

A Value Chain Analysis of the Cashew Sector in Ghana

African Cashew initiative



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February 2010



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Executive Summary

Agriculture is the predominant sector in Ghana's economy. In 2008, agricultural activities contributed to 33.6% of Gross Domestic Product (GDP), employed about 60% of the labour force, and accounted for 54% of foreign exchange earnings (Ghana Statistical Service, 2008). The sector itself is composed of five subsectors, namely crops other than cocoa, cocoa, livestock, fisheries and forestry. However, non-traditional crops, such as pineapple, mango and cashew nuts, are increasingly of importance to the Ghanaian economy.

During the last six years, there has been growing interest in cashew cultivation in Ghana because of its importance to farm families, coupled with high demand and a flourishing export market. Production is mostly carried out by smallholder farmers (88%), who are usually organised into associations. Most of these producers rely on family labour or hired labour, especially for weeding and harvesting activities. Since cashew is harvested during the lean season for all major staples (e.g. maize, yam, plantain and millet), this crop could help avoid food purchases and contribute to increased food security.

The Ghana Cashew Industry Study conducted by the Ministry of Food and Agriculture (MOFA) in 1998 estimated that Ghana has enough land to develop new plantations of about 60,000 ha by 2008 and up to 100,000 ha by 2020. However, there are strong doubts about the credibility of these figures due to generally lacking resources (such as land and water), the competition for resources arising from the production of other food and cash crops, and the possible negative impact on (agro-) biodiversity.

In 2008, 61,590 t of raw cashew nuts (RCN) valued at US\$ 45.37 million were exported for processing, mainly to India, while annual local production was estimated to be 26,454 t. These numbers indicate cross border trading of RCN between Ghana and neighbouring countries, especially Côte d'Ivoire. In 2008, RCN exports contributed to 6.1% of GDP and 18.2% of agricultural GDP (*computed according to data available from the Ghana Shippers' Council and the Ghana Statistical Service*).

Value chain addition regarding cashews is mainly realised through processing and packaging activities. There are different processing steps involved, mostly carried out by different actors and, again, mostly outside Ghana. As for RCN originating from Ghana, the vast majority are exported to India, where they are converted into plain kernels which are then exported in bulk to markets in developed and emerging countries. There, further processing takes place with regard to roasting, salting/seasoning, packaging, and labelling/branding.

The cashew industry in Ghana currently boasts 12 processing companies, with a total installed capacity of 2,137 t per year. The only medium processing company is Mim Cashew Products, which has an installed capacity of 1,000 t per year and, as the name implies, is located in Mim. The remainder are small enterprises with an installed capacity ranging from 10 to 250 t per year. These companies process kernels for export and for secondary processing around Accra.

There are 21 kernel roasting companies operating in different parts of the country: 17 in the Greater Accra Region, three in the Brong-Ahafo Region and one in the Eastern Region. The kernels they roast are sold in hotels, restaurants and supermarkets. The “Cashew Processing, Marketing and Consumption in West Africa” (USAID 2007) study concludes that the average retail price of locally processed cashews is highest in Ghana and Côte d’Ivoire – higher even than that of imported Asian cashews. If prices cannot be reduced significantly, the local market for cashews will be dominated by imports.

It has been estimated that the cashew sub-sector can contribute to pro-poor economic growth by generating over 200,000 permanent and seasonal jobs, particularly for farm labourers and intermediaries (Cashew Development Project, 2008). Furthermore, marketing, distribution and processing of RCN offer more than 5,000 permanent and seasonal jobs annually in the cashew industry as it now stands (CDP 2009a).

The marketing of RCN is currently one of the most critical issues of concern for farmers. RCN are marketed between February and May of each year, and without much structured organisation to the underlying process. Basically, RCN marketing companies visit known cashew farming communities individually to either purchase RCN directly, or to collect the RCN already purchased at an agreed price by their locally commissioned people and local marketing agents. Thus, the marketing channel consists of producers, village merchants, or agents and exporters. Since this is an activity restricted to only four months in the year, there are no exclusive traders for raw cashew nuts. Often, there are intermediaries or agents acting between traders, exporters and processing companies who provide information services and make deals. This has resulted in middlemen playing an important role in the marketing of nuts, and thereby reduced the margin or dividends accrued by cashew farmers.

Prices vary widely from place to place, from season to season, and even within the same season. The producer price is a function of many factors, the most important of which are international cashew supply and demand dynamics, domestic market conditions, as well as the efficacy of the regulatory mechanism and the tax/levy structure for the agricultural sector (personal comments by M. Das, 2009). The highest average farm gate producer price obtained so far was for the 2009 harvesting season.

There are a number of major bottlenecks hindering the development of the cashew value chain in Ghana. At the farmer level, these would be: limited access to good planting material; a high incidence of pest infestations; weak extension services; and weak farmers’ associations. Meanwhile, limited access to working capital, an inconsistent supply of raw cashew nuts, inadequate transport facilities, and frequent fuel price fluctuations that result in high transportation costs are major bottlenecks on the side of processing companies.



1 Introduction

1.1 Background Information on the African Cashew Initiative and the Purpose of the Country Study

Many African countries have considerable comparative advantages within the agricultural sector at their disposal based on their natural resources. Moreover, globalisation provides opportunities for integrating developing countries into the global economy and can thereby reveal options for building up and strengthening national economies. In this context, African countries could use the comparative advantages they have to significantly increase their share of international economic growth and, thus, support their own sustainable economic development and poverty alleviation.

Cashews are grown in Africa, Latin America and South East Asia. The leading producer countries are India, Vietnam, Brazil and Indonesia. Increasingly, Africa is gaining importance in raw cashew nut production. Here, the main producer countries are Nigeria, Tanzania, Mozambique, Côte d'Ivoire and Guinea Bissau¹, while countries such as Ghana, Burkina Faso and Benin are currently expanding areas under cultivation. Although the global market for cashew kernels is steadily growing, it is dominated by a small number of traders. West African cashews are predominantly exported as unprocessed raw cashew nuts. On average, 90% of the raw nuts produced in this region are exported to India.

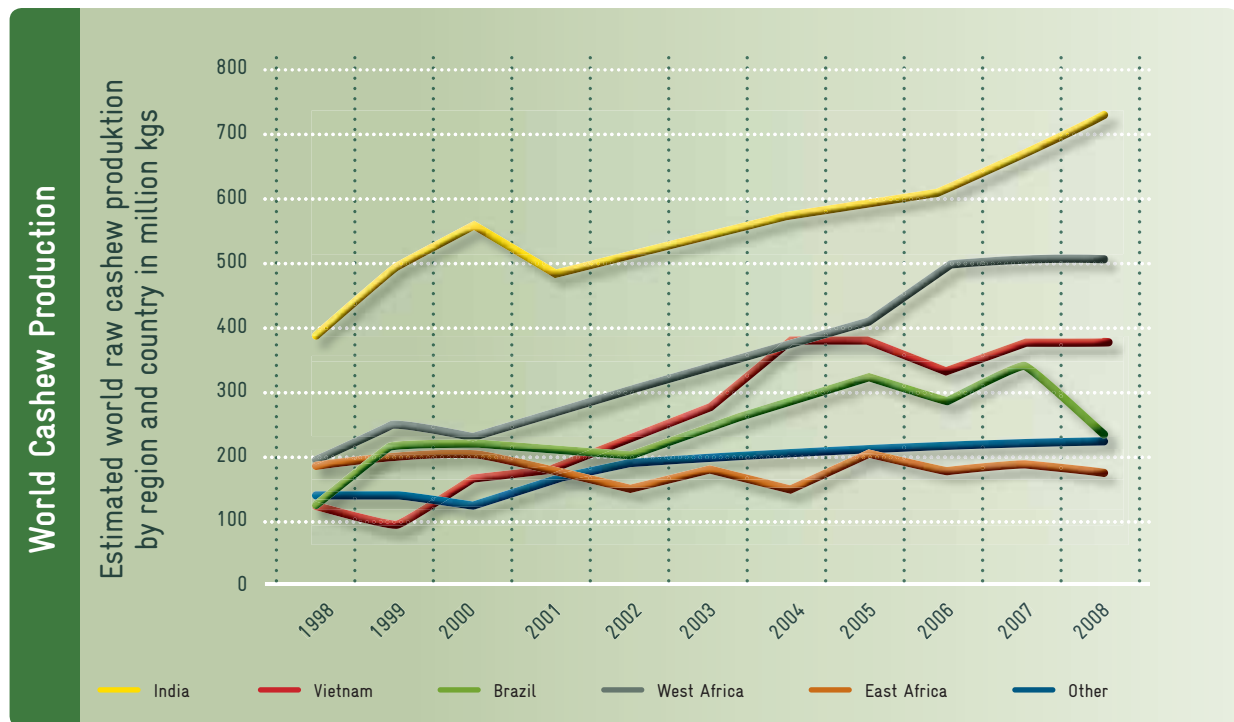
In 2007, African farmers accounted for about 40% of total global cashew nut production. These are mostly poor smallholders who grow cashews under diversified cropping systems.

Cashew nut production is an important source of income for many Ghanaian smallholder farmers. Agriculture, as a whole, dominates Ghana's economy – in 2008, agricultural activities contributed to 33.6% of GDP, employed about 60% of the labour force, and accounted for 54% of foreign exchange earnings (Ghana Statistical Service, 2008). The sector itself is composed of five sub-sectors, namely crops other than cocoa (49% of agricultural GDP), cocoa (22.5% of agricultural GDP), livestock (5.5% of agricultural GDP), fisheries (12.2% of agricultural GDP), and forestry (9.9% of agricultural GDP).

Non-traditional crops, such as pineapple, mango and cashew nuts, are increasingly of importance to Ghana's economy. The last six years have seen growing interest in cashew cultivation across the country. This is because of the crop's importance to farm families, coupled with the presence of high demand and a flourishing export market. Since cashew is harvested during the lean season for all major staples (e.g. maize, yam, plantain and millet), this crop could help avoid food purchases and contribute to increased food security (personal comment by Peter Gyan, 2009).

However, most of the time, African farmers face several constraints that hinder them in increasing the profitability of their cashew production. These would include: low tree pro-

Figure 1.1 World Cashew Production



Source: Red River Foods Inc. /FAO

¹ This is a listing rather than a ranking as fluctuations in production (which also depend on the quality of information sources) do not allow for a definite yearly ranking.



ductivity and insufficient nut quality due to sub-optimal agricultural practices; few economies of scale in the production and marketing of nuts because of weak farmer organisations; limited access to necessary support services (e.g. technology, credit and marketing); and a lack of political support.

Many African governments have realised that agro-processing industries play a crucial role towards achieving sustainable economic development. Nevertheless, the overwhelming majority of nuts are exported raw, mostly to India, rather than processed locally. The development of a national cashew nuts processing industry could help diversify Ghana's economy, capture an increased part of the achievable added value, and create employment opportunities for the population.

The objective of the African Cashew initiative (ACi), funded by the Bill & Melinda Gates Foundation, the German Federal Ministry for Economic Development and Cooperation and private sector organisations, is to strengthen the global competitiveness of cashew production and processing in five pilot countries in sub-Saharan Africa, namely Mozambique, Ghana, Burkina Faso, Côte d'Ivoire and Benin.

The ACi aims to help 150,000 small-scale cashew producers increase productivity and gain additional income of US\$ 15 million per year. Furthermore, the project's support activities will develop 5,500 new jobs in local, medium- and large-scale cashew nut processing industries in the pilot countries. Indeed, the vision for the longer term is to have 60% of cashew nuts processed locally in their country of growth. Finally, the project should alleviate rural poverty and promote pro-poor growth by increasing the income of poor small-scale farmers and by creating new employment opportunities, especially for women.

This cashew project is implemented by the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH in cooperation with three sub-grantees: Technoserve, a US non-governmental organisation; FairMatch Support, a non-profit foundation based in the Netherlands; and the African Cashew Alliance, a supranational platform of private and public sector partners involved in the cashew value chain.

1.2 Objective of the Study and the Methodology Applied

The ACi started in April 2009 with a kick-off workshop in Accra. Representatives of the four implementing partners as well as private and public stakeholders involved in the cashew value chain discussed the project's underlying concept and strategy. By the end of this workshop, the participants had identified project goals, agreed on the major principles for project implementation, and decided on the institutional set-up for steering and coordinating project activities. In addition to this start-up workshop, the major activities undertaken by the ACi in Ghana have comprised: finalisation of contracts with implementing partners; identification of key stakeholders in the national cashew value chain; and an assessment of the country situation.

As a first step towards developing and implementing an effective support strategy for cashew production and processing in Ghana, the ACi planned to conduct a study on the cashew value chain in the country. The objective of this study is to summarise and analyse all facts and information on the cashew value chain in Ghana systematically, to review ongoing support activities and, thus, to provide a comprehensive insight into the national cashew sector.

Based on the results of such country studies, the project will develop an effective and sustainable support strategy for cashew value chain promotion in each pilot country. Moreover, the studies: help avoid a duplication of efforts with other support agencies; develop synergies with existing promotion measures; are in line with ongoing national support activities; widen knowledge of best practices; and also help in identifying essential key players in the sector and with implementing demand-driven support measures.

A country study is mainly compiled using analysis from existing studies, research papers and documents relating to the cashew sub-sector. If necessary, further information can be collected by using participatory methodologies, including focus group discussions (involving major players in the cashew industry) and interviews with individuals.



1.3 Major Data on Cashew Production and Processing in Ghana

In 2008, 61,590 t of raw cashew nuts valued US\$ 45.37 million were exported for processing, mainly to India, while annual local production was estimated to be 26,454 t. These numbers indicate cross border trading of raw cashew nuts between Ghana and neighbouring countries, especially Côte d'Ivoire. In 2008, RCN exports contributed to 6.1% of GDP and to 18.2% of agricultural GDP (*computed according to data available from the Ghana Shippers' Council and the Ghana Statistical Service*). It has been estimated that the cashew sub-sector can contribute to pro-poor economic growth by generating over 200,000 permanent and seasonal jobs, particularly for farm labourers and intermediaries (Cashew Development Project, 2008). Further-

more, RCN marketing, distribution and processing offer more than 5,000 permanent and seasonal jobs annually in the cashew industry as it now stands (CDP, 2009a).

The Ghana Cashew Industry Study conducted by MOFA in 1998 estimated that Ghana has enough land to develop new plantations of about 60,000 ha by 2008 and up to 100,000 ha by 2020. However, strong doubts exist about the credibility of these figures due to generally lacking resources (such as land and water), the competition for resources arising from the production of other food and cash crops, and the possible negative impact on (agro-) biodiversity. *Tables 1.1-1.6* that follow summarise major data on cashew production and processing in Ghana, and place the cashew sector in the broader context of the country's economy.

Table 1.1 Importance of the Cashew Value Chain for the National Economy

		Cashew	Source of Information
Human Development Index (global ranking)	152 (out of 177)		Human Development Report 2009 (UNDP)
GDP	<ul style="list-style-type: none"> ▶ US\$ 744.32 million ▶ Other sources provide significantly different figures for nominal GDP in 2008: ▶ CIA: US\$ 16.12 billion ▶ IMF: US\$ 16.65 billion ▶ AfDB: US\$ 14.7 billion 	6.1% of national GDP*	Ghana Statistical Service (2008)
Agricultural GDP	US\$ 250 million***	18.2 % of agricultural GDP*	
Agricultural GDP's share of national GDP	33.6%		
Raw cashew nuts produced in 2008	26,454 t**	Equals 1.3% of the total global production estimated for 2008	Ghana Shippers' Council (2008)
Raw cashew nuts exported in 2008	61,590 t**		
Raw cashew nuts produced worldwide in 2007	2.1 million t	(2008 estimate – 2 million t)	Red River Foods, Inc. (2008)
Agricultural area cultivated	13.6 million ha ^a (i.e. approx. 30% of total land area ^b – this figure seems to be rather optimistic; other sources indicate about 16% is used as arable land and 10% for permanent crops)	7 % of area cultivated with tree crops, including cashew	^a AfDB (2006): Appraisal Report – Afram Plains Agricultural Development Project ^b WTO Trade Policy Review (2008)
Total population in 2000	18,912,079	In 2000, 70% of the population was engaged in agriculture, of which 0.53% (i.e. around 70,000 people) were involved in cashew production	Ghana Statistical Service (2002)
Total population in 2009 (estimated)	23,832,495		CIA World Fact Book and AfDB (2009)
Poverty incidence in 2005/2006 (%)	28.5%, of which 10.8% is urban-related and 39.2% is rural-related		Ghana Statistical Service (2007)

* Figures refer to the total volume of RCN exported.

** The difference between local production and exports is mainly explained by smuggling from neighbouring countries.

*** This figure changes according to the level of GDP specified.



Table 1.2 Essential Data/Information on Cashew Farmers in Ghana (2009)

		Source of Information
Total number of cashew farmers in Ghana (estimated)	70,000 farmers (60,000 males and 10,000 females)	Cashew Development Project (2009a)
Average size of farm for cashew smallholders	0.8 – 2.5 ha	Cashew Development Project (2009c)
Average size of farmer family	6 persons	Statistics, Research and Information Directorate, Ministry of Food and Agriculture (2007)
Farm gate price of 1 kg of raw cashew nuts (2009 cropping season)	US\$ 0.39/kg – US\$ 0.52/kg	Cashew Development Project (2009b)
FOB price (Tema) of raw cashew nuts	US\$ 550/t – US\$ 650/t	
Average income of a cashew farming family	US\$ 655 per year (estimated)	
Cashew-related income of cashew farming family as a share of total income	43%	
Cashew intercropped with...	Yam, maize, millet, sorghum, ground nut, soybean, pepper, pineapple	Policy Planning, Monitoring and Evaluation Directorate, Ministry of Food and Agriculture (2007)
Other cash crops farmed by cashew farmers	Cocoa, plantain, citrus, cassava, cowpea	
Harvest period	From February to May	
Number of cashew trees	70 – 100 trees per ha	
Annual tree productivity	3 – 6.5 kg per tree	Cashew Development Project
Average age of trees	5 – 10 years	
Inputs used for cashew intercropping systems	Improved seeds (cashew, yam, maize, soybean, groundnut); jute sacks; herbicides (glyphosate); pesticides (cyperdim); fertilisers/decomposed poultry manure; pesticide sprayers	
Inputs used for old cashew farms	Herbicides (glyphosate); pesticides (cyperdim); jute sacks; pesticide sprayers	

Table 1.3 Overview of Projects/Programmes Supporting Cashew Production in Ghana

Name of project/programme	Supporting donor/s
Cashew Development Project of the GoG	AfDB
Afram Plains Agricultural Development Project, GoG (an integrated project including cashew promotion)	AfDB
Adventist Development and Relief Agency (ADRA), a non-governmental organisation	USAID
Trade and Investment Program for a Competitive Export Economy (TIPCEE) – this project includes a cashew component	USAID
African Cashew Alliance	Private sector agents and USAID
West African Trade Hub	USAID
African Cashew initiative	Bill & Melinda Gates Foundation, German Federal Ministry for Economic Cooperation and Development



Table 1.4 Potential and Actual Processing Capacities of Cashew Factories in Ghana

			Source of Information
Potential installed capacity for processing RCN	2,137 t per year		Cashew Development Project (2009b)
Annual amount of RCN processed (actual capacity)	362.62 t per year (i.e. about 17% of potential capacity)		
Overview of existing processing factories	Large-scale (Installed capacity for processing more than 1,000 t of RCN per year)	None	
	Medium-scale (Installed capacity for processing 500 – 1000 t of RCN per year)	MIM Cashew Factory (Brong-Ahafo Region; capacity for processing around 1000 t per year)	
	Small-scale (Installed capacity for processing up to 500 t of RCN per year)	Kona Agro-Processing Ltd – Awisa (250 t)	
		Cash Nut Foods Ltd – Faaman (250 t)	
		NASAKA – Kabile and Nsawkaw (200 t)	
CRIG – Bole (120 t)			
Winker Investments Ltd – Afienya (100 t)			
	Dudasu – Dudasu (90 t)		
	Latemu – Kabile (72 t)		
	Shop Best Company Ltd – Accra (25 t)		
	Jelana Company Ltd – Jamera (20 t)		
	Nsuro – Accra (10 t)		

Table 1.5 Organisation of Cashew Farmers in Ghana

		Objective of organisations/ general remarks
Local level	<ul style="list-style-type: none"> ▶ 156 district co-operative societies (formed from 1,549 production groups in 389 farming communities) ▶ 11 District Cashew Farmers' Unions formed and registered * 	
Regional level	Ghana Cashew Association – Brong-Ahafo Chapter (inaugurated on 28 August 2009)	
National level	Cashew Processors and Exporters Association of Ghana	Formed, but not functional
* Contact addresses are provided in Appendix 1		



Table 1.6 Policies Governing the Cashew Value Chain in Ghana

		Source of Information
Cashew sector policy	<p>Cashew sector policy is a part of the Food and Agriculture Sector Development Policy (FASDEP).</p> <p>Objective of FASDEP: to promote selected commodities (tree and industrial crops) and improve access to national and global markets.</p>	Ministry of Food and Agriculture (2002)
Price regulation	No price regulation	
Export tax	<p>For raw cashews: none</p> <p>For shelled cashews: none</p>	
Import duties for cashew products	<p>Import duties for raw cashew nuts: US\$ 2.07/80 kg of RCN (equals roughly US\$ 26/t; the 80kg bag is the typical measure used in the cashew industry).</p> <p>No import duty on kernels, but a quarantine fee of US\$ 3.5 is charged on every 2 tonnes of imported kernels.</p> <p>NB: WTO lists applied tariffs for fresh or dried cashew nuts in shells or shelled at 20%.</p>	Personal comments, K. Gallant (2009)
Investment support via tax relief	<p>The corporate tax on income from non-traditional exports such as cashew nuts is 8%.</p> <p>A tax holiday of 10 years applies from the start of tree cropping operations.</p> <p>After an initial 5-year tax holiday period, agro-processing enterprises which primarily use local agricultural raw materials as inputs have corporate tax rates fixed according to their location, i.e. according to whether they are based in urban or rural areas – a 0% tax rate applies to those firms outside regional capitals.</p> <p>Industrial plant machinery and parts thereof are exempted from customs import duty under the Customs Harmonized Commodity and Tariff Code.</p>	Ghana Investment Promotion Centre (2007)
Country label	None	
Exchange rate policy	Since 1992, Ghana has been using a floating exchange rate regime, a hybrid system of inter-bank and retail trading with minimum interventions.	Bank of Ghana (2008)
Exchange rate stability	The US dollar/cedi rate moved up from the GH0.0520 per US dollar registered in 1992 to GH1.2457 per US dollar at the end of 2008. It thus increased about 24 times with an average yearly depreciation of 17.04%.	
Trade agreements and preferences	Ghana has been a WTO member since 1 January 1995. The country is committed to the full implementation of the ECOWAS protocol for the free movement of goods and persons in West Africa. The differential tariff structure between Ghana and the West African Economic and Monetary Union may be one of the barriers that may impact the cashew trade in the future.	Ministry of Food and Agriculture (2002), and WTO (2009)

2 The value chain analysis

2.1 Historical Background of Cashew Farming in Ghana

In the early 1990's Ghana embarked on an Economic Recovery Programme (ERP), which helped rekindle interest in cashew production. Making this a viable export crop was considered one way of broadening and diversifying the country's export base. The implementation of the ERP resulted in the liberalisation of commodity markets. Cashew farmers gained access to marketing centres and benefited from prompt payment for their nuts. Farmers became enthusiastic about the crop and invested money and labour to rehabilitate some of the old cashew farms that had been planted in the late 1980's under the National Agroforestry Programme. As a result, Ghana recorded its first RCN export of 50 t in 1991. By 1997, according to official statistics, cashew exports had increased to 3,571 t.

In 1998, the Ministry of Food and Agriculture commissioned and funded a study on the status of the cashew industry. This focused, in particular, on its performance, the potential for production, possible areas for cultivation, as well as the general problems hindering the industry in its development. One of the conclusions of this study is that there is potential to increase the area under cultivation. It is estimated that more than 3 million ha of land suitable for cultivating cashew are available, largely in the Northern and Brong-Ahafo regions. However, this estimate should be treated with caution, given the competing uses for land and related environmental aspects. Nonetheless, this study also indicated that increased cashew production in Ghana has a tremendous potential for raising significantly the income of rural farm families, and hence for reducing rural poverty.

Table 2.1 Estimated Potential Areas for Cashew Cultivation in Ghana

Major Areas of Production	Potential Area (ha)
Coastal Savanna	21,000
Brong-Ahafo/Afram Plains	1,150,000
Upper East Region	220,000
Northern Region	1,180,000
Upper West Region	510,000
TOTAL	3,270,000

Source: Addaquay and Nyamekye-Boamah (1998), as cited by SNV (2006/07)

In 2003, the Government of Ghana (GoG) requested the African Development Bank (AfDB) to finance a six-year Cashew Development Project (CDP) in five regions at a cost of US\$ 13.32 million. The CDP aimed to increase production by doubling the then 18,000 ha under cultivation, and to expand the processing of cashews at the village level. The CDP

facilitated an integrated and coordinated approach towards the development of the cashew industry. Up until then, only a few isolated attempts had been made by individuals, government agencies, and NGOs to promote the cashew sector in Ghana.

2.2 The Cashew Value Chain and Marketing in Ghana

2.2.1 Value Chain Map and Description of Stakeholders Involved

The aim of measures promoting cashew value chains in agribusiness is to generate greater added value within a country or region, and to improve the competitiveness of locally produced cashews in national and international markets. Value addition regarding cashews is achieved both at the processing and packaging stage. The key criterion in this context is one of broad impact, i.e. growth that benefits the rural poor to the greatest possible extent, or at least does not worsen their position relative to other demographic groups (GTZ, 2006). Thus, adding value to commodities produced for export and domestic markets (like cashews) is believed to generate substantial profits and employment along the chain and, in this way, contributes to poverty alleviation. Pro-poor growth is one of the most commonly quoted objectives of value chain promotion. The stakeholders involved and their most important activities at different stages of the cashew value chain are shown in *Figure 2.1 on page 18*.

Input suppliers: provide producers with specific inputs such as seedlings, pesticides, herbicides, fertilisers, processing equipment and packaging materials. Seed dealers/nurseries are found only in a few cashew producing areas. Some big agro-chemical dealers are located in Greater Accra (Dizengoff, Agrimat, Chemico, Aglow, Kurama Co. Ltd), while smaller dealers operate throughout the country. They sometimes offer information on the use of chemicals to producers.

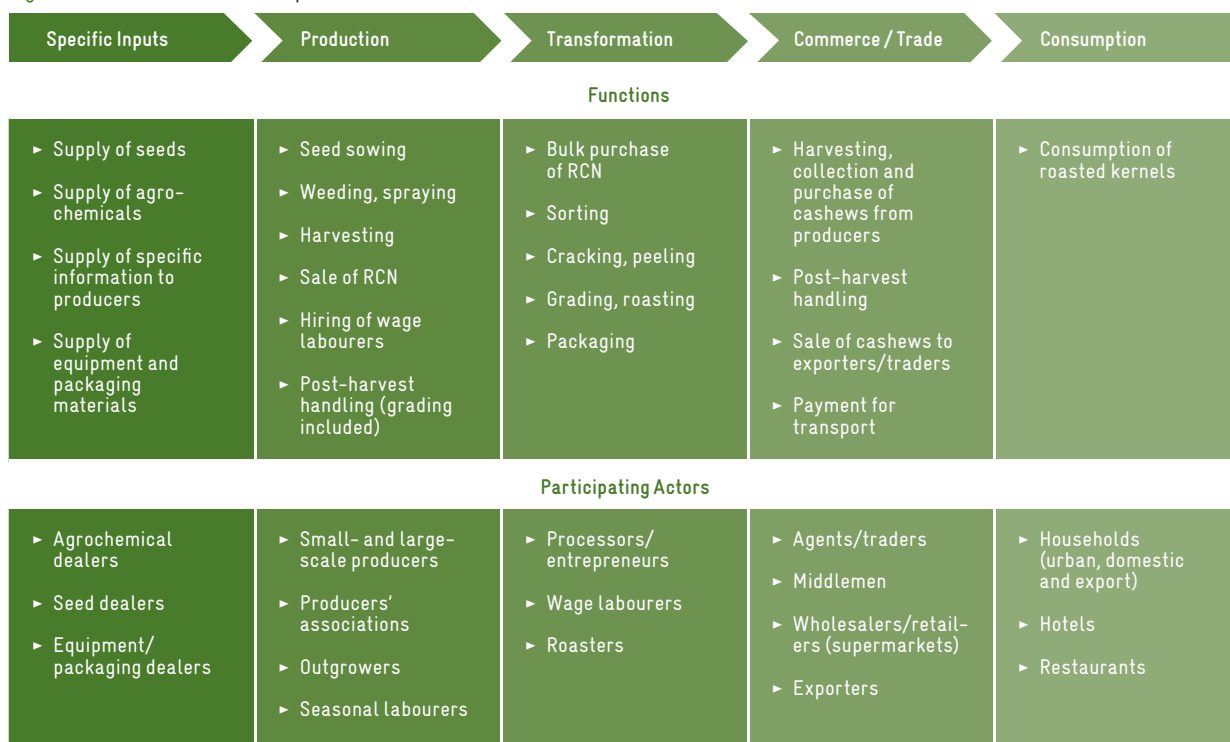
Cashew producers: production is mostly carried out by smallholder farmers (88%)², who are usually organised into associations. Most of these producers rely on family labour or hired labour, especially for weeding and harvesting activities.

Processors: value chain addition to cashews is mainly realised at the processing and packaging stage. There are different steps for processing cashews, mostly carried out by different actors and, again, mostly outside of Ghana. As for RCN originating from Ghana, the vast majority are exported to India, where they are converted into plain kernels which are then exported in bulk to markets in developed and emerging countries. There, further processing takes place with regard to roasting, salting/seasoning, packaging, and labelling/branding.

² This number refers to individuals, not to the size of their land. Without information on land distribution it might be the case, for example, that the 12% of commercial farmers, while few in number, still own the majority of land.



Figure 2.1 Cashew Value Chain Operators and their Functions



The cashew industry in Ghana currently boasts 12 processing companies with a total installed capacity of 2,137 t per year. The only medium processing company is Mim Cashew Products which has an installed capacity of 1,000 t per year and, as the name implies, is located in Mim. The remainder are small enterprises with an installed capacity ranging from 10 to 250 t per year. These companies process kernels for export, while the bulk of secondary processing takes place around Accra.

There are 21 kernel roasting companies operating in different parts of the country. 17 of these are to be found in the Greater Accra Region, three in the Brong-Ahafo Region and one in the Eastern Region. The kernels they roast are sold at hotels, restaurants and supermarkets. The “Cashew Processing, Marketing and Consumption in West Africa” (USAID 2007) study concludes that the average retail price of locally processed cashews is highest in Ghana and Côte d’Ivoire – higher even than that of imported Asian cashews. If prices cannot be reduced significantly, the local market for cashews will be dominated by imports. In addition, Ghanaian producers do not use all of the market channels available within the country effectively. As a result, products do not reach all potential points of sale, and potential buyers or sellers (such as hotels) are underserved.

Distributors: these include local traders, intermediaries, (agents), retailers and exporters. There are nine local RCN buyers, plus the four foreign companies in operation during the 2008 harvesting season. The agents of these companies purchase RCN by travelling from one marketing centre to another and

sometimes travel to the farming communities themselves. Agents and traders are responsible for transporting cashews to ports and pay for the related costs. They sell RCN to exporters directly and, in some cases, to secondary intermediaries or middlemen.

Exporters: these are few in number and operate mostly from the Brong-Ahafo Region, as well as from marketing centres in other cashew growing areas of Ghana. The RCN are collected in bulk and packed into jute sacks obtained from associations. These are then transported to Tema harbour, where they are shipped to target markets such as India and Vietnam.

Consumers: the majority of consumers buy locally roasted kernels from supermarkets and other retailers.

2.2.2 Marketing Channels and the Local Cashew Trade

The diagram that follows depicts the marketing channel for raw cashew nuts produced in Ghana. Only 2% of these are processed locally, while the remaining 98% are exported to India. World prices for cashew kernels fluctuate, as is particularly the case for raw nuts from Africa. Farm gate prices reached a peak in 2000, before they collapsed by 50% in 2001. In Ghana, the farm gate price for RCN was US\$ 0.52 per kg in 2009. This compares with the price range of US\$ 0.31 per kg to US\$ 0.54 per kg identified by a survey of three West African countries conducted in 2006. In 2009, the realised sales revenues from cashews in Ghana were:

Farm gate price of RCN per kg	= US\$ 0.52
Processing centre price per kg of WW320 kernels	= US\$ 6.80
Roasting centre price per kg of roasted kernels	= US\$ 10.00
Retail price per kg of roasted and packaged kernels	= US\$ 17.00

The marketing of RCN is currently one of the most critical issues of concern for farmers. RCN are marketed between February and May each year, and without much structured organisation to the underlying process. Basically, RCN marketing companies visit known cashew farming communities individually to either purchase RCN directly from farmers, or to collect the RCN already purchased at an agreed price by their locally commissioned people and local marketing agents. Thus, the marketing channel consists of producers, village merchants, or agents and exporters. Since this is an activity restricted to only four months in the year, there are

Figure 2.2 Illustration of Existing Marketing Channels

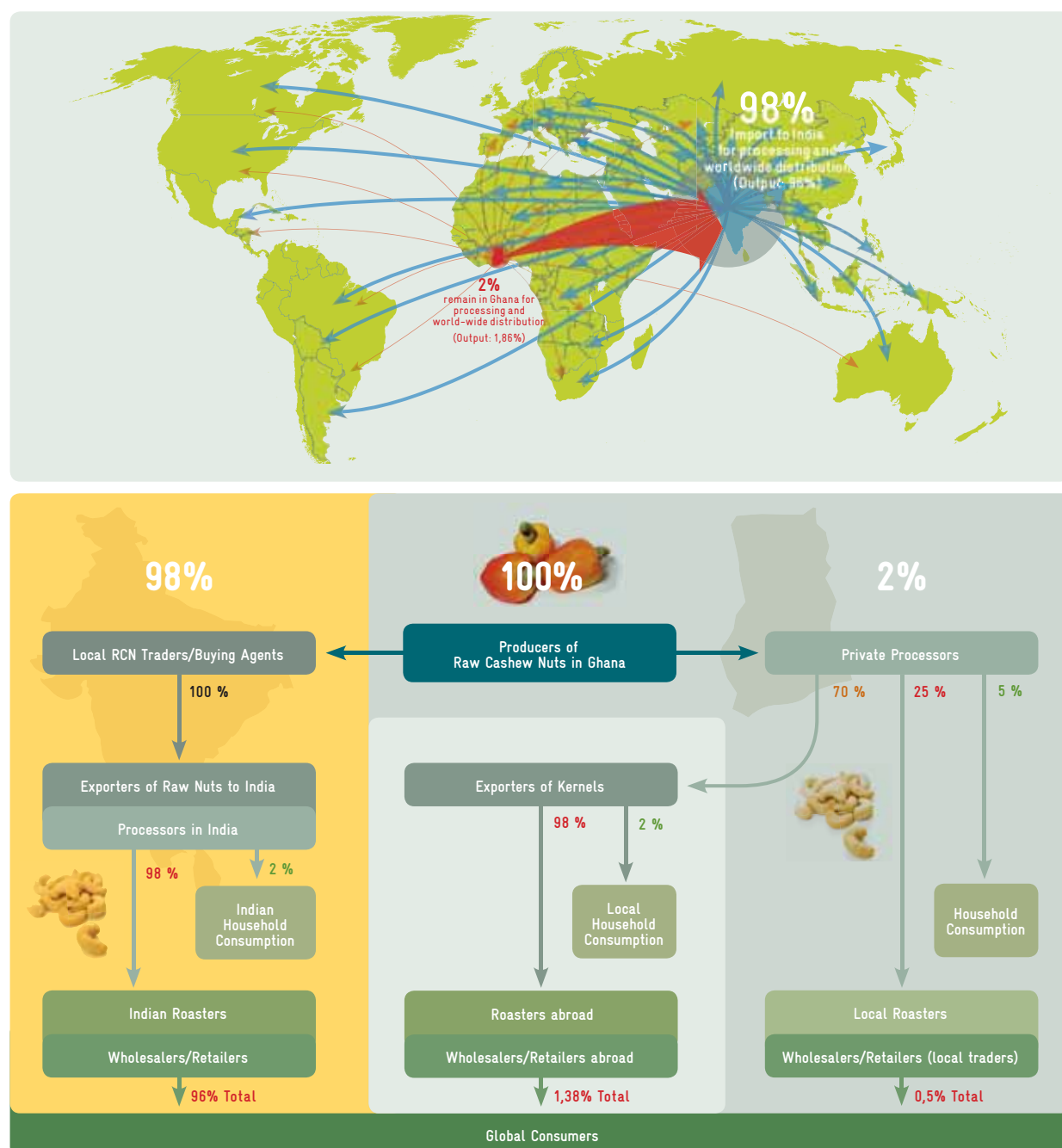
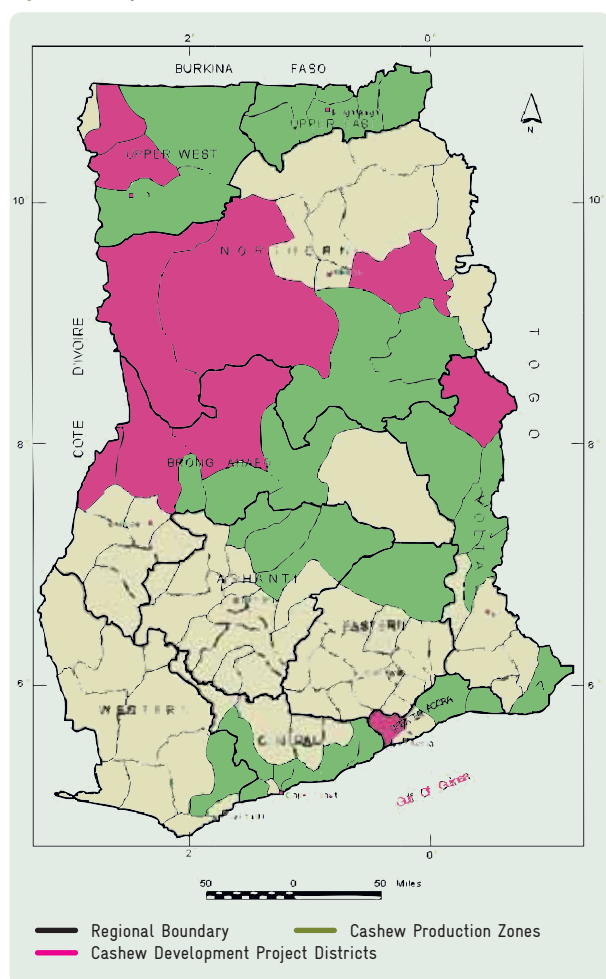


Table 2.2 Farm Gate Producer Prices and Export Prices FOB for Raw Cashew Nuts (2003 – 2009)

Year	Quantity of RCN traded (t)	Range of producer prices at the farm gate (Ghana Cedi (Gc)/kg)	Range of FOB, Tema (US\$/t) (Export Price)	Average percentage of FOB price obtained by farmers	Source of Information
2003	31,335	N/A	N/A	N/A	N/A
2004	38,181	0.20–0.30	600–700	69.2	CDP Annual Report (2004)
2005	40,992	0.25–0.60	700–800	71.1	CDP Annual Report (2005)
2006	47,962	0.30–0.45	500–600	69.5	CDP Annual Report (2006)
2007	38,298	0.25–0.40	550–600	64.0	CDP Annual Report (2007)
2008	61,590	0.35–0.60	700–900	54.5	CDP Annual Report (2008)
2009	N/A	0.40–0.60	500–600	63.7	Computed using data available from the CDP (2009)

no exclusive traders for raw cashew nuts. Often, there are intermediaries or agents acting between traders, exporters and processing companies who provide information services and make deals. This has resulted in middlemen playing an important role in the marketing of nuts, and thereby reduced the margin or dividends accrued by cashew farmers.

Figure 2.3 Major Cashew Production Zones



Prices vary widely from place to place, from season to season, and even within the same season. *Table 2.2 above* shows RCN production, producer prices, FOB, Tema export prices and the average percentage of FOB prices obtained by farmers. The producer price is a function of many factors, the most important of which are international cashew supply and demand dynamics, domestic market conditions, the efficacy of the regulatory mechanism and the tax/levy structure for the agricultural sector (personal comments by M. Das, 2009).

It can be noted from *Table 2.2* that the highest average farm gate producer price obtained so far was in 2009. During the harvesting season, marketing companies liaise with private sector carting and haulage providers to ensure that the RCN purchased are transported to ports, especially the one at Tema.

Presently there are 13 marketing companies in Ghana which purchase cashews from farmers. Nine of these are local companies, the other four are foreign and mainly of Indian origin. The leading marketing companies in the country are: Bet Exports Ltd, Olam Ghana Ltd, Blossom Exports Ltd, Mim Cashew Products, Rals Commodities Ltd, Ghana National Procurement Agency and Sri Amanan Ghana Ltd. Data on the volume of raw cashew nuts traded from 2003 to 2009 are given in the *Table 2.3 below*:

Table 2.3 Raw Cashew Nuts Trade in Ghana

Year	Quantity (t)	Value (US\$)	Source of Information
2003	31,335	15,667,500	Ghana Ports and Harbours Authority
2004	38,181	20,999,550	
2005	40,992	29,930,000	Ghana Shippers' Council
2006	47,962	23,981,000	
2007	38,298	21,064,000	
2008	61,590	45,367,000	

Source: Adaptation of Cashew Development Project data

Table 2.4 Major Climatic and Edaphic Factors Affecting Cashew Production and Suitability of Production Areas

Agro-ecological Zone	Rainfall (mm)	Temperatures (°C)		Soil Types	Number of Dry Months	Suitable Production Areas
		Max.	Min.			
Forest-Savanna Transition	Rainfall is characteristically bimodal and ranges from 1,200–1,400 mm per year. The major season starts at the end of March and the minor season at the beginning of September.	29–33	19–22	Soil types found are predominantly Luvisols, Lixisols and Acrisols (ISSS FAO–ISRIC, 1998). These soil types are suitable for the crop. These are highly deep soils and mostly of a medium texture. Soil moisture and nutrient retention is low to moderate.	5	North of Ashanti (Ejura–Sekyeri–Dumasi, Offinso, Sekyeri W& E, Ashanti Akim N. districts), Brong-Ahafo (Jaman N&S, Kintampo N&S, Wenchi, Tain, Nkoranza N&S, Techiman, Attebubu, Sene, Pru districts), Eastern (Kwahu N, Asuogyaman and Suhum Kraboa Coaltar districts), Volta (Nkwanta N&S, Kete Krachie districts) regions
Interior Guinea Savanna	Rainfall in the Guinea Savanna ranges from 1,000–1,200 mm. This zone has unimodal rainfall which starts at the end of April and runs until end August/September.	32–34	20–22	Suitable soil types include Lixisols, Luvisols, Acrisols and Plinthosols. They have good physical characteristics, are well to moderately well drained, and feature low levels of organic matter and nitrogen.	6–7	Part of Northern (W&C Gonja, Bole, Sawla–Tuna–Kalba, Yendi, Nankana N., Wulensi districts), entire region of Upper West
Interior Sudan Savanna	Rainfall ranges from 900–1000 mm per year. Marked by unimodal rainfall that usually starts at the beginning of May and ends in September	32–34	20–22	Soils are heterogeneous, deep to moderately deep, and medium textured. Soil moisture and nutrient retention is low to moderate. Commonly found soils include Luvisols, Plinthosols and Lixisols.	This zone has a much longer dry period of 7–8 months	Parts of Upper East (Bawku, Builsa, Kassina–Nankana districts)
Coastal Savanna	This zone features a bimodal rainfall pattern. Rainfall ranges from 750–1,000 mm per year, and is very low along the coast but increases towards inland areas. The major season starts at the end of March.	29–33	20–24	Major soils here are medium textured Luvisols and Acrisols, and light textured Arenosols. Organic matter levels are generally very low.	4	Central (Gomoa KEA, Asikuma districts), GT. Accra (Ga W&S, Dangbe West Districts) and Volta (Akatsi, Kpando, Keta districts) regions

Source: Adapted from Dedzoe et al. (2001) and Brammer (1967)

2.3 Description of Cashew Production Systems

Cashew is grown as a cash crop in three agro-ecological zones, namely in the Interior Savanna (Guinea and Sudan Savannas), Forest-Savanna Transition and Coastal Savanna (Figure 2.3, page 20). To put it another way, cashew is grown in all regions of Ghana except for the Western Region. Among these agro-ecological zones, Forest-Savanna Transition is regarded as highly suitable for cashew cultivation while Coastal Savanna is considered only marginally suitable (Dedzoe et al. 2001). In addition, these agro-ecological zones feature a range of environments, which explains the presence of several farming systems. The most important of the climatic and edaphic fac-

tors affecting these farming systems and the major areas of production are summarised in Table 2.4 above. Cashew is invariably established among short-term intercrops and intercropping is pursued as long as space and soil fertility allow. The criteria used for selecting intercrops under the various farming systems include crop compatibility with cashew, plus whether a crop has a comparative advantage in terms of production area and profitability. The most common intercrops in both the Forest-Savanna Transition and Interior Savanna zones are yam, groundnut, soybean and maize. Pineapples, pepper and maize are the most important intercrops for cashew farming in the Coastal Savanna agro-ecological zone.



Cashew is grown as a smallholder crop in Ghana and the commercial plantations sector is very small. It is estimated that about 88% of cashew farms are owned by smallholders, with farms ranging in size from a minimum 0.8 ha to 3.0 ha. Large plantations account for 12% of cashew farms and are sized between 4 ha to 40 ha (Osei-Akoto et al. 2005). According to estimates, there were 60,000 ha under cashew cultivation in 2008, producing about 26,454 tonnes of raw cashew nuts per year (CDP, 2008). As a result of research, certain interventions have been implemented to address some of the production constraints experienced. These interventions of improved planting materials (seeds and grafts); rehabilitation of old unproductive farms through canopy substitution with scion materials from high yielding trees; selective thinning; pruning; and chemical control of weeds, pests and diseases.

Most cashew trees start bearing fruit in their third or fourth year and are likely to reach their yield at maturity by the seventh year, that is, if conditions are favourable. The average yield of a mature tree ranges from 7 kg to 11 kg of nuts per year. Although the cashew tree can reach an age of 50 to 60 years, most trees produce nuts for about only 15 to 20 years. The cashew tree grows with a minimum of attention and is easily cultivated. It is usually found up to an altitude of 1,000 m above sea level, in regions where the annual rainfall is as low as 500 mm and as high as 3,750 mm. For maximum productivity, good soil and adequate moisture are essential. Optimal conditions include an annual rainfall of at least 889 mm and not more than 3,048 mm. The tree has an extensive root system, which helps it to tolerate a wide range of moisture levels and soil types, but commercial production is only advisable in well-drained, sandy loam or red soils (FAO, 2001).

Currently, yields from improved seeds planted by farmers in Ghana vary from 350 kg/ha in some parts of the Interior Savanna to 650kg/ha in the Forest-Savanna Transition zone. However, through the planting of grafts from elite mother trees, the productivity of cashew plantations could potentially be raised from the present level to about 800-1,200 kg/ha. Elite mother trees produce at least eight kilos of nuts per tree annually, with an average nut weighing seven grams.

2.3.1 Access to Land and Inputs for Cashew Farming – and the Ecological Impact of Cashew Farming

Most of the agricultural land in Ghana is under communal ownership. Communal land is controlled by lineage- or clan-based land-owning groups. It is allocated to individuals or households on an infrastructural basis. In most parts of the country, particularly in the northern regions, women generally have difficulties in accessing such land except where it is owned by a group or where a male guarantor is present. In principle, both men and women have equal rights of access to land in many parts of Ghana, but in practice women are often allocated smaller areas of poorer quality land that are far away from villages or homesteads (IFAD, 1997).

The majority of cashew farmers experience severe difficulties in obtaining necessary inputs. In most instances, the use of agrochemicals for controlling pests and diseases has become inevitable. However, these are only implemented on a limited basis because they are either unavailable (e.g. due to untimely distribution) or unaffordable. The existing distribution system is generally weak, and characterised by a lack of funds, unreliable suppliers, as well as weak and poorly developed rural infrastructure.

Cashew has been found to be a valuable tropical cash and food tree crop that can grow on even marginal lands. It has the ability to stabilise the soil in which it grows and is also a source of fuelwood. The additional tree cover provided by cashew plantations helps to alleviate the pressure on local vegetation and increase soil fertility. This, in turn, helps mitigate the effects of drought and desertification. In addition, the use of cashew shells to fire boilers and ovens during processing reduces the need for cutting down trees for fuelwood, and hence reduces the pressure on surrounding forests.

Cashew trees, as any other trees, serve as carbon sinks. Potential negative environmental impacts include loss of habitat and subsequent decrease in biodiversity, plus an increased possibility of crop loss due to higher susceptibility to pests and diseases.



The use of agrochemicals, if not properly controlled, can be a health hazard to farmers through direct inhalation or via run-off into local water bodies that affects the quality of drinking water. Furthermore, localised soil erosion and loss of fertility resulting from chemical and biological changes in soil structure can occur. This is because when litter becomes dominated by a single plant species, the decomposition process is altered (AfDB, 2000). As cashew trees will not tolerate arid conditions (i.e. mean annual rainfall < 600 mm) without supplementary water, the issue of irrigation needs to be considered, where feasible.

2.3.2 An Economic Analysis of Cashew Farming

“Gross margin” can be defined as the gross income from an enterprise less the variable costs incurred to achieve this. This measure enables producers to evaluate their existing performance and, for those who are considering investing in a new enterprise, it provides a guide to estimating gross profit. The following calculation offers a practical example. Here, the result is net annual revenue of US\$ 180 per hectare for a mono-crop cashew farm which is six years old. The underlying assumptions are as follows:

- ▶ **Number of trees per ha:** 10 x 10 m spacing, resulting in 100 trees/ha
- ▶ **Cultural practice:** A cashew farm requires relatively high levels of inputs to ensure trees yield to their genetic potential. Cultural practices include slashing in conjunction with herbicides to minimise weed competition; the maintenance of a clean ground area to facilitate harvesting; sanitation pruning; and fire belt construction. Pesticides are also used to contain a variety of insects likely to damage trees. Labour is engaged to pick the fruit during the harvesting season that runs from February until the end of April.
- ▶ **Costs and returns:** Costs and returns are presented in real and not nominal or face value terms. Real costs and returns exclude the effect of inflation.
- ▶ **Costs:** These comprise the capital costs and operating costs. The analysis takes into consideration that no major outlay was incurred under capital costs except for the acquisition of basic farming tools and a mist blower which was annualised for 10 years.

The cost of cultivating one hectare of cashew trees amounts to US\$ 158 and consists of US\$ 53.20 in capital costs and US\$ 104.80 in variable costs:

	Capital costs	Operating costs
	Tools; mist blower (annualised for 10 years)	Weed control (3 times); sanitation pruning; fire belt construction; application of pesticides; and harvesting and packaging (lump sum)
Sum (US\$ per year and per ha)	53.20	104.80

The returns from cashew farming are derived from nut sales - calculated as the yield multiplied by the price received. Yields vary according to farm location and soil type. The *following Table* depicts possible cashew tree yields in different parts of Ghana, in each case for a hectare of land with 100 trees.

RCN Yield in kg per tree of Different Ages and under Different Climatic Conditions

Tree Age (years)	Low Areas (Upper West/ Central Regions)	Medium Areas (Northern/ Greater Accra Regions)	High Areas (B/A, E/R, A/R, V/R)
1	0 kg	0 kg	0 kg
2	0 kg	0 kg	0 kg
3	0 kg	0.5 kg	1.5 kg
4	0.5 kg	2.0 kg	4 kg
5	2.0 kg	4.0 kg	6 kg
6+	4.0 kg	6.5 kg	>8 kg

Based on a farm gate price of US\$ 0.52 per kg of RCN (2008) and an average annual yield of 6.5 kg per tree, gross annual income is US\$ 338. The *following Table on page 24* summarises the returns and revenue from cashew cultivation.



An Economic Analysis of Annual Cashew Cultivation (per ha):

Income	US\$ 0.52 x 650kg/ha =	US\$ 338
Costs	US\$ 104.80 + US\$ 53.20 =	US\$ 158
Gross Revenue		US\$ 338
Net Revenue	US\$ 338 – US\$ 158 =	US\$ 180

2.3.3 Farmer-Based Organisations in the Cashew Sector

There are about 5,000 agricultural farmer-based organisations (FBOs) registered in Ghana, but only a few (about 100) are wholly owned and managed by women (IFAD 1997). Generally, the environment here is not very supportive to the existence of FBOs. Most do not function well and suffer from several weaknesses, including: low member commitment, support and participation; very high levels of illiteracy (of members and officials); inadequate capitalisation; a low scale of operations; weak and unprofessional management; as well as low levels of business management skills, internal controls, planning and monitoring capabilities.

The Cashew Development Project, in collaboration with the Department of Co-operatives, has successfully organised 1,549 farmer groups into 156 cashew co-operative societies. These 156 co-operative societies cover 15 districts in five regions of Ghana:

- ▶ **Northern Region:** five districts with 60 co-operative societies
- ▶ **Brong-Ahafo Region:** six districts with 57 co-operative societies
- ▶ **Upper West Region:** two districts with 25 co-operative societies
- ▶ **Volta Region:** one district with 3 co-operative societies
- ▶ **Greater Accra:** one district with 11 co-operative societies

So far, 11 district co-operative unions have been registered by the Department of Co-operatives. However, the organisational capacities of these co-operative societies are still weak. They usually lack training in: group management (administration, leadership, simple business development and management techniques); accounting and financial management (non-sophisticated); programme planning and monitoring; and product market development.

2.4 Cashew Processing in Ghana

Currently, the overwhelming majority of cashews produced in Ghana are exported rather than processed locally or consumed within the country. There are 12 RCN processing enterprises now operating in Ghana, with an estimated capacity of 2,137 t. By the end of 2008, these companies had the capacity to process 3.5% of all RCN (61,590 t) exported from Ghana.

In terms of RCN processing, the Brong-Ahafo Region accounts for 88% of the total installed capacity nationwide. The leading names present here are Mim Cashew Products, Cash Nut Foods Ltd, and Kona Agro-Processing Ltd. Most of these processing companies use Indian technology, and employ between 5 – 250 permanent and seasonal staff. Further details on some of these processing companies are presented in the *Tables 2.5 and 2.6 on the next two pages.*

Since processing is a recent development, most employees, apart from permanent staff, are unskilled and have a low capacity to handle the large volumes of RCN required for the export market. Processing companies ensure that substantial quantities of nuts (of the necessary quality) are procured during the harvesting season. Admittedly, some firms would need to re-engineer themselves in order to become competitive and benefit from economies of scale.

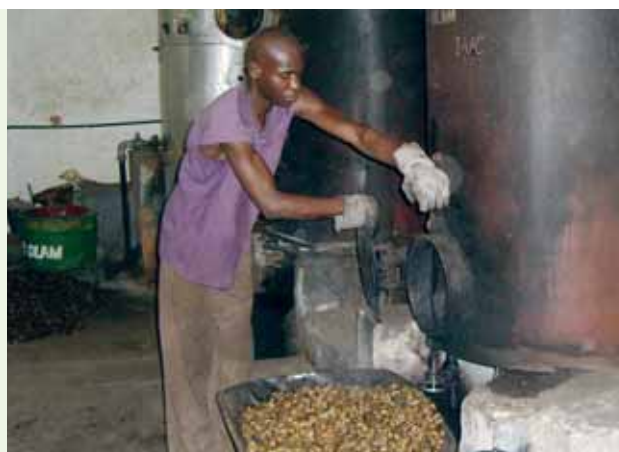


Table 2.5 Overview of Cashew Processing Companies in Ghana

Name	Location	Region	In- stalled capacity (t/yr)	Qty of RCN used (t)	Qty of kernels proc- essed (t)	Ownership	Level of process- ing *	Assessment capacities to expand their turnover
Shop Best Ltd	Accra	Greater Accra	25	11.42	2.28	Joint Venture	Small	Yes
Nsuro Farms	Accra		10	1.80	0.42	N/A		
Winker Investments Ltd	Afienya		100	31.31	6.91	Joint Venture		
Kona Agro-Processing	Awisa	Brong-Ahafo	250	58.48	9.77			
CRIG	Bole	Northern	120	18.04	3.26	CRIG		
Dudasu	Dudasu	Brong-Ahafo	90	12.93	2.66	Joint Venture		
Cash Nut Foods Ltd	Faaman		250	5.50	0.95			
Jelana Company Ltd	Jaman		20	1.56	0.46			
NASAKA	Kabile		100	35.38	7.82	Farmer Co-operative		
Latemu	Kabile		72	15.00	3.00	Joint Venture		
Mim Cashew Products	Mim		1,000	150.00	30.20		Medium	Yes
NASAKA	Nsawkaw		100	21.19	4.09	Farmer Co-operative	Small	
Total			2,137	362.62	71.87	* Large > 1,000 t, Medium 500-1,000 t, Small < 500 t		

Source: Adapted from the CDP Progress Report for the period April – June, 2009

There are 21 roasting companies in Ghana adding flavour and taste to 42.02 t of kernels for the domestic market. Local demand for cashew kernels is currently estimated at over 50 t per year, while production is only about 42 t (CDP, 2009). Major cashew kernel roasting companies are located in Accra,

notably Winker Investments Ltd, SPB Agro Processing Ltd, Ermark Ltd, Shop Best Ltd, Yummy, Goody Star, and Friends Nuts. Others would include Jiji, Gunners, Nsuro, Gaabs and Kabile Nuts.



Table 2.6 Technical and Economic Data on Three Selected Small-Scale Processing Companies

Name	Kona Agro-Processing Ltd	Cocoa Research Institute of Ghana (CRIG)	Winker Investments Ltd
Potential processing capacity	250 t per year	120 t per year	100 t per year
RCN actually processed	58.48 t per year	18.04 t per year	67 t per year
Technology used	From India and Brazil: steamers, cutters, boilers, dryers, vacuum-packaging machines	From India: steamers, cutters, boilers, dryers, vacuum-packaging machines	From India: crackers Locally manufactured machines: steamers, dryers and crackers
Total Staff employed	165	34	51
► male staff	71	3	22
► female staff	94	31	29
Number of permanent staff	15	0	39
Number of seasonal staff	150	34	12
Cooperation with outgrower farmers	None	None	25
Services delivered to cashew farmers	Advice to farmers for improving the quality of nuts	Advice to farmers for improving the quality of nuts	Financial advances against raw cashew nuts
Market	Netherlands: kernels (WW240, WW320, WW450)	Local market: kernels (WW240, WW320, WW450)	Local markets
Yearly turnover	No information	No information	US\$ 130,525
Ownership structure/source of financing	Joint venture between family members	Owned by CRIG/ Government of Ghana	► Private partners ► 100% local investment
Supported by		Cashew Development Programme	CDP/TECHNOSERVE regarding technical expertise and operational advice
Source of information	Personal comments from Nyamekye Amankwaa, Production Manager (2009)	Personal comments from Justus Gariba, Chief Technical Officer (2009)	Personal comments from Mr Smith, Winker Investments (2009)



2.5 Gender Aspects and the Poverty Relevance of Cashew Processing

Poverty in Ghana is concentrated in rural areas and impacts women more severely than men. The poverty rate for northern savannah areas is significantly higher than the national average. The Northern, Upper East and Upper West Regions are generally the poorest in Ghana, followed by the Volta Region (GLSS, 2006). Both the incidence and depth of poverty are found to be greater in the rural savannah than in any other area. The proportion of Ghanaians described as being “poor” decreased to 28.5% in 2005/06 from 39.5% in 1998/1999. Those considered “extremely poor” declined to 18.2% from 26.8%. All localities in Ghana with the exception of Greater Accra and the Upper West Region have experienced a decline in poverty.

The Poverty Impact Assessment conducted by GTZ revealed that women (heads of households, single and married), show significant interest in working in existing cashew processing companies. Based on the discussions held with women actually working in processing companies, it seems that this type of employment is preferred to the hard labour associated with cashew production and other agricultural activities. Consequently, processing jobs are a favoured alternative way of earning income for women in rural communities.

There is no apparent division of labour based on gender in cashew production, apart from regarding thinning and pruning, which are almost always done by men. Activities such as weeding, clearing, planting and sowing are undertaken by both

women and men, albeit in different proportions. In some cashew producing communities, women make juice and alcohol from cashew apples, and are therefore highly involved in the processing of apples and nuts at the household level. Furthermore, 70% of the labour force involved in processing activities is comprised of women (CDP, 2009c), and many women participate in the selling of raw nuts at marketing centres. However, large traders/exporters and their agents generally tend to be men.

In the northern part of the country, some farmers use income gained from cashew production to establish livestock enterprises (PPMED, 2007). While there is a progressive trend towards more inclusion of perennial tree crops (cocoa, citrus, rubber, cashew, mango) in farming systems, most farm-based households maintain traditional multiple sources of income - each has on average 7-8 income sources (PPMED, 2007).

This strategy aims to reduce economic and production risks by allowing for agricultural seasonality and increased use of labour during the course of the year. However, it usually involves limited labour productivity for those households in the poor and medium categories, and also restricts the labour and capital investments needed for intensive commercial agriculture and specialisation (PPMED, 2007).

Cashew farming can lead to increased employment opportunities for women in rural areas (processing companies), and generate income for vulnerable smallholder farmers and women. All these opportunities will ultimately result in an improvement in rural living conditions, and hence contribute to poverty reduction.



Table 2.7 Needs Assessment for Support Services along the Value Chain

Value Chain Operators	Operational/Support Services	Results of Needs assessment
Input Dealers	<ul style="list-style-type: none"> Financial support Training support Transportation Support with infrastructure Cold rooms 	<ul style="list-style-type: none"> Technical training Advocacy Promotion of inputs Loans
Producers	<ul style="list-style-type: none"> Extension services Credit facilities Research support Market information Training support Delivery of inputs 	<ul style="list-style-type: none"> Appropriate research technologies Technical training Transfer of technology Access to market information/prices for products and farm inputs Credits for inputs and investment
Processors	<ul style="list-style-type: none"> Packaging and labelling Maintenance of equipment and buildings Credit facilities Research support Quality assessments 	<ul style="list-style-type: none"> Legal advice Training in entrepreneurial skills Transportation and logistics Support through policies promoting agro-processing industries Development of business partnerships between small- and large-scale factories Development of international quality standards
Distributors	<ul style="list-style-type: none"> Credit support Garages to repair the vehicles needed for transporting raw materials Good road networks Spare parts 	<ul style="list-style-type: none"> Training on road safety issues Strong and reliable haulage trucks Adequate knowledge of maintenance
Exporters	<ul style="list-style-type: none"> Logistics Legal support Financial support Quality assessments 	<ul style="list-style-type: none"> Advertising Transportation Warehouses Entrepreneurial skills and marketing Skills for improving the quality of exports

2.6 Support Services for Cashew Production along the Value Chain

Operators along the value chain face varying constraints and thus require different support services in order to overcome these constraints.

Table 2.7 (above) summarises the operational services needed by these key agents and gives an assessment of their needs. There are many governmental and non-governmental organi-

sations in Ghana which could assist cashew farmers and processing companies with overcoming their technical and entrepreneurial constraints. The major support organisations are listed in *Table 2.8 on page 29*. So far, the Cocoa Research Institute in Ghana (CRIG) has been mandated to handle cashew research. Apart from the CRIG, national universities and the Council for Scientific and Industrial Research (CSIR)



Table 2.8 Overview of Major Service Providers for the Cashew Value Chain

Service Provider	Major Activity	Relevance to Cashew Production and Processing
Cocoa Research Institute of Ghana (CRIG)	Research and training (for extension staff and farmers)	Research and training (for extension staff and farmers) related to cashew production
Crop and Savanna Research Institute (CSRI)	Research (e.g. on soils) and training of students and entrepreneurs	Research and training, including as related to soils for cashew production
Universities – Legon, KNUST, University of Development Studies, University of Cape Coast, University College of Winneba	Research on cashew farming and marketing	<ul style="list-style-type: none"> ► Analysis of cashew production systems ► provision of background information on the economic and socioeconomic issues relevant to cashew farming
Department of Co-operatives	Organises groups of farmers into societies, associations and unions	Strengthening and development of cashew farmers' organisations
Cashew Processors and Exporters Association of Ghana (CAPEAG)	Organisation for cashew farmers and exporters	Marketing and lobbying for the cashew sector
Ghana Cashew Association, Brong-Ahafo Chapter	Organisation for cashew farmers in Brong-Ahafo	<ul style="list-style-type: none"> ► support regarding production ► lobbying on behalf of cashew farmers
Ghana Standards Board, Food and Drugs Board	Watches over the quality and safety of cashew products	<ul style="list-style-type: none"> ► development of quality standards ► control of quality standards
SGS, Quality Control Division of COCOBOD	Grading, certification of quality standards	
Plant Protection and Regulatory Services Directorate – Ministry of Food and Agriculture	Quality control	Issues quarantine certificates for kernel products and raw cashew nuts
Statistics, Research and Information Directorate (SRID) – Ministry of Food and Agriculture	Provides market information, especially regarding intercropping (e.g. maize, yam, groundnut, etc.)	Improves access to market information for cashew farmers
Cashew Development Project (CDP)	<ul style="list-style-type: none"> ► Coordinates cashew-related activities in the country; provides technical backstopping to activities ► provides market information through its Buyers Directory and website: www.ghanacashewproducts.com 	<ul style="list-style-type: none"> ► Supports extension services ► helps organise farmers ► political lobbying on behalf of the cashew sector; strengthens production sector
Ministry of Information Ministry of Trade and Industry Ghana Export Promotion Council Export Development Investment Fund (EDIF)	Provide market information, offer promotion services, organise trade fairs, etc	<ul style="list-style-type: none"> ► Promote the political frame conditions for agro-processing industries ► support the organisation of trade fairs
Ministry of Food and Agriculture (MoFA) – district and regional offices; Agricultural Extension Services Directorate	Provides extension services; supports development of favourable political frame conditions for the agricultural sector in Ghana	Extension services for cashew farmers

are also involved in cashew-related research. The Cashew Development Project provides technical support to District Agricultural Development Units (extension units) as well as cashew farmers regarding appropriate methods for cashew production. It also supplies farmers and processors with important market information. Various extension manuals and bulletins have been published by the CDP to support extension

services. Non-governmental organisations, most notably the Trade and Investment Program for a Competitive Export Economy (TIPCEE), Technoserve and the Adventist Development and Relief Agency (ADRA), are supporting national extension staff with training on technical issues and business management.

2.6.1 Demand and Supply of Financial Services along the Value Chain

Funding is of crucial importance to success in the cashew value chain. The various stakeholders may require finance to procure and distribute inputs, to purchase RCN, or to process and market cashew products. An assessment of the short- and long-term credit needs of the different value chain stakeholders is presented in the *Tables 2.9 and 2.10 below*.

Short-term loans could be provided by the Agricultural Development Bank (AgDB), rural banks, commercial banks and the National Investment Bank. Meanwhile, the Export Development Investment Fund (EDIF), venture capital firms, and the proposed government fund for agricultural development could supply long-term loans. The latter would support agricultural activities and related agents (including input suppliers, processors, market intermediaries, warehouse operators,

haulers and exporters). Currently, some cashew value chain stakeholders (i.e. producers, processors and exporters) benefit from credit facilities offered by the AgDB and EDIF.

Table 2.11 on page 31 gives an overview of the financial organisations which could play an important role in the provision of short- and long-term credit to cashew value chain stakeholders.

2.7 Summary of Major Political Frame Conditions

Cashew value chain promotion in Ghana has to be integrated into national policies and strategies. Major policies important for cashew sector development are summarised in *Table 2.12 on page 31..*

Table 2.9 Short-term Financial Needs of Value Chain Stakeholders

	Value chain stakeholders				
	Input dealers	Farmers	Processing firms	Distributors	Exporters
Short-term credit for ...	Import of agrochemicals	Farm inputs and hiring of farm labour	Purchasing of raw material and labour costs	Transportation costs (renting of cars)	Purchasing of RCN for export, and warehouse rental
Financial organisation	AgDB	AgDB	AgDB	AgDB	AgDB
	Rural banks	Rural banks	National Investment Bank	Rural banks National Investment Bank	Commercial banks
	Credit unions	Credit unions			EDIF

Table 2.10 Long-term Financial Needs of Value Chain Stakeholders

	Value chain stakeholders				
	Input dealers	Farmers	Processing firms	Distributors	Exporters
Long-term credit for ...	No information	No information	Construction and extension of processing facilities	Purchasing of haulage equipment and trucks	Construction of warehouses
Financial organisation			EDIF		
			Venture capital	National Investment Bank	EDIF
			Proposed government fund for agricultural development	Rural banks	AgDB

Table 2.11 Overview of Financial Organisations Supporting Agricultural Activities

Name	Target group	Products	Assessment
Agricultural Development Bank	<ul style="list-style-type: none"> ▶ Input suppliers ▶ Farmers ▶ Traders ▶ Distributors ▶ Processors ▶ Exporters 	<ul style="list-style-type: none"> ▶ Warehouse Receipt ▶ Short-term and long-term loans ▶ Credits for investment and working capital 	AgDB serves as a channel for credit schemes (associated with food security and the marketing of farm produce) supported by the government, as well as bilateral and multilateral assistance.
Rural banks	<ul style="list-style-type: none"> ▶ Producers ▶ Traders ▶ Distributors 	<ul style="list-style-type: none"> ▶ Various agricultural loans (short-term and long-term; and micro-credit) 	<ul style="list-style-type: none"> ▶ many cashew farmers have accounts with rural banks ▶ producers, buying agents, traders and processors work with rural banks ▶ Network of branches in rural areas.
Commercial banks; National Investment Bank; ECOBANK; Merchant Bank	<ul style="list-style-type: none"> ▶ Medium- to large-scale businesses ▶ Commercial farmers; medium- to large-scale traders, processors, exporters and distributors 	<ul style="list-style-type: none"> ▶ Warehouse Receipt ▶ long-term loans, inventory credit, working capital 	<ul style="list-style-type: none"> ▶ Support investment in the equipment and machinery required for processing RCN ▶ Help with purchases, e.g. haulage trucks.

Table 2.12 Summary of Major Political Frame Conditions

National Policies	Description
Food and Agricultural Sector Development Policy (FASDEP)	<p>Within the framework of FASDEP, the Government of Ghana through the Ministry of Food and Agriculture (MoFA) identifies and promotes processing technologies at the farm and industry level. FASDEP aims to support the private sector by creating an enabling environment for investments.</p> <p>FASDEP adopts a sector wide approach to managing agricultural development, i.e. as opposed to the discrete project approach pursued in the past. It is the strategic framework within which all present and future programmes and projects operate. It provides a broad platform for agricultural development from which projects and programmes dealing with specific issues can be planned in detail and implemented.</p> <p>FASDEP recognises access to markets as being a major key to success. In the short term, the government will facilitate improved marketing through advancements in infrastructure (such as roads, markets and storage facilities), and strengthen farmer-based organisations.</p>
Ghana Poverty Reduction Strategy I, Growth and Poverty Reduction Strategy II, etc.	<p>GPRS I provides a policy framework for eradicating poverty. Specific interventions in the agricultural sector for reducing poverty, as outlined under the GPRS II and equally supported by FASDEP, are:</p> <ul style="list-style-type: none"> ▶ Infrastructure development (e.g. as regards feeder roads, bridges, farm tracks, irrigation, and construction of storage and marketing facilities). ▶ Promotion of appropriate technology (linked to research, development and dissemination work; focus on value addition). ▶ Extension: the public extension system will initiate pro-poor extension programmes in targeted areas and for specific groups of the population.



Table 2.13 Programmes/Projects Involved in Promoting the Cashew Value Chain in Ghana

Programme/ projects involved in cashew value chain promotion	Major partners involved (gov- ernment, NGOs, donors)	Geographical area	Major activities	Potential coopera- tion with ACi	Interest in cooperation with ACi	Remarks	Experience of cooperation
Cashew Development Project (CDP)	Government of Ghana and the African Devel- opment Bank	<ul style="list-style-type: none"> ▶ 6 districts – Brong-Ahafo ▶ 5 districts – Northern Region ▶ 2 – Upper West ▶ 2 – Volta Region ▶ 2 – Greater Accra 	<ul style="list-style-type: none"> ▶ Production ▶ Processing ▶ Marketing ▶ Research & Extension ▶ Credit provision ▶ Local improve- ments –feeder roads 	Yes	All activi- ties along the value chain	Project ends in Septem- ber 2010	Coopera- tion with NGOs in farm map- ping; train- ing and ex- tension ac- tivities
Afram Plains Ag- ricultural Devel- opment Project		Kwahu North District	<ul style="list-style-type: none"> ▶ Production ▶ Marketing 			Project ends in 2012	Coopera- tion with CDP
Trade and Invest- ment Program for a Competitive Export Economy (TIPCEE)	USAID	Operates in all cashew growing districts	<ul style="list-style-type: none"> ▶ Training (tech- nical- and busi- ness manage- ment-related) ▶ Farm Mapping ▶ Technical Back- stopping ▶ Marketing 	Yes	All activi- ties along the value chain	Project ends in Decem- ber 2009	Coopera- tion with Tech- noserve/ CDP
Adventist Devel- opment and Re- lief Agency (ADRA)		Districts in Brong-Ahafo	<ul style="list-style-type: none"> ▶ Training ▶ Farm Mapping ▶ Technical Back- stopping 			No funds to continue cashew activi- ties	Coopera- tion with CDP to map farms
Ricerca e Cooperazione (R & C)	Italian NGO	Kwahu North District	<ul style="list-style-type: none"> ▶ Production ▶ Marketing 	Project has ended		Project has ended	Cooperated with CDP
African Cashew Alliance (ACA)	Public-Private Partnership	Cashew growing districts	<ul style="list-style-type: none"> ▶ Promotion of African cash- ews in regional and global markets 	Imple- menting partner	Marketing		Coopera- tion with ACi
West African Trade Hub (WATH)	USAID		<ul style="list-style-type: none"> ▶ Trade Develop- ment Services 	Yes	Promotion of trade services		

2.8 Overview of Ongoing Support Activities/Projects for Cashew Production in Ghana

The Government of Ghana has given priority to the cashew sector, more specifically through the Cashew Development Project of the Ministry of Food and Agriculture. Over the past decade, training and technical advice on cashew production has been given to more than 40,000 farmers.

Non-governmental organisations and other projects supported by donors have joined the MOFA in its efforts. The NGOs and

institutions most actively involved in cashew production and processing have been: Technoserve; Ricerca e Cooperazione; ADRA; West African Trade Hub (WATH); Ghana Export Promotion Council (GEPC); MoAP (supported by GTZ); TIPCEE (supported by USAID); and the African Cashew Alliance (ACA).

Through collaboration between CDP, ADRA and TIPCEE, cashew farms are being mapped using Geographic Information Systems technology. This farm mapping is primarily aimed at facilitating extension delivery and forecasting yields,

or estimating harvest volumes at particular times. Also, mapping allows for traceability which is a critical requirement for certification. Recently, TIPCEE, Technoserve and CDP jointly organised a Training of Trainers workshop for selected extension staff on quality standards and norms for cashew. The major outputs expected from such workshops include training and the sensitisation of farmers towards producing good quality RCN for domestic and export markets. *Table 2.13 on page 32* summarises programmes/projects involved in promoting the cashew value chain in Ghana.

2.9 Opportunities and Bottlenecks for Promoting the Cashew Value Chain in Ghana

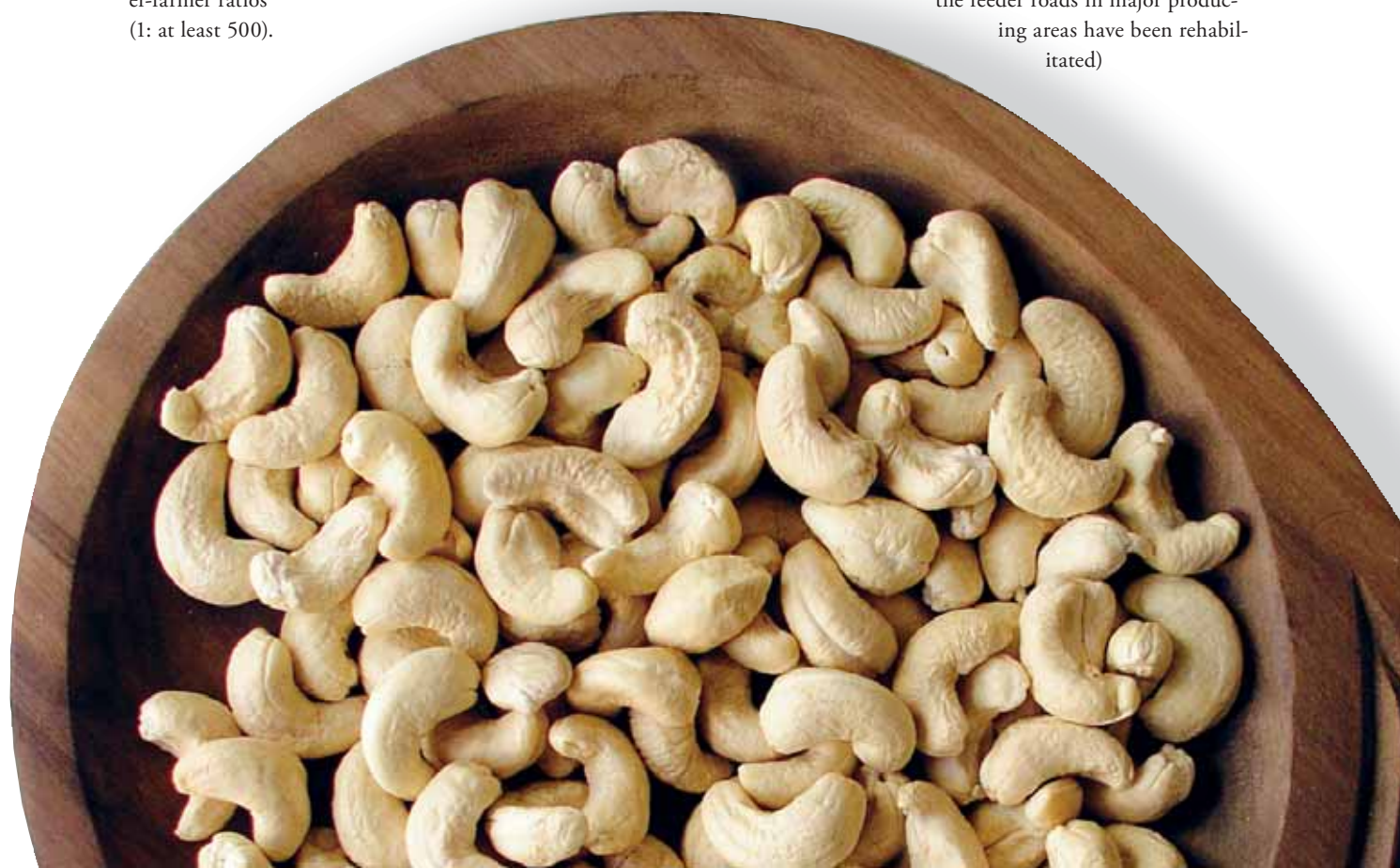
The most important problems/ bottlenecks within the cashew value chain in Ghana are:

- ▶ **Difficulty in accessing farm inputs and good planting materials:** The existing distribution system for farm inputs is generally weak and characterised by a lack of funds, unreliable suppliers and poor infrastructure (feeder road networks, storage facilities) in rural areas. Furthermore, farmers lack access to agro-chemicals needed for increasing the productivity of cashew farming.
- ▶ **High incidence of pest infestations:** Devastating effects from sucking pests (*Helopeltis* spp, *Anoplocnemis curvipes*, *Pseudotheraptus devastans*) and stem borers (*Apate telebrans*) lead to secondary infections and subsequent losses in yield and quality.
- ▶ **Inadequate extension services:** There is insufficient dissemination of research findings due to inadequate extension services and high extension worker-farmer ratios (1: at least 500).

- ▶ **High interest rates and lack of working capital:** High interest rates charged by financial institutions on loans and overdrafts are said to be one of the major factors negatively impacting processing. Also, lack of working capital prevents the expansion of processing companies.
- ▶ **Inconsistent supply of RCN to processing companies:** although RCN are exported, there is an inadequate supply to meet the needs of existing local processing companies.
- ▶ **Weak farmer associations:** These associations do not have a strong enough collective voice to promote the interests of their members when it comes to selling RCN. Thus, their members lack the bargaining power needed for negotiations with traders.
- ▶ **Inadequate transport facilities and frequent fluctuations in the price of fuel have resulted in high cashew transport costs.**
- ▶ **Lack of an effective marketing information system for monitoring and analysing global products and market trends, and for relaying the information gathered to stakeholders in the sector.**
- ▶ **Frequent bush fires.**

The most important opportunities for the cashew value chain in Ghana are:

- ▶ Increased global demand for cashews
- ▶ Availability of land in environments suitable for cashew production
- ▶ Increased farmer interest in cashew production due to a flourishing export market
- ▶ The enabling environment facilitated by government support for infrastructure support (e.g. 70% of the feeder roads in major producing areas have been rehabilitated)





- Geographical proximity to primary consumption markets in the U.S. and Europe
- Associated employment opportunities (seasonal and permanent) for rural people
- Donor agencies that support cashew production
- The positive contribution of cashew trees in terms of desertification, plus their resistance to drought.

2.10 Proposals for the Strategic Orientation of Activities Promoting the Cashew Value Chain

Based on the strengths and bottlenecks identified, it is recommended that interventions in the cashew value chain in Ghana should focus on the following areas:

- Scaling-up of extension and training activities to increase awareness of cashew production and processing through individual, group and mass extension methods (e.g. local radio programmes promoting good agricultural practices and sharing information on marketing).
- Strengthening of farmers' organisations at the local, regional and national levels: strong cashew farmers' organisations can better defend the interests of this agricultural sub-sector at the political level. In this way, they can contribute to improved legal, organisational and political frame conditions (e.g. in the area of tariffs, taxes and levies, etc). Furthermore, strong cashew farmers' co-operatives help their members through improved access to credit, marketing (via economies of scales) or training.
- Increasing access to improved planting material (grafts) for farmers: two central nurseries have already made progress in producing improved planting materials. High yielding materials (with annual yields ranging from 8-15 kg/tree) have been used to establish scion banks supplying scions for graft production purposes. These nurseries have been developed through the combined efforts of MOFA, CDP, and CRIG. It is suggested that the African Cashew initiative should join in this initiative. The production of grafts for planting helps increase smallholder access to better planting material, and thereby raises the productivity of Ghanaian farmers.
- Strengthening research on cashew farming systems and the cashew value chain by national research institutes and universities (e.g. CRIG). The ACi could benefit from research on cashew farming systems conducted by national universities, and take this into consideration in the strategic orientation of its support activities.

- Farm mapping and development of training on quality standards and norms: Ghanaian cashews have to meet national and international quality standards in order to be competitive in national and global markets. This is why training on quality standards is of crucial importance to project success. TIPCEE and CDP have helped their local partners to map farms and to implement training in order to ensure that quality standards and norms are maintained. The ACi can continue the efforts of TIPCEE and CDP here.
- Improving farmers' and processors' access to short- and long-term credit (for investment and working capital) will increase the economic profitability of small-scale cashew farmers and raise the turnover of national processing companies. Over 95% of the cashew nuts produced are exported in their raw form due to bottlenecks in processing that reflect poor access to credit. Apparently, there is limited support for the cashew processing industry in terms of credit. It is suggested that intensive education, communication and information campaigns on the profitability of workable processing models should be launched by the project so that processing firms attract the necessary capital.

Furthermore:

- As regards improvements to nut quality and yields, it is suggested that emphasis should be placed on the development and maintenance of new plantations with high yielding clones that conform to quality requirements for exports.
- Pilot demonstrations of clonal cultivation using model clonal cashew gardens can transfer agricultural science and technologies to farming communities for production purposes.
- Adoption of intensive pest control (based on integrated pest management approaches) can limit the incidence of major pests identified as a threat to cashews. This would prevent a loss in yield, especially in farms located in the Forest-Savanna Transition agro-ecological zone.
- Furthermore, RCN traders or exporters should be encouraged to assist in the provision of inputs for farmers, e.g. credit.
- Secondary processing should also be promoted in Ghana, namely the production of both alcoholic and non-alcoholic beverages from cashew apples.

3 Identification of information gaps in the Cashew Value Chain in Ghana

There are certain information gaps regarding farmers/producers, marketing channels, processing companies, and access to credit which need to be investigated in further studies. These are specified in the following table:

Table 3.1 Information Gaps

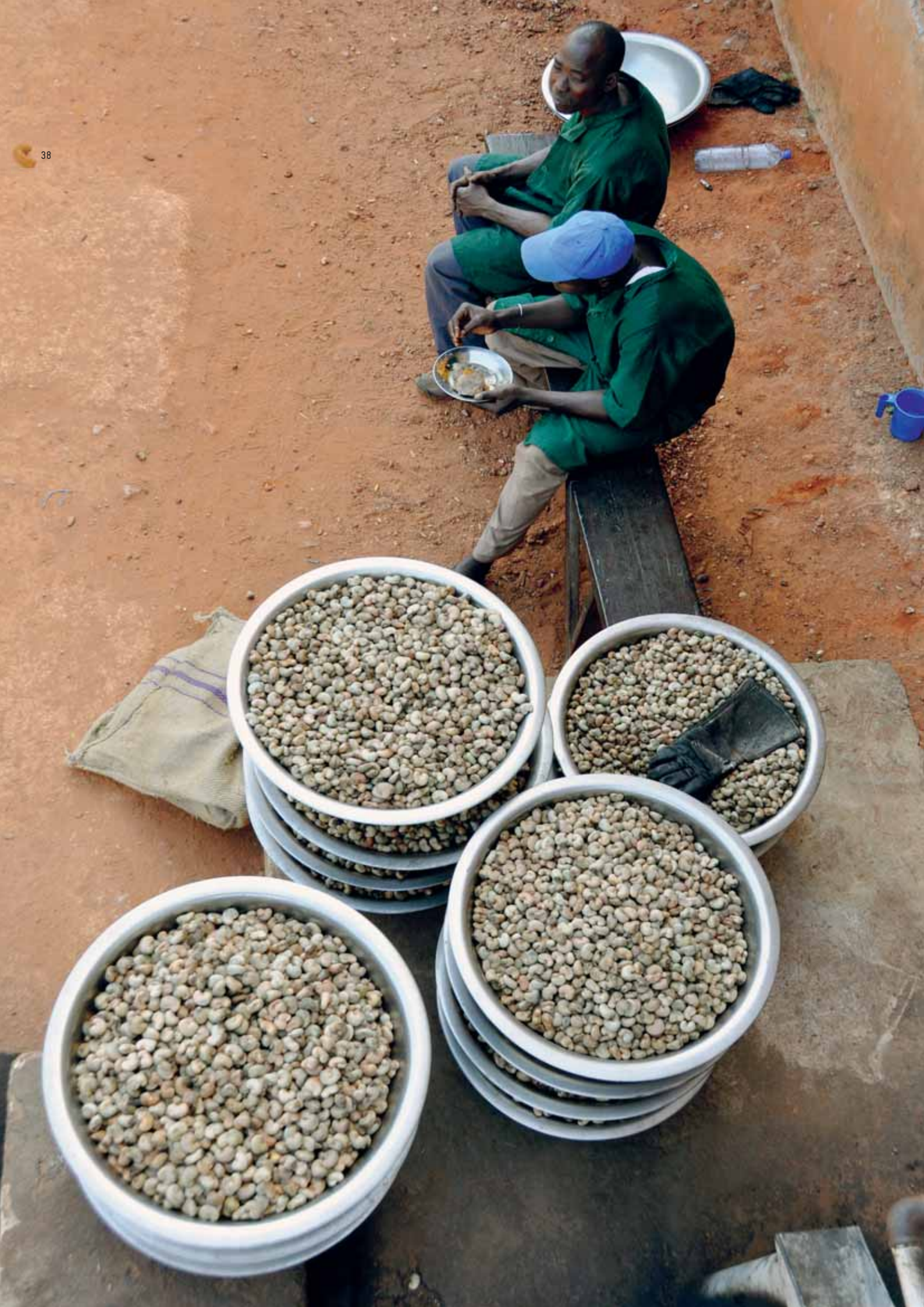
	Information gap
Producers	<ul style="list-style-type: none"> ► Area under cultivation ► Production level ► Economic profitability of cashew production ► Number of farmers involved in cashew production ► Motivation to join farmers' associations
Marketing channels	<ul style="list-style-type: none"> ► Structure of marketing and marketing channels: how exactly does the purchase of cashews from local farmers and their sale to processing companies/exporters work (quantitative and qualitative description) ► Factors influencing farm gate prices ► Transparency of marketing for farmers ► The market power of farmers, traders and processors
Processing companies	<ul style="list-style-type: none"> ► Annual turnover, costs and economic profitability
Credit	<ul style="list-style-type: none"> ► Demand for credit by different stakeholders in the cashew value chain







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List of Acronyms

ACA	African Cashew Alliance
ACi	African Cashew initiative
ADRA	Adventist Development and Relief Agency
AFD	Agence Française de Développement
AfDB	African Development Bank
AgDB	Agricultural Development Bank
CAPEAG	Cashew Processors and Exporters Association of Ghana
CDP	Cashew Development Project
CIA	Central Intelligence Agency
CRIG	Cocoa Research Institute of Ghana
CSIR	Council for Scientific and Industrial Research
DADUs	District Agricultural Development Units
ECOWAS	Economic Community of West African States
EDIF	Export Development Investment Fund
FASDEP	Food and Agriculture Sector Development Policy
FOB	Freight on Board
GDP	Gross Domestic Product
GLSS	Ghana Living Standards Survey
GoG	Government of Ghana
GPRS I	Ghana Poverty Reduction Strategy I
GPRS II	Growth and Poverty Reduction Strategy II
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH
ha	hectare
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
KNUST	Kwame Nkrumah University of Science and Technology
M&E	Monitoring and Evaluation
MOFA	Ministry of Food and Agriculture
MOTI	Ministry of Trade and Industry
NASAKA	Nsawkaw, Sampa, Kabile Cooperative Association
NGO	Non-Governmental Organisation
PIA	Poverty Impact Assessment
PPMED	Policy Planning, Monitoring and Evaluation Directorate
R&C	Ricerca e Cooperazione
RCC	Regional Coordinating Council
RCN	Raw Cashew Nuts
SRID	Statistics, Research and Information Directorate
t	tonne (metric)
TIPCEE	Trade and Investment Program for a Competitive Export Economy
USAID	United States Agency for International Development
WATH	West African Trade Hub
WTO	World Trade Organization

Appendix I: Inventory of Literature

Author(s)	Title of Document/Material	Usefulness of Information	Credibility of Data/Information
Addaquay, J., & Nyamekye-Boamah,K. (1998)	The Ghana Cashew Industry Study for MOFA	Outdated	Medium
AfDB (Agric. & Rural Development Dept. For Central & West Regions) – (2006)	Appraisal Report – Afram Plains Agricultural Development Project	High	High
AfDB (Country Department for West Region) – (2000)	Appraisal Report – Cashew Development Project		
Bank of Ghana (2008)	Exchange Rate Management in Ghana		
Berg, C., Bercher-Hiss, S., Fell, M.,Hobinka, A., Muller, U., Prakesh, S. (2006)	Poverty Orientation of Value Chains for Domestic and Export Markets in Ghana		
Brammer H. (1967)	Soils of the Accra Plains	Outdated since new studies on soil taxonomy and classification	Low
Behrens, Ruediger, GTZ (1996)	Cashew as an Agroforestry Crop	Medium (in parts outdated)	High
CDP (2004)	Annual Report	High	
CDP (2005)			
CDP (2006)			
CDP (2006)	Cashew Production Guide	Medium	Medium
CDP (2007)	Annual Report	High	High
CDP (2008)			
CDP (2009a)	Project Monitoring &Evaluation Report	Medium	Medium
CDP (2009b)	Project Progress Quarterly Report (April – June 2009)	High and brand new	High
CDP (2009c)	Status of Ghana Cashew Industry	High	
Dedzoe, C.D., Senayah, J.K., and Asiamah, R. D. (2001)	Suitable Agro-ecologies for Cashew (Anacardium occidentale Linn) Production in Ghana, West Africa Journal of Applied Ecology, Vol.2	High quality information despite being published eight years ago	
Dwomoh, E. A., Afun, J.V.K. and Ackonor, J.B. (2007)	Evaluation of Karate EC, Cyperdim EC, and Confidor SL for the control of Helopeltis schoutedeni Reuter (Hemiptera: Miridae) on cashew in Ghana, Journal of Science and Techn.,Vol. 27	High	
Dwomoh, E.A., Ackonor, J.B., Afun, J.V.K. (2008)	Survey of insect species associated with cashew (Anacardium occidentale Linn) and their distribution in Ghana, African Journal of Agricultural Research Vol.3 (3), pp 205–214	Brand new	
Dwomoh, E.A., Afun, J.V.K., Ackonor, J.B. (2008)	Laboratory studies of the biology of Helopeltis schoutedeni Reuter (Hemiptera: Miridae), a major sucking pest of cashew (Anacardium occidentale Linn), Journal of Cell and Animal Biology, Vol. 2 (3)pp 055–062		
Dwomoh, E.A., Afun, J.V.K., Ackonor, J.B., Agene, V.N. (2008)	Investigations on Oecophylla longinoda (Latreille) (Hymenoptera: Formicidae) as a biocontrol agent in the protection of cashew plantations, Pest Management Sc. 2009: 65:41–46	High	



Author(s)	Title of Document/Material	Usefulness of Information	Credibility of Data/Information
FAO (2001) (S H Azam-Ali and E C Judge, ITDG, Schumacher Centre for Technology and Development)	Small-scale cashew nut processing	High	High
Ghana Investment Promotion Centre (2007)	Doing Business in Ghana		
GTZ (2006)	Value Chain Analysis and "Making Markets Work for the Poor" (M4P) – Poverty Reduction through Value Chain Promotion.		
GTZ (2008)	Grant Proposal: Competitive African Cashew Value Chains for Pro-poor Growth		
Ghana Statistical Service (2008)	Revised Gross Domestic Product		
Ghana Statistical Service (2007)	Pattern and Trends of Poverty in Ghana 1991 –2006	Outdated because of current poverty situation – uses the consumer price index as an indicator	Medium
Ghana Statistical Service (2006)	Ghana Living Standards Survey (2005 –2006)	Outdated	
Ghana Statistical Service (2002)	Summary Report of Final Results–2000 Population & Housing Census	Update on popula- tion for 2009 would have been more use- ful	
Gyedu-Akoto, E., Oduro, I., Amoah, F.M., Oldham, J.H., Ellis, W.O., Opoku-Ameyaw, K., Ha- keem, R.B. (2007)	Locational and maturity effects on cashew tree gum production in Ghana, Scientific Research and Essays, Vol. 2(11) pp 499–501	High	
Gyedu-Akoto, E., Oduro, I., Amoah, F.M., Oldham, J.H., Ellis, W.O., Opoku-Ameyaw, K., Asante, F., Bediako, S. (2008)	Quality estimation of cashew gum in the production of chocolate pebbles, African Journal of Food Science Vol. (2) pp 016–020	Brand new	
Gyedu-Akoto, E., Oduro, I., Amoah, F.M., Oldham, J.H., Ellis, W.O., Opoku-Ameyaw, K., Ha- keem, R.B. (2008)	Physico-chemical properties of cashew tree gum, African Journal of Food Science, Vol.(2) pp. 060–064	High	High
IFAD (1977)	Ghana: Ghana Root and Tuber Improvement Programme, Appraisal Report Vol. 1	High	
Ministry of Food & Agriculture (2002)	Food & Agricultural Sector Development Policy	High	
National Development Planning Commission (2005)	Growth and Poverty Reduction Strategy (GPRS II) – Volume 1 Policy Framework	Medium, since the current government is updating the strategy	Medium
National Development Planning Commission (2003)	Ghana Poverty Reduction Strategy 2003–2005: An agenda for Growth and Prosperity, Vol.1	Medium	Medium
Nkum Associates (June 2009)	Report on the Internal Assessment of the Cashew Development Project	High – brand new	High

Author(s)	Title of Document/Material	Usefulness of Information	Credibility of Data/Information
Nyamekye-Boamah K. (1996)	Ghana : Cashew Nut Supply Base Study	Medium	Medium
Osei Akoto, S., Topper, C.P., Swatson, E. (2005)	Status of cashew production in Ghana and agronomic options for increasing production by smallholder farmers. Paper presented at Ghana Institute of Horticulture Annual Conference.	Medium	Low, since the status of the cashew industry has changed significantly
Opoku-Ameyaw, K., Appiah, M.R. (2000)	Improving the growth of cashew (<i>Anacardium occidentale</i>) seedlings interplanted into mature sheanut stands in Northern Ghana, Ghana Jnl. Agric. Sci, 33:159-164	Medium	Low, since above ground competition is being displayed
Opoku-Ameyaw, K., Amoah, F.M., Oppong, F.K., and Agene, V. (2007)	Determination of optimum age for transplanting cashew (<i>Anacardium occidentale</i>) seedlings in Northern Ghana, African Journal of Agricultural Research, Vol. 2(7) pp296-299	High	High
PPMED (2007)	Rural livelihood in Ghana. Preliminary survey to create outcome and impact indicators data base and to measure targeted development programmes	The survey was restricted to a few districts in the various agro-ecological zones	Medium
Red River Foods Inc. (www.redriverfoods.com)	Highlights of the cashew industry	Medium	High
SRID (2007)	Annual Survey Report	Medium	Medium
SNV (2006?)	(no title available) Comprehensive study on the cashew sector in Ghana	High	High
Topper C. P., Osei-Akoto, S., Swatson, E.. (2005)	Top-working unproductive mature cashew trees in Ghana. Paper presented at Ghana Institute of Horticulture Annual Conference	Medium	Medium
USAID, West African Trade Hub (2007)	Cashew Processing, Marketing and Consumption in West Africa	High	High

Appendix II: Further Sources of information

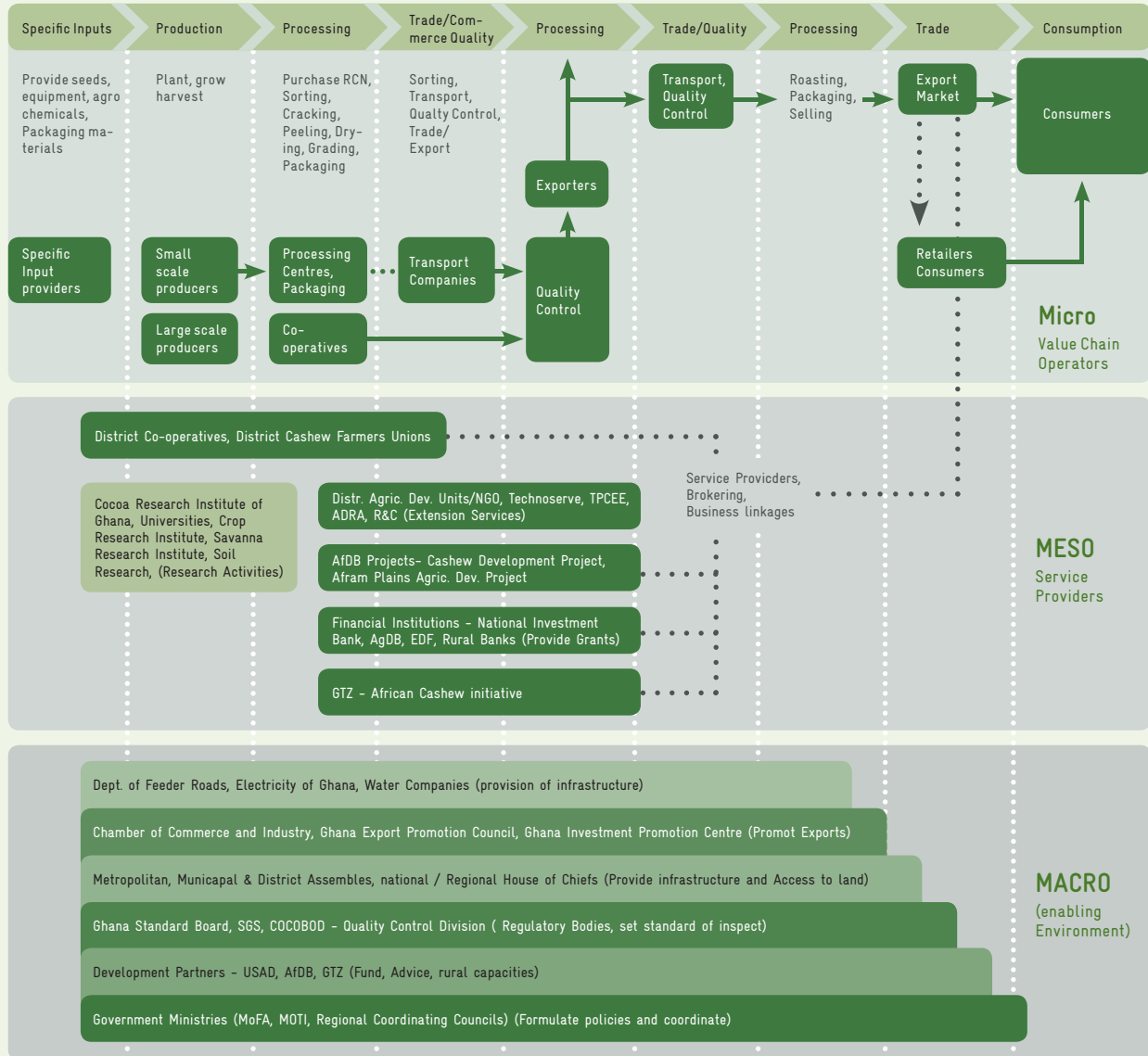
Adu, Kwaku, Farmer, Wenchi, September 2009
Das, M., Exporter/Trader, Accra, September 2009
Gallant, K., Processor/Roaster, Accra, September 2009
Gariba Justus, Processor, Bole, September 2009
Gyan, Peter, Farmer, Drobo, September 2009
Gyammera, K., Agro-chemical Supplier, Accra, September 2009
Nyamekye Amankwa, Processor, Awisa-Wenchi, September 2009
Smith, E.W., Processor, Afiencya, September, 2009

Appendix III: Co-operative Unions

Contact details for district cashew co-operative unions

No.	Name of Union	Contact Address
1.	Jaman North District Coop. Cashew Producers/Market Union Ltd.	P. O. Box 109 Sampa Brong-Ahafo Region
2.	Tain District Cooperate Cashew Farmers & Marketing Union Ltd.	P. O. Box 2 Nsawkaw Brong-Ahafo Region
3.	Kintampo North District District Coop. Food Farmers & Marketing Union Ltd.	P. O. Box 43 Kintampo Brong-Ahafo Region
4.	Kintampo South District Coop. Cashew Farmers & Marketing Union Ltd.	P. O. Box 2 Jema Brong-Ahafo Region
5.	Wenchi Municipal Coop. Cashew Farmers & Marketing Union Ltd.	P. O. Box 224 Wenchi Brong-Ahafo Region
6.	Jaman South Coop. Cashew Producing Processing & Marketing Union Ltd.	P. O. Box 5 Drobo Brong-Ahafo Region
7.	Nadowli District Coop. Cashew Farmers & Marketing Union Ltd.	P. O. Box 65 Sombo Via Kaleo Upper West Region
8.	Jirapa District Coop. Cashew Farmers & Marketing Union Ltd.	P. O. Box 1 Jirapa Upper West Region
9.	Yendi Municipal Coop Cashew Farmers & Marketing Union Ltd.	P. O. Box 1 Yendi Northern Region
10.	Bole-Bamboi District Coop. Cashew Farmer & Marketing Union Ltd.	P. O. Box 14 Bole Northern Region
11.	Sawla-Tuna-Kalba District Coop. Cashew Farmer & Marketing Union Ltd.	P. O. Box 21 Sawla Northern Region

Appendix IV: Comprehensive Illustration of the Cashew Value Chain and Marketing in Ghana



Notes



A series of horizontal dotted lines for writing notes.



Notes

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