WP 2009-25
July 2009

Working Paper

Department of Applied Economics and Management
Cornell University, Ithaca, New York 14853-7801 USA

Cashew Production in Guinea Bissau

Steven Kyle

It is the Policy of Cornell University actively to support equality of educational and employment opportunity. No person shall be denied admission to any educational program or activity or be denied employment on the basis of any legally prohibited discrimination involving, but not limited to, such factors as race, color, creed, religion, national or ethnic origin, sex, age or handicap. The University is committed to the maintenance of affirmative action programs which will assure the continuation of such equality of opportunity.

Abstract

Cashew Production in Guinea Bissau

Steven Kyle

Cashew is by far the most important cash crop grown in Guinea Bissau. Indeed, the degree of export dependence on this crop exceeds even the export dependence of most members of OPEC on oil exports. This paper provides an overview of the current system of cashew production in Guinea Bissau and suggests policies to improve production, marketing and international sales.

Cashew Production in Guinea Bissau[1]

I. Cashew, Poverty, and the Macroeconomy

Cashew is by far the most important cash crop grown in Guinea Bissau. Indeed, the degree of export dependence on this crop exceeds even the export dependence of most members of OPEC on oil exports. This fact has led many observers to promote diversification away from cashew as a primary objective of any trade promotion effort. However laudable diversification may be (and indeed, it is a worthy goal not only to raise incomes but also to decrease the risk characteristics of export earnings) it is impossible to achieve broad based success in export promotion without a high degree of success in the cashew sector.

Simple arithmetic underscores this observation – with 98% of export earnings and 17% of fiscal revenue derived from this crop, even unprecedented success with other products can yield only a marginal increase in the total. However, much more than arithmetic dictates that a primary goal of any trade effort be directed toward the cashew sector:

- First, it is abundantly clear that Guinea Bissau possesses near optimal conditions for cashew production. Indeed, not only is cashew produced virtually without purchased inputs in most cases, but the quality of the nuts is superior to those from many other exporters and so is capable of commanding a premium on the international market. The rise of cashew cultivation is therefore no accident – producers are behaving very much in accord with what the standard predictions of comparative advantage would have them do. They gravitate toward a product in which they have relatively lower costs than do other producers.

- Second, the vast majority of the cashew crop is produced by small farmers. In many areas it is hard to find small farmers who do not grow at least some cashew. According to recent estimates, more than 85% of the population is involved in cashew production in some way.[2] This is extremely important in that it means that alterations in the farm gate price of cashews have a greater impact on the incomes of the poorest than any other variable in the economy. One study by Boubacar-Sid et al. concluded that a 15% increase in the farm gate price of cashew could result in an increase in consumption of the extreme poor of 9.5% and by the poor of 3.3%.

Studies of the percentage of the export price actually received by farmers vary from as little as 20%[3] to as much as 70%.[4] Reports from the cashew harvest of 2008

[1] This paper is based on a report by Steven Kyle in May/June of 2008 written for the Guinea Bissau Diagnostic Trade Integration Study, and also has sections based on a report by Henrique Mendes in March 2009, and an earlier report by JP Chausse in 2007

[2] See Mendes 2009

[3] Boubacar-Sid et. al. op. cit. page 70

[4] See Jaeger and Lynn 2004

support an even higher figure of about 78%[5]. Given the stop-go nature of government interventions in the sector in recent years it is entirely possible for this percentage to have varied enough for all of these analyses to be accurate for different years. (It is worth noting that the low end figure of 20% reflects the extraordinary situation of 2006 and is not a "normal" occurrence.) Table 1 shows a breakdown of the cashew marketing chain for 2007. Table 2 shows the relationship between international prices and domestic prices at the port (i.e. farmgate plus internal marketing margins). Late accounts from the 2008 harvest reported prices to producers equivalent to as much as $950 US/MT and export prices (CIF) as high as $1300.[6] These prices imply that producers were receiving about 73% of the international price, again in about the same range as prior years. However, these figures are extremely high in absolute terms and indicate that Guinea Bissau has benefited from what is perhaps the best year in history for cashew exports; average prices to producers are somewhat lower at $820/MT, reflecting the sharply rising trend through the latest harvest season.

The government's determination to pursue development of the cashew sector was clearly demonstrated in the October 2008 National Cashew Conference in which it was agreed that promotion of processing and improved production and marketing would be key elements of a national strategy. Implementation would be led by a newly created National Cashew Institute (INCA) which would operate similarly to the analogous INCAJU in Mozambique. Many of the key recommendations of this report were also emphasized in this conference – clearing the way for a consensus between the government and the donor community on an appropriate path for the future.

II. Cashew Production[7]

A. Cashew Producers and Production

It is estimated that cashews cover more than 6.7% of the national territory, or about 210,000 ha. and that each Bissau Guinean produces an average of more than 53 kg of raw cashew each year.[8] The majority of families have at least some producing cashew plants. It is estimated that cashew area is increasing at the rate of 4% per year though output is increasing at a rate of 10% due to the fact that many recently planted trees are only now reaching their period of highest productivity. Table 3 shows agricultural production in Guinea Bissau where the importance of cashew is immediately obvious. Tables 4 and 5 show cashew production and processing figures for Guinea Bissau and other African cashew producing countries.

[5] See Mendes op. cit.
[6] See Relatorio da Iia Conferencia Nacional do Caju, 7-9 Outubro de 2008.
[7] This section draws on ; Jaeger and Lynn 2004, Chausse 2006 and Paiva 2007,
[8] See Mendes, op. cit.

Formatted: Portuguese (Brazil)

Small farms account for about 80% of cashew plantations, with the average smallholder plantation being between 2 and 3 ha. Larger plantations account for the balance, with one plantation of 1.300 ha. associated with a processing facility. Though no detailed evaluation of the state of the trees themselves has been undertaken, it is obvious from the high growth of area under cashew in recent years that most are quite young and are therefore either in or close to their phase of maximum yield. Growth in production will thus continue for the next several years even without further planting as young plantations come on stream and reach full potential. At current rate of growth, production should reach 150,000 MT by 2010.

Cashew trees are established by direct seeding using random seeds and random spacing. There is little attention to the selection of seed nuts or parent plants or use of grafted seedlings. There has therefore been no genetic improvement of planting material and productive potential. Husbandry practices are poor. with little or no thinning or pruning of trees. In spite of this, yields appear relatively acceptable at 500-600 kg/ha. comparable to those in India and Brazil (although far from those achieved in Vietnam). Harvest and post harvest techniques are often inadequate (premature harvesting, inadequate drying, handling and storing), which generates losses in quantity and quality of nuts.

B. Common Cashew Diseases, Research and Extension

There is at the present time no effective extension presence in any agricultural areas. There is a National Agricultural Research Institute in Guinea Bissau (INPA) which was in the past largely funded by donors but has been unfunded for several years and has therefore been largely dormant. What little (applied) research has taken place recently has been funded by private sector operators. However, little or none of this reaches the smallholders who constitute 80% of production in the country.

Disease has not yet affected production in any substantial way in Guinea Bissau. Anthracnose and Oidium both exist but are not widespread and have so far caused only limited damage, indicating that the Guinean cashew variety may be relatively resistant. Brazilian varieties introduced for their nut size have reportedly not had this resistance and have consequently been infected. This indicates that there is an obvious case for conducting adaptive research to try to produce varieties that would incorporate local disease resistance characteristics into higher yielding varieties with larger nuts.

Farmers use no input or treatment. This reduces cost and opens the possibility of niche markets for "organic" cashew[9]. However, it is unlikely that the current situation can last indefinitely. There are already some worrying signs of (localized) dying trees and experience shows that the development of a crop under monoculture conditions such as cashew in Guinea-Bissau is affected by pests and diseases that either adapt to local conditions or are inadvertently imported. It is thus of the utmost importance that efficient crop protection services be urgently re-established. Indeed, experience with Oidium and

[9] Agri-Bissau demonstrated the feasibility of doing this prior to its closure in 2006.

Anthracnose in other cashew producing countries (e.g. Mozambique) demonstrate that early action is essential in limiting losses to these problems.

There is no doubt that there are very clear public good characteristics of cashew research and extension. Accordingly, it is essential that the government do whatever is necessary to revive INPA and reestablish collaboration with EMBRAPA in Brazil in order to quickly put in place an active research and extension program in cashew in Guinea Bissau.

Fortunately, the legal foundation for a funding mechanism is already in place though it has not been actually funded in recent years. Of the revenue collected from the 8.6% cashew export tax, 5% of the total is supposed to be diverted to the Conselho Nacional do Caju for purposes of research and development benefiting all growers. Diverting all or part of this income to cashew research and extension would be entirely in line with the intention of the original law but would require a political decision to ensure that the flow of funds actual occurs. At present none of this money has been returned to the cashew sector in any form.

C. Markets, Prices and Processing

Markets and Prices

Guinea-Bissau exports most (more than 95%) of its crop as dried-shell nuts to India where it is processed into kernels for consumption in the terminal markets. World demand for kernels has grown strongly (10% p.a.) over the last ten years. In 2004, total consumption was estimates at about 300,000 tons with the main markets being: the North America (120,000 tons); India (80,000 tons); and Western Europe (60,000 tons). Demand is also exploding in East Asia and middle income countries in Eastern Europe and the Middle-East. World demand is expected to increase by 5-8% per years over the next decade. The national market is very small, estimated at less than 20 tons for the formal market (informal consumption unknown). The Dakar and Banjul market is larger, but probably doesn't exceed a few hundred tons and it is reported to be supplied by unregistered exports from Guinea Bissau.

The processing of raw nuts for supplying end-markets is dominated by three countries: India (58%), Vietnam (25%) and Brazil (15%). African countries (Tanzania, Guinea-Bissau, Cote d' Ivoire, Mozambique, Nigeria and Benin) account for close to 40 % of total raw nut production and almost 100% of raw nut exports (almost exclusively to India) but they account for less than 2% of total processing. The price of cashew nuts is derived from that of the kernel on end-markets (itself sensitive to the supply of substitute nuts such as almonds), and the market anticipation and short-term needs of the (Indian) processors which try to optimize the throughput of their plants. This induces a much higher price volatility for raw nuts than for finished products (kernels) both from year to year and, for a particular producing country, during the same season. After a sharp drop in 2000, the price of raw nuts recovered in 2003 and was in the US$650-900/ton range depending on origin and nut size in 2006. In 2008 prices are extremely high with

contracts for Guinea Bissau's product ranging as high as $1050/ton. Guinea-Bissau produces good quality nuts highly sought after by processors because of a high outturn (kernel to unshelled nut) ratio.[10] Guinea nuts command a premium over other origins (about US$60-100/kg).

Domestic Marketing and Export

Domestic marketing and exports is carried out by traders and exporters in a relatively liberalized environment. There are currently about 300 licensed (and many more unlicensed) traders operating in the interior and delivering nuts to Bissau warehouses and plants, and 40 licensed exporters. The law regulating the activities of traders and exporters was recently modified to eliminate entry barriers and lower entry costs[11]. As a result, competition has increased and marketing margins appear to have decreased. In addition, the National Farmers association (ANAG) has been active in providing price information to farmers, though at the present time the government has ceased attempts to influence the farmgate price after the disastrous experience in 2006. It is estimated that under normal circumstances[12], farm-gate prices average between 60 and 70% of fob prices. There is thus little evidence of obvious profiteering in the marketing chain since the high costs of marketing in Guinea Bissau, including both internal transport and port costs explain the difference between farmgate and international prices.

In spite of the reasonable efficiency of marketing agents, the cost of domestic marketing and exporting raw nuts (and kernels) is extremely high in Guinea Bissau. It is estimated that it costs up to US$300 to move nuts from farm-gate to processors in India.

- The cost of freight to India is much higher than that from East Africa but also from other West African countries: about US$90/ton against US$40/ton from Abidjan. This is due the low traffic touching port in Bissau, the low depth of the harbor (compounded by the lack of dredging over an extended period) which limits the size of the ships that can dock and the perceived risk of accessing Bissau harbor. This represents foregone earnings for the country in the order of US$5.0 million per 100,000 MT exported. Given the expectation of greater production figures in the future, the expected losses should rise proportionately.

- Port charges are also extraordinarily high (about US$40/ton against less than US$10/ton in other West African countries) due to inadequate or missing loading equipment, inefficient services and a lack of security resulting in a high rate of theft. The rehabilitation of the Bissau harbor (both in terms of access to the port

[10] According to reports cited in the recent Cashew Conference in October of 2008, Guinea Bissau's raw nuts enjoy an outturn ratio of 48-56%, which compares well with India, at 50-56% the worl leader, and with Brazil, the largest producer with an average outturn of 50-55%. No other African country produces nuts of a quality equivalent to Guinea Bissau.

[11] Although there are recurrent calls by nationals for excluding non-nationals from these activities and the law may not always be applied with consistency,

[12] This was not the case during the 2006 season because of government's intervention (see below and the resulting uncertainty it created for traders activities,

and in terms of port efficiency), planned since 1997, has not yet been achieved though work has begun on improvements in the access roads to the port.

- Expensive and bureaucratic export procedures including: high cost of transport and handling costs[13]; lengthy and expensive administrative procedures; an export tax (and related charges) of 8.6% of fob price[14] (for nuts); and a certification (SGS) fee of about 4% of the fob price. It is estimated that it takes 9 different documents, 30 days and US$1,550 to export a 20 ft container. Export procedures can and should be streamlined through a one-stop export window (a good example of such a mechanism is the *Centre de Facilitation aux Filieres d'Exportation* –CAFEX—in Guinea).

- Domestic marketing costs are also high (about US$180/ton), in spite of adequate competition among traders, due to the poor state of the transport network which makes transport expensive in particular during the rainy season and the illegal levies collected at road blocks by government officials and armed forces.

Improvement at every level of the marketing chain is thus critical to improve competitiveness and producers' income. This should be a central focus of Government attention for supporting the development of the sector.

Domestic Processing

There are currently three large scale processing units in Guinea Bissau. Two – Agri-Bissau and Sicaju-- have a capacity of one container of kernels per month (about 16 tons) and the third – B&B Caju – a capacity of 8.6 tons per month[15]. These plants export on the international market (EU, USA). Although they appear reasonably efficient, they operate under rather precarious conditions because of the difficult business environment in Guinea-Bissau. In addition, there are 21 small processing units established with Enterprise Works' assistance under the USAID-funded TIPS project, with combined production capacity of about 13 tons of kernel per month.

Guinean processors face several disadvantages:

- *Competition with exporters* - The main issue is that of securing the procurement of raw nuts in the context of a strong competition with raw nut exporters. International nut buyers want to ensure their own supply of nuts (as long as there is strong demand and unused capacity in India and Vietnam, which is going to be the case for the near future, thought India does have a long term policy of

[13] The warehouse (Bissau) to port cost for a 16t container of kernel is estimated at US$1,500, i,e, US$100/ton,

[14] This levy can be justified in economic terms if it were to be used for research or other public good ends which benefited all producers.

[15] A fourth unit – GETA—(belongs to the Minister of Finance) is non-operational at the moment, in need of rehabilitation, but, being of the mechanized OLTRAMARE technology it is not viable/competitive and shouldn't be rehabilitated,

achieving self sufficiency in raw cashew production) and thus compete with local processing by offering high prices and accepting little or no margin on their procurement operations. This problem is particularly evident in the current harvest season, with prices in Bissau reportedly reaching as high as CFA 430/kg. a price that domestic processors cannot pay and remain profitable under current international market conditions.

- *Small plant size* - Only three plants currently have the minimum economic size (about 1,000 MT/year). The other local processors, established under the TIPS program, are too small to meet importers requirements in terms of quality and quantity (minimum one container/16 tons per month). Their main outlets are the limited domestic and regional markets. These plants will not be able to export until their production is marketed/exported through a central unit[16].

- *High investment costs* - The cost of establishing a processing plant appears extremely high when compared to other African countries such as Tanzania and Mozambique, and even higher when compared to India. The cost of a 1,200 MT/year plant is reported to about US$800,000 against US$ 250,000 in Mozambique. High investment costs have been attributed to (i) the cost of land (though this problem can be overcome if plants are located in rural areas rather than Bissau), (ii) the cost of construction; (iii) the cost of equipment (imported from Brazil or Portugal, though there is no apparent reason Guinea Bissau cannot access the same suppliers as e.g. Mozambique); and (iv) import duties (5%) and taxes paid on imported equipment (though this would appear to be a problem entirely under the control of the government). This cost difference needs to be investigated in detail, though it appears that lower cost options exist for the problems cited.

- *Need to constitute stocks* - Cashew processors need to build substantial nut inventories since harvest takes place during a 4-5 month period whereas kernel production is spread over the entire year. It is estimated that a local plant of 1,200 MT capacity needs to secure an inventory about 700 tons of nuts for processing after the harvest period, at a total cost of about US$300,000. This is not the case for Indian processors who can import nuts from different countries throughout the year.

- *Lack of/high cost of credit* - High investment costs and the need to constitute substantial inventories are compounded by the difficulty of accessing investment or working capital credit from local financial institutions (most investments have been financed from own funds and off-shore sources) and the very high cost of commercial bank funding (14-19% p.a.).

[16] Many small units have sold to/through BBCaju to achieve the minimum shipment of one container/month

- *Low labor productivity* - Processing is highly labor intensive and labor productivity is thus a major determinant of competitiveness. Processors complain of the handicap imposed by low labor productivity (lack of skills, absenteeism) and the current wage policy (which makes firing an employee extremely difficult and costly). In particular, they strongly favor a more flexible wage policy and, to increase productivity, a performance-based payment system where employees are paid by the piece.

- *Small domestic market* - The domestic market in Guinea-Bissau lacks the capacity to absorb a significant amount of kernels (in addition to those of a lower quality, produced by cottage industry) and/or cashew by-products (except cashew liquor or *aguardente*) such as cashew jam, juice/wine and other secondary products. The national market is very small, estimated at less than 20 tons for the formal market (informal consumption unknown).

It is clear that a strategy of promoting processing of the cashew crop can not only increase the value added accruing to the country but can also reduce the risk associated with cashew dependence due to the much higher volatility of raw nut prices as compared to processed. This alone is a prima facie case for some level of protection to promote the industry, as is the cost of start-up noted above.

However, before embarking on such an effort it will be necessary to thoroughly examine the relative price relationships between raw and processed nuts to confirm whether Guinea Bissau can realistically expect to be able to compete with Indian purchasers operating on much narrower margins. The answer to this in the Mozambican case is clearly yes (given the 18% export tax on raw nuts) which would seem to indicate that it is at least plausible to think that Guinea Bissau could also do so. But in doing so it is important to bear in mind that the Mozambican model uses a somewhat different organization for its processing sector (medium size plants located in or near producing areas) and does not face some of the high cost of doing business that apparently plague Guinean operators.

However, it is eminently justifiable in theoretical terms to regard the difficulties associated with doing business in Guinea Bissau as a form of market failure requiring government intervention to alleviate the problem. This means that it is <u>far more desirable to effect the needed protection through targeted efforts at the high production and financing costs for processing startup than to raise export taxes though the Mozambican experience shows that this is a viable method to promote processing.</u>

Such targeted efforts could include efforts to lower land costs through use of government land in selected areas, exemption from import duties on all equipment and construction materials, tax holidays, or other means to reduce the costs associated with setting up processing facilities. It is also important to note that the Mozambican model of cashew processing is low enough in cost that processors are able to pay 20% more to farmers than exporters can, which would seem to indicate that the 18% export tax is a key factor in giving the processors this advantage.

For the moment, local processors benefit from a moderate protection through an 8.6% tax on raw nut exports. This protection, although higher than in other West African countries, is lower than in the countries that have been successful at developing a domestic processing sector (Brazil and India, but also Vietnam and Mozambique). Given the fact that there is some degree of investment taking place already[17] it is likely that the needed assistance can be achieved at a relatively modest cost. A targeted study of exactly what would be needed is clearly indicated.

The export tax is 6% of the government's established export reference price (US$600/ton in 2008) to which is added a "tax on rural enterprises" and a tax on industrial enterprises" of respectively 2.0 and 0.6% of the reference price. It is important to note that these taxes, based as they are on a fixed price[18] ("base tributaria") are NOT ad valorem taxes within any marketing year. If, as is the case in 2008, the actual export prices are higher than the price upon which taxes are based then the tax remains constant in absolute terms, affording a consequently lower level of protection than the 8.6% figure seems to indicate. For example, the current "base tributaria" of $600 yields a rate of protection of only 4.9% on actual export prices of $1050.

It is also important to note that cashew processing should not be evaluated solely on the basis of a strict comparison of costs and benefits accruing to the cashew processors alone. Rather, it is possible and indeed likely that there may be significant social benefits to a processing sector that should also weigh in the calculation. It is clear that development in the broadest sense involves a process of successfully diversifying the economy into progressively higher value-added forms of production as this permits higher outputs and incomes per worker and promotes the development of an industrial labor force able to be productive in a broad spectrum of activities. It is also usually the case that the best candidate for such activities is to enter into transformation of raw materials already in abundant supply in the country in question. In Guinea Bissau this clearly points toward the cashew sector.

In addition, it is also the case that a strictly static view of the question may not be entirely appropriate – though Guinea Bissau may face higher costs in the short run, this is not at all a given in the long run, adding to the case for investigating the needs for a viable cashew processing sector. This is particularly true if India achieves its long term goal of self sufficiency in raw nuts. Finally, there may also be some degree of subsidization of competing processors elsewhere in the world – indeed, their current willingness to pay CFA 340/kg when international prices are in the range of $800-

[17] New entries are apparently taking place: Brazilian investors are to open a factory in Quinhamel (Northern part of the country), and the existing enterprise operating in Bolama (Island) is about to expand to Binta (Eastern Region of the country), New investors have also recently purchased the plantation and processing facilities of Agri-Bissau.

[18] The base tributaria is not to be confused with the reference price of previous marketing years. It is NOT a government indicated fixed price for marketing purposes. Rather, it is simply an accounting convention used to compute the export tax due on any given shipment of cashew. Rather than looking at actual current contract values, all that is needed is to weigh the shipment and calculate the tax due based on the base price specified for that marketing year.

900/MT would seem to provide some evidence in favor of this possibility – and this subsidization may also not be something that will be a permanent state of affairs.

Cashew Processing Technology

Cashew development in other African countries has in some cases been plagued by debates over the appropriate technology to use in processing, Mozambique is perhaps the most obvious example of this. However, this experience also points the way to a viable strategy for Guinea Bissau.

The competitiveness of the local processing industry largely hinges on the processing efficiency (kernel outturn) and operating costs of the processing technology. Past experience in Guinea Bissau, Mozambique, Benin and Tanzania, indicates that the plants set up in the 1980s-1990s using mechanized technology (Ultramare) are not competitive because of high investment and operating costs and low kernel outturn. These technologies are clearly uncompetitive with the operating cost and efficiency of manual technologies used in India, and they have all closed down even when benefiting from substantial protection from competition. The model developed by EnterpriseWorks, although it requires very little initial investment, has also proved uncompetitive. It has too small a size to achieve economies of scale and meet importers requirements in terms of minimum quantity.

A model developed in Mozambique by Technoserve appears much more promising. It is based on a comprehensive approach that addresses all important aspects of cashew processing:

- Small scale plants (between 1,000 and 1,500 MT/year) using a manual technology derived from the Indian model, which (i) requires a low investment (about US$300,000 or less than 30% of that of a large scale mechanized plant on a per ton basis), has a low operating cost (less than 40% of a large plant); and (iii) produces a high net yield (21%) and high whole nut yield (over 70%);

- A manual technology that creates about 300 jobs per processing unit, with a high proportion of female labor;

- Plants located in prime producing regions which is suitable for procuring from smallholders, decreases transport cost and improve their contact with farmers and ability to provide services (contract farming);

- The provision of professional assistance to entrepreneurs on many aspects, from market access to plant and quality management (HACCP certification) to services to farmers.

There are now 15 such units operating in Mozambique, processing about 20,000 MT of nuts produced by some 100,000 smallholders. These plants have been able to pay around

20% more for the nuts than exporters and a premium of about 15% for high quality nuts (achieved with a protection against raw nut exports of an export tax of 18% on raw nut exports).

The main issues that require attention in developing a strategy for promoting cashew processing in Guinea Bissau are: (i) investment costs as discussed above; (ii) operating costs, including labor productivity; (iii) the location of processing facilities; and (iv) the incentives that would be necessary to encourage private investments. They are briefly discussed below.

Operating costs: labor wages/productivity and access to finance

The major operating costs are (i) the cost and productivity of labor; and (ii) the cost of procuring the raw material, including the cost of financing the necessary inventory of nuts.

- Labor costs represent about 45% of total operating costs. The competitiveness of cashew processing is thus highly sensitive to labor costs and productivity. This underlines the critical importance to be given to labor training to improve throughput efficiency and the quality of kernels (in order to eventually achieve the level of Indian performance of 80% whole kernels), and a performance-based labor compensation system.

- Cashew processing requires substantial working capital for funding the inventory of nuts bought during the three months harvest period. The level of interest rates is thus an important factor in processing competitiveness. One option would be to rely on commercial sources, though this exposes operators to the risk of spikes in interest rates. Another option to explore would be the establishment of a credit guarantee scheme similar to that operating in Mozambique (funded by USAID) which provides a guarantee of up to 50% of the credit to qualifying enterprises. However, the latter would have to meet the BCEAO requirement that borrowers have a satisfactory accounting system (SYSCOA) to access commercial bank funding. The recent Cashew Conference in Bissau in October of 2008 endorsed an effort to develop along the lines of the Mozambican model, and particularly endorsed the establishment of a guarantee system to be funded via the existing export tax on cashews. 20% of these receipts would be dedicated to the newly created guarantee fund which would be adminstered by a new institution – The National Cashew Institute.

One way to minimize the cost of access to utilities and other basic services is to establish “industrial parks” to facilitate “enterprises clustering”. However, in the case of cashew processing it appears that this “solution” is in fact aimed at a problem which does not necessarily affect this particular activity. Indeed, cashew processing generates its own energy (and can even sell excess electricity to neighboring users) and water supply is

generally abundant in the country. In addition, decentralizing processing on the Technoserve model: (i) decreases the cost of land; (ii) permits direct procurement of nuts from producers thus eliminating middlemen and lowering marketing margins; (iii) decreases transportation costs; and (iv) allows processing plants to operate as well as service centers for delivering planting material and advice to producers.

D. Policy and Institutional Environment

The history of government policy in the cashew sector has had a major impact on performance over the past few years, with prices varying from as low as 50CFAF to more than 430 CFAF per kilo. This range of variation is far greater than that in international prices and is a prima facie case for an end to government intervention in order to stabilize the market. In 2006 the government initially set a price of 350 CFAF in response to a perception that international traders were colluding to depress domestic prices. The resulting withdrawal of traders at these unrealistic price levels resulted in a drop in prices offered and accumulating stocks. The government eventually had to lower export taxes to encourage traders to buy up the remaining harvest. Smuggling also increased significantly. As a result, fiscal revenues, foreign exchange earnings and farmers' incomes all declined.

The consequences of this intervention have led the government to state its commitment to avoid any price setting in the cashew sector going forward, but there does remain some government intervention. For example, the government still makes it a point to mark the traditional opening of the cashew harvest even though the date on which this is done is in fact after the point at which some of the harvest has already ripened. There is also still a feeling within Government that international traders and exporters may collude in Guinea Bissau so that the possibility of government intervention remains a concern in the minds of many market participants.

All observers both inside Guinea Bissau and outside the country are in agreement that improving the performance of the cashew sector is essential to growth and poverty alleviation in the country. Further, there is clear agreement that improvements are needed at the levels of production, marketing and processing. However, there is still no clear statement of what the role of government is vis a vis the private sector, and no road map of how to achieve the goals desired. In spite of the lack of a clear statement by the government, the experience of the past few years has crystallized perceptions among most observers as to what such a statement should contain. It is essential that such a clear statement be made, but there is little question that the following points would be included in any consensus document produced by the government together with the private sector:

1. It is the responsibility of the private sector to carry out all activities related directly to production, marketing and processing of cashew.

2. It is the responsibility of the government to ensure the viability of private sector activities through the provision of the following public goods:

- Research into improved varieties of cashew and into methods needed to limit the spread of common diseases and pests.

- Extension of the results to smallholders

- Adequate infrastructure, particularly secondary and primary roads and port facilities

- Enabling business environment

The experience with government intervention in the cashew market in 2006 has had a profound effect on public perceptions of the desirability of further government efforts to "stabilize" this sector. The end result of the stop-go government pricing initiatives in that year was to reduce the average price received by producers to about CFAF110/kg. With well-functioning markets, the producer price would have averaged, as in previous years, about 60-70% of the fob price, i.e. about CFAF200/kg. Government actions thus induced a loss for farmers of at least CFAF90/kg. With a crop estimated at over 100,000 tons, this amounted to a total loss of income of close to CFAF100.0 billion (US$20 million) for cashew producers (a near halving of the potential income).

The marketing difficulties experienced in 2006 also induced a substantial increase in the smuggling of nuts through Senegal, Guinea and The Gambia. Although actual data is missing, it is estimated that illegal nuts exports of 40,000 tons represented about US$20.0 million in lost foreign exchange earnings and US$ 2.5 million in lost export taxes. Finally, the lowering of export taxes in December 2006 may have cost up to CFAF300.0 million (for 20,000 tons).

Since that time the government has studiously avoided direct intervention in the market and this together with higher international prices has resulted in an average price to farmers in the current year that is estimated to be in the vicinity of CFA 225-250. In addition, the higher prices paid in the countryside and Bissau itself have reduced the incentives to smuggle to Senegal.

In essence, the experience of the past three years has made clear what the government should not do. What is less clear is the absolutely essential need for the government to actively do those things that the private sector cannot – in particular, activities related to research, extension, and provision of the conditions and incentives needed for growth of a processing sector. The following section summarizes areas where an active government action is needed.

Areas of Government Responsibility in Support of the Cashew Sector

Government support or action is needed in the following areas:

- *Provision of funding for needed public sector activities* - Donor-funded projects supporting the sector (USAID-TIPS) closed in 2003. As a result, critical public services are non-existent: the plant protection services of the Ministry of Agriculture are not operational; The *National Agricultural Research Institute (INPA)*[19] has no research activity on cashew and there are no extension programs; and there is no support for farmer organizations. By law (Law N1/2000), Government must transfer 5% of the total amount of taxes collected on cashew exports to three institutions critical for sector development: CNC, IMPA and ANAG. However, this has never been done. As a result, these institutions have been largely non-functional.

- *Compensate for Credit Market Failures* - Cashew producers have no access to credit: commercial banks do not finance producers, micro-finance institutions are not present in most rural areas and processing plants do not engage in contract farming arrangements (in part because they themselves have difficulty in accessing credit for working capital needs. Traders, exporters and processors have a very limited access to financial services. For the most part, the purchase of nuts from producers is funded either by traders on their own funds (small local and Mauritanian traders) or international buyers who arrange off-shore credit for exporters who in turn pre-finance their up-country buyers. There are four commercial banks operating in Guinea-Bissau. These are all fairly liquid and the local BCEAO offers refinancing facilities for financing the purchase of the crop. However, the risk perceived by banks, and BCEAO requirement that borrowers demonstrate that they have a satisfactory accounting system (Systeme de Comptabilite Ouest Africaine SYSCOA) largely prevent most private operators from accessing commercial bank funding. The newly created *Banque Regional de Solidarite* (BRS) has also opened a branch in Bissau. However, its operating policies, mostly targeting "vulnerable groups" and providing financing for "micro-projects", are not suitable for financing cashew marketing or processing activities. Finally, FUNDEI, a credit program supported by the Swedish Development Agency (SIDA), has provided funding to local processors for financing raw nut inventories, though it is no longer functioning. Funding, in particular for investments in processing facilities and for funding the large working capital required will be a major constraint to the development of local processing.

It should be made very clear that it is not a good idea for the government to engage in direct credit provision through a development bank or directly administered fund. Rather, a credit guarantee mechanism such as that used with the Technoserve model in Mozambique could be implemented in Guinea Bissau given the creation of the necessary institutional mechanisms.

- *Quality Control/Grading of Nuts* - There is no laboratory specializing in quality control of exported nuts or kernels. As a result, the quality of nuts is assessed by

[19] INPA has some staff but no operating budget so that currently it has no active research program,

international buyers who tend to minimize it. This has a depressing effect on producer prices. At present, kernel exports are not subjected to stringent demands in terms of safety standards or code of practices. All these issues are however receiving increasing attention in Europe and North America and attention will turn to nuts as well. Indeed, cashew processing has a poor reputation for standard of hygiene and social responsibility with respect to workers conditions. Traceability will become increasingly important and factories will need to gain accreditation to standards such as HACCP and ISO. Guinea-Bissau is not equipped to face the quality/safety requirements for kernels that will be introduced by consuming countries (EU) in January 2008. Meeting these food safety standards will require that processing plants be "certified" and that kernel exports be analyzed by an authorized laboratory. An EU/UEMOA program is currently being implemented to address general food safety issues. However, there is an urgent need for assistance to (i) establish a licensed laboratory and standards testing facility for the sector; and (ii) help local processing plants making the investments required for their certification ("mise a niveau").

- *Strategic Coordination* - Private operators are organized in several "interest groups". ANAG represents agricultural and thus cashew producers. It is active in policy discussions. However, it lacks adequate funding to develop its advocacy, capacity-building and field services. Traders, exporters and processors have also formed their respective associations. All these organizations are represented, along with Government's ministries, on the *National Cashew Council (CNC)* which is the institution responsible for advising government on all cashew-related issues. Under its current structure/mandate, however, the CNC is a hybrid, dysfunctional organization[20]: (i) its mandate is unclear[21]; and (ii) it doesn't have any resources to carry out its activities. Its mixed membership – public and private – makes for an unclear mandate. At the same time it performs the functions of an advisory body helping shape policy; an advocacy body representing specific private interests; a regulatory body; a body managing private stakeholders' common interests. It therefore appears necessary to clear separate reassess the mandate and composition of the CNC – separating public goods/regulatory functions from private sector interests and collective actions-- and to give this institution the resources need for undertaking collective action on behalf of its stakeholders.

E. Next Steps

Several steps seem to be clearly indicated given the above considerations:

[20] CNC's powerlessness was illustrated by its inability to prevent government from fixing a totally unrealistic producer price for the 2006 season, That this has not been done since that time is more a tribute to the obvious negative consequences in 2006 than to the influence of the CNC

[21] Indeed, the president of the CNC is a civil servant in the Ministry of Trade, complicating the status of the organization as a supposedly independent entity.

- **Launch the pilot research program -** The joint cashew research program between IMPA and EMBRAPA, the Brazilian agricultural research institute, should be launched without delay. Its content should de developed in close collaboration with all stakeholders, in particular the CNC, and focus in priority on measures for disease control and improving productivity at farm level, including selection and genetic improvement. During the implementation of this joint program, INPA should develop a highly prioritized medium-term research program to be funded through the transfer of export revenues mentioned above.

- **Develop and Implement a Cashew Processing Promotion Project** – Successful development of cashew processing is key to the future development of the sector. Use of the Mozambican model of decentralized processing facilities should be seriously considered, together with a package of incentives designed to overcome the high cost of doing business in Guinea Bissau. Among these are: the high cost of land, the high taxes on inputs, machinery, etc.; the lack of available financing; the rigidity of existing labor laws.

- **Addressing priority safety standard issues -** As noted above, Guinean kernel will be required to meet strict safety standards for exports to the EU if it is to export processed product directly. It is thus necessary to (i) assist the existing processing plants to carry out a detailed technical audit of their operations and undertake the upgrading necessary for obtaining their certification; and (ii) undertake an assessment of the complementary investment necessary to upgrade one of the existing laboratories in the country to the level required for carrying out internationally accepted pre-shipment inspection of kernel exports.

- **Streamlining export procedures -** It is estimated that the export of one container of cashew (up to FOB level) requires close to 30 days and 9 different administrative procedures, and costs US$1,600[22]. It is recommended that serious consideration be immediately be given to establishing in Guinea-Bissau a one-stop export window similar to the "*Centre de Facilitation aux Filieres d'Exportation* – (*CAFEX*)" operating satisfactorily in Guinea.

- **Preparing a prioritized operational strategy -** The government, in close collaboration with all stakeholders, should immediately prepare an operational strategy and medium-term program for the development of the cashew sector. This strategy/program should focus on achieving the following objectives: (i) sustained productivity increases at farm level, (ii) increased efficiency at all levels of the value chain and (iii) increased value added through local processing. It should also specify clearly the institutional framework (as mentioned above) and establish sustainable mechanisms for addressing critical farm productivity issues (research, access to agricultural advice), strengthening farmer organizations, improving access to international markets, and promoting efficient local processing. The participatory

[22] Source: Doing Business 2006, World Bank,

preparation of this strategy/program would be a powerful instrument to build the capacity of all stakeholders to analyze issues and options and to undertake collective action on common priorities.

Table 1: Cost Structure of Cashew Marketing 1 MT – 2007 Harvest

	CFA
Acquisition price of trader	**200,000**
Trader margin	25,000
Transport from Interior	14,400
Trader price in Bissau	239,400
Acquisition price of exporter	**239,400**
Customs tax (6% of FOB value Bissau)	17,280
CPR/DGCI (2% o FOB value Bissau)	5,760
ACI/DGCI (CFA 27/ s5kg)	6,750
APGB	4,650
Transport from warehouse to port	3,158
Loading and Unloading	2,500
Pre-embarcation weighing	259
Bank Costs	12,384
Sacks	6,250
Certificate of Origin	1,500
Phytosanitary certificate	53
Despachante fee	413
SGS (certification fee)	1,500
Warehouse rental	1,500
Sub Total	**303.357**
Administrative Costs	25
Spoilage	1,296
Contingencies	500
Exporter Margin	25,000
Sub Total	**26,821**
Export Price	**330,178**

Source: CNC Caderno de Exportacao 2008

Table 2: Cashew Prices (US Dollars / Metric Ton)

Year	Domestic Purchase Price in Bissau	International Price	Domestic Price as % of International
1998	$ 589	$ 739	80 %
1999	714	844	85
2000	595	745	80
2001	600	730	82
2002	380	500	76
2003	545	675	81
2004	550	700	79
2005	523	658	79
2006	505	652	77
2007	470	621	76
2008	821	1050	78

Source: 1998-2007 *Ministerio de Comercio, Industria e Artesanato; 2008 Mendes 2009*

Table 3: Agricultural Production

	2003/2004	2004/2005	2005/2005	2006/2007	Growth
Rice	66,423	89192	98339	112490	14.4%
Maize	20639	31,868	39,835	41,827	5.0%
Mil	10025	31,473	47,209	49,569	5.0%
Sorghum	22669	15,506	23,359	24,527	5.0%
Millet	698	1,836	2,295	1,836	-20.0%
Céréales du SAB	1,000	1,500	1,500	1,500	0.0%
TOTAL CEREALS	**121,454**	**171,375**	**212,537**	**231,749**	**9.0%**

	2003/2004	2004/2005	2005/2006	2006/2007	Variation
Cassava	26,502	27,006	27,519	28,042	1.9%
Sweet Potatoes	24,502	24,967	25,442	25,925	1.9%
Vegetables	53,298	54,310	55,342	56,393	1.9%
Fruits	1,331,117	1,356,408	1,382,180	1,408,441	1.9%

	2003/2004	2004/2005	2005/2006	2006/2007	Variation
Groundnut	5,421	5,524	5,629	5,736	1.9%
Cashew Nut	84,800	97,900	115,000	126,500	10.0%
Palm Nut	268	273	278	283	1.9%
Cotton				187	

Source: CNPE

Table 4: Cashew Production in Sub Saharan Africa

Country	2008 Production in MT
Ivory Coast	220,000
Guinea Bissau	130,000
Tanzania	100,000
Nigeria	75,000*
Mozambique	80,000
Benin	65,000
Senegal	15,000*
Togo	3,000*
Ghana	10,000*
Kenya	5,000*
Burkina Faso	5,000*
Mali	3,000*
Guinea Conakry	3,000*

* 2006 figures
Source: African Cashew Alliance

Table 5: Cashew Processing In Sub Saharan Africa in 2006

Country	Processing (for Export)	Processing (for domestic market)
Mozambique	25,000	
Nigeria	16,000	2,500
Tanzania	15,000	
Kenya	5,000	
Ivory Coast	5,000	500
Guinea Bissau	2,500	500
Benin	1,500	80
Burkina Faso	900	
Ghana	500	80
Senegal		150
Togo		80
Mali		
Guinea Conakry		
Total	**71,400**	**3,860**

Source: African Cashew Alliance

Bibliography

Boubacar-Sid, Creppy Gacitua-Mario and Wodon "Conflict, Livelihoods and Poverty in Guinea Bissau" World Bank Working Paper No. 88, January 2007.

Camara, Suande – Estudo Sobre a Cadeia do Caju – Bissau August 2007

Chausse, JP "Guinea-Bissau: Development of the Cashew Sector", December 2006

Comissao Nacional do Caju – "Estudo para a Elaboracao de um Programa Integrado de Industrializacao do Caju, Novembro 2007

Comissao Nacional do Caju – Relatorio da Campanha de Comercializacao e Exportacao da Castanha de Caju 2007

Comissao Nacional do Caju – "Caderno de Exportacao" Bissau 2008.

FAO (2008), Rice Market Monitor – July 2008

International Monetary Fund – Guinea Bissau, Article IV Consultation, November 2007

International Monetary Fund – Guinea Bissau, Article IV Consultation, May 2008

Jaeger, P and S Lynn, "Guinea Bissau Cashew Sector Development Study" Private Sector Development Project of Guinea Bissau, 2004.

Mendes, Henrique – "Sector Castanha de Caju" June 2008

Mendes, Henrique – Estudo Diagnostico Sobre Integracao Comercial (Cadeia Produtiva de Caju na Guine-Bissau, powerpoint presentation March 2009.

Mendes, N. "Reunioes de Conselhos de Gestao dos Parques", IBAP, May 2006

Ministry of Economy, Guinea-Bissau National Poverty Reduction Strategy Paper (NPRSP), September 2006.

Miovic, P. "Rice in Guinea Bissau" Memo, September 25, 2006

Monke, E. A. and Pearson, S. R. 1989, The Policy Analysis Matrix for Agricultural Development, Cornell University Press, Ithaca, New York

National Conference for Identification of Rice Production Constraints in Guinea Bissau – "Rice Chain Analysis" March 2005

Paiva, Fabio de Assis, "Projeto de Reestruturacao da Cajucultura na Guiné Bissau, PRDSP, World Bank, March 2007

PRDSP, Relatório Final, 1º Fórum Público Privado da Guiné-Bissau, June 2007

PRDSP, Relatório para a Avaliação Intermédia, 2005

Republic of Guinea Bissau – Ministry of Finance – Minimum Program for Restoration of Fiscal Stability, May 2007

Republic of Liberia, 2007, Comprehensive Study of the Agricultural Sector (CAS-Lib), Ministry of Agriculture in Collaboration with FAO, IFAD and the World Bank, Monrovia, Liberia

Republica da Guine Bissau – Documento de Estrategia de Reducao da Pobreza, September 2006.

Republica da Guine Bissau – Ministerio dos Transportes e Comunicacoes – Concessao do Direito de Exploracao Comercial em Regime Exclusivo de Servico Publico, da Actividade de Movimentacao de Cargas No Porto de Bissau

Republica da Guine Bissau - Projecto da Carta Política Para os sectores " Das Obras Públicas,Construções e Urbanismo e dos Transportes e Comunicações" 2003.

Republica da Guine Bissau – Ministerio da Agricultura, das Florestas, da Caca e da Pecuaria, "Carta de Politicas de Desenvolvimento Agrario, April 2002

Republica da Guine Bissau, "Plano de Accao Plurianual 2006-2008" Sept. 2006

Republica da Guine Bissau, Ministerio da Economia "Projecto Multi Sectorial de Reabilitacao de Infraestruturas" March 2008

Republica da Guine Bissau, Ministerio do Comercio, Energia, Industria e Artesanato, "Relatorio da IIa Conferencia Nacional do Caju", 7-9 Outubro de 2008.

UNDP - Guinea Bissau - Human Development Report 2006.

World Bank, Doing Business, various years

World Bank – Guinea Bissau Public Expenditure Review Update, Report No. 35871-GW, May 23, 2007

World Bank (2008) Emergency Project Paper On A Proposed Emergency Food Crisis Response Program To The Republic Of Guinea-Bissau, July 24, 2008

www.lonelyplanet.com - Guinea Bissau Travel Information. May 2008

www.parks.it

OTHER A.E.M. WORKING PAPERS

WP No	Title	Fee (if applicable)	Author(s)
2009-24	When No Law is Better Than a Good Law		Bhattacharya, U. and H. Daouk
2009-23	Is Unlevered Firm Volatility Asymmetric?		Daouk, H. and D. Ng
2009-22	Conditional Skewness of Aggregate Market Returns		Charoenrook, A. and H. Daouk
2009-21	A Study of Market-Wide Short-Selling Restrictions		Charoenrook, A. and H. Daouk
2009-20	The Impact of Age on the Ability to Perform under Pressure: Golfers on the PGA Tour		Fried, H. and L. Tauer
2009-18	Beyond the Tipping Point: A Multidisciplinary Perspective on Urbanization and Development		Beal, J., Guha-Khasnobis, B. and R. Kanbur
2009-17	Economic Impacts of Soybean Rust on the US Soybean Sector		Gomez, M., Nunez, H. and H. Onal
2009-16	Detecting Technological Heterogeneity in New York Dairy Farms		del Corral, J., Alvarez, A. and L. Tauer
2009-15	Altering Milk Components Produced by the Dairy Cow: Estimation by a Multiple Output Distance Function		Cho, J., Nakane, M. and L. Tauer
2009-14	Evaluating Marketing Channel Options for Small-Scale Fruit and Vegetable Producer		LeRoux, M., Schmit, T.M., Roth, M. and D.H. Streeter
2009-13	An Empirical Evaluation of New Socialist Countryside Development in China		Guo, X., Yu, Z., Schmit, T.M., Henehan, B.M. and D. Li
2009-12	Towards a Genuine Sustainability Standard for Biofuel Production		de Gorter, H. and Y. Tsur
2009-11	Conceptualizing Informality: Regulation and Enforcement		Kanbur, R.
2009-10	Monetary Policy Challenges for Emerging Market Economies		Hammond, G., Kanbur, R. and E. Prasad
2009-09	Serving Member Interests in Changing Markets: A Case Study of Pro-Fac Cooperative		Henehan, B. and T. Schmit
2009-08	Investment Decisions and Offspring Gender		Bogan, V.

Paper copies are being replaced by electronic Portable Document Files (PDFs). To request PDFs of AEM publications, write to (be sure to include your e-mail address): Publications, Department of Applied Economics and Management, Warren Hall, Cornell University, Ithaca, NY 14853-7801. If a fee is indicated, please include a check or money order made payable to Cornell University for the amount of your purchase. Visit our Web site (*http://aem.cornell.edu/research/wp.htm*) for a more complete list of recent bulletins.