

# **The Potential for Developing a Sorghum Supply Chain for Guinness Cameroun S.A.: a Rapid Assessment**



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**March 29 - April 5, 2008**

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# **The potential for developing a sorghum supply chain for Guinness Cameroun S.A.: a rapid assessment**

## **I. Background**

Guinness Cameroun S.A. is one of the leading beverage companies in Cameroon. It is a daughter company of Diageo. Based in London, U.K. Diageo's believes that enriching local communities is an important part of the business. For that reason it has embarked on local supply chain initiatives world wide, as purchasing raw materials locally contributes to the domestic agricultural development and can serve as a significant stimulus for the introduction of improved agricultural cultivation practices. Moreover, with the continuing increase in agricultural commodity prices on the global market such procurement strategy can make also commercial sense as by buying locally the supply chain is shortened and diversified. Diageo has enjoyed positive experiences in using local sorghum in Nigeria and – more recently – also in Ghana. In these countries local sorghum has partly substituted for imported barley. Cameroon produces sorghum in the North and Extreme North provinces. The question is if the production and the marketable surplus of domestically grown sorghum are sufficient in order for Guinness Cameroon to consider procuring a portion of their raw materials locally.

## **II. Objectives of the study**

The main objective of this study was to determine the production and marketable surplus of domestic sorghum in order to assess the potential for local sorghum procurement. Specific questions are:

- Is there a consistent surplus of sorghum?
- Would Guinness Cameroun procurement of sorghum negatively affect the local food security?
- Would key stakeholders in the region welcome Guinness Cameroun entering the market for sorghum?
- What observations can be made regarding seasonality and pricing of sorghum?

## **III. Method**

For reasons of efficiency and timeliness a rapid survey was conducted during the week of March 29 - April 5 by a team of two persons, Henk Knipscheer and Maurice Kenmogne. Dr. Knipscheer is Senior Program Officer at Winrock International, an U.S. based NGO that already is collaborating with Guinness Nigeria Plc. He is also Managing Director of EUCORD, the European Cooperative for Rural Development, and Winrock's affiliate in Europe. EUCORD is collaborating with Guinness Ghana Breweries Ltd. during the last two years. Maurice Kenmogne is member of the Brewing Team at Guinness Cameroun.

The team visited the Northern and Extreme North provinces and gathered information from key stakeholders, i.e. from the public sector, the private sector (including farmers) and the civil society (NGOs). Where available, statistic information regarding sorghum production and prices were collected. The interviews were informal and covered various aspects of the supply chain.

A list of persons interviewed can be found in Annex A. The itinerary of the team is summarized in Annex B.

#### **IV. Findings**

##### **a. Sorghum supply**

There are three different seasonal types of sorghum to consider. The main bulk of the sorghum production consists of rain-fed sorghum varieties. These are planted at the beginning of the raining season – generally in June. Among the rain-fed varieties two sub-types can be distinguished, i.e. the short duration varieties which mature in about three months (90-100 day varieties) and the long duration varieties that mature in 120-150 days. Short duration varieties are harvested in September-October while long duration varieties are harvested during November – December. The long duration varieties have the potential of a higher yield depending on the duration of the raining season. The third type of sorghum is quite different from the first two types. This is the dry season sorghum (“sorghum de contre saison”). It is planted on fields, which are flooded and inundated during the raining season and become dry when the raining seasons ends (e.g. October). The dry season sorghum varieties have the capacity to survive on the residue moisture of the previous flooded soils. Although not cultivated in the same quantities as the rain-fed sorghum it is a significant commercial crop as it is grown especially for the market while rainfed sorghum mainly is grown for household consumption. Table I shows the amount of sorghum grown in the two northern provinces.

**Table 1. Estimated sorghum production in 2007 (1,000 MT)**

<i>Types of sorghum</i>	<i>North Province</i>	<i>Extreme North Province</i>
Rainfed sorghum	190,000	325,000
Dry season sorghum	22,000	150,000
<b>Total</b>	<b>212,000</b>	<b>475,000</b>

Table 1 indicates that the Extreme North produces clearly most of the sorghum for Cameroun. However it is more densely populated than the North Province. Sorghum is a more important food staple in the extreme North Province while maize is a more important grain crop in the North province where the rainfall is more reliable.

Rainfall is the main determinant of the level of production. Production figures are available for the period 1999-2004. These are presented in Table 2.

**Table 2. Annual sorghum production during 1999-2004 (1,000 MT) as per MOA**

<i>Year</i>	<i>North Province</i>	<i>Extreme North Province</i>	<i>Total</i>
1999	91,877	224,311	316,188
2000	153,246	304,328	457,574
2001	162,288	322,283	484,571
2002	171,863	341,298	513,161
2003	182,002	361,475	543,477
2004	192,241	382,758	574,999

Unfortunately these official production numbers are very suspect as from year 2000 onwards the annual increase of production is reportedly always about 6% higher than the previous year. Such consistent increase is highly unlikely in view of variability of rainfall and great fluctuations in prices.

A separate analysis by the provincial office of the MOA (Ministry of Agriculture) at Maroua estimated that the annual surplus in the Extreme North Province during the 2007-2008 cultivation season was estimated to be about 150,000 MT. Surplus is here defined by the difference between annual provincial sorghum production and annual provincial sorghum consumption. The annual amount that Guinness Cameroon would possibly procure domestically is an insignificant portion of this estimated surplus.

Our conclusion is that sorghum is available in large supply in the two northern provinces of Cameroon. Guinness procurement is highly unlikely to affect food security in the region. The Extreme North Province produces about twice the amount of sorghum provided by the North Province.

#### **b. Sorghum demand**

The vast amount of sorghum is used for home consumption. Farmers try to store enough sorghum for the family needs for the period until the next harvest. Often food becomes very scarce during the months immediately preceding the harvest – the “hungry season”. The marketable surplus of sorghum is being bought by (a) traders from Nigeria and Chad, and (b) the World Food Program (“Programme d’Alimentaire Mondial” – PAM). Smaller quantities find their way to Yaoundé. PAM distributes sorghum to refugees’ camps in Chad and Sudan (Dafur) and - reportedly - also provides food to school food programs. The Cameroon Office Cerealier has been established to buy grains during periods of oversupply (low prices) and sell these at periods of relative shortages (when prices are high). The office rarely buys or sells sorghum. However, it regularly buys, stores, sells and transports *maize*.

Thus, nearly all the sorghum produced in Cameroon is being used for human food purposes. No sorghum is being used for agro-industrial uses (livestock or beverages) unless some of the sorghum sold to Nigerian traders finds its way to Nigerian industrial agro-processors.

### c. Sorghum prices

Average prices for sorghum are available for the north Province. As there is a good connection between markets in Garoua and Maroua, prices are similar. Sorghum production depends on rainfall. When rainfall is low, sorghum prices in Maroua may be higher than those in Garoua, and Chad traders will come down to Garoua in order to buy their sorghum in the North Province. More common though is that prices in Maroua are slightly lower than those in Garoua. The Office Cerealier collects price information weekly for cereals per main variety. Paging through the raw price data of the last five years, prices have been at times as high as CFA 24,000 per bag of 100 kg, and as low as CFA 5,500 per bag of 100 kg. Most commonly market prices hover around CFA 12,000/100 kg. Prices at the village level are about CFA 3,000 lower. For example, during 2007 monthly farm prices in the department of Benoué, around Garoua, reportedly averaged CFA 8,200/100 kg. When the Team visited the village of Lombou, farmers estimated that the price difference between the village of Lombou and the nearest weekly market (Pitoe) was about CFA 2,000 per bag of 100 kg while the difference in price between the weekly Pitoe and the daily Garoua market was another CFA 1,000 per bag.

Table 3 shows average monthly sorghum prices at Maroua during the period 1985 – 2007 and the period 2004-2007.

**Table 3. Average monthly sorghum prices at Maroua market (CFA/100 kg)**

<i>Month</i>	<i>Average 1985-2007</i>	<i>Average 2004-2007</i>
<b>January</b>	<b>9,000</b>	<b>11,000</b>
<b>February</b>	<b>8,900</b>	<b>11,300</b>
<b>March</b>	<b>9,200</b>	<b>11,800</b>
<b>April</b>	<b>9,700</b>	<b>12,100</b>
<b>May</b>	<b>10,400</b>	<b>13,200</b>
<b>June</b>	<b>11,200</b>	<b>13,900</b>
<b>July</b>	<b>12,700</b>	<b>15,100</b>
<b>August</b>	<b>12,300</b>	<b>14,200</b>
<b>September</b>	<b>11,200</b>	<b>12,700</b>
<b>October</b>	<b>9,600</b>	<b>12,300</b>
<b>November</b>	<b>9,400</b>	<b>11,800</b>
<b>December</b>	<b>9,500</b>	<b>11,800</b>
<i>Annual</i>	<i>9,400</i>	<i>11,600</i>

Table 3 demonstrates that prices during the “hungry season” peak more than 30% above their average monthly value (e.g. compare average July prices with average annual prices). Obviously in some years this increase has been much larger. Average fluctuations in the remaining months are modest. January and February are months with average low prices. However these prices are only about six percent below the annual monthly average. The Table shows that Guinness Cameroun should avoid procuring sorghum during the period May-September. However, note that the price fluctuations for specific varieties, e.g. white rainfed varieties or yellow dry season varieties are likely to show

much larger fluctuations than the averages shown in Table 3. Another observation to be made is that Guinness Cameroun (as well as the farmers involved) may gain by buying directly from (groups of) farmers rather than via various layers of intermediaries.

**d. Sorghum cultivation**

Rainfed or pluvial sorghum is typically grown during a three year crop rotation:

1. Year 1: Cotton
2. Year 2: Intercropping of sorghum and millet with grain legumes such as groundnut and/or cowpeas
3. Year 3: Similar intercropping as year 2

During the fourth year, farmers return back to cotton. Cotton cultivation needs fertilizer application, and the sorghum grown during the year following sorghum benefits from the presence of residue fertilizers. The yield of rainfed sorghum can be improved significantly by the application of some fertilizers and higher planting density.

Agricultural productivity can be increased much more if appropriate sorghum hybrids can be developed. See Table 4.

**Table 4. Illustrative benefit from improved practices (rainfed sorghum)**

	<i>Scenario 1</i>	<i>Scenario 2</i>	<i>Scenario 3</i>
Yield (kg/ha)	700	1,500	3,000
Price (CFA/kg)	70	70	70
Revenue (CFA/MT)	49,000	105,000	210,000
Costs (CFA/MT)	46,900	82,700	105,820
Margin (CFA/MT)	2,100	22,300	104,180
B/C ratio	1.04	1.27	1.99

*Scenario 1 - Farmer saved seeds, no fertilizer*

*Scenario 2 - Improved seeds, 4 bags of fertilizer*

*Scenario 3 - Hybrids, 6 bags of fertilizer*

The productivity of dry season sorghum can be improved by conservation tillage techniques. Presently the land preparation for dry sorghum is very labor demanding as the knee high weeds have to be removed by hand and hoe. The application of herbicides reduces the demand for labor allowing the farming families to farm a larger area. Moreover by not disturbing the top soils, the scarce moisture in the soil is being conserved resulting in higher yields.

The cotton cultivation is declining as Cameroon (as elsewhere in Africa) has problems competing against the cheaper Chinese and Indian cotton. Farmers are looking for other sources of cash income. This is one of the main reasons why Guinness Cameroun is being welcomed as a potential buyer of sorghum in the two provinces.

*Difference in varieties.* Farmers tend to grow a mixture of sorghum varieties thereby reducing their risk. Modest price differences and/or yield differences are reported between varieties but the team found no consistent information. On the urban markets of Maroua and Garoua three varieties are common: red, yellow and white. As the Team visited these markets early April most of these varieties were dry season varieties. Rainfed (pluvial) varieties also are red, yellow or white, but these are different varieties and will not necessarily have the same transformation characteristics as the dry season varieties with the same color. Farmers grow these varieties on the same field and separate the grains by color after threshing.

One special variety is known to be disliked by birds. This variety (“Bourgou”) is sometimes grown around the borders of the field in order to discourage birds to enter the center of the field where better tasting sorghum is being grown.

Table 5 illustrates the most common varieties per season and color.

**Table 5. Common sorghum varieties**

<i>Season</i>	<i>Red</i>	<i>Yellow</i>	<i>White</i>
Rainfed/Pluvial	<b>Jigari</b>	<b>Mbayeri</b>	<b>S35</b>
Dry Season	<b>??</b>	<b>Safrari</b>	<b>Dalassi/Adjajamai</b>

*Need for inputs.* It seems that the productivity of both kinds of sorghum cultivation, i.e. rainfed/pluvial sorghum and dry-season sorghum can be improved. For rainfed sorghum access to fertilizer is essential while for the dry season access to herbicides is required. Both these inputs need cash outlays. The Team visited a micro-finance bank called “Crédit du Sahel” in order to explore if short term credit for these inputs can be made available if the credit would be associated with delivery contract by groups of farmers to Guinness Cameroun. The response was a clear “yes”.

Unfortunately during the time of the survey the sorghum experts at the Agricultural Research and Development Institute (IRAD – “Institut pour la Recherche Agricole et le Développement”) were traveling and could not be interviewed.

#### **e. Marketing system**

Presently sorghum is marketed via several layers of traders. Generally farmers arrange for the transport of their bags from the field to the homestead and from the homestead to the weekly market using public transport. During these market days they will sell their sorghum, and buy home and/or farm supplies before returning to their villages. Petty traders (sometimes also called “village collectors”) collect bags from these weekly markets and deliver these to the large traders who have their storage facilities at the permanent (daily) urban markets. The large traders will sell to long distance traders coming from Chad and Nigeria. Large buyers such as PAM may place an order for a large quantity (e.g. 200 MT) with a large trader. This trader will then mobilize his collecting agents (village collectors) to start buying sorghum at the weekly markets and bring this to a central storage place in order for the sorghum to be ready when the large trucks (30 and 40 MT) arrive. Village collectors may also visit larger farmers directly



without going via the weekly market if they need to fill a specific consignment and cannot find enough sorghum on the weekly markets.

Estimates for the cost of transport between Garoua/Maroua and Douala varied between CFA 3,500 and CFA 4,000 per bag of 100 kg. Transport cost per train may be somewhat cheaper than by road but will take twice as long. The Office Cerealier reported paying CFA 3,000 per 100 kg for the transport of large quantities of maize between Garoua and Douala. There is no reason to assume that the costs for sorghum (in large quantities) would be higher than that. Presently trucks from Douala transport wheat, sugar and rice from Douala to Garoua and Maroua. These transporters are eager to return as soon as possible with a full load back to Douala. If large quantities of sorghum can be pre-arranged to be ready to be loaded, one can bargain for competitive transport contracts.

*Quality.* All traders reported no or very little problems with quality control. The quality of sorghum in 100 kg bags can easily be checked by sampling. Bags are sometimes marked according to their origin and problems can be traced (at least at the local – departmental – level). Also, few problems are reported during long term storage of sorghum during the dry season. The Office Cerealier provided the Team with their treatment for maize storage.

*Transparency.* Price negotiations at the weekly markets depend on the quantity of sorghum carried in by farmers during the morning and the eagerness of village collectors to buy. As farmers have paid for the local transport and need some cash in order to buy supplies, they generally will have no strong bargaining position. Therefore, it is really not well known what price individual farmers actually receive for their sorghum. Often the weak negotiation position of the farmers is compounded by their need to take cash advances from local (petty) traders before they have even harvested their crop. In such occasions traders tend to negotiate for relative low prices. The team believes that Table 3 therefore does not actually reflect the very low farm-gate prices prevalent at the time of harvest of the rainfed sorghum – rather the Table 3 prices may reflect prices paid by large traders to petty traders.

#### **f. Farmers organizations**

Cameroon has benefited from previous World Bank financed agricultural development programs. Under these programs rural self-help groups have been promoted: “GICs – Groupement d’Intérêt Commun”. A GIC is an officially registered self help group of a minimum of 7 households. The average number of household members may be ten. One village will have several GICs – depending on the size of the village. Many GICs are dormant but some of them are well organized. The team met with the Head of one GIC whose members kept some sorghum in communal storage in order to assist the weaker members during the “hungry season”. If members borrowed some sorghum during this season they had to return the sorghum after the harvest with some additional quantitative as “in kind” interest. Sometimes a group of GICs is organized into a “Union”, e.g. ten GICs in one village can become an Union. A group of Unions are sometimes organized into “Federations”. The Office Cerealier has been able to contract with some of the stronger federations for the sale of maize and is satisfied with the results.

Guinness Cameroun directly contracting with cluster of GICs, Unions and/or Federations has the great advantage of eliminating one or two layers of intermediaries thereby saving costs. However, the capacity of these farmer organizations has to be tested – including a review of both the governance of the farmer organization and the management procedure. Transparency of management is a key of a successful farmer organization.

The team visited with one seeming well organized Federation in the Extreme North Province, FAPEN. FAPEN (Fédération pour l'Autopromotion des Paysans d'Extrême Nord) is located at the village of Moussourouk near the village of Mouda about 35 km south of Maroua. The main storage shed is brand new and conveniently located at the main road between Maroua and Garoua. For another two years FAPEN will benefit from the guidance of an Italy sponsored rural development program. This 30 month project is being implemented by an Italian NGO, ACRA (Association pour la Collaboration Rural en Afrique). The team was impressed by the attention to transparent decision-making being emphasized by the ACRA staff. Guinness Cameroun should seriously consider trying to arrange for a (initially modest) contract with FAPEN. Such contract should be arranged before June in order for farmers to arrange for their sorghum planting accordingly.

Guinness Cameroun is also advised maintain in good communication with the Office Cerealier (e.g. Mr. Lazare Iloga) as they have ample experience in contracting with Federations and Unions, and can help assess their management capacity.

Note that in Ghana, Guinness Ghana breweries Ltd collaborates with EUCORD in a different manner. There the sorghum supply chain is organized via so-called “nucleus farmers”. Nucleus farmers are large scale farmers who are committed to arrange for a network of small scale out-growers in their vicinity. The advantage of this structure of the supply chain is that the production and collection responsibilities in the supply chain are clearly defined. The disadvantage of the nucleus farmer system is that the nucleus farmers may start to behave as a village collector. Under the nucleus farmer system transparency of price setting is important – as it is when working with federation and/or Unions which are organized according to cooperative principles.

One should note that a cooperative farmer organization can also be abused by its leader(s) and turn into a disguised village collector system.

Guinness Cameroun can show its strategy of social responsibility by involving a substantial number of smallholder sorghum farmers into their supply chain. Assuming an annual procurement of 1000 MT can easily involve 1000 families who collectively may earn USDF 300,000 in income. One dollar of income to poor farmers will turn five times around in the local economy. Therefore the economic impact of such local procurement strategy would amount to USD 1.5 million dollars – a staggering amount.

However, a reliable sorghum supply chain cannot rely on smallholder production alone, as during years of little rainfall these households will have to feed their families first

before being able to deliver sorghum to Guinness Cameroun. So, the team recommends Guinness Cameroun also exploring the potential for a nucleus farmer supply system.

## **V. Conclusions**

The main conclusion of this rapid survey is that the local production of sorghum is more than enough to provide food to the local population and that – even in years of low rain fall – there is a sizeable marketable surplus of domestic sorghum. It is unlikely that Guinness Cameroun entering the market would negatively affect to local food security or even have an impact on price.

Without exception all stakeholders contacted, MOA offices, famers, private traders and NGOs alike, enthusiastically welcome Guinness Cameroun entering the sorghum market. The general feeling is that Guinness starting to buy sorghum will partly help offset the decline in cotton earnings. Unlike in Nigeria there are no indications that muslin famers or traders are concerned about sorghum partly being used for the preparation of beer. Actually large amounts of sorghum are used for the preparation of home made beer.

Sorghum prices fluctuate significantly from month to months and from year to year. Guinness Cameroun should avoid buying during the hungry season (July-September) and probably focus on deliveries immediately after the harvest of the short duration and long duration rainfed sorghum (October-December) and the harvesting of the dry season crop (March). There are good commercial and social reason for Guinness to follow a procurement strategy similar to the one followed by Office Cerealier, i.e. bypassing intermediate traders and contracting directly with selected Federations, Unions and “nucleus farmers”.

Procurement contracts between Guinness Cameroun and Federations, Unions or even “nucleus famers” will help famers gain access to credit for the application of more productive cultivation practices, e.g. use of modest amounts of fertilizers during the raining season and the use of herbicides (and conservation tillage) at the beginning of the dry season.

Therefore -while developing a sorghum supply chain - a partnership with an agricultural development NGO that can train farmers and initially assist with facilitating the collection, transport and quality control of locally produced sorghum seems desirable.

Many sorghum varieties are being marketed. Although similar in color and appearance, rainfed and dry season sorghum varieties are to be distinguished and to be tested by the Guinness Cameroun for brewing characteristics.

## ANNEX A: Persons interviewed

### **Garoua:**

Mr. Lazare Iloga, Office Cerealier,  
Mr. Gilbert Gourlemond, DG Office Cerealier, 22 27 16 53  
El-Hadj Hamadou Abdoulaye, MOA Head of North Province, 990 12 50  
Mr. Mbolda, MOA Chief of Provincial Development Service, 77 67 03 70  
Dr. Klassou Celestin, Head IRAD Station, 75 17 34 14  
El-Hadj Bouba Ghana, Trader, 22 16 17 38  
El-Hadj Alhidjo Sombare, Trader, 99 55 56 63  
Mr. Djoubairou, Farmer and head GIC of Barka Ndemri  
Mr. Dzomo Jean, Office Cerealier, 99 85 46 51  
Mr. Hamadou Issa, MOA, Head of Benoue departmental Agricultural and Rural Development Service, 99 31 40 24  
Mr. Yaya Change, Trader  
Lombou Village, group of about ten farmers including village chief.

### **Maroua:**

Mr. Necdem Janvier, MOA Depute Head of Extreme North Province, 99 91 19 96  
Mr. Galasse Gregoire, MOA Chief Development Service, Extreme North Province  
Mr. Fare Gilbert, MOA Chief Statistics office, Extreme North Province, 77 55 63 59  
El-Hadj Sali Bouba, Trader and Farmer, 77 64 48 36  
El-Hadj Boubakary Nouhou, DG Adjoint of Credit du Sahel Micro-Finance Bank  
Mr. Bamo Clement, Director Marketing, Credit du Sahel, 77 19 46 71  
Ms. Eliane Akoa Efa, Winrock International – Maroua, 96 29 72 51  
Mr. Gaston Galamo, SNV Netherland Development Organization, 987 42 82  
Ing. Roger Bello, ACRA (Association pour la Collaboration Rural en Afrique)  
Development Specialist assigned to FAPEN (Federation pour l'Autopromotion des Paysans d'Extrême Nord), Moussourtok (near Mouda)  
Mr. Samuel Warda, ACRA Development Specialist assigned to FAPEN, Moussourtok

## ANNEX B: Itinerary

Saturday, March 29: Arrival Henk Knipscheer in Douala  
Sunday, March 30: Travel Knipscheer and Kenmogne to Garoua and visit to market  
Monday, March 31: visits to various offices and market  
Tuesday, April 1: visit to Lombou village, travel to Maroua and visit MOA  
Wednesday, April 2: visits to various offices, market, and travel to Moussourtok village  
Thursday, April 3: return to Garoua, visit Office Cerealier and return to Douala  
Friday, April 4: visit Guinness Cameroun S.A.  
Saturday, April 5: report writing and departure Knipscheer