area of 165.605km². Bamenda II Council Area shares boundary with the following villages; to the north by Nkwen, that is Bamenda III council area, to the south east by Bamendakwe, that is Bamenda I council, to the south by Akum, Bali to the south west. The layout of this area is made up of a serie of

road networks leading to administrative towns (Bamenda II Council Development Plan, 2012).

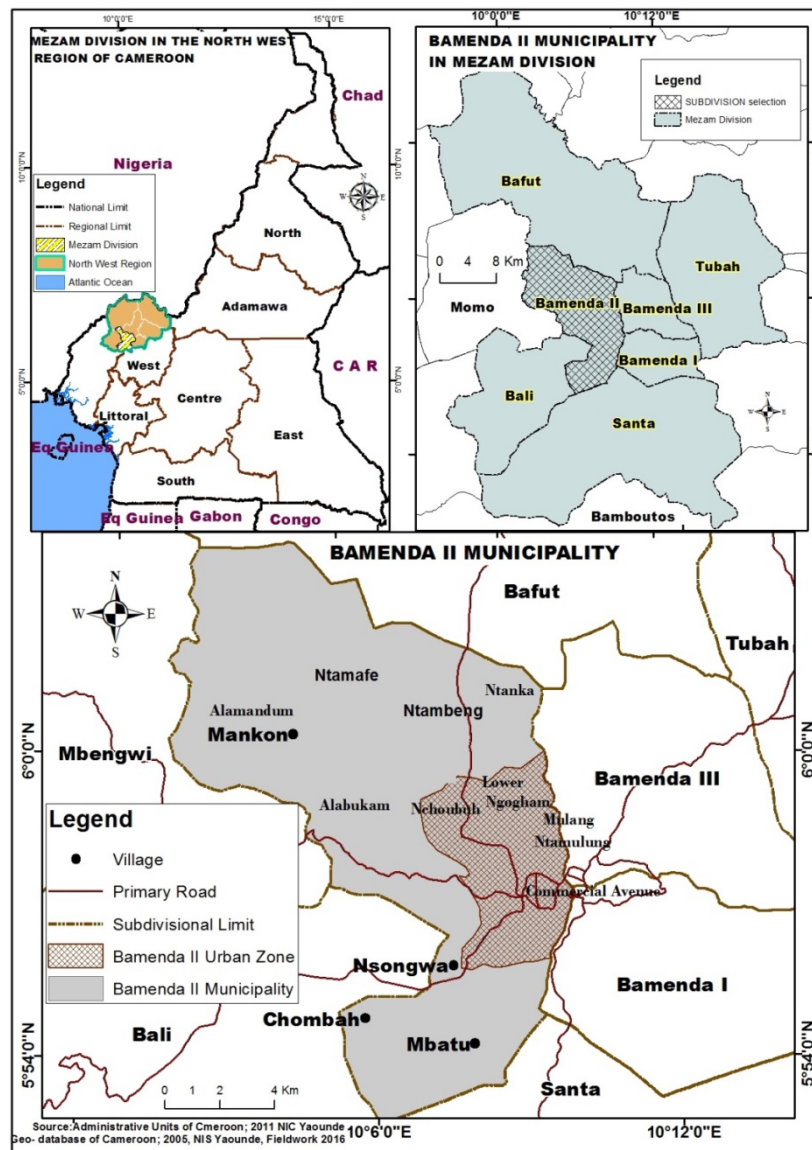


Figure 1: Location of the area of study in Mezam, North West region Cameroon.

Source: Administrative units of Cameroon; Geo-database: 2005, NIS Yaoundé, Fieldwork, 2016.

B. Methods

Quantitative and qualitative data were collected using appropriate methods. Secondary data were obtained from different sources such as articles, reports, dissertations and open access journals related to fuel wood commercialization, from the library of The University of Bamenda and the Bamenda City Council, from the Delegation of Forestry and Wildlife and from internet.

Fieldwork was done through field observation of the study sites; surveying the domains of fuel wood marketing and consumption in Bamenda II through transportation of fuel wood, taking photographs, the administration of

questionnaires as well as interviews. A total of 150 copies of questionnaires were administered using a stratified random sampling technique. The total population for each neighbourhood was then divided by the total population of the study area and multiplied by the sample size. This was to ensure that each member of a household had equal chance of being represented and to minimize cost as the study size was too large. A total of 138 questionnaires were used in Bamenda II because of many firewood sellers and consumers, 03 questionnaires were administered in Nsongwa, 05 in Mbatu and 04 for Chomba. The sites were chosen due to their potentials of firewood marketing. The return rate of questionnaire is shown on table 1.

Table 1: Number of Questionnaires Administered

Villages	Total population	Number of questionnaires administered	Number of questionnaires retrieved	Percentage (%)
Mankon	195041	138	128	91
Nsongwa	3964	03	03	2
Mbatu	7000	05	05	4
Chomba	5551	04	04	3
Total	211.556	150	140	100

Source: Fieldwork, 2017

Interviews were conducted to obtain first class information with the various fuel wood actors. Interview guide were administered to firewood vendors, at the different sale points (Food Market, Old Town Quarter and Ntarinkon Market), to urban household consumers and urban commercial wood consumers, the Regional Delegation of Forestry and Wildlife. The locations of respondent's site were identified with the help of taxi drivers and help from motorbike riders in Bamenda II. Primary data obtained were analysed using several approaches both qualitative and quantitative analysis; cartographic techniques were used, Microsoft Excel and SPSS to analyse collected data.

The fuel wood market chain and its main actors involved were presented diagrammatically. Information gathered from field work and interviews were integrated with statistical data collected. The information was analysed and presented in the form of tables, pie charts and bar charts to describe the socio-economic profile of the firewood vendors and consumers in Bamenda II Municipality because the marketing and supply of firewood is linked to many parameters like impact on livelihood, profit making, cost of transportation amongst others.

III. RESULTS

A. Actors in Fuel Wood Production and Commercialization in Bamenda II

Production essentially entails cutting the trees, chopping to a practical or requested size, drying and packing for transportation to the market. The main actors or stakeholders involved at the level of production and commercialization in the study area are specialized private forest owners, woodcutters (engine saw men), wood splitters and the intermediaries as indicated on Table 2.

Table 2 Actors of Fuel Wood Commercialization in Bamenda II

Actors	Frequency	Percentage
Firewood consumers	72	51,4
Forest owners	17	12,1
Wood transporter	2	1,4
wholesaler	18	12,9
Retailer	26	18,6
wood splitter	4	2,9
Wood cutter	1	0,7
Total	140	100,0

Source: Field Work, 2017

Table 2 shows that over 51% of the respondents are firewood consumers who are responsible for the bulk of wood consumed within this municipality. This is both at household and commercial levels. Over 32% are the intermediaries while private forest owners make up 12%. Transporters and wood cutters constitute the least of the actors involved (2%). This is because they are not only specialised in the transportation and felling of fuel wood alone. They transport other goods as well.

Private Forest Owners

Private Forest Owners are the primary actors in terms of the number of income generating opportunities created in the study area. In the Bamenda II Council area, an estimated 12% are involved at the level of production and collection of fuel wood for supply to consumers. Firewood can be sourced from a number of places; including natural forests, trees on farms, private plantations, residues from forest harvesting. Most fuel wood for this urban area is often derived when forestlands are converted to farmlands due to rapid population growth and the need for settlement as attested by respondents. The forest owners have varying surface area of forest plantations as shown on Figure 2. After collecting the firewood, most of the producers will have to take it to the market for the final consumer either as wholesalers, retailers or both. Producers are located both in the Division and out of the Division of the study area such as in Mankon (rural areas), Bamendakwe, Bafut, Bali, Mbengwi, Batibo, Pinyin, Alatening, and Bui Division. Actual earnings from these activities are not available because exploiters were reluctant to provide reliable figures since their activities are illegal.

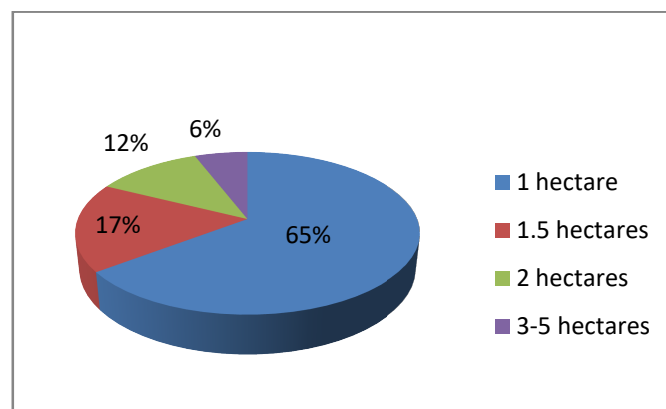


Figure 2: Number of forest hectares owned by farmers

Source: Field Work, 2017

Figure 2 reveals the varying hectares of forest land owned by fuel wood collectors or producers. About 17% of the respondents own forest ranging between half and one hectare, while 65% of the respondents own a hectare of forest. Approximately 12% of the sampled respondents own at least two hectares of forest while 6% have forest over hectares most of which are in the rural areas of Bamenda II as well as out of the Municipality . During wood harvesting, farmers gather fuel wood and bring it to the nearest road side by head-loads, two wheel truck, motorbike-loads or pick-up trucks. They may sell the firewood to the intermediary traders or to transporters as well as to micro-retailers in the neighbourhoods. They also supply directly to the final consumers. The sale of service wood was also noted in this study area. Here, a pole of about 5cm diameter and 700 cm long sells for 250 FCFA. Vendors principally forest owners indicated that they supply poles essentially on order. These vendors say selling service wood is very difficult because

Ministry of forestry and wildlife agents are seriously against it.

Transporters and Fuel Wood Trade

Transporters ensure that fuel wood is transported from villages to the study area. Transportation of fuel wood varies from head-loading, motorbikes to taxis, pick-up trucks, Lorries and large trucks (20 ton truck). Transport cost depends on the distances that have to be covered and the financial means of the fuel wood traders. Transporters make up just 1% of the fuel wood chain and are often men mostly urban based, who travel around production zones to collect fuel wood or travel to villages in and out of the Sub-Division after being contacted by producer groups. Involvement in transport and trade is relatively expensive, which explains why fewer people are able to engage in this activity. Different means are used by transporters for the transportation of fuel wood from the farm to the market as indicated in plate 1



Figure 3: Different means of transporting wood from farm to market

(Photo A: Moto bike transporting, Photo B: Taxi conveying wood from market, Photo C: Pick-up loading firewood Photo D: Fuel wood truck from Kumbo)

Source: Field Work, 2017

From plate 1, photo A and B shows that the collectors of fuel wood in the forest and farms transport their wood to the market either with the help of bike as indicated already or via other means like taxis as shown by B. Collectors equally

transport the wood collected from other parts of the region like Pinyin and Batibo with the aid of a pick-up vehicle as indicated on photo C. Dyna 300 cargo (7 tons) is another mode of transportation which is mostly use to freight in wood

from distant sources. Consumers come directly to the collector at various sales points for purchase. Picture D is a truck heavily loaded with fuel wood from Kumbo on weekly distribution (retail and whole sale) to households and micro-retailers in the neighbourhoods such as old town Bamenda.

Intermediaries

Intermediaries are those that are concern with the trading or the commercialisation of fuel wood directly or indirectly to the consumers and traders. These traders are therefore classified into two namely the wholesaler and retailer. The number of intermediaries is indicated on Table 2.

Table 2 Market Pattern of Fuel Wood Dealers in Bamenda II

Actors	Numberof Respondents	Percentage of respondents
Wholesalers	18	40.9
Retailers	26	59.1
Total	44	100

Source: Field Work 2017

Wholesalers

Wholesalers can be categorised into two groups. About 28% were those with their personal means of transportation and over 72% of the respondents attested that they pay public transport. The formal group of wholesalers plays a central role in the wood market. They control supply by sending woodcutters to harvest and by buying in bulk. They control transportation as well by the fact that often they are vehicle owners. Lastly, they partially control distribution. Wholesalers without their own transportation pay a fixed price for a truckload before organising further sales, directly, or via retailers depending on the distance covered. This category of vendors sells firewood in large quantities (bulk) either to retailers or directly to the consumers, both splited and logs as shown on plate 2.



Figure 4: Types of wood sold by Wholesalers in Bamenda II markets
(Photo A: Wholesaler at Food Markets, Photo B: Wholesaler at Ntarinkon Market)

Source: Field Work, 2017

Plate 2 shows wood in both split and log forms sold by wholesalers. The wholesalers sell this wood either to consumers or to retailers in varied quantities ranging from one log to a four wheel truck or 20 ton truck. The price per log ranges from 500-800 FCFA depending on the size of the log. The wholesalers also supply households in bulk or restaurants who need wood in bulk among other commercial consumers like bakeries and meat roasters.

Retailers

These are traders who sell firewood in small quantities directly to consumers in the Municipality. Retailers buy fuel

wood from the wholesalers and repack the product in smaller quantities for sale in the different neighbourhoods. About 46% of the retailers sell at specialised fuel wood markets in the study area. Bamenda Food Market, Ntarinkon Market as well as along the ring way street are some of their selling points. Some of the wood retailers do not only buy directly from the wholesaler but equally from the collectors. Retailers of wood in Bamenda II often sell in bundles and only about 20% of the 26 retailers sell both logs and splited as shown on plate3



Figure 5: Retailers of fuel wood selling both logs and splited wood

(Photo A: Un-splited logs of wood at the Food Market, Photo B: Splited displayed fuel wood)

Source: Field Work, 2017

Plate 3 dictates fuel wood displayed by vendors in both split and log forms. About 76% of the retailers obtain their supply in town and the others get theirs from the rural areas or from both rural and township. The survey equally revealed that 78% vendors are retailers selling to households, restaurants and roasted meat dealers. Some vendors (9%) obtain loans (essentially from ethnic meeting groups) for the wood sales operation. Those identified selling wood as a main activity is about 75%; the others do this alongside other activities such as farming. This explains the reason why they sell mostly on Saturdays which is considered as the principal commercial day for this town from villages like Mendankwe, Bafut, and Alatening.

Average weekly Sales of Fuel Wood by Vendors

Wholesalers in the study area are the main determinants of seasonal prices of fuel wood, which determine market prices and the share of producers' revenues. In general, it is motorised transporters, merchants and wholesalers who gain the most revenues. Wholesale-transporters in the study area receive over 28 per cent of the product's end prices, followed by retailers who receive about 12 per cent as noted by some of the respondents. Table 3 shows the average weekly quantity of firewood sold by wood vendors.

Table 3: Average Quantity of Wood Sold Per Week and Income of Traders

Category	Number of days on business	Quantity of category sold per day	Price per quantity	Gain per category	Gains per day	Total Average gains per year
Split	5	17 bundles	500frs	100frs	1700frs	408,000FCFA
Logs	5	10	700frs	200frs	2000frs	480,000FCFA

Source: Field Work, February 2017

From Table 3, the firewood vendors sell about 12 bundles of wood per day at a price of 500FCFA per bundle. They make a profit of 100FCFA per bundle and since most of them sell on basis daily (5days), it will give them the privilege to earn at least 1700FCFA per day and an average annual gains of about 408,000FCFA. For those that trade only the logs, it was revealed that averagely they sell 10 logs daily at 700 FCFA per log. This gives them a daily income of about 2000FCFA with an average annual income of about 480,000FCFA. Therefore, for those that trade both logs and split wood in Bamenda II will be working at an annual income of approximately 888,000frsCFA. The income of the traders as revealed by Table 3 is excluded from transportation expenses.

B. Actors in Fuel Wood Consumption in Bamenda II Municipality

In any production chain, if the good does not reach its final consumers, then the production process is not complete. With the collection, trading of fuel wood in Bamenda II, the consumers should not be neglected. The consumers are those that use the final products and for this reason some consumers buy directly from the wholesalers. Consumers include households and other small size enterprises all involved in commercial income generating activities such as food vending (restaurants), local beer (corn beer) brewery as well as industrial activities such as bread baking (bakery), fish smoking, hide and skin (kanda) roasting amongst others that use fuel wood. The percentages of some of the fuel wood consumers are shown on Figure 3.

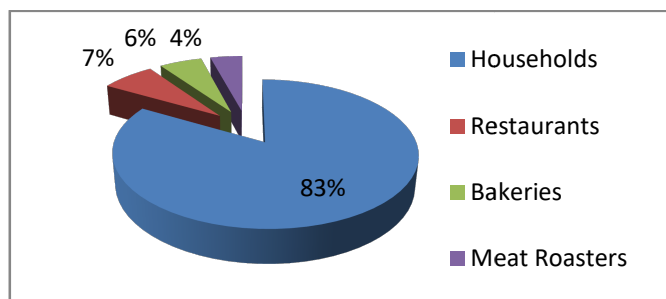


Figure 6: Proportion of fuel wood consumers in Bamenda II

Source: Field Work, 2017

Figure 3 indicates that about 83% of the respondents exclusively consume firewood as a major source of energy in their respective homes. A majority of households buy wood from both wholesalers and the retailers at the council markets as well as along the streets in the neighbourhoods. These are consumers who might want to supplement the other sources of fuel such as domestic gas and kerosene.

Average Weekly Expenditure on Fuel Wood Consumption by Households

Average weekly expenditure on domestic fuel wood and by representative households in the study area was assessed. Analysis of household expenditure on fuel wood revealed that the respondents spend substantial amount of money on fuel wood per week. The mean weekly expenditure on fuel wood is about 3,750FCFA that is total weekly expenditure divided by N. As shown in Table 4.4 household expenditure varies from averagely 1500 (8%) to over 6000 (20%) per week.

Table 4: Average Weekly Expenditure on Firewood by Households

Averageprices	Frequency	Percentages
<1500	5	8
2500	12	20
3500	9	15
4500	16	27
5500	6	10
>6000	12	20
Total	60	100

Source: Field work, 2017

From Table 4, over 8% of the households spend about 1500FCFA on fuel wood while 35% of the respondents spent from 2500 to 3500FCFA weekly. About 27% of the respondents spend more than 4000FCFA on firewood weekly, 10% respondents spend 5500FCFA while 12 (20%) spend between 4001 – 5500 francs. The study shows that an average of 3750FCFA is being spent on the purchase of fuel wood per week per household. This means that total household expenditure on fuel wood in the study area per week is 225,000 FCFA or 11,700,000FCFA per annum. That is average mean per week multiplied by total respondents per annum.

Mean=total average price divided by the total Number of average price.

$$3750 \times 60 \text{ respondents} = 225\,000 \text{FCFA.}$$

Quantity of Fuel Wood Consumed Per Households

A further analysis was made to explore the relationship between household size and the quantity of fuel wood consumed. The analysis revealed that the mean consumption rate per week varies with household size as shown in table 5.

Table 5: Quantity of Firewood Consumed Per Week

Quantity(bundles)	Frequency	Percentage
<5	5	8
6-10	10	17
11-15	30	50
16-20	6	10
>20	9	15
Total	60	100

Source: Field analysis, 2017

The analysis on domestic energy use shown in Figure 2 indicates that 83% of the sampled households use fuel wood for domestic cooking. Following from this, an attempt was made to estimate the total weekly and annual household consumption of fuel wood energy in Bamenda II.

The analysis on Table 5 indicates majority of the sampled (50%) consumed between 11– 15 bundles of fuel wood per week, about 17% consumed between 6-10 bundles while 15% consumed over 20 bundles. Using the 10.3 mean weekly consumption rate, this translates to the consumption of 618 bundles of fuel wood per week or 32,136 bundles of fuel wood per annum. Approximately a bundle is 40kg as attested by vendors of firewood and when multiplied by 32,136 bundles, total fuel wood consumed by households per annum will be 1,285,440 kg or 128,544 tons.

Over 66% of households using wood gave various cost related reasons: Wood is cheaper; wood is retailed for as low as 100 FCFA whereas other forms of energy like gas need a heavy initial investment for cooker, bottle and gas. Other households, 18%, use wood for different socio-cultural reasons. This has been identified as a major influence or perhaps obstacle to fuel transitions. They said wood is practical for the cooking of their staple meals or that they were brought up cooking with firewood and will stick to it. The other 16% households were indifferent as to why they use wood.

Consumption by Restaurants

Three restaurants were surveyed (7%) and are run by women. All the restaurants use wood. Restaurants using fuel wood use a total of about 75 kg/day. This gives an average daily consumption of 25 kg of wood /restaurant which can be equivalent with firewood in a two wheel truck. Considering the three samples consumption for restaurants can be

estimated at 450 kg of firewood per week. This implies an average annual consumption of 23,400 kg or 23tons of wood.

Consumption by Meat Roasters

All three roasted meat dealers surveyed (4%) were males and 1 of them use metallic drum as heating unit, 2 use clay built mounts (Photo 1). The 3dealers consume a total of 108 kg of wood a day, making an average of 36 kg/vendor/day. Wood used here is essentially big logs of the best quality (12kg per log). For the 3 vendors in Bamenda II sampled, it gives 648 kg of wood/week (annual consumption of 33,696 kg or 33tons).



Figure 7: Roasted meat dealer at Santa Park, Bamenda II

Source: Field Work, 2017

Consumption by Bakeries

There are different categories of bakeries in Bamenda II. There are those operating at large scale and those at micro-scale. The quantity of firewood varies per bakery. Large scale bakeries like pee bakery Ntarinkon (photo 2) consume over 7 tons of wood per week which is equivalent to Dyna cargo. Two large scale bakeries were sampled with two small scale bakeries (6%). This is equivalent to 14tons per week for the bakeries. The two small scale bakeries consume over one and a half tons of firewood each per week. That is half of a pick-up 3 ton-vehicle. Per week two small scale bakery consume 3 tons. Mostly fruit trees such as mangoes, pears as well as indigenous trees are used by these bakeries because of their heat contain as noted by respondents. This means consumption per week for the 4 bakeries will be over17 tons and per annum will be over 884tons of wood consumption.

All the respondents in this survey admitted that there was a substitute for wood which is electricity, but not within their reach in the processing of bread and gateaux. They attested of the frequent power outages and high bills that may affect their profit margins. They are left with no choice but to keep on using fuel wood.



Figure 8: Pee bakery Ntarinkon

Source: Field Work, 2017

Summary of Firewood Consumption in Bamenda II Municipality

The quantity of firewood use by consumers per time depends on the purpose and type of household. This explains why different consumers use different quantity of wood base on their activities per time. Table 6 shows a summary of wood used by different actors of firewood consumption.

Table 6: Summary of Firewood Consumption by Actors in Bamenda II

Type of Consumer	Firewood Consumption in Tons
Households	128,544
Bakeries	884
Restaurants	23
Meatroasters (barbecue vendor)	33
Total	129484

Source: Field Work, 2017

The data on Table 6 illustrates that wood is still the major energy source for the majority of the inhabitants of Bamenda II both at household and commercial levels. Households consume over 128,544tons of firewood per annum. Commercial users of firewood energy in Bamenda II consume a significant amount of firewood. The consumption of bakeries is especially alarming with an estimated consumption rate of 10% of the annual urban household consumption compared to that of barbecue vendors whose annual consumption is closed to 0.03% of that of urban households. By implication, households are the main consumers of firewood in the Municipality. This perhaps can cause a decrease in the forest wood indicating that one day if care and appropriate management is not put to monitor the exploitation of the forest, then this so much needed and widely used energy in this area will cease to exist.

IV. DISCUSSION

This study reveal that, the main actors or stakeholders involved at the level of production and commercialization in the study area are specialized private forest owners, woodcutters, wood splitters and the intermediaries. Fire wood

is supplied in Bamenda II from different sources; it is obtained mostly from communal forests and also from private farms or plantations in and from rural localities surrounding this Municipality. Sometimes the owners of the farms are the ones involved in the fuel wood business; they pay labourers to cut the wood and then loading in trucks for sale in the market. Also, firewood retailers go to private farm owners and buy directly at low cost because they have to do harvesting and transportation themselves. Most of the wood sold and consumed in the study area comes from both local and distant sources. This response was mainly for respondents who relied on fire wood trade and forest owners involve in its trade.

This result agrees with the findings of FAO (2016). The author remark that the fuel wood value chain starts with the growing trees, followed by the process of cutting, drying and possible carbonization, then bundling or packaging and transportation to local and regional markets, where it is consumed by households and businesses. Market channels for urban supply vary from direct sales by producers to consumers, to indirect chains that involve intermediaries and/or wholesalers and retailers who organize the sales to consumers. The major groups of actors involved in the wood fuel value chain are producers, transporters, traders (wholesalers and retailers), consumers and (traditional and official) authorities. This work therefore, reflects the same situation in the Bamenda II Municipality where there are thus complimenting the works of other authors.

The result also express agreement with the findings of Eba'aAtyiet *al*; (2016) who hold the view that fuel wood is in large part traded to the final consumers located in urban areas. The sub sector involves four main categories of actors: collectors, transporters, traders and consumers. To these four main categories of actors can be added processors who intervene particularly in the case of charcoal. Collectors sometimes called producers who ensure the availability of fuel wood from various places where the resource is available. This category includes casual wood cutters and local pickers, and more or less professional wood cutters often mandated from urban centres. Wood cutters and local pickers are mostly made up of farmers who collect most of the wood for their own consumption, but also sell them along the road near their homes.

The study of JolienSchure*et al*; (2014) on an approach to promote compatible wood fuel value chains concurs with the findings of this study by citing that the main actors involve at the level of production are specialized woodcutters, community members, farmers and formal and informal authorities. Producers are the primary actors in terms of the number of income generating opportunities created. The authors elucidate with the case in Democratic Republic of Congo, where an estimated 290,000 people are involved at the level of production for supply to Kinshasa. Farmers and their family members often partake in wood fuel production year round. Formal and informal authorities exercise control over tree resources and commercialisation. Regulatory tools

regarding wood fuel extraction can constitute producer or trader taxes, licenses, permits, fees and imposing minimum harvestable tree diameters or restrictions on certain tree species.

V. CONCLUSION

From the above analysis it can be deduced that there is a variation in the market patterns of the commercialization of fuel wood in Bamenda II in terms of the actors involved. This market patterns has an impact on the structure of the market and all these influence the profitability margin of actors as organized actors make more profit that actors who are not organized. Eventhough the government comes in anywhere along the fuel wood chain, governance is critical in determining who controls what along the firewood chain. Owners of forest ought to draw up simple management plans with the assistance of the services of the Ministry of Forestry and Wildlife as attested by a forestry officer during field interview. But this is never the case as noted in the Bamenda II area due to illegal exploitation of the forest and also due to bottle necks from forestry control post officers. The firewood sector therefore, suffers from a lack of organisation both with regard to public services and private actors. The legislation is inadequate and institutional framework inappropriate. These organizational, legal and institutional shortfalls may in turn aggravate the situation in the North West Region by promoting the destruction of resources in addition to promoting illegality and depriving the State of needed resources.

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