Promotion of Sustainable Arabica Production in North-West Province, Cameroon

Baseline Study

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Foreword

During November 2008 Kuit consultancy and a team from Olam Cam designed and carried out a baseline study in preparation for the implementation of the project “Promotion of Sustainable Arabica Production in North-West Province, Cameroon”. The team consisted of 4 people: Michiel Kuit, Austin Kidzeru, Gwellem Abula Jacqueline and Dickson Kwanyuy.

The goal of the study was to:

1. Provide a sound socio-economic analysis of the context in which the project operates; and
2. provide quantitative information on those aspects of development in the project area that will be monitored and evaluated during and after project implementation.

This report details the findings of the team.

The team would like to take this opportunity to thank all respondents for their willingness and enthusiasm to answer our questions. Also thanks to DE Foundation and Olam(Cam) who are funding the project and made this work possible and to the National Coffee and Cocoa Board for their support.

List of Abbreviations

˚C	Degree Celsius
asl	Above Sea Level
CBD	Coffee Berry Disease
CCIC	Cocoa and Coffee Inter-Professional Council
CFA	Communauté française d'Afrique
CIF	Cost Insurance and Freight
cm	Centimetre
DEG	Deutsche Investions- und Entwicklungsgesellschaft
FAO	Food and Agriculture Organisation
FFB	Farmer Field Book
FFS	Farmer Field School
FTE	Full Time Employee
GDP	Gross Domestic Production
ha	hectare
ICP	International Coffee Partners
kg	kilogram
km	kilometre
LBA	Local Buying Agent
m	meter
MINADER	Ministere De L'Agriculture et du Developpement Rural
mm	Millimetre
MoU	Memorandum of Understanding
Mt	Metric tonne
NCCB	National Coffee and Cocoa Board
NGO	Non-Governmental Organisation
NWCA	North-West Cooperative Union
OECD	Organisation for Economic Cooperation and Development
ONCPB	Office National de Commercialisation des Produits de Base
PARFAR	Programme d'Amélioration du Revenu Familial Rural
PPP	Purchasing Power Parity
PRSP	Poverty Reduction Strategy Paper
SAI	Sustainable Agriculture Initiative
USD	US Dollar
USDA	United States Department of Agriculture
USDct	US Dollar cents

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1 Introduction

The goal of the study is to assess current agricultural production practices in general and coffee production practices in particular in 4 selected sub-divisions of North-West Province (NWP). It goes on to detail the relative importance of coffee *vis a vis* other cash and food crops. Socio-economic conditions in the project area are assessed by analysing farm income, access to education, healthcare, infrastructure, coffee trade mechanisms, credit facilities, farmer support services and current inter-farm modes of cooperation.

Outcomes of the study will allow the project team to optimally adjust project operational planning to local conditions and farmers' needs. In addition the baseline outcomes form the benchmark against which project impact can be monitored and implementation adjusted if and when needed. An over-riding project goal is to ensure sustainability of project interventions after the project has ended. In light of this goal the current study will be repeated 2 years after the project has ended in 2013.

The first section (Chapter 2) outlines the rationale for this study and describes the methodology used. Chapter 3 then describes the general development situation in Cameroon and details characteristics of the Cameroonian coffee sector and the policies that have been designed to govern it. Going into more locally relevant detail, Chapter 4 describes the socio-economic conditions on the project area. It provides a detailed analysis of farming activities and revenues and describes the relative importance of coffee. It goes on to analyse current coffee farming and marketing practices and suggests improvements that could be made. Current support delivery mechanisms and types of support, such as extension, farmer organizations and finance, are then discussed. The report concludes by summarizing opportunities in which project activities could make a difference and enhance both productivity and farm incomes. Finally the case for stakeholder involvement to arrive at concentrated and targeted action across the sector is argued.

Annex I outlines values of project indicators that shall be tracked over time to analyse project impact and form the basis of activity adjustment. Annex II contains a reference to the questionnaire that was used.

2 Methodology

This section describes the methodology used implementing the study.

2.1 Research approach

The project preparatory mission which took place in May 2008 resulted in the selection of 3 sub-divisions, Oku, Noni and Nkambe, in which the pilot phase of the project is to take place. Given the nature of the project, its focus on coffee and the involvement of coffee companies the primary selection criteria centred on the relative importance of coffee in the pilot areas[1]. A fourth sub-division, Nkum, was added afterwards.

Data collection in the pilot areas was carried out using a comprehensive questionnaire (Annex II) and structured interviews. The questionnaire was designed using input from a local expert. Prior to implementation the questionnaire was field-tested and minor changes were made as a result. Ideally interviewees would be selected randomly from a list of coffee farmers. However, in the absence of such documentation the team had to resort to random on-site selection of respondents. Particular care was taken to avoid interviewing only those farmers that are living close to the main roads and in village centres. To the extent this was possible all interviews were done on-farm. This gave the interviewers the possibility of corroborating answers related to, for example, pruning practices and pest and disease pressure with a visual assessment of the farm. In total 60 farmers were interviewed in 4 sub-divisions. While coffee is considered a "man's crop", there are also women that grow coffee. Often women acquire coffee farms by inheritance from family members or run the coffee farm in the absence of their husband, although at least one female respondent recently bought a coffee farm. Regionally, female ownership of coffee farms is estimated by a local expert to be no more than 10% (Kidzeru, 2008), this is reflected in selection of respondents (Table 1). During a further estimated 10% of the interviews both husband and

wife were present. During the pilot phase the project is expected to work with 500 farmers. To ensure a representative sample the baseline study collected data from 60 farmers, or 12% of the target group.

Table 1: Number of respondents per sub-division and by sex (interviews where both male and female were present are listed under the "male" heading).

	Respondents	
Sub-division	*Male*	*Female*
Oku	19	1
Noni	13	2
Nkambe	15	1
Nkum	6	3
Total	53	7

Additional data was sourced during informal interviews with local coffee experts. And the section on national and regional development relied heavily on literature sources and informal interviews with resource persons from research and government institutes.

3 Cameroon

This section outlines the general development situation in Cameroon and goes on to analyse the broad parameters of coffee production in the country by detailing historical developments and the status quo. The section concludes by outlining national policies that govern operations in the sector.

3.1 Cameroon development situation

Following independence, Cameroon was one of the most prosperous countries in West Africa for 25 years. The mid-1980s global decline in commodity prices for Cameroon's principal exports –oil, cocoa, coffee and cotton, combined with an over-valued currency and economic mismanagement led to a decade long recession. Per capita GDP fell by more than 60% from 1986 to 1994.[2] IMF enforced structural adjustment started in the late 1980's and involved currency devaluation, reduction of salaries for public servants, liberalization of several sectors and a general reduction of public spending on things like health care, education and research. By 2004 Cameroon had met most of its Poverty Reduction and Growth Facility targets that are outlined in its Poverty Reduction Strategy.

Cameroon remains a largely agrarian nation with close to 70% of the population involved in farming. Up until the discovery of oil in 1978, agriculture contributed 32% of GDP. However, the importance of agriculture as measured by its contribution to GDP has declined to 20% in 2006[3]. GDP per capita (PPP adjusted) was estimated at 2,421USD in 2005[4] with annual real GDP growth of around 4.1%.[5]

Literacy rates for adults are estimated at 68% and are some of the highest in the region. With universal primary education Cameroon is well underway to increase the literacy rate of its population. Primary school attendance ratios for males and females are 86 and 81% respectively.[6] Cameroon's poverty rates, defined as the percentage of people of the total population living on less than 1USD per day, have been reduced substantially from 32% in 1996 to 17% in 2001. The reduction has however not been equal across the country; poverty remains widespread in the 3 most northern provinces.[7].

3.2 Coffee production in Cameroon

During the colonial period France stimulated coffee growing, especially in Cote d'Ivoire and Cameroon. Most plantations were small scale family farms, larger scale European owned plantations represented less than 2% of the cultivated area at the start of independence. Supporting the expansion of coffee were stabilisation funds setup across the region in 1955. Initially, their function was to stabilise producer prices, however their portfolio of activities rapidly expanded to include extension, input supply and infrastructure. The stabilisation mechanism was based on a guaranteed price for producers, a scale of marketing charges for reimbursing and paying operators and a guaranteed CIF (Cost Insurance Freight) price. The fund in Cameroon, ONCPB (Office National de Commercialisation des Produits de Base), covered the difference between the CIF price and the sales price (either through levies or by providing support, depending on prevailing market prices). Marketing was thus under tight state control. Operators had purchase quotas for specific regions and needed authorisation from the Fund to export. From the 1960s to the early 1980s the Fund accumulated surpluses that were used to provide input subsidies. However, when prices fell at the end of the 1980s the Fund was unable to support producer prices. A benchmark study has shown that it should have been possible to support producer prices for a period of 11 years. Mismanagement at the Fund however prevented this. In fact, the Fund became so indebted that producers received only half the guaranteed price during the 1989-1990 crop. Effects were immediately visible and production declined (Figure 1).[8]

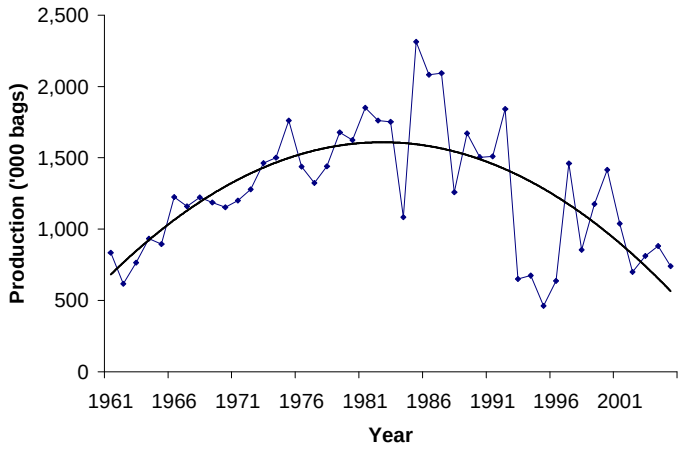

Figure 1: Cameroon, total coffee production from 1961 to 2007 in thousand bags of 60kg with polynomial trend line. Source: USDA

Despite 2 brief surges in production resulting from high prices in 1994 and 1997 production never surpassed its peak of the mid-1980s.

Current production of Cameroon is expected to come in at 33,000Mt. The bulk of this, 91%, is Robusta. Nearly all coffee is grown on small-scale family farms. Robusta farming is concentrated in the West and South West of the country, while Arabica is mostly found in the West and North West (Figure 2 and Figure 3). Aggregate green bean productivity of Arabica and Robusta combined is low at 176 kg/ha.[9]

Figure 2: Map of Cameroon. Towns of Douala, Bamenda and Yaounde reappear in Figure 3.

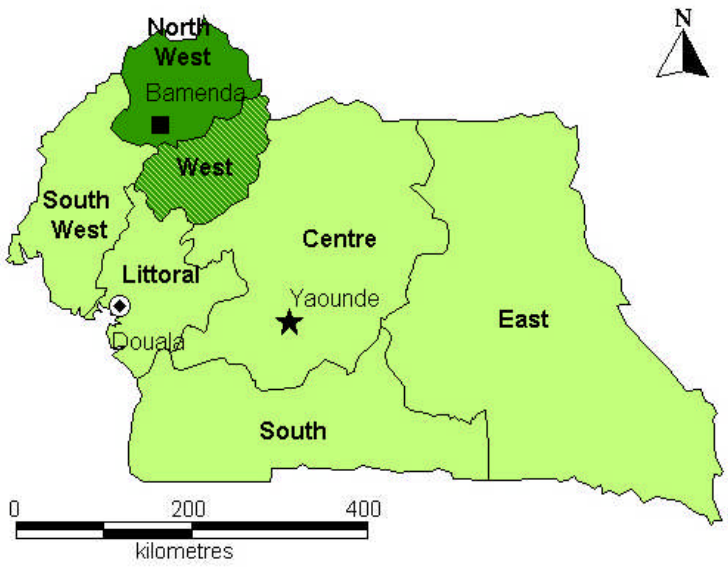

Figure 3: Cameroon's coffee producing provinces by type of coffee. Dark green areas represent Arabica growing areas, Robusta area are light green, and the spotted area (West) sees both types.

Agro-ecological conditions in the West and North-West favour Arabica production. Soils are ferralitic, of volcanic origin and rather fertile although soil pH is on the low side. Arabica growing areas are between 1,000m and 1,800m asl. Rainfall occurs from March to October and average precipitation is in the range of 2,000 to 3,000mm with average temperatures of around 20˚C. Consequently, quality of Cameroon Arabica is good and often compared to Burundi and Tanzanian coffees, although better than average lots are, according to some in the industry, on par with Columbian milds. Arabicas from the North-West Province are characterised by good acidity, an agreeable body and a nice flavour.[10]

Main buyers of Cameroon Arabica are based in Europe. Limited volumes however, mean that demand generally outstrips supply.

3.3 Policy environment

Cameroonian agricultural policy has gone through three broad phases. It was particularly interventionist up to the end of the 1980s: production was partly in the hands of State-owned enterprises; there were numerous price controls and substantial input subsidies. Export taxes were used to finance these measures. As a result of the implementation of an IMF directed structural adjustment programme a radical change led to the elimination of most of this State intervention. At the same time the agricultural sector as a whole posted vigorous growth, despite the decline of certain export crops, such as coffee and cocoa. Lotsmart (2004) attributes the decline of coffee and cocoa to substantially reduced government support. A third policy phase began in 1990-2000 under the Rural Sector Development Strategy, prepared as a component of the Poverty Reduction Strategy Paper (PRSP).[11]

The Cocoa and Coffee Inter-Professional Council (CCIC) and the National Coffee and Cocoa Board (NCCB) supervise marketing of coffee. The Cocoa and Coffee Sub-sector Development Fund, established in March 2006, aims to revive these sectors. The Fund's resources come partly from an export levy and from the national budget. In addition to export the levies the EU channels about 2 million Euro primarily earmarked for input supply through the fund.

Apart from the establishment of the Fund in 2006, a number of other measures have been taken since 2004 to strengthen the coffee sector. Coffee must be purchased hulled from the producer, with prices differentiated by quality. Collusion between manufacturers or exporters to impose a single price on

farmers is prohibited. The marketing of green coffee is reserved for farmers, farmer organizations, economic operators and local roasting plants. The concession of purchasing zones, allocation of quotas to operators, agreements between exporters, manufacturers or collection agents to impose a price on farmers, as well as night-time or door-to-door purchases (to avoid detection by authorities), are all prohibited. Coffee can only be marketed having been hulled. Committees are supposed to be put in place in each locality, under CICC supervision, to verify the quality of products and hulling operations. Manufacturers, exporters and their collection agents must hold a trader's card and certification of their inclusion in the manufacturer or exporter register. [12] Stocks and exports all have to be declared to NCCB. Various levies that benefit different institutions are imposed on coffee exports, totalling 25CFA/kg (or 6 USDct) green bean.

Current policies, especially with regard to buying hulled coffee from producers, is an interesting attempt to redirect some value-added to the producer. In practice however, this fails. Producers, especially when selling to LBAs, do not have access to hulling equipment. In the field little witness is borne of the funding collected in export levies actually reaching its intended beneficiaries, the farmers.

4 Situation analysis

This section details the conditions under which coffee farmers in the project area operate. It will look into socio-economic aspects of farming families in the project area and goes on to detail coffee farming in particular. As subsequent farm economic analysis reveals income sources and the relevance of coffee as an agricultural activity and generator of income. This section is concluded by an analysis of marketing aspects and current credit and support services.

4.1 Project area

The project is implemented in the North-West Province (NWP) of Cameroon. The pilot phase of the project operates in the sub-divisions of Oku, Nkambe, Nkum and Noni, while the project office is located in Kumbo (Figure 4), about 100km north, north-east of the provincial capital Bamenda. The terrain is characterized by volcanic mountain ranges and ferralitic soils. Altitudes range from 1000m to 2500m asl. Nearly all farms are located on moderately sloping land with the occasional one on steeply sloping land. The region is part of the Cameroon Highlands and is dominated by Cameroon's second highest mountain: Mount Oku with an altitude of 3,011m asl. FAO classifies the area as Tropical Wooded Savannah. To the south the region is bordered by Tropical Humid Dense Forest and Savannah to the north extending into Chad. While detailed climatic data for the project sub-divisions is not available, overall annual rainfall is reported to be 2,200mm. Average temperatures hover around 22°C.

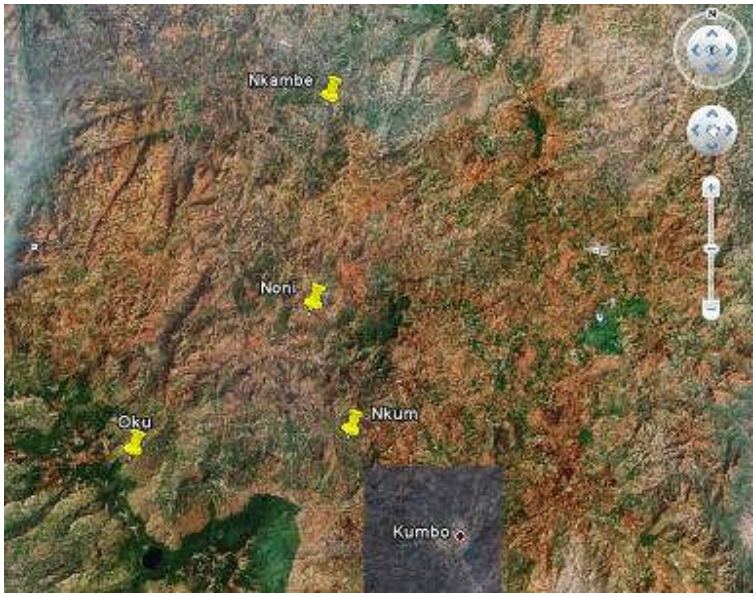

Figure 4: Satellite image of project area sub divisions (yellow pins) and project office location (Kumbo town). Source: Google Earth

Population density in NWP is 99 people per km^2, while the national average is 22.6. The provincial urban growth rate is 7.95% (compared to the national average of 5.6%), while the rural growth rate, at 1.16%, is equal to the national rate. According to the *Statistical Provincial Services* of North-West Province in 2001, the population of the province is largely a young one, with over 62% of its residents aged less than 20 years[13].

During structural adjustment spending on rural infrastructure was reduced. Rural areas never seem to have completely recuperated from this and infrastructural conditions are taxing on inhabitants. Noni subdivision in particular is badly hit by this. The dirt road leading the centre of the sub-division has not seen any maintenance for at least the last seven years. Even in the dry season, only 4 wheel drive vehicles can make it to the subdivision. The problem of evacuation of food and cash crops to the closest market town of kumbo seems to act as a restraint on local economic development and disincentives food crop production above subsistence levels. This limits peoples' cash earning options to coffee and other products that are not perishable.

The most used form of transportation therefore in these regions is the motor bikes but at very high costs since bikes only carry one or two persons and on hire.

4.2 Socio-Economic situation

4.2.1 Household characteristics

The average farmer interviewed is 56 years old. All farmers are either married or widow(er) and each household on average has 6.3 children. Most farmers have additional family members living on the farm, the average number of people dependent on each farm is 9.4.

Most of the houses in the project area are built from mud blocks and 85% of the farmers have metal roofs. The more affluent farmers have cemented walls (44%). And over 50% have radios, most of these are battery operated as only 11% have access to electricity. All respondents have pit latrines. Transportation is problematic, not only are the roads in bad condition, only 14% of interviewed farmers have motorbikes and while 4% of farmers have bicycles, the hilly terrain does not lend itself to their use. Although infrastructure remains a problem and affects access to markets, the prevalence of mobile phones (24%) means that farmers have increased access to up to date market information from further a field. Supply of drinking water is well taken care of, all villages have communal water taps at strategic locations across the village.

The project subdivisions all have Government secondary schools. Most of which are constructed by parents with the government providing mainly teachers and some officials. The situation of primary schools is worse as often you find schools in the project villages with just two or three trained teachers. The parents have to employ other teachers trained or untrained from around to fill the gap. The primary school fees and costs for books and uniforms seem affordable at an average across the project area of 18,000CFA/ year for one child. School attendance at primary level is near universal among farmers' children. A few exceptions are mentally disabled children for whom there is no special care.

Even among the adults 71% and 68% of men and women have attended some form of education. A few have progressed to high school and some have attended a professional education. It seems to be common for the younger generation to receive more education. Most children of secondary school age indeed attend secondary school. 3 have even made it into university. Despite the fact that children have access to education and possibly better qualifications, most parents expect their children to eventually take over the farm.

All 4 subdivisions have district hospitals, some with resident and others with visiting doctors. However, the pilot villages do not all have hospitals but rather have health centres with trained nurses to attend to minor health problems. These health centres are fairly well equipped to take care of basic illnesses like malaria and bronchitis which are quite endemic to the area. All major health concerns are evacuated to Kumbo where the two main mission hospitals are located. Transportation to these hospitals is a big issue as well as the rising costs of medical bills. On average each interviewed farmer spent over 40,000CFA on healthcare in 2007, with malaria being the single most important ailment (Table 2).

Table 2: Percentage of respondents and family members afflicted by 4 ailments in 2007

	Ailment			
Group	*Malaria*	*Respiratory problems*	*Eye problems*	*Rheumatic pains*
Male	31%	5%	13%	17%
Female	38%	2%	9%	10%
Children	56%	11%	0%	0%

The level of health care awareness appears to be quite high. Most people are aware of disease preventive measures such as the use of pit latrines, proper draining of the compound to avoid still water in which mosquitoes breed. Nearly all respondents (93%) are aware of the use of mosquito nets to avoid

contracting malaria, however most respondents indicated that nets are not on sale locally and that while NGOs occasionally hand out free or subsidised nets these are only to be used for the children.

Awareness about HIV/AIDS is equally quite high, 47% of respondents indicated that they heard about or personally knew people from within their community that died from HIV/AIDS and a few farmers indicated that they had lost children themselves to HIV/AIDS. In one particularly tragic case a farmer indicated that he had already lost 4 of his children. According to many respondents children contract the disease after having been to the cities for work or study and come home when they have become too weak to take care of themselves, only to die sometime after their return. Of the 47% of respondents that indicated they heard of people dying form HIV/AIDS, they on average could name 7 people that deceased. Awareness of how to avoid contracting HIV/AIDS is high, 76% had heard about condom use for example. However, most respondents belong to the Catholic Church and condom use is thus restricted on religious grounds although culture also plays a role. Most farmers seemed more comfortable with abstinence and faithfulness to prevent HIV/AIDS, at least on a conceptual level. The project could include this particular aspect and malaria in its program of activity.

4.2.2 Farm size and land tenure

Land holdings of farmers in the project area are fairly substantial. On average each farmer has 7.9ha. Nearly all of this land is used for cropping activities. Those farmers that have livestock often make use of communal grazing facilities. While there are some farmers who own small pieces of forest, usually planted with Eucalyptus, this is the exception rather then the rule. Land devoted to coffee farming on average covers 4.6 ha per farm. The majority of farmers have different plots across the project area; on average a farm comprises 3.8 plots.

Land tenure of these plots is mostly governed by traditional land-use rights. People usually farm land that has been handed down to them by their parents or other family members. The traditional village chief plays an important role in land-ownership issues and has the power to redistribute land that is left lying idle by its owners. This, however, pertains primarily to land used for annual crops. Tenure of coffee land is more secure. Land under coffee is for many farmers an attractive asset. Particularly the poorest farmers use land they have under coffee as collateral when borrowing money. Such land under coffee is typically the last item a farmer in severe financial trouble would sell. Food crops can always be grown on idle land, whereas coffee is a long-term investment. Farmers who have bought land from others sometimes have a sales receipt that functions as proof of ownership. While such proof can reportedly be used to mortgage land holdings, government does not recognize it and in cases of land seizure for governmental development projects, farmers are generally not compensated unless they have a real title-deed. Obtaining a title-deed is a costly and complicated procedure, not a single respondent has a title-deed for the land they own.

Interviewed farmers show that traditional land-use rights are predominant, followed by sales receipts and squatting (Table 3).

Table 3: Type of land tenure by sub-division

	Land tenure		
Sub-division	*Traditional*	*Receipt*	*Squatting*
Oku	73%	24%	3%
Noni	84%	8%	8%
Nkambe	72%	11%	17%
Nkum	81%	19%	0%
All	82%	12%	6%

Farmers that rely on squatting are part of a group of poorer farmers, their average income amounts to 145,000CFA per farm per year, whereas the group with more secure tenure in the form of traditional rights or receipts has an average income of 263,000CFA.

4.2.3 Farm activities

As state support for agricultural production was reduced in the 90-ties a sharp decrease in cash crop production followed while at the same time production of food crops increased (Table 4).

Table 4: Selected cash and food crop production in 1988 and 1998 for North-West Province (Source: adapted from Lotsmart, 2004)

	Year and production (Mt)	
Crop	*1988*	*1998*
Arabica	3,847	1,146
Robusta	1,492	141
Maize	141,383	183,000
Irish potatoes	16,647	35,000

Despite strongly declining volumes, coffee remains the primary cash crop in the project area. Traditional cash crops are limited to Kola nut. In addition to coffee, nearly all farmers grow maize, beans and potatoes and several harvest and sell palm wine. Food crops are primarily for home consumption although excess produce is being traded. Other crops of lesser importance are vegetables and chilli. Food crops are occasionally intercropped with coffee but mostly dedicated food crop plots are found. As a result of relatively high population density food crops are often grown on steep hillsides. Clean weeding and a general absence of terracing have negative effects on soil erosion and fertility.

Self-sufficiency in food is a key objective for farmers and the large majority of those interviewed succeed in growing sufficient food to feed the household.

In addition to food crops and coffee, 68% of farmers keep animals. Goat rearing is most common, followed by poultry, pigs, sheep, cattle and bees. While some livestock is for home consumption livestock trade is common and contributes to farm income.

Table 5: Share of farmers that keep livestock and average number of animals (hives in case of bees) that are kept per farm.

	Type of livestock					
	Cows	*Pigs*	*Goats*	*Sheep*	*Poultry*	*Bee hives*
% of farms	4%	22%	44%	5%	36%	2%
Average nr	5.0	3.8	6.7	10.0	9.5	15.0

Goats and sheep are generally free range except during the rainy season when farmers take some time to stake them in the field or along the road side. During the dry season goats are left to browse around. Pigs are mostly kept in pens and are fed household scraps supplemented by cooked plantains and vegetables. Cattle are more labour intensive and need to be supervised throughout daily grazing. One larger cattle owner even hired a permanent worker for this, but in most other farms children take responsibility for this work. Poultry is all free range.

The main problem with livestock is disease pressure. Particularly poultry seems frequently hit and some respondents indicated that they discontinued keeping poultry because of this. According to CIRAD (unknown date), Newcastle disease is responsible for 90% of poultry mortality in free range poultry in

North West Province while Gueye (2000) reports a 53% mortality rate for poultry during the first 4 weeks. Labour input for livestock is limited and proportional to the share of income farmers derive from it.

This importance of food crops is illustrated by the amount of labour time farmers devote to these crops relative to the amount of net income[1] they derive from it (Table 6).

Table 6: Labour time by farm activity and relative share of each

	Time spent	Share of time	Share of net farm income
Activity	*Days*	*Percentage*	*Percentage*
Food crops	170	62%	9%
Coffee	82	30%	50%
Animals	24	8%	8%
Forest	na	na	1%
Off-farm labour	na	na	32%
Total	276	100%	100%

Table 6 also shows the importance of coffee, 44% of net farm income is derived from coffee. Surprisingly, off-farm income also is an important income source. Professions such as builder, seamstress and teacher all occur and 25% of interviewed farmers have off-farm income.

4.2.4 Labour use

Given average household size, labour availability seems to exceed the amount of labour spent on different farming activities. However, reproductive tasks have not been taken into account during the interviews and also the labour time spent on forest work and off-farm labour is unknown. What remains clear however is that tending food crops is the single most activity for nearly all respondents. Common knowledge has it that women take responsibility for the food crops. Responses during interviews partly confirm this, but surprisingly show that the female labour share in tending food crops varies across age groups. Among the younger households in the age bracket “<39” the men actually take responsibility for a larger share of the food crop work while the share of women increases over the years. A possible explanation could be that women have to devote a larger share of their time to raising children, a need that is reduced as children grow older and fewer new-borns are added. A similar trend can be observed for children who take on an increasing share of the food crop work as they mature (Figure 5).

One might expect the share of hired labour to increase over time as families grow older and become less able to work the land. What actually seems to happen is that children take over more work from their parents. Productivity tends to go down as farmers advance in age, so an explanation could be that households in the >60-bracket simply do not have the financial resources to engage hired labour.

[1] Net income is derived by subtracting production costs from turnover. As farmers do not pay income tax the resulting figure represents net income.

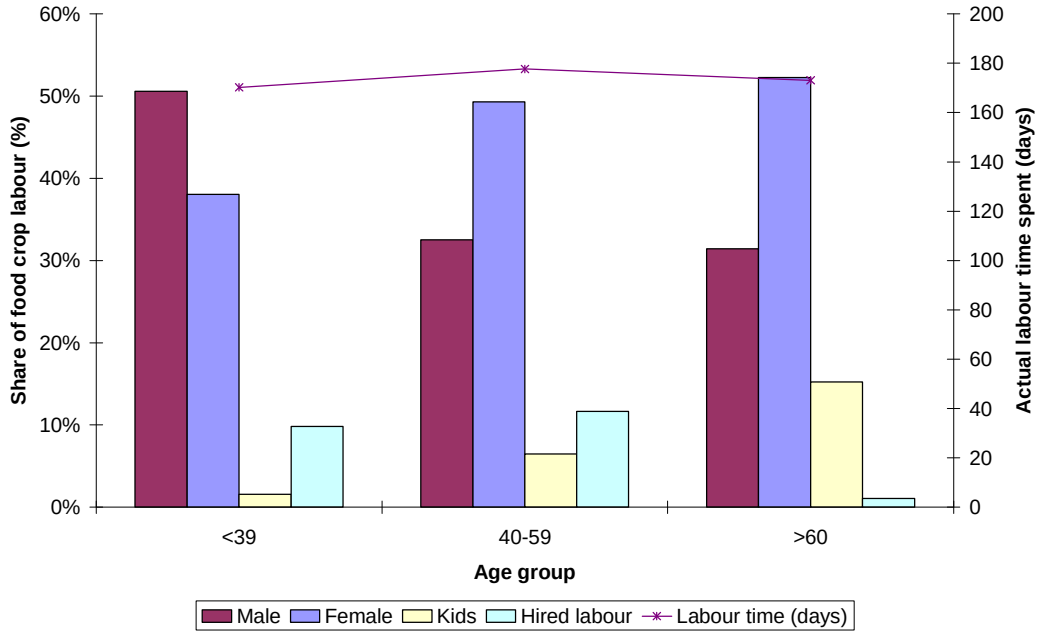

Figure 5: Relative share of food crop labour among men, women, children and hired labour split by age of household head (primary y-axis) and actual time spent per year (secondary y-axis).

Coffee labour shows a different development in that male labour input remains fairly stable across the age brackets, although also in coffee labour from children increases over time. A decrease in productivity and associated reduction in income of 20% could be a reason that the share of hired labour is decreasing (Figure 6).

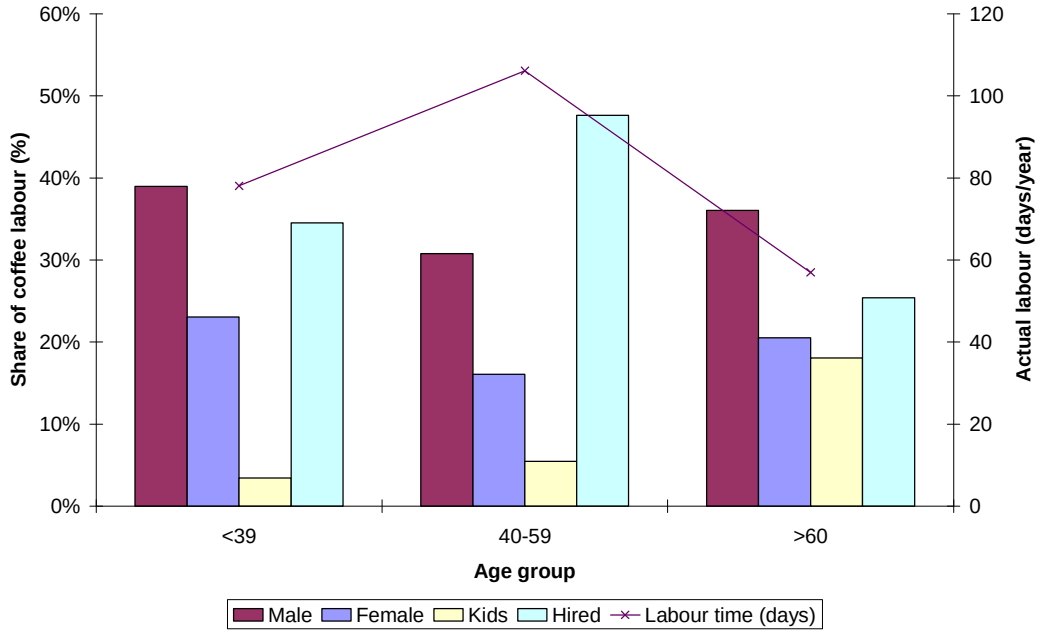

Figure 6: Relative share of coffee labour among men, women, children and hired labour split by age of household head (primary y-axis) and actual time spent per year (secondary y-axis).

Contrasting the decrease in labour spent on coffee from the 40-59 age bracket to the >65 age bracket with the fact that labour time spent on food crops remains stable across all age brackets lends further support to the argument that food crops and food self sufficiency take precedent over cash income.

4.2.5 Input use

During liberalization and structural adjustment, fertilizer subsidies were abolished and prices have reached high levels. Consequently, country-wide less than 5% (estimated) of farmers use fertilizer today. Comparatively, fertilizer prices in Cameroon are one of the highest worldwide. Nation-wide Cameroon uses 7kg of fertilizer per ha of arable land against a global average of 94kg. Cameroon does not have a domestic fertilizer plant, which contributes to higher prices, but with import duties on fertilizer at 5% and fertiliser sales VAT exempt[14] the large price difference with other countries is not entirely explained by the absence of local production. What could be the case, and this needs further research, is that the two primary importers in Cameroon (Yara and Ader) have an effective duopoly and keep prices at inflated levels. Other coffee producing countries see significantly lower prices and tend to have higher productivity (Figure 7).

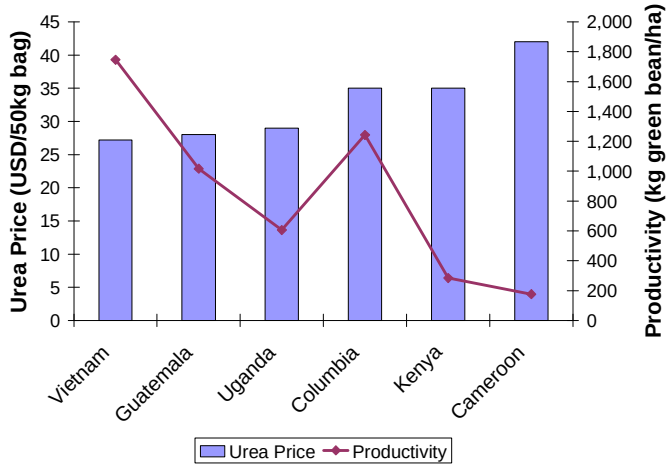

Figure 7: Comparison of farm gate Urea prices in 2007 in 6 countries in USD per 50kg bag (primary Y-axis) and productivity (Arabica and Robusta combined) in kg green bean per ha (secondary Y-axis). Data sources: Urea price: FFB data and field visits; productivity: FAO Stat

Fertilizer use across the project area is somewhat higher than the national average. 25% of respondents indicated that they used fertilizer on their coffee plots, while 11% use fertilizers on their food crops. On average a farmer spends nearly 29,000CFA and 3,800CFA per year on fertiliser for coffee and food crops respectively. However, the average fertilizer expenditure on coffee may be skewed upwards somewhat. Three of the respondents are of above average wealth and at least 1 of them is trading fertilizer in addition to farming. Overall, a lack of access to fertilizers hampers scope for productivity improvement. Also the commonly available fertilizer types are not ideally suited to coffee. Of those farmers that apply fertilizers, most use only Urea which over time may result in both acidification of the soil and imbalances between available N, P and K. It is for this reason that increasing availability of fertiliser alone will not be enough to improve production. On the contrary excessive use of only Nitrogen based fertilisers, as is currently the case (section 4.3.4), can have an adverse effect on production because of soil acidification. Farmers seem to have a great need of knowledge on nutrient management to enhance their decision-making capacities on types of fertiliser to apply relative to their expected yield, timing of such applications and volumes needed as well as application methods.

Use of other external inputs such as herbicides and pesticides is limited too. Only 1 respondent indicated the use of pesticides in food crops. And 2 mentioned the use of herbicides in coffee. Given the high disease pressure in coffee from Coffee Berry Disease in particular one would expect intensive use of fungicides, but only 9% uses fungicides to attempt control of Coffee Berry Disease.

4.2.6 Farm economics

PPP adjusted GDP per head in Cameroon is 2,421USD[15]. Farmers in the project area earn substantially less, average net income is 439USD per year, when adjusted to PPP farmer income would be 870USD, or less than half of the national PPP adjusted GDP. Net income varies considerably across the project sub-divisions, ranging from 310,554CFA in Oku to 141,266CFA in Nkum (Table 7).

Table 7: Average gross income, total production costs and net income for all farm activities across 4 sub-divisions in CFA per farm per year.

	Sub division				
Item (CFA)	*Oku*	*Noni*	*Nkambe*	*Nkum*	*All*
Gross income	541,038	243,459	216,771	195,200	329,442
Total costs	230,485	43,809	17,539	53,935	101,543
Net income	310,554	199,650	199,232	141,266	227,899

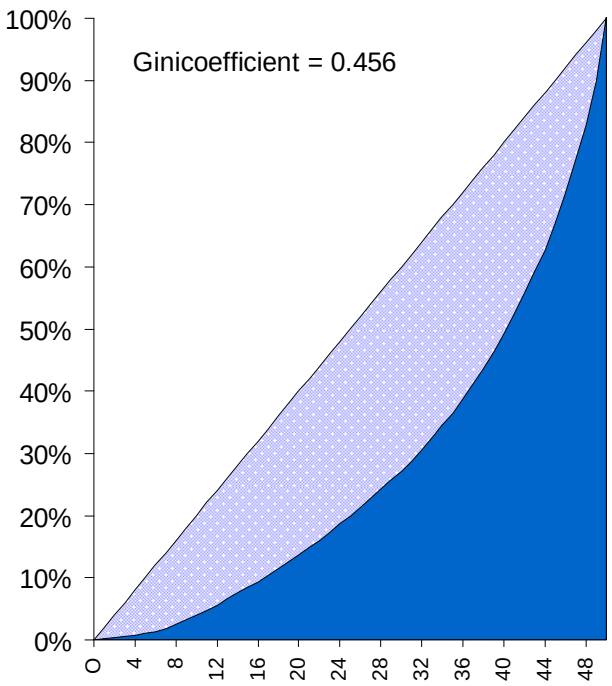

Figure 8: Gini-Coefficient for income of interviewed farmers. The x-axis shows farmers sorted by income (poor to rich) and the y-axis shows their share of cumulative income. The 5 richest farmers generate about 30% of the cumulative income. (Note: Gini-coefficient calculations require that only positive incomes are used, 1 farmer that reported negative income has been left out for this graph.)

Table 4 shows that the richest sub-division by far is Oku. Oku serves as a regional centre for trading activities and soils in the area are more fertile. Interestingly, farmers in Oku have both higher gross incomes and also invest more. As a measure of income equality across the region the Gini-Coefficient[2] amounts 0.456 (Figure 8). The national Gini-Coefficient is 0.446, income distribution in the project area is slightly less equitable than national distribution. Over time one would like to see the Gini-Coefficient across the project area decrease. A decrease can come about in a number of ways but the desirable outcome would be if, as a result of project interventions or otherwise, the poorer farmers grow richer more quickly than the richer farmers. To monitor this, the Gini-Coefficient for income has been added to the project Monitoring and Evaluation framework. An additional Gini-Coefficient could be calculated for coffee production. Tracking such a value over time would allow the team to discern if uptake of project recommendations is limited to certain groups of farmers or if it is a wide-spread phenomenon. Currently the absence of reliable acreage figures does not allow for calculation of productivity and corresponding Gini Coefficients. However, using Farmer Field Book data after project year 1 and beyond will allow us to do this.

Income sources across the sub-divisions are varied, but coffee is the single most important source of income responsible for 50% of average net income. Off-farm employment plays a surprisingly large role and the remainder of income is derived from selling surplus food crops, animals and forest products (mostly timber). Despite varied sources of income farmers remain poor and on average have just 1.20USD/day. Being so close to the internationally accepted poverty line of 1USD/day means for example that one single medical emergency in the family can easily push people back into more severe poverty. The legal minimum wage in Cameroon is 32,000 per month, or 384,000 per year. While this legal minimum does not apply to private farmers it does give an indication of what the Cameroonian

[2] The Gini coefficient is a measure of statistical dispersion most prominently used as a measure of inequality of income distribution or inequality of wealth distribution. It is defined as a ratio with values between 0 and 1: A low Gini coefficient indicates more equal income or wealth distribution, while a high Gini coefficient indicates more unequal distribution. 0 corresponds to perfect equality (everyone having exactly the same income) and 1 corresponds to perfect inequality (where one person has all the income, while everyone else has zero income).

government thinks is necessary to survive. Farmers on average earn 59% of the minimum although their expenditures for food are certainly lower than those of the urban poor.

Costs are disproportionately attributable to coffee production, while investment in food crops and animals is considerably lower. Hired labour is in all cases, except for livestock, the most important cost item, followed by fertiliser and pesticides. Livestock inputs centre on feed stuff and procurement of veterinary services (Table 8).

Table 8: Gross margin analysis by farm activity in CFA. Share of totals of gross and net margins and total cost is displayed to the right of final column, shares of cost by activity are displayed to the left of the final column

			Value			
Item		**Cost item**	*Gross (CFA)*	*Cost (CFA)*	*Net (CFA)*	*% of total*
Coffee	**Gross**		**193,041**			**59%**
	Cost	Hired labour		47,063		60%
		Fertilizer		29,790		38%
		Pesticides		1,554		2%
		Other		4		0%
		Total cost		*78,411*		*78%*
	Margin				***114,630***	***50%***
Food crops	**Gross**		**32,489**			**10%**
	Cost	Hired labour		7,808		62%
		Fertilizer		4,260		34%
		Manure		420		3%
		Pesticides		50		0%
		Total cost		*12,538*		*12%*
	Margin				***19,951***	***9%***
Livestock	**Gross**		**28,340**			**9%**
	Cost	Hired labour		2,884		27%
		Feed stuff		5,820		55%
		Veterinary		1,891		18%
		Total cost		*10,595*		*10%*
	Margin				***17,746***	***8%***
Forest	**Gross**		**1,480**			**0%**
	Cost	Na		na		
	Margin				***1,480***	***1%***

Item			Value			
			Gross (CFA)	*Cost (CFA)*	*Net (CFA)*	*% of total*
Off-farm	**Gross**		**74,092**			**22%**
	Cost	Na		na		
	Margin				***74,092***	***32%***
	Total		**329,442**	101,543	**227,899**	

Given the level of income the high costs for hired labour are somewhat remarkable. Compared to other coffee producing countries, Cameroonian farmers invest relatively little in terms of labour input (Table 6), this makes the investment level in terms of hired labour a bit surprising. One would expect farmers to invest more of their labour and rely less on costly external sources. This is particularly the case when one realises that the average daily payment for hired labour exceeds the farmer's average earning by 178%. Hired labour is on average paid 1,110CFA per day. Given this situation, farmers must surely have good reasons for hiring labour, but just by looking at the amount of family labour spent one could be led to believe that there is still some slack and farmers could rely less on hired labour than they presently do. The reasons for this are not apparent from the data and information collected.

Of the 227,899CFA average income the largest expenditure is medical care. On average each interviewed household spends 41,752CFA per year on medical care.

After medical care, the next largest expenditure is educational. Educational cost is comprised of school fees, books and uniforms and in some cases board. On average each household has 1.14 children in primary and 0.58 in secondary school. Smaller numbers still apply to high and professional school and university. Average educational spending per household is 38,022CFA per year, but this figure is skewed downwards somewhat because of the relatively high average age of the respondents, that thus have few if any children in school. Among younger families education expenditure is certainly going to be higher. In fact education fees are due in November or December and several farmers have to sell coffee in advance of the harvest, at much lower prices, just to be able to pay education fees.

After paying medical and educational cost 148,125CFA remains. This needs to cover housing maintenance, food, kerosene for lighting, transport, social events and new farm or other investment. Judging by the household expenditure flows it is not surprising that only 42% of interviewed farmers have any savings at all and only 16% of all interviewed farmers have savings in a Credit Union. Of those farmers that have savings all pointed out that they intend to use their savings to cover educational cost. Family emergencies and house construction came in second and third place while any savings that may be left could be used for coffee by 66% of respondents.

4.3 Coffee Husbandry

This section deals with coffee husbandry issues and starts by outlining production characteristics, varieties used and the structure of coffee farms in the 4 sub-division. It then goes on to look into specific management aspects and concludes with an analysis of potential improvements.

4.3.1 Coffee Varieties

Two varieties are commonly used: a so-called traditional variety and Java.

The traditional variety is referred to in literature (Wintgens, 2004; Schufmacher, 2003) as a Jamaica and most likely belongs to the Typica variety. The Typica variety is characterised by low to average yielding capacity and large elongated cherries and beans. Stems are fairly flexible and primaries are quite thin and branch out nearly horizontally. Some of the world's most expensive commercially traded coffees

belong to the Typica variety (eg Blue Mountain coffee). Typica varieties are known to be susceptible to main coffee diseases, pests and nematodes.

IRAD in Cameroon identified resistance to Coffee Berry Disease (CBD) in field collections, mostly among Ethiopian introductions. Variety trials were carried out in the 1960s and 1970s. Local varieties, amongst which the Jamaica, and introduced varieties such as Mundo Novo and Caturra turned out to be poor yielding under Cameroonian conditions. Among the varieties assessed, the most productive one was "Java", which is vigorous, moderately susceptible to Coffee Leaf Rust (CLR) and field resistant to CBD. Java was released for cultivation in the 1980s after extensive field trials and selected plants were used to establish seed production plots. Field tests by IRAD have shown that the yield potential of the Java variety is between 1.5 to 2Mt green bean per ha, although the planting density at which this yield potential was measured is not given.

Despite its release for cultivation in the 1980s, the majority of the coffee tree population among the interviewed farmers is still of the Jamaica variety and not of the CBD resistant variety Java. All farmers interviewed have the Jamaica variety in their fields while 70% have some Java. Tree numbers are notoriously hard to come by and only 28% of farmers had an idea about how many trees they have. Among these farmers the average number of trees per farm is 3,680. Of those farmers that know how many trees and the variety, the share of Jamaica and Java is 69% and 31% respectively.

From those farmers that know or are able to estimate their acreage the average coffee farm is 4.6ha with a planting density of 800 trees/ha.

The average age of trees is 31 years, although wide variability is found. Some farmers planted coffee in 2007, while the oldest farm encountered is from 1937. Fact remains that part of the yield decline of recent years can probably be attributed to an ageing tree population. Although 26% of farmers have been planting coffee, both infilling and new plantations, the current replacement rate is only 1.6%. At such a rate a coffee tree would have to have a productive live of 63 years just to maintain the current tree population. Although productive trees of over 100 years old exist, the productive life of a tree is commonly assumed to be between 30 to 50 years. This implies a replacement rate from 2 to 3.3% is needed to maintain the population. That means the current replanting rate needs to increase anywhere from 20 to 100% just to maintain the current tree population and, in the absence of sudden yield increases, production.

Given the ageing tree population and the fact that only 31% of tree stock is of the CBD resistant Java variety replacement planting will be important. However, a major drawback is that: i) farmers have little access to improved varieties; ii) replacement planting initially reduces income before newly planted trees make up in yield for the loss of old, but marginally productive trees; and iii) a general absence of good agricultural practices (pruning, soil management and pest and disease control in particular) means that any newly planted trees would most likely suffer from neglect as well.

4.3.2 Pruning

Pruning is an important activity that, if done properly, contributes significantly to yield. Pruning is also important to enhance general tree health and can help to reduce impact of fungal diseases, such as CBD, by ensuring adequate airflow through the tree and field. Pruning seems to be surrounded by some misconceptions. Farmers generally associate pruning with a reduction of yield in the following year. There does not seem to be a widely accepted pruning method. Some farmers maintain 2 to 5 stems on one tree whereas others work with single stem systems. Trees can be up to 2.5m in height with a small crop at the top of the tree. Trees that are kept at lower heights often take an umbrella shape with no productive wood in the first 50 to 80cm of the stem. Knowledge on more productive tree structure seems absent. Pruning tools like scissors and handsaws are of limited availability and can not be bought in most villages.


Figure 9: Difference between properly rejuvenated and pruned tree (left) and commonly found neglected tree (right).

Of the interviewed farmers, 56% state that they have pruned in 2007. Farm visits with local coffee experts showed that only 5 farmers, 10% of the respondents, are applying proper pruning techniques. Effects on yield were quite apparent, properly pruned trees encountered in the field were bearing much better and looked much healthier (Figure 9).

Promoting proper pruning practices will be a crucial aspect in the project. Even in the absence of fertilisers and other inputs, pruning can already contribute significantly to improved yields and lower disease pressure. The impression given by farmers is that there is general interest in pruning, although this varies across the sub-divisions (Table 9), but few farmers know about pruning techniques.

Table 9: Share of farmers that prune by sub-division and average time (rounded to days) spent per year.

	Share of farmers that prune	**Average time spent**
Sub division	*%*	*Days/year*
Oku	88%	14
Noni	91%	10
Nkambe	23%	3
Nkum	38%	3
All	56%	8

Based on experience from Vietnam Arabica farmers, a well-trained and experienced farmer can prune an Arabica tree in about 15 minutes. With an average number of trees of 3,680 in the project area farmers would have to spend over 900 hours, 114 days on pruning. Currently, the average time spent on pruning the average is 8 days. Focus of the FFS programme will vary between sub-divisions. In Nkambe and Nkum attention should be paid to discussing of and why pruning could help to increase production while in Oku and Noni this is of lesser importance as most farmers there already prune. They would need more input of the pros and cons of different pruning techniques.

4.3.3 Weed control

Weeds can compete with coffee for nutrients and water. In particular grasses are great consumers of nitrogen and often weave a net of rhizomes, intertwining with coffee roots which can slow their development. Ideally, weed control should aim to limit growth of noxious vegetation, particularly grasses.

Weed control can be done in a number of ways. Within the project area most farmers tend to have shaded coffee fields which reduces competition from weeds because the soil is less exposed to sun light. Some farms are intercropped with maize and beans and the intensive care that these crops receive also benefits coffee. Although in the case of maize significant competition with coffee for nutrients may occur. Ideally noxious weeds are removed at the end of the rainy season so as to avoid competition for water with coffee during the dry season. Removed weeds can be left in the field to provide some ground cover, thereby reducing soil moisture losses. The use of (nitrogen fixing) cover crops could be another way to control weeds, but this is not practiced in the project area.

90% of respondents indicated that they practiced weeding (Table 10). Most farmers weed twice a year, once in May and once in October, just before the harvest and at the start of the dry season.

Table 10: Share of farmers that practice weeding by sub-division and average time spent per year per farm.

	Share of farmers that weed	**Average time spent**
Sub division	*%*	*Days/year*
Oku	100%	31
Noni	100%	24
Nkambe	71%	18
Nkum	88%	22
All	90%	24

As in the pruning section, one can see that attention being paid to coffee is less in Nkambe and Nkum.

4.3.4 Soil management

Managing soils and especially soil fertility and organic matter content is of primary importance to ensure a healthy and productive crop. Farmers seem not very much aware of proper soil management practices. No soil cover was observed in any of the fields visited, leaving bare soil exposed to the elements. All interviewed farmers practice clean-weeding, but several leave the weeds in the field to act as mulch. This at least contributes build up of soil organic matter content. Inter-cropping with beans and maize is practiced across the project area, but the prevalence of this practice is unclear. Cover-cropping for soil management purposes has not been observed. The predominant ferralsols are physically very stable so little evidence of erosion was observed. However, given the exposed topsoil one would expect nutrients to leach downhill. Some farmers utilise cow and goat manure to supplement soil organic matter. Further supplements could be expected from coffee pulp, although this does not seem to be applied in a structured manner. Use of fertiliser is limited across the project area and varies strongly from one sub-division to another (Table 11).

Table 11: Share of farmers that use fertiliser, manure and mulch by sub-division.

	Fertilising	**Mulching & manuring**
Sub division	*Share of farmers (%)*	*Share of farmers (%)*
Oku	53%	24%
Noni	9%	18%
Nkambe	14%	0%
Nkum	22%	22%
All	25%	16%

Soils in Oku and Noni seem to be richer than those in Nkambe and Nkum and are suspected to have a larger nutrient buffer capacity. However, long term sustainability of coffee production is adversely affected by the lack of nutrients applied. In effect farmers are currently depleting the nutrient stock of the soil and productivity can be expected to go down further still unless more nutrients are being applied to replenish diminishing stocks. A nutrient balance for those farmers that apply fertiliser shows that it is not enough to just apply fertiliser, it is important to apply volumes of N, P and K in relation to what the soil can deliver and what the coffee tree needs. Farmers have a tendency to focus on Urea, which explains the high N input, the situation for P is fairly balanced while the focus on Urea shows that K application is short (Figure 10).

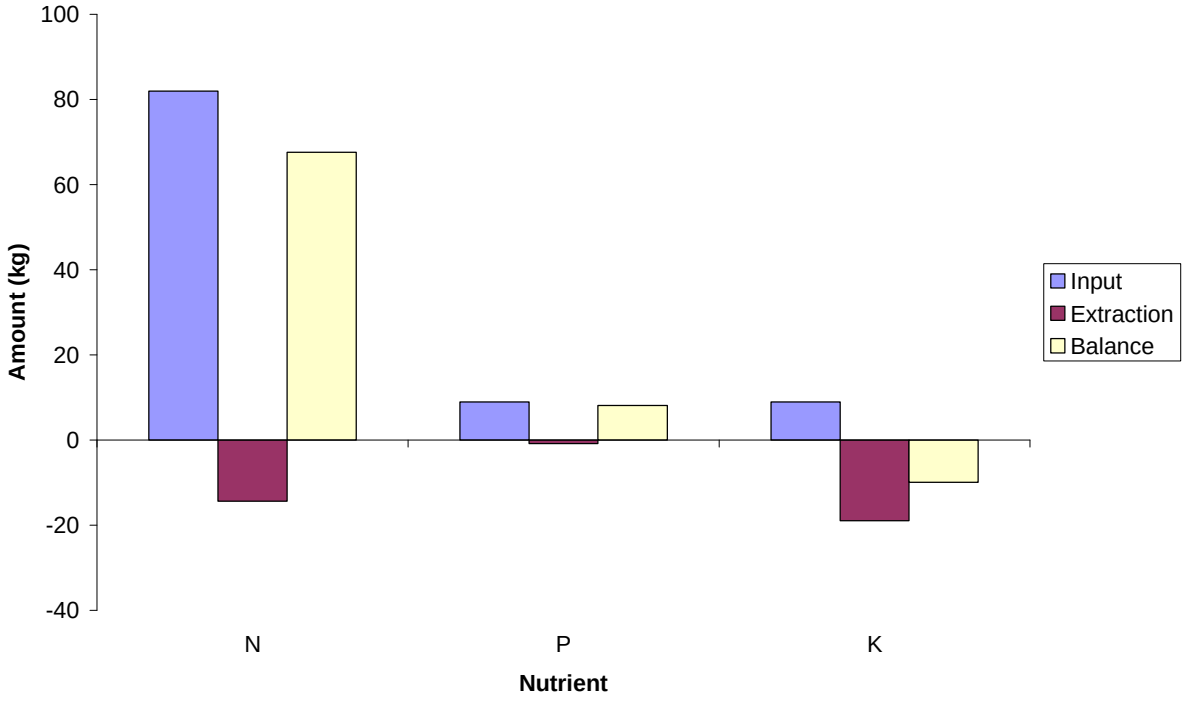

Figure 10: Nutrient balance for N, P and K for those farmers that apply fertiliser. Input rates are calculated by using fertilizer volumes and nutrient contents of fertilisers applied. Extraction rates refer to the amount of nutrients contained in harvested cherries. The balance is difference between input and extraction.

Training on fertiliser use and use of organic manure is highly needed. Even those farmers that apply fertilisers do not make use of them optimally, given their strong focus on Urea which goes to the detriment of K applications. Improvements that could be made should focus on erosion measures to counter nutrient leaching and the importance of enhancing soil organic matter through the use of manure and composted coffee pulp. Increased use of nitrogen-fixing shade trees would further enhance soil fertility.

4.3.5 Pest and disease control

Although disease symptoms can frequently be observed, their presence does not necessarily result in economic losses. In some cases a lack of pruning and nutrient management results in physiological disorders which, by weakening the tree, make the tree more susceptible to disease. Dieback is a typical example of this. Given the generally poor agronomic practices in the project area a substantial share of disease pressure could be reduced simply by applying better agronomic practices. While this may not eradicate disease all together it can reduce possibilities for disease to develop and lessen its economic impact.

Pressure from pest and disease can have severe effects on yield. The main disease problem in the project area is Coffee Berry Disease (CBD). The Jamaica variety that the majority of farmers use is particularly susceptible to CBD. Coffee Leaf Rust (CLR) and Dieback also occur but are of minor importance. Important pests are limited to Stem-borer, White Fly, Mealy bug and Coffee Berry Borer (Figure 11 to Figure 16).


Figure 11: Red Stem-borer


Figure 12: Entry hole of CBB


Figure 13: White fly


Figure 14: Sooty black mould from scales and aphids


Figure 15: CBD affected cherries on otherwise healthy tree


Figure 16: Early signs of Dieback, (blackening of twig on the right) and general lack of Potassium (leaf top left) and Nitrogen (bottom leaf)

CBD is by far the most devastating disease affecting coffee farms in the project area. CBD is a fungal disease caused by *Colletotrichum coffeanum*. To date CBD is limited to the African continent and affects only Arabica trees. Generally CBD is only found in equatorial plantations above 1500m and lower altitude plantations with particularly damp and cool micro-climatic conditions. Climatic conditions in the project area are favourable to CBD development, although care should be taken not to confuse CBD with Dieback. A CBD infected tree will show blackened cherries (at later stages of development) whereas a tree affected by Dieback shows also blackened twigs and general loss of foliage. CBD attacks green cherries on coffee trees which are otherwise healthy and have well-developed vegetative growth. CBD can destroy practically all cherries on a tree without having an impact on leaves or branches. Propagation of the disease depends on rains and spores are transported from tree to tree by anything that moves through the plantation. As CBD moves from cherry to cherry heavy yields usually result to greater CBD infection rates. Chemical control of CBD is possible and fungicides are available in the larger towns. However, effective control in the project area would entail an intensive spraying regime of 7 treatments carried out from the start of flowering until 20 weeks later[16]. Such intensive spraying regimes are out of reach for most of the farmers in the project area. All farmers that have CBD on their farms indicated that they have no control measures in place.

Occurrence of pest and disease varies across farms and even occurrence does not immediately entail economic losses. Farmers however often seem to have little possibilities to enact affective pest and disease control (Table 12).

Table 12: Share of farms affected by pests and diseases

	Share of farms affected	Share of farmers that practice cultural control	Share of farmers that practice chemical control
Pest – Disease	*%*	*%*	*%*
Stem-borer	80%	30%	10%
Aphids	62%	8%	6%
CBB	80%	2%	6%
Mealy bug	36%	0%	6%
CBD	90%	6%	0%
Dieback	42%	0%	0%

Use of chemical is low and while cultural control is somewhat higher, this is only the case for Stem-borer which is easily controlled by cutting open infected trees and destroying the insect. Chemical control is sometimes practiced by injecting the insecticide Dursban into the entry hole on the stem. Control measures for other pest and diseases are fairly limited, although some farmer mentioned pruning and farm cleanliness as a control measure. None however is aware of removal of fallen cherries for example to break the breeding cycle of CBB. A number of farmers use chemicals but their application seems haphazard and without a good understanding of pest and disease characteristics. Other cultural control measures usually refer to farm cleanliness, but few if any farmers for example remove fallen cherries in an attempt to break the breeding cycle of CBB. Labour time spent on pest and disease control is thus limited although again difference can be observed across the sub-divisions (Table 13).

Yield losses from pest and disease pressure are hard to quantify. Farmers however indicated that the single most important disease is CBD. Given the lack of resistance of the Jamaica variety that most farmers still use this is not surprising.

Surveys in Cameroon carried out by Muller[17], reveal total losses which can be as high as 80% or more. Our field work confirms that yield losses can be substantial. Farmers estimated an average yield loss from pest and disease of 49%.

Table 13: Share of farmers that practice pest and disease control by sub-division. Average labour time could not reliably be assessed by sub-division due to lack of data

	Pest and disease control
Sub division	*Share of farmers (%)*
Oku	29%
Noni	0%
Nkambe	14%
Nkum	0%
All	11%

Project training activities will have to pay serious attention to pest and disease control, but given the cost and availability of chemicals the focus should be on improvement of agricultural practices to reduce susceptibility of trees. In the longer term, promotion of CBD resistant Java varieties will be important. For those farmers that have access to chemicals, and this number is expected to increase as yields and farm incomes go up, training of safe handling of chemicals should also be a priority.

4.3.6 Harvesting

Harvesting is done selectively and farmers demonstrate a very high awareness of the importance to harvest red cherries only. Most farms use 3 to 4 rounds before the entire crop is in. Harvesting periods vary across the sub-divisions. In Noni harvesting starts in October and ends in November, while in the other sub-divisions the harvesting period runs from November to December. During the harvest the entire family is active and on the more productive farms hired labour is used. Transportation of the yield is a severe problem for many farmers, as farms are fragmented across areas and only a small minority has

any means of transportation to bring the crop home. Most farmers hand-carry their harvest back to the house for processing.

4.3.7 Processing

Processing is done using hand-driven pulpers. Most farmers seem to be aware that processing should ideally be done on the same day as harvesting. A substantial number of farmers rent pulpers. A combination of low yields and availability of pulpers often results in farmers waiting 1 to 5 days before pulping. This has detrimental effects on quality. After pulping, coffee is dried of the ground on raised platforms and raffia mats. This allows optimal air circulation and results in a beautiful coffee. Rains are usually absent during the drying period. Most farmers take processed coffee that is drying inside during the night. While this is done to prevent theft it also enhances quality as coffee does not collect dew and is thus not rewetted at night. Farmers dry coffee to 12-13% moisture content and some store coffee for up to 3 months, although the majority of farmers aim for a quick sell to cover school fees. Coffee that is stored is kept either in polythene or old fertiliser bags and some use baskets. Bags or baskets are on all farms stored of the ground on a wooden platform or on the house ceiling. Hulling machines are not something farmers have access to and all coffee is sold as parchment.

Table 14: Pulper ownership by sub-division

	Pulper ownership
Sub-division	*% of farmers*
Oku	41%
Noni	27%
Nkambe	64%
Nkum	38%
All	44%

Quality awareness is very high among the project farmers. Nearly all seem to have sound knowledge on how to process coffee and pay attention to such details as using clean water, drying coffee of the ground and hand-pick parchment coffee after processing to remove defects. Project interventions on processing should be designed to reduce the incidence of farmers that wait for more than 1 day before pulping.

4.3.8 Labour use

Overall average labour use per farm is 82 days, 49 days of family labour and 33 of hired labour. As could be seen in section 4.2.4 labour use for coffee is decreasing over time while labour input for food crop labour stays stable across different age groups. Average labour use by activity shows how family and hired labour is being allocated (Table 15).

Table 15: Average family and hired labour allocation for all sub-divisions

	Family labour	**Hired labour**	**Total labour**
Activity	*Days/farm*	*Days/farm*	*Days/farm*
Pruning	5	3	8
Weeding	14	11	24
Fertilising	3	0	3
Mulching	4	0	4
Replanting	2	0	2
Harvesting	20	19	38
Other	2	0	2
Total	49	33	82

Labour intensive activities such as weeding and harvesting use the highest share of hired labour. Given the importance of pruning in coffee and its relation to yield levels it is somewhat surprising to notice that also pruning uses a high share of hired labour. In many producing countries farmers generally do not trust hired workers enough to perform pruning tasks.

Across the project areas labour time devoted to different activities varies greatly. As could be seen earlier, the cultivation methods in Oku and Noni are far more intensive than in Nkambe and Nkum. However, on a per Mt green bean produced basis labour use spreads more evenly across the sub-divisions (Figure 17).

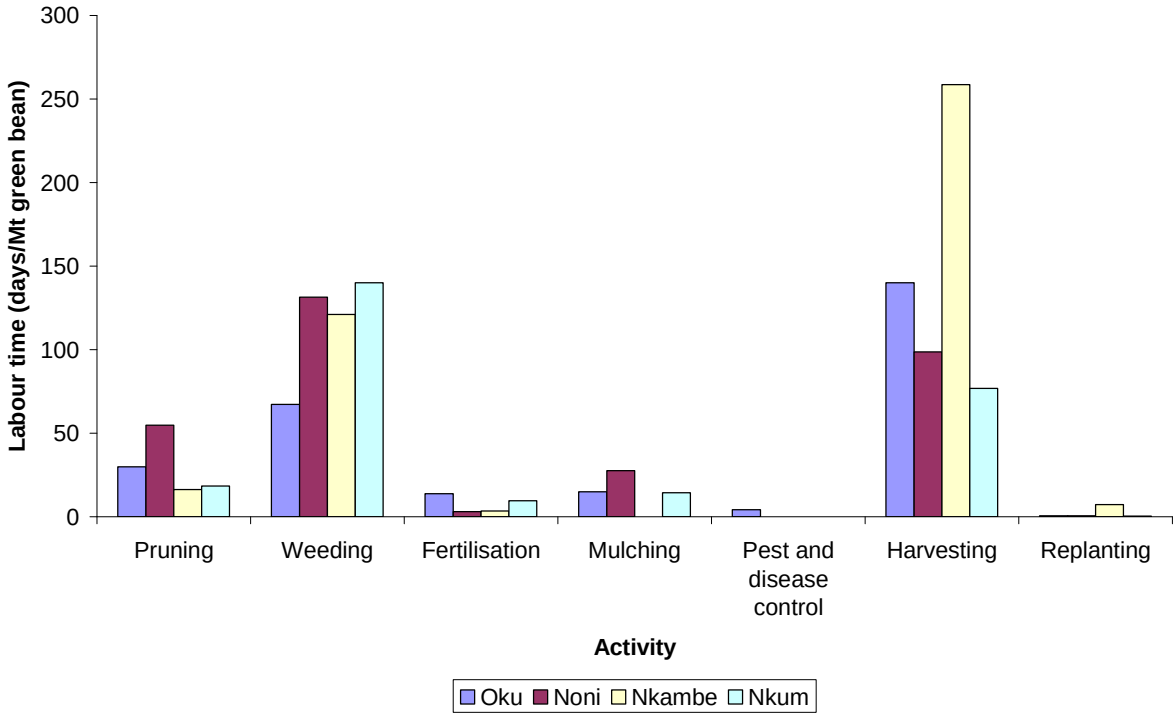

Figure 17: Labour time by activity and by sub-division in days per Mt of green bean (Note: replanting labour is listed in days per farm).

The high amount of weeding labour per Mt of green bean in all areas except Oku is partly attributable to the relatively high yields in that area. What is interesting to notice is that Oku is the only area where farmers make an attempt at pest and disease control. Replanting labour is on average less than 1 day per farm, the average for Nkambe is skewed upwards by one farmer who had just established a new coffee farm.

4.3.9 Coffee production cost

National coffee productivity figures segregated by coffee type could not be obtained or are not available. National average production for both Arabica and Robusta combined is 176kg green bean per ha. Given characteristics of Robusta the figure for Arabica is probably considerably lower than this. Productivity in the 4 project sub-divisions is 58kg/ha or 0.12kg/tree. On a per farm basis production reaches 262kg green bean. The farm production figure does not completely match the acreage and productivity figures because not all farmers know their acreage. All farmers currently sell their produce as parchment coffee with processing done on farm. Given the references in literature to Java and the solid appearance of Java trees in the field one would expect better yield performance from this variety. However the sample size of Java-only farmers is too small to make meaningful statements on this.

Production cost per Mt of green bean amounts to 321,000CFA per Mt, or 618USD/Mt. Compared to other countries cost of production is relatively low on a per Mt basis. However, relative to the amount of money invested, one would expect to see higher productivity. Countries like Colombia and Guatemala achieve far higher productivity relative to their production cost per Mt. Looked at separately no single Cameroonian aspect of production explains this situation. However collective impact of inadequate pruning, low nutrient input and high CBD pressure result in high production cost relative to productivity. On a sub-division basis production cost varies considerably (Table 16).

Table 16: Average productivity, cost of production and net farm income (from coffee) by sub-division. Note: cost of production in Nkambe is skewed downwards because of newly established farms that are not productive yet.

	Production cost	**Average yield**	**Farm income from coffee**
Sub-division	*CFA/kg*	*kg/ha*	*CFA/farm*
Oku	447	100	151,862
Noni	180	39	113,705
Nkambe	69	32	88,550
Nkum	167	34	82,450

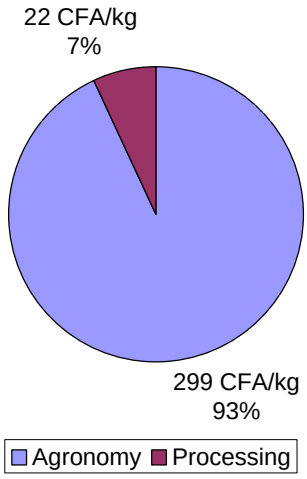

Figure 18: Coffee production cost breakdown in agronomy and processing, average per farm and share of each cost item

Costs of production can be split in agronomy and processing costs (Figure 18). Average agronomy cost outweighs processing cost with 93% and 7% of total cost respectively. Agronomy cost can be broken down further by sub-division and by activity and use of inputs for each activity (Figure 19).

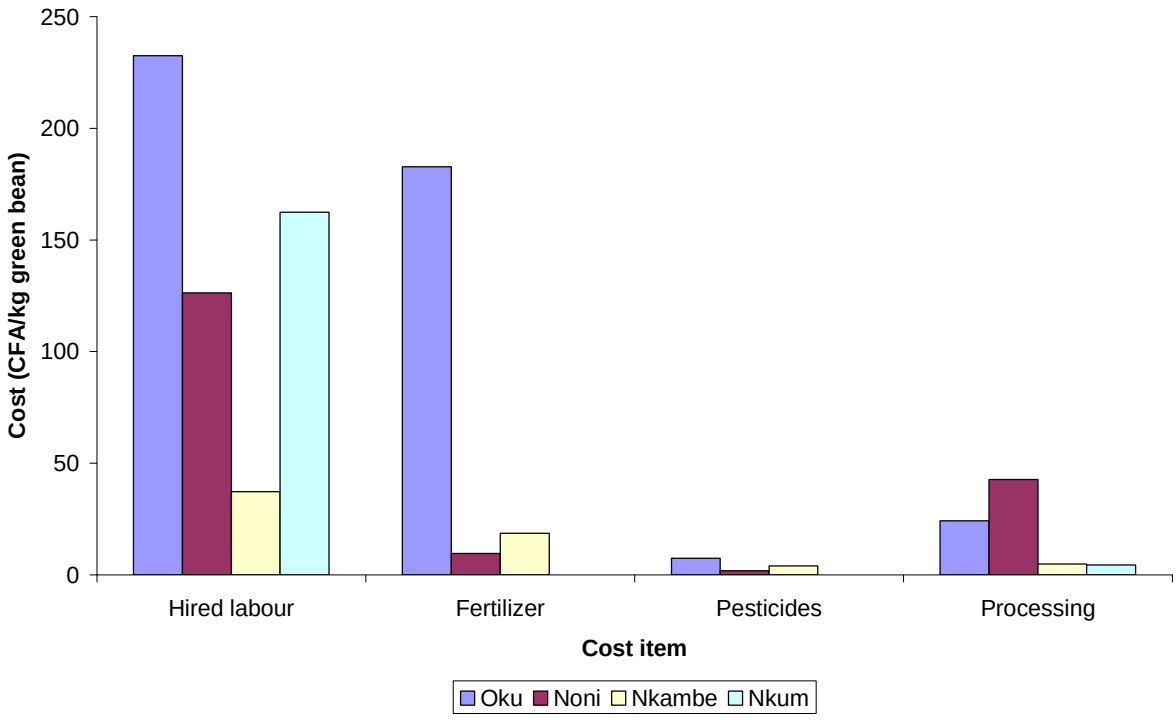

Figure 19: Cost of production breakdown by major cost item and by sub-division

The cost break down by item and sub-division gives a good view of the difference among the sub-divisions. Oku stands out in the sense that its fertiliser cost is the highest. Although production levels in Oku are greater than in other areas, the observed level of fertiliser investment seems too high. In addition, while not clear from the graph, the majority of fertiliser expenditure is used for nitrogen fertilisers. This leads to nutrient imbalances in the soil and a substantial portion of applied fertilisers are wasted. Production cost in Nkambe is relatively low, to a large extend this is because respondents there make little use of hired labour. From a soil fertility perspective the situation in NKum is somewhat worrying, average fertiliser expenditure is nil.

4.4 Coffee marketing

Since liberalization (see section 3.1) the Cameroonian coffee market is open to any buyer. However, limited and declining volumes of both Arabica and Robusta have resulted in one international exporter, OlamCam that has a substantial operation in the country. Schluter, a Swiss-based trading house active mainly in the specialty coffee sector buys Cameroonian coffee as well. It has a single representative in Cameroon who buys from local cooperatives and other exporters. In addition to OlamCam, a number of local organizations and companies have export licenses. The North-West Cooperative Association (NWCA) is the largest such player in Arabica and claims to represent 30,000 Arabica farmers. These farmers are grouped into 7 cooperative unions that are made up of 43 village-level primary societies following a restructuring from 16 unions and 172 primary societies.

Where the Arabica market is concerned OlamCam and NWCA are the two important players. Farmers do not seem to have apparent loyalties to NWCA and sell, logically, to whomever offers the best price. The buying systems of the two players differ. NWCA sources coffee through its chain of cooperative unions and primary societies while OlamCam works with village-based local buying agents (LBAs). When the harvest is in full swing, from the end of December to March both parties publish their prices: NWCA via local radio stations and OlamCam via its LBAs. Farmers sell on price, unless they are tied in with a trader who pre-financed them. On average a farmer sells to 1.37 buyers, ranging from 1.5 in Noni and Nkambe and 1.1 and 1.2 in Nkum and Oku respectively. Analysis of sales channels of respondents show that OlamCam is a dominant buyer in some sub-divisions and less active in others (Figure 20).

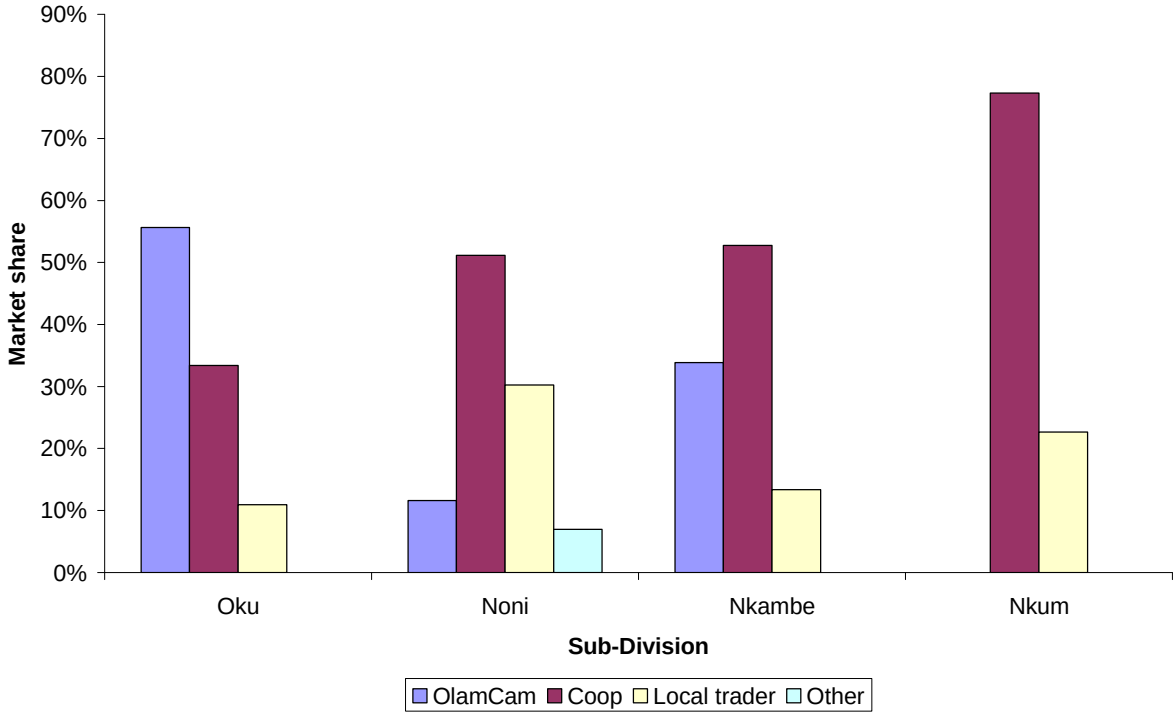

Figure 20: Sales channel of respondents by sub-division for the 2007/08 crop.

While OlamCam is strongly present in Oku and Nkambe it needs to enhance its visibility in the other 2 sub-divisions.

Farmers' access to reliable coffee price information is limited. During the harvesting season, the NWCA radio broadcasts reach a wide audience, but there have been occasions where their quoted price was in CFA per kg exportable green bean rather than the parchment that farmers sell. Needless to say, farmers are generally unaware of conversion rates from parchment to exportable green bean. OlamCam regularly distributes parchment prices to its LBAs, but how the price information reaches the farm gate is solely in the hands of the LBAs. One would expect farmers in those villages with a single LBA to receive a smaller share of the quoted price, but this needs further research.

A combination of lack of access to credit and the fact that school fees are due just before the start of the harvesting season forces some of the farmers, usually the poorest, to sell their coffee when it is still on the tree. Farmers across the area complained that the prices they receive on such occasions, and in some cases from their local LBAs, can be 50% or less than the market price that prevails a month or so later. Comparison to the ICO indicator price for Other Milds (the category in which Cameroonian Arabica falls) gives an appreciation of value of farmers relative to international value of their coffee[3] (Figure 21).

[3] The ICO indicator price is a rather crude tool in a comparison such as this, but in the absence of Douala FOB prices for Arabica the ICO price is the second best option.

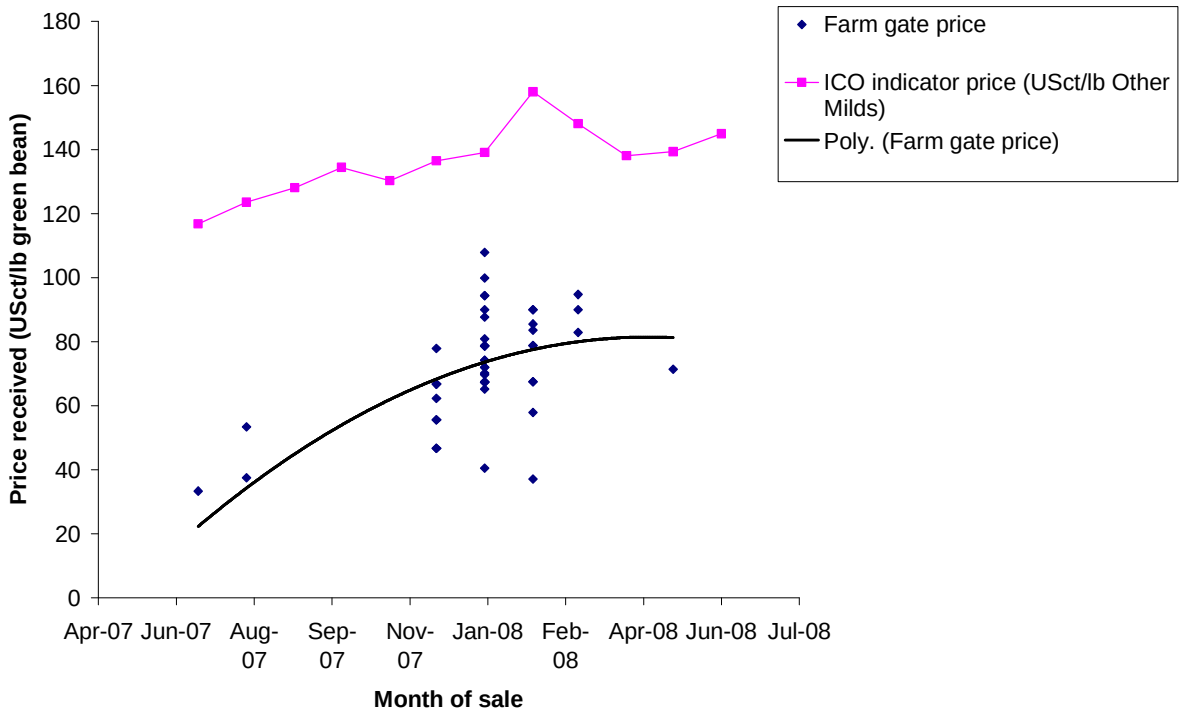

Figure 21: Month of sale of the 2007/08 crops versus price received in USct/lb for all respondents in relation to average monthly ICO indicator price for Other Milds.

While the presence of OlamCam has an effect on competition, the timing of their coffee buying is somewhat poor. The majority of farmers need cash in November to pay for school fees while OlamCam does not usually start buying until January. While speculative, the effect of OlamCam buying is reflected in farm gate prices. Figure 21 shows a stronger increase in farm gate prices than one would expect from the increase of the ICO indicator price in the same period. However, coffee is available as early as the end of November, which means that by the time OlamCam comes in to buy, the poorest farmers will already have sold their crop to well-to-do farmers or traders. This deprives the poorest farmers of the price increasing effect OlamCam's presence has.

From a project perspective, earlier buying by OlamCam, from the end of November, will be crucial to enhance prices received and farm profitability and therefore interest from farmers in project activities. Improving production makes little sense if there's no or only limited equitable market access.

4.5 Support mechanisms

Support services are those services that come from outside the farm but nevertheless play an important role in optimization of farming. Support services typically consist of extension services for technical advice, farmer organizations that represent farming interests and credit institutions that provide liquidity in times of need. In other (coffee) farming environments, such as Vietnam and Colombia, farmers may have direct access to research institutes as well.

4.5.1 Extension services

Prior to liberalization the cooperative structure channelled extension services to farmers. Interviews with farmers show that few of them have received any contact with an extension agent after liberalization. A lack of access to technical knowledge was listed by interviewed farmers as one of the constraints that kept them from achieving better productivity and income. Discussions with the National Coffee and Cocoa Board (NCCB) showed that farmers in the Arabica coffee sector are worse of than, for example, cocoa farmers who have a specialised structure (SODECAO) to cater for their needs..[18]

The Ministry of Agriculture (MINADER) runs extension services too, but these often fail to reach coffee farmers. Partly, a lack of funding is to blame, while additionally MINADER extension workers are better versed in food crops and livestock and not in cash crops.

Previous coffee projects in the North-West Province (eg DEG, ICP and NWCA) have failed to make a substantial impact on farming practices. Discussions with a former North-West Cooperative Association (NWCA) technician clarified the reasons for this: a lack of funds refrained extension staff from long term commitment to farmer training. Most farmer groups (primary societies) received a few trainings but intensive follow-up was lacking. 50% of respondents indicated that they have at some stage received training on coffee, but for some this was more than 10 years ago.

4.5.2 Farmer organizations

Reflecting their long-standing experience with cooperatives, Cameroonian Arabica farmers are fairly unique when compared to producers in other countries in the sense that they have a strong conviction that working together as a group makes them better of than approaching the market as an individual. This is somewhat surprising given the fact that the majority of farmers complained about NWCA performance, notably because of delayed payments and promised payments that did not arrive. As a matter of fact, in 2007 alone, 14% of respondents have discontinued their membership to the cooperative because of this. And declining market share of the cooperatives is a clear symptom of dissatisfaction of members.

Besides marketing its members' coffee, farmer organizations such as NWCA also count among their mandate the provision of extension and inputs. The first is detailed in section 4.5.1, the second takes place in a haphazard manner. Last year some supplies of government funded fertilizers and chemicals were distributed through NWCA to the cooperative unions. According to farmers and former NWCA staff, part of these inputs ended up being sold in the open market, at, of course, market rates. OlamCam has also provided some farmer groups with subsidized inputs (at a rate of 50%) but worked via its local buying agents (LBAs).

OlamCam also works with farmer groups, often there is overlap between the groups of OlamCam and the primary societies of NWCA. Currently, OlamCam uses group structures to assemble farmers for meetings, but beyond that little use is made of existing group structures. Groups are not yet mobilized for addressing issues such as high input prices by bulk buying or targeted, community-wide action on, for example, CBD.

Some farmer groups seem to lack transparency, accountability and well-understood and publicized rules and regulations that govern their operations. In some cases, management boards consist of the wealthiest and best-connected people. Tensions between management boards and group members can be observed, the farmer group in Oku is one such example.

4.5.3 Finance

The cooperative credit union is active in parts of the rural area. However, only 16% of respondents are currently member of a Credit Union. The majority of farmers therefore rely heavily on LBAs in times of liquidity needs during the off-season. Interest rates and collateral requirements are simply too high for them to access formal sources of credit.[19] An OECD study[20] shows that the rural sector received 6% of bank credits, in relation to the share of agriculture in GDP. The matter is not so much about credit availability *per se* – credit can be had at up to 15% interest per month – but is more one of access to affordable credit. Some more socially-oriented programs and institutions provide credit too. Depending on conditions and approaches loan recovery rates vary. PARFAR in 2004 had a recovery rate of 31%. LFDP had a recovery rate of 87% on 194 loans, and PAFRA achieved 98%. The draw back is that these schemes are not widely dispersed.

Traditionally, informal saving schemes are popular, most farmers take part in savings groups called Njangi. In this system a select group of people meets weekly. During each meeting a different member

receives a fixed sum from each of the other members. The main condition to take part is, besides being trusted by the other members, an ability and willingness to conform to the level of weekly payment.

Given the lack of access to inputs and prohibitive prices a financing scheme, that still needs to be defined in detail, could focus on providing inputs against future crop. Some form of hedging would have to be part of such a scheme to avoid farmers taking out expensive inputs that can not be repaid if coffee prices crash a few months later at time of reimbursement. A detailed finance study will be undertaken in 2009 to arrive at a suitable scheme for financing of farmers, with implementation of identified finance options expected to start in the second half of 2009.

5 Opportunity analysis

This section details project opportunities and summarizes suitable interventions. It goes on to look at Utz certification potential and implications of baseline study findings on project operations.

Given the low production the focus of the project should be production improvement. At the same time higher prices could help, although these alone will not help much given the low base from which most farmers start. Utz certification is one way of achieving better prices but as said, its effect will be limited. Improving production should go hand in hand with better access to inputs. Given the high prices of fertiliser in Cameroon relative to other coffee producing countries and the suspected duopoly of 2 fertilizer importers the option of OlamCam importing and distributing fertilizers might offer improved access for farmers as well as a line of profitable future business for OlamCam. The country-wide effects of more affordable fertiliser would most likely exceed the economic impact this project in itself could ever make. This, in combination with adequate training on good agricultural practices could go a long way to improve farm economics and hence living conditions of farmers. On the back of improved productivity improved pest and disease control also becomes a possibility, enhancing yield levels further still.

Increasing productivity will be of little use if pest and disease problems are not addressed. CBD in particular as it is estimated to cause about 50% yield losses among respondents, and with documented losses of up to 80% (IRAD, 2007). Tied in with CBD control is whole range of good agricultural practices. For example, pruning will be vital, even if farmers would have access to chemicals for CBD control, the current tree structure is such that spray will hardly penetrate those areas of the tree where it is most needed. Management of shade will be another important issue as shaded fields are less susceptible to CBD.

Improved nutrient management meanwhile will contribute to both better production (provided other agricultural practices are properly implemented) and improved tree health. This is expected to reduce CBD and general pest and disease pressure.

In conclusion, interactions between different variables within any agricultural system are very complex. Farming objectives of farmers and the means they have to implement their objectives vary, which is one reason why a one-size-fits all approach to training does not usually work. For this reason the projects' training programme will be designed to improve farmers' decision making capacity by jointly arriving at suitable agricultural practices under different conditions that are nevertheless geared towards productivity improvement.

As production improves, groups of farmers become increasingly attractive business partners to exporters such as OlamCam. To enable groups of farmers to act on as equal a footing as possible with OlamCam and other buyers and exporters guidance and training will be geared towards establishment of group structures that:

- Work to the benefit of their members;
- Are recognised legal entities;
- Function democratically;
- Aim to maximise member's returns while operating within a framework of industry standards; and
- Facilitate access to inputs and credit.

Groups of farmers will be kept small to enable members optimal control over elected boards that run the groups. For this reason and to keep overheads to a minimum and maximise returns to members apex structures that amalgamate farmer groups will be avoided. A move supported by field findings, 22% of interviewed farmers have discontinued cooperative membership on the grounds of broken promises, late or absent payments and distrust of management that seem to have come about after the amalgamation of NWCA that was started in 2005.

Once farmers work together in viable groups, certification of products becomes a viable development option that generates additional income and, reportedly, improves market access. Market share of

certified sustainable coffees is growing in the main importing markets (Europe and the US) and several of the big 5 roasting companies4 have made public commitments to source anything from increasing volumes to 100% certified coffee within in the next 5 to 7 years. This presents both a threat and an opportunity to farmers. Those (groups of) farmers that do not manage to become certified may see their market access reduced as certified coffees come to dominate world supply. At the same time early movers still benefit from premium payments that are being made to stimulate growth of supply (and, reportedly, to reward farmers for extra efforts that have to be made to become certified). If farmer groups are interested, the project will provide guidance and training on how to become Utz Certified and will facilitate the process with the objective of enabling farmer groups to take control over their own certification process over time.

While the project aims to work with close to 20% of the estimated 30,000 families that grown Arabica coffee in North-West province (and are responsible for the majority of Arabica supply from Cameroon) the team feels it is imperative that findings are being made available to policymakers and sector stakeholders, including international industry. Only concentrated action by the sector as a whole seems to have a chance of turning the sector around if experiences from other countries, such as Vietnam, are anything to go by[5].

4 Nestle, Kraft Foods, Procter&Gamble, SaraLee and Tchibo, together responsible for about 60% of the world's coffee purchases.
5 A multi-stakeholder initiative in Vietnam is on the verge of issuing a sector strategy that is both widely accepted in governmental and industry circles and aims to enhance sustainability of the sector through targeted projects that are in line with latest development thought.

Annex I: Monitoring and Evaluation Framework

(See file:080617_Project Proposal_Olam_DEF_Cameroon_Final for details of project components)

Component 1: Productivity improvement

Result	Indicator	Target value after year					
		0	1	2	3	4	5
Coffee farm management has been intensified (as measured by labour time and inputs used per unit coffee)	Amount of pruning labour (h/tree)	0.017			Value significantly higher than yr 1 (p=0.95)		
	Amount of weeding labour (h/tree)	0.053			Value significantly higher than yr 1 (p=0.95)		
	Amount of fertilising labour (h/tree)	0.006			Value significantly higher than yr 1 (p=0.95)		
	Amount of mulching labour (h/tree)	0.008			Value significantly higher than yr 1 (p=0.95)		
	Amount of harvesting labour (h/tree)	0.083			Value significantly higher than yr 1 (p=0.95)		
	Total labor/unit coffee (h/kg gb)	2.487					
	Household labor/unit coffee (h/kg gb)	1.49					
	Child labor/unit coffee (h/kg gb)	0.18					
	Hired labor/unit coffee (h/kg gb)	0.99					
	Fertiliser cost/unit coffee (CFA/kg gb)	114					
	Variable production cost/unit coffee (CFA/kg gb)	299					
	Fixed production cost/unit coffee (CFA/kg gb)	0					
	Profit/hour household labour (CFA/h)	292			Value significantly higher than yr 1 (p=0.95)		
	Nutrient balance N (kg/tree)	0.018	<0	<0	<0	>0	>0
	Nutrient balance p (kg/tree)	0.002					
	Nutrient balance K (kg/tree)	-0.0027					
	Nr of nurseries supported	0	3	6	>10	>10	>10
	Nr of seedlings sold	0					

Result	Indicator		Target value after year				
		0	1	2	3	4	5
	Nr of improved variety seedlings sold (Java or other)/nr seedlings sold	0	>25%	>30%	>50%	>50%	>50%
Average yields have at least doubled	CBD losses reduced	50%					
	Yield (kg gb/tree)	0.17	<0.5	>0.5	>1	>1.5	>1.5
	Yield (kg gb/ha)	58.5			Value significantly higher than yr 1 (p=0.95)		
Incomes have increased significantly.	(Turnover/tree)/(turnover/tree yr1) (CFA, normalized prices)	Na	1	>1	>1.5	>2	>2
	Turnover/tree (CFA, actual prices)	52					
	Total cost/tree (CFA, normalized prices)	Na					
	Total Cost/tree (CFA, actual prices)	21					
	Net income/tree (CFA, normalized prices)	Na			Value significantly higher than yr 1 (p=0.95)		
	Net income/tree (CFA, actual prices)	31			Value significantly higher than yr 1 (p=0.95)		
	Net income per day worked/legal minimum wage	0.59	<1	<1	>1	>1	>1
	Gini coefficient for income	0.456					
	% of FOB price received at farm gate	na					

Component 2: Farmer organisation and capacity building

Result	Indicator		Target value after year				
		0	1	2	3	4	5
80% of project farmers are part of a registered farmer group	Nr of registered groups	0	3	>25	>50	>50	>50
	% of project farmers part of registered group	na	80%	80%	80%	80%	80%
	Nr of group members over time	na	500*0.8	1,500*0.8	2,500*0.8	5,000*0.8	5,000*0.8

Result	Indicator	Target value after year					
		0	1	2	3	4	5
	Average volume sold per group	na			Value significantly higher than yr 1 (p=0.95)		
	Average value marketed coffee per group	na			Value significantly higher than yr 1 (p=0.95)		
	% of groups that deploy non-coffee activities	na	-	-	>20%	>25%	>30%
Management boards are elected as per group procedures and by-laws	% of groups that have written procedures	na	>50%	>60%	>70%	>80%	>80%
	% of groups that hold elections according to schedule	na	>50%	>50%	>50%	>70%	>80%
	Nr of participants in management trainings over time	na	>10				
	Satisfaction of members with management board	na	>70%	>70%	>70%	>70%	>70%
50% of farmer groups have attained Utz Certification by year 3	% of groups that passed Utz certification audit	na	na	na	>50%	>60%	>70%
	Average Utz premium per farmer/average net income per farmer	na					
100% of Utz certified farmer groups receive on average at least 50% of Utz premium paid by Decotrade	Average share of Utz premium received per certified farmer	na	na	na	>50%	>50%	>50%

Component 3: Access to credit

Result	Indicator	Target value after year					
		0	1	2	3	4	5
Credit and savings options have been tested and promising ones up-scaled	Study report identifying promising options available	na	1	na	na	na	na
	Contacts with potentially interested banks (local and intl') established	na					
	Evaluation report of testing available	na	na	1	na	na	na

Result	Indicator	Target value after year					
		0	1	2	3	4	5
At least 70% of project farmers have access to credit at market rates.	Incidence of pre-harvest selling of coffee against less than 70% of the prevailing market price has decreased by at least 50%	na	na	na	>50%	>50%	>50%
	Average interest rate paid by farmers/average interest rates of 3 main NWP banks for agricultural credit[6]	2.74	na	na	<1.1	<1.05	<1
	At least 70% of project farmers have access to credit at market rates	66%	na	na	>70%	>80%	>80%

Component 4: Promotion of Arabica cultivation

Result	Indicator	Target value after year					
		0	1	2	3	4	5
Number of young farmers taking up coffee as a livelihood or considering it has increased by 50% against the baseline study value	Nr of coffee newsletter published	na	>2	>6	>10	>14	>18
	Nr of coffee events held	na	1	2	3	4	5
	% of farmers <30	4%	na	>10%	>30%	>50%	>50%
Coffee quality from the project area, as measured by OlamCam and NCCB, has noticeably improved;	Hulling outturn project coffees/hulling outturn regular coffees from comparable area	Na	na	>1	>1	>1	>1
	Labor time handpicking project coffees/labor time handpicking regular coffees	Na	na	<1	<1	<1	<1
	Consistency of Arabica quality has improved	Na					
80% of farmers have access to daily price information during the harvest.	Idem	16%	na	80%	80%	80%	80%

[6] Credit rate used for calculation is 1.8% per month. An internet reference value for NWP.

Component 5: Rolling out

Result	Indicator	Target value after year					
		0	1	2	3	4	5
Working group with members other than NCCB and OlamCam has been formed and meets at least twice a year	Nr of introductory workshops held	Na	na	1	2		
	Nr of organizations that joined working group	Na	Na	na	2	>2	>3
	Minutes of meetings	Na	na	na	2	2	2
Viable sector development program has been designed and is used by relevant authorities to guide part of their work on coffee;	Idem	Na	na	na	na	yes	yes
SAI reporting requirements have been met.	Baseline and progress reports available (nr)	1	1+2	5	7	9	11

Component 6: Phasing out

Result	Indicator	Target value after year					
		0	1	2	…	6	7
75% of the original project farmers are part of the farmer groups that were formed during project implementation 2 years after project withdrawal	Idem Result	Na					75%
50% of the farmer groups market products other than coffee two years after project withdrawal	Idem Result	Na					50%
75% of farmer groups have up to date management and business plans two years after	Idem Result	Na					75%
Average yield increases achieved during project implementation have been maintained or increased (2 years average to cancel out effects of bi-annual bearing).	Average yield year 6+7/Average yield year 4+5	Na					>1

Annex II: Questionnaire

See file: 081204_Baseline questionnaire.pdf

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