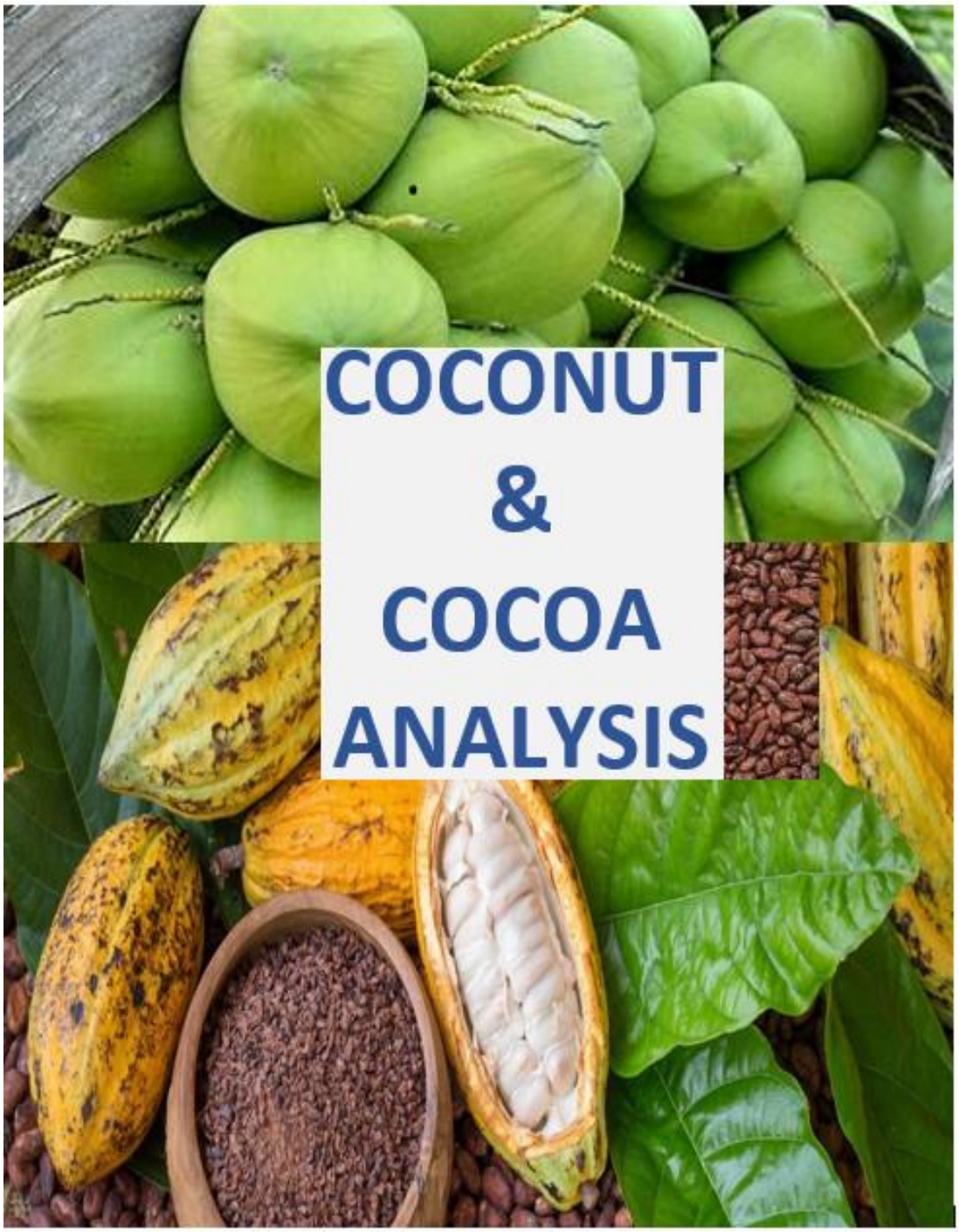

COCONUT
&
COCOA
ANALYSIS

Contents

EXECUTIVE SUMMARY

Value Chain	-Farmers -Input -Quality Assurance -Provide/Extension workers/Seed -LBC's
	Cocoa Marketing Company (CMC)
	Retailers
	Shipping Lines
	Haulage and Transport
Major Players	-PBC Limited -Olam (Ghana) Ltd -Transroyal (GH) Limited -Adwumapa Buyers Limited -Calli Ghana Co. Ltd -WAMCO
Supply Dynamics	In 2020/21, Africa's cocoa bean production amounted to around 4.1 million tons compared to an estimated amount of 3.2 million tons in the 2021/22 crop season. On a country level, the top two producers of cocoa beans are Côte d'Ivoire and Ghana, with Côte d'Ivoire producing more than twice the volume of cocoa beans of Ghana.
Demand Dynamics	Cocoa is sold to either Local Processing Companies or international grinders. New data from Ghana's Cocobod, the agency that coordinates the Cocoa production sector revealed that processing of the commodity from its raw form into other products has increased from 30% to about 34%. Ghana government is projecting to have about 50 percent of its cocoa processed into refined products such as Chocolate and Cocoa beverages.
Trade Dynamics	The major sales objective of COCOBOD is to sell to the external and local markets at the best prices obtainable and to undertake its marketing function in a manner which will maximize the foreign exchange revenue that will accrue to the country. Specifically in 2019, we earned about $2.2 billion, $2.3 billion in 2020, $2.8 billion in 2021, $2.3 billion in 2022 and as at the end of June 2023, revenue from cocoa beans and products stood at $1.5 billion, according to BoG data
Regulatory Dynamics	The COCOBOD is a key regulator and therefore, guides the conduct of the cocoa trade (internally and externally), ensuring that contractual parties in the value chain respect the rules of the trade in order to protect both producers and consumers
Risk Considerations	Poor Crop Yield which will reduce supply. Quality Control management. Congestion along the Supply Value Chain Cocoa Price Volatility.
	High Interest Rates for facilities.
	Exchange Rate Volatility
	Diversion of Produce/Smuggling
Key Success factors	-Good reputation with farmers. -Efficient management of costs. -Reliable agents and access to farmers. -Availability and access to good warehouses for storage.
	Continuous monitoring of the Cocoa quality along the value chain.
	Access to cheap funding and/or a larger share of allocated seed fund.

THE COCOA INDUSTRY IN GHANA

1.0 Background

The cocoa industry in Ghana has a long history and is vital to the country's economy. Ghana is globally recognized as a major cocoa producer, second only to Ivory Coast. Cocoa production has been a crucial part of Ghana's agricultural sector for over a century.

During the late 19th century, cocoa was introduced to Ghana by Tetteh Quarshie, a Ghanaian farmer who brought cocoa beans from Fernando Po and cultivated them in the Volta Region. The suitable climate, fertile soil, and favorable rainfall patterns in the Ashanti and Eastern regions of Ghana led to rapid expansion of cocoa cultivation.

To regulate the cocoa industry, the Ghana Cocoa Board (COCOBOD) was established in 1947. COCOBOD is responsible for cocoa production, marketing, and research. They set cocoa prices and purchase directly from farmers, ensuring fair compensation and industry stability. Farmer cooperatives provide support to small-scale cocoa farmers, including technical assistance, credit access, and training on sustainable farming practices.

Quality control is a priority in Ghana's cocoa industry. Initiatives like the Ghana Cocoa Quality Control Company (GCQCC) ensure adherence to international standards. Certifications such as Fairtrade and UTZ promote sustainable and ethical practices.

Challenges faced by the cocoa industry in Ghana include aging cocoa trees, low productivity, pests and diseases, inadequate infrastructure, and fluctuations in global cocoa prices. The government, in collaboration with international organizations, implements initiatives like the Cocoa Rehabilitation and Intensification Program (CRIP) to address these challenges.

Cocoa is a vital contributor to Ghana's economy, providing employment, foreign exchange earnings, and significant contributions to GDP. Efforts are made to promote environmentally friendly practices, improve farmers' livelihoods, and combat child labor. Ghana aims to increase cocoa processing domestically to capture more value from the industry.

In April 2023, merchandise exports for cocoa beans and products contributed $227.88 million to Ghana's GDP. Ghana produced an estimated 683 thousand tonnes of cocoa beans in the 2021/2022 crop season, representing 19% of Africa's total production.

This report therefore examines the performance, value chain, dynamics, outlook, and challenges of cocoa production in Ghana. It highlights the need for support and provides valuable insights for management decision-making in the sector.

1.1. The Cocoa Sector Supply Chain

The supply chain of Cocoa goes through a complex production process that includes farmers, buyers, transportation and trading, collection, certification, storage processors and chocolatiers and distributors.

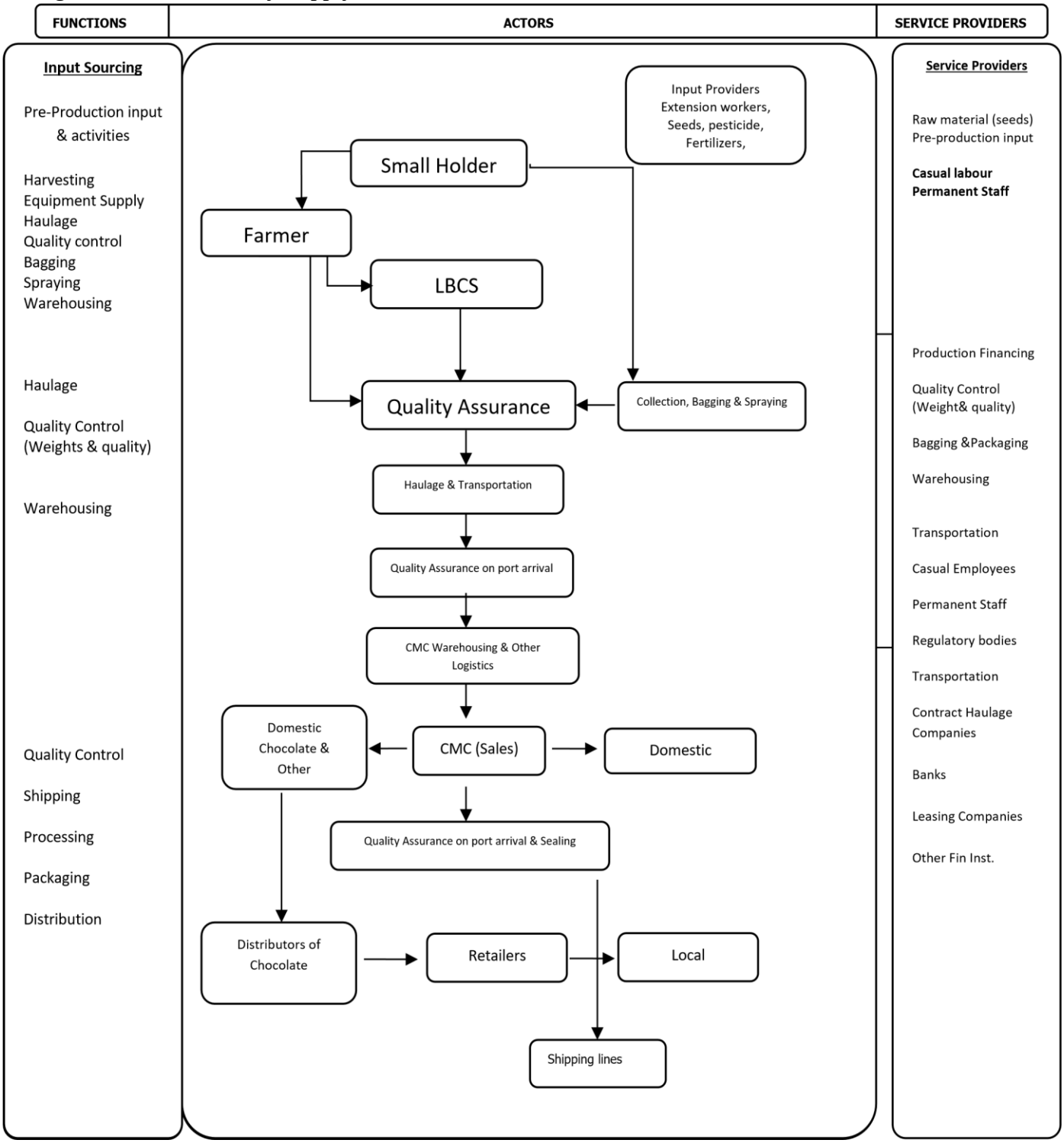
The cocoa industry supply chain structure is broken into activities within Ghana and outside Ghana as depicted in the flow chart below. It identifies and profiles the key actors and describes their specific roles within the supply chain. It explores the interrelationships between actors and the principal factors that influence behavior and drive decision-making. Overall, the cocoa supply chain can be subdivided along four major product categories, based on the stage of processing. The categories are the following:

- ✓ Cocoa beans (raw or minimally processed).
- ✓ Semi-finished cocoa products (cocoa paste/liquor, cocoa butter, cocoa powder).

- ✓ Couverture, or industrial chocolate.
- ✓ Finished chocolate confectionary products.

The structure below focuses on Ghana's domestic supply chain, which encompasses the production and marketing of cocoa beans and semi-finished cocoa products from their origin up to the point of export. The supply chain is comprised of a wide range of actors, from input suppliers to farmers, to traders, to transport and other service providers, to processors. Each has a fundamental role to play in the supply chain that brings cocoa and cocoa products to the market.

Figure 1: Cocoa Industry Supply Chain.



Prepared by authors with data from Sector Industry Analysis-Cocoa Sector Report 2023, By GCB Strategy & Research Dept.

1.2. Cocoa Supply Chain Analysis

Figure 2: Supply Chain Analysis.

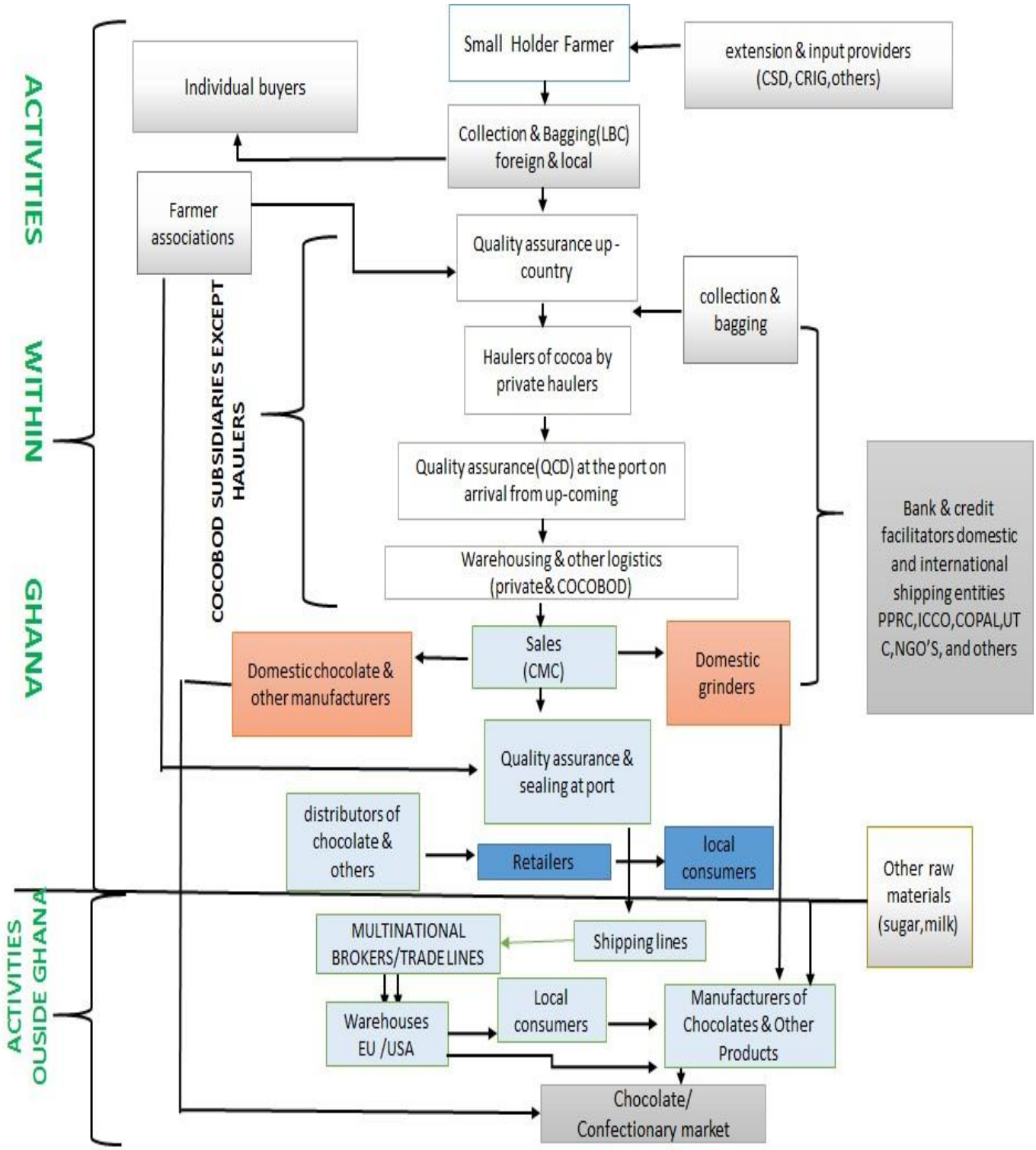


Table 1: Key Players in the Cocoa Supply Chain.

Key Agro-Allied input	Key Pre-Productions Input Importers	Key Pre-Productions Input Distributors	Key LBCs	Key Haulage Providers	Ware-housing	Local Chocolate Processors (Grinders)
Research	Dizengoff Ghana Limited	Kumark Company Ltd	PBC Limited	Global Haulage Company Ltd	Tarzan Enterprises	CPC
Small Farmers	Weinco	Wynca Sunshine Company	Armajaro (Gh) Limited	Gelloq Limited	Cocoa Marketing Company Ltd	Barry Callebaut
Agricultural Technical trainings	Chemico Limited	Cropstar Enterprise	Kuapa Kokoo Limited	Antrak Ghana	Global Haulage Company	Cargill
	Calli Ghana Co. Ltd	Rainbow Agrosciences Co Ltd	Olam (Ghana) Ltd	Vehrad Transport & Haulage Co.	Vehrad Transport & Haulage	WAMCO
Glyphosate &Paraquat (Weedicide)	Agrimat Limited	Bentronic Production Enterprise	Federated Commodities	ROM Logistics Limited		OLAM Cocoa Processing Ghana
Fungicide	Crop star Enterprise	Calli Ghana Co. Ltd	Transroyal (Gh) Limited	Trans-Royal Ghana		NICHE
Fertilizers	Golden stock Enterprise	Bayer S.A, Ghana	Cocoa Merchants (Gh) Ltd	Hippo Transport		Plot Enterprise
Machines	Wynca Sunshine Company	Loius Dreyfus Commodities Ghana	Ceres Demeter Ltd.	BAJ Freight & Logistics Limited		Cocoa Touton Processing
Insecticides	Cocoa Research Institute	Altimate Agrochemicals Company Limited	Kumankoma Company Ltd			Afrotopics Cocoa Processing
Seeds	Kumark Company	Bady Kaakyire Abrochemical	Cargill	BHJ Logistics		Bd Associates
Insecticides	Cocoa Rearch	Altimate AgroChemicals	Kumankoma Company			
	Reiss & Co. Ghana Ltd	Joyful Agro Services	ADM Company Ltd.			

1.3. Structure of the Sector

The Cocoa industry is structured along the production cycle which has 3 stages namely:

- Pre-Harvest.
- Harvest.
- Post-Harvest.

Pre-Harvest

This stage covers preparation of farmland and tending of existing plantations. With proper care and environmental conditions, cocoa trees begin to yield at their peak between 3 to 5 years and can continue at that level for about 10 years. The key players during the Pre-production stage are the farmers, providers of the agricultural inputs such as fertiliser, fungicide, pesticide, insecticides as well as agricultural and technical extension services rendered to the farmers by government through
COCOBOD.

Agricultural inputs are necessary to protect the crops from damage and improve yields from the farmland. Key providers of agricultural input are Dizengoff, Weinco and Chemico Limited who also provide support services to the farmers. Inputs are sometimes provided on credit as a loan to be paid after harvest or on a subsidized upfront charge or as a loan to be repaid on monthly instalments. Other independent importers and distributors of pre –harvest agricultural inputs are:

- Yara Ghana Ltd
- Golden Stork Ghana
- Sidalco Limited
- Calli Ghana Company Ltd
- Makhteshim Agan

Harvest

Cocoa is grown by mainly small-scale farmers and harvested in 2 seasons throughout the year (Main crop: September to March and Mid-Crop: May to August).

The cocoa pods are ready for harvesting when the pods become deep yellow for most varieties. Farmers remove pods from trees using long steel tools i.e. long handle knife called “go-to-hell” and machetes. The pods are cut open to remove the seeds using sturdy sticks and machete. About 20 to 50 beans are expected from a pod depending on the variety.

The beans are heaped and covered with banana leaves or mats. The layer of pulp that naturally surrounds the beans heat up and ferment the beans. Fermenting takes 3 to 5 days and then dried for several days under the sun. Unlike other origin countries where cocoa is dried by mechanical heating process, the Ghanaian farmer dries his produce using natural rays of the sun, as beans are evenly spread on a raised bamboo mat. Turning is regular and every part of the beans is exposed to the incident of sun rays. Coupled with complete fermentation, Ghana’s cocoa beans diffuse the best natural chocolate aroma and a perfect dry brown colour appearance.

The fermented beans are dried, packed and moved to the cocoa buying centres for sale to the Licensed Buying Companies (LBC’s). Ghana Cocoa is subjected to a minimum of three stages

of quality inspection prior to shipment. This gives added assurance and confidence to our customers to always buy Ghana Cocoa.

Post-Harvest

The post-harvest period is the period from the purchase of cocoa beans, quality assurance, transportation and sale. After drying, the beans are bagged and sold at a buying station or a local agent of the buying company. At the cocoa buying centres, the beans undergo Quality Control Test by the LBC buying agents following which acceptable cocoa is purchased by the agents. LBC's purchase cocoa from the farmers at a minimum producer price set by a Producer Price Review
Committee (PPRC). The LBC's then move the cocoa to the main COCOBOD sheds/ warehouses in the districts, where the cocoa is further weighed and tested for humidity levels by Quality Control Unit (QCU). After testing, acceptable cocoa is taken into the warehouse where the LBC's will be issued with a Cocoa Takeover Receipt (CTOR's) by the Cocoa Marketing Company.

The operations of all LBC's are closely monitored by the COCOBOD. The LBCs are required to abide by the regulations and guidelines set by COCOBOD. Prospective buyers of cocoa must apply to the COCOBOD for consideration to be licensed as buyers. Upon vetting by an independent committee set up for that purpose, successful applicants are granted provisional licenses, which may be converted into full licenses if the COCOBOD is satisfied that the LBC has adequate operational logistics for effective operation.

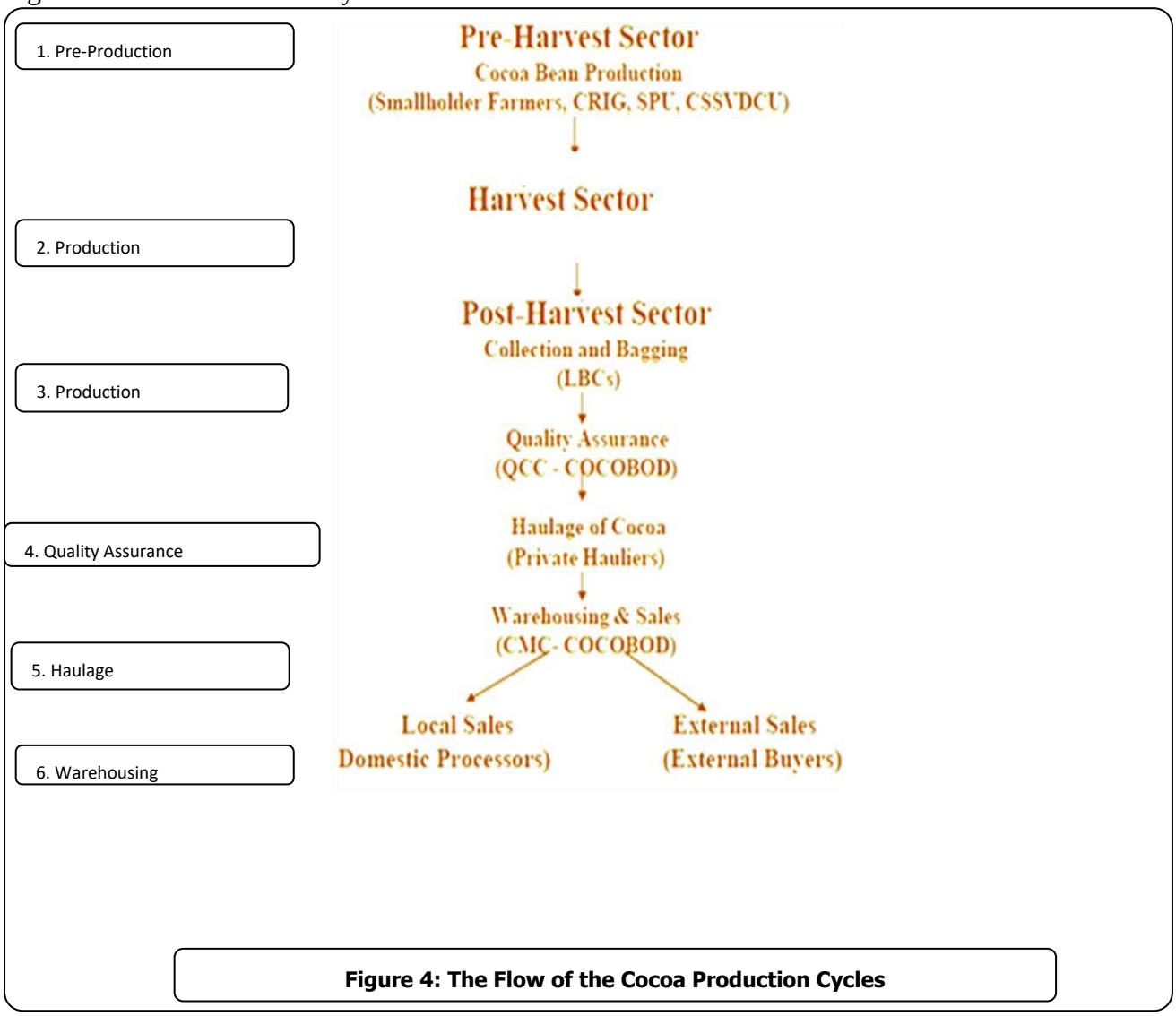
Warehousing

The LBCs sell their purchased cocoa to Cocoa Marketing Company (CMC) which issues a cocoa takeover receipt to them for payment by COCOBOD according to margins set by the PPRC. The cocoa is again checked for quality before being transferred to a pier warehouse of CMC at the port.

The various sheds and warehouses at the district and main collection sites are inspected on regular basis by staff of QCD to carry out disinfestations to remove damage to the bags of coco insect and rodents.

Outside of the CMC's warehouses, the main warehouse provider in Ghana is Tarzan Enterprises and Global Haulage. The warehousing section of the value chain has an estimated value of between GHS 30 - 40 million a year.

Figure 4: Cocoa Production cycle.



Source: Adopted from a Presentation by Emmanuel A. Opoku COCOBOD Research

Quality Control Unit

After purchase of the beans, the goods are inspected by the Quality Control Unit of COCOBOD to ensure that the cocoa meets the set standards for cocoa. Ghana Cocoa Board strives to meet the evolving trade quality required by their customers. Ghana remains the producer of the best quality bulk cocoa whiles the CMC maintains its reputation as the most reliable supplier of premium quality cocoa from origin. The minimum Quality standards set by Ghana Cocoa Board exceed the benchmarks set in the international cocoa market for the trade in Good Fermented Cocoa. Furthermore, quality control is rigorous. Ghana cocoa is subjected to a minimum of three stages of quality inspection prior to shipment. This gives added assurance and confidence to our customers to always buy Ghana Cocoa.

In achieving these set standards, the QCD agent certifies the produce with a tamperproof metal seal attached to the jute bag of weighed cocoa. The jute sack is perforated to allow for air circulation during transportation and maintain the 7% moisture level requirement as well as absorb excess moisture when the cocoa is being shipped in containers. The sack has the weight, country of origin and the content written on it. Once the bag is sealed, the cocoa remains in the custody of the buyer until it is taken over and it is a criminal offence to de-seal without the express approval of the Quality Control agent.

Table 2: Quality Specifications: for Ghana Cocoa Beans

	Maximum Defect Levels		
Grade	**Mouldy**	**Salty**	**Other Defects**
Grade 1	3%	3%	3%
Grade 11	4%	8%	6%

Source: Cocobod

Collection, Haulage & Storage.

The graded and sealed cocoa remains in bags until secondary evacuation by the LBCs using either their own trucks or private cocoa haulers to designated take over points such as Tema port with storage capacity of 255,000 tonnes (which is 33% of the total cocoa exports), Takoradi port with 233,000 tonnes (representing 30% of the total cocoa exports) and an inland port at Kaase, Kumasi also receives 67,000 tonnes (thus 9% of the cocoa exports). These take over points are the final destinations of cocoa products from the LBC's to COCOBOD.

Haulage

Registered private transport companies haul cocoa from the countryside to designated take over centres for a fee. They are given education in the handling of cocoa in transit. They are organised under Cocoa Hauliers Association of Ghana. The major transporters serving this sector are:

- Global Haulage.
- Gelloq Haulage.
- Antrak Ghana Ltd.
- Vehrad Transport & Haulage Co. Ltd.
- Global Cargo & Commodities Ltd

The price of haulage from each of the 65 cocoa districts to the ports is also regulated by the PPRC. This price is influenced by the mileage and nature of the road network to cover the cost of haulage from farm gates to takeover centers and the port.

Sales

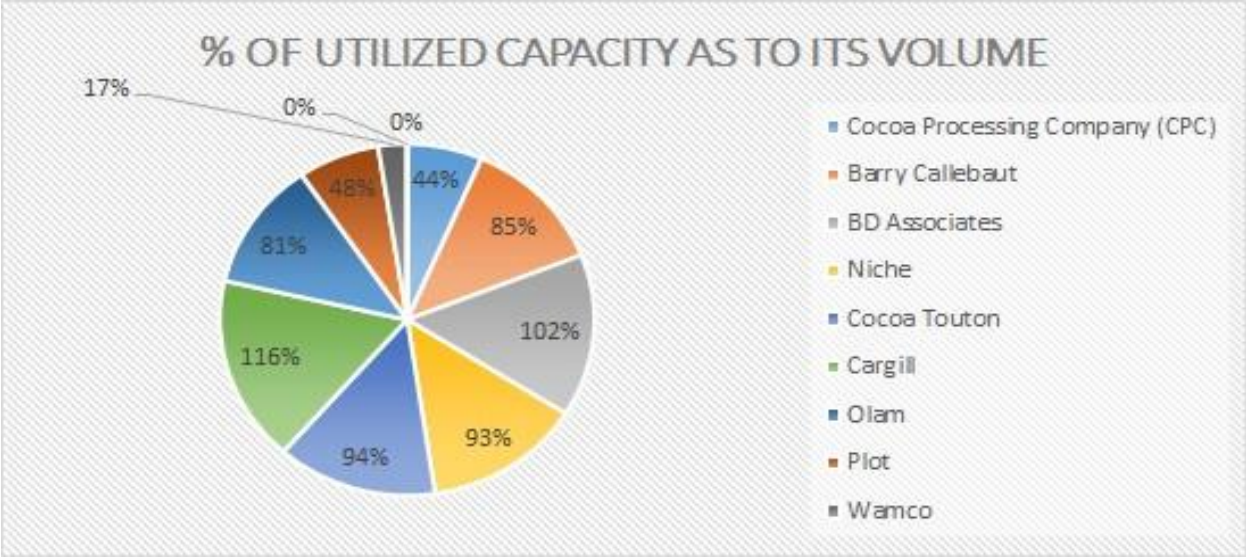
Cocoa is sold to either Local Processing Companies or international grinders. New data from Ghana's Cocobod, the agency that coordinates the Cocoa production sector revealed that processing of the commodity from its raw form into other products has increased from 30% to about 34%. Ghana's government is projecting to have about 50 percent of its cocoa processed into refined products such as Chocolate and Cocoa beverages. Cocoa beans which do not meet international requirements are typically sold to local grinding companies. Ghana's cocoa grinding sector is dominated by a handful of multinationals and the former state-owned grinder, Cocoa Processing Company (CPC).
Switzerland's Barry Callebaut, the USA's Cargill and OLAM Processing Ghana Ltd vie for the top share of the grind, with capacities of 67,000 MT, 65,000MT and 43,000 MT, respectively.

Table 3: List of cocoa processing companies, installed and utilization capacities in Ghana (Tonnes).

No.	Company	Installed Capacity	Utilized Capacity
1.	Cocoa Processing Company (CPC)	64,500.00	28,486.17
2.	Barry Callebaut	67,000.00	56,935.00
3.	BD Associates	32,000.00	32,535.24
4.	Niche	50,000.00	46,425.73
5.	Cocoa Touton	30,000.00	28,289.46
6.	Cargill	65,000.00	75,426.00
7.	Olam	43,000.00	34,733.00
8.	Plot	32,000.00	15,357.99
9.	Wamco	55,000.00	9,296.26
10.	Real Products	30,000.00	-
11.	Afrotropics	15,000.00	-
	Total	**483,500.00**	**327,484.85**

Source: Cocobod

Figure 5: Percentage of Utilised Capacity



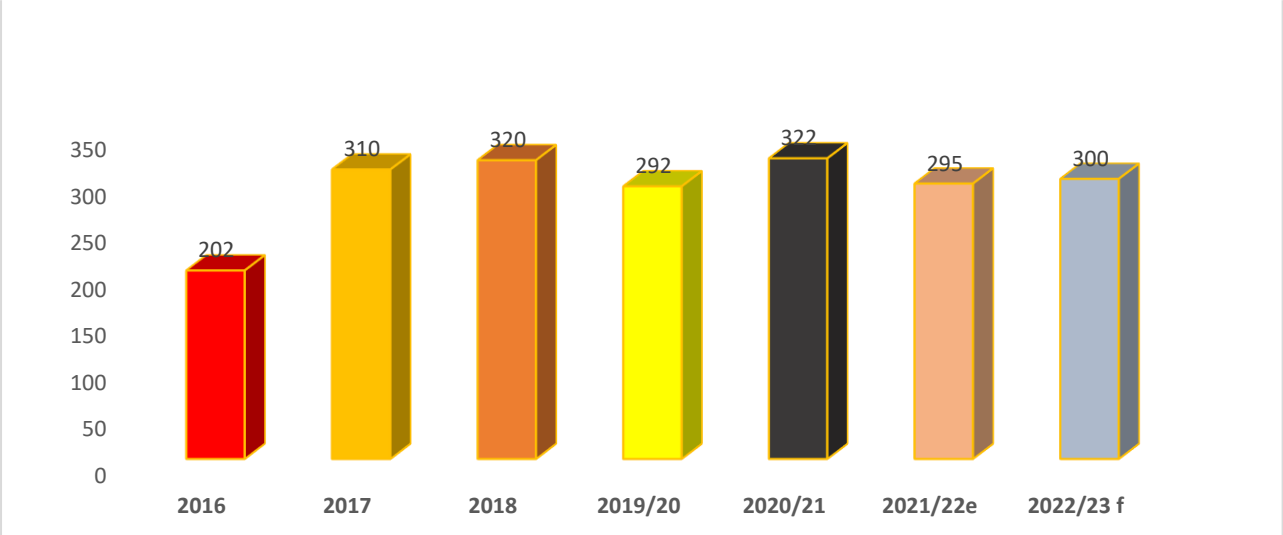
Source: Cocobod

According to the International Cocoa Organization (ICCO), Ghana's cocoa consumption capacity witnessed a decline of 8.39% in the 2021/22 period, consuming 295,000 MT of cocoa products. This contrasts with the 322,000 MT consumed in the previous year, 2020/21. However, the ICCO projects a rebound in consumption for the 2022/2023 season, with an estimated increase to 300,000 MT, indicating a growth rate of 1.69%. Meanwhile, the CEO of COCOBOD, indicated recently that the country is currently processing about 40% of cocoa beans produced locally and was, therefore confident of meeting the 50% target soon. Fears about weakening global economic activity and lifestyle changes led to shifts in consumer preferences and behaviours, such as dietary preferences, also contribute to the fall in cocoa consumption. A drop in consumption could be attributable to the impact of COVID,

stagnation-owing to high production costs, as well as disruptions to supply chains and consumer behaviour, upon whose smaller beans grinders depend on to make their margins.

Ghana has an extensive replanting programme of cocoa hybrids, which produce fatter beans for export; therefore, grinders may face an increasingly small supply of "smaller beans" in the future (which are traditionally discounted by 20% by COCOBOD). This may make the processing in Ghana commercially unviable. As of 2019, with the help of the cocoa consumption campaign which was launched by the Chief Executive of Ghana Cocoa Board (COCOBOD), Hon Joseph Boahen Aidoo, significantly helped Ghanaians to appreciate cocoa as a health-food increasing the consumption rate. The per capita consumption of cocoa which hitherto stood at 0.5kg significantly improved to about 0.52kg because of the support stakeholders have given to the campaign.

Figure 6: Cocoa Consumption in Ghana



Source: ICCO e= estimate, f = forecast

The bullets below provide a summary of some key processing companies in the country.

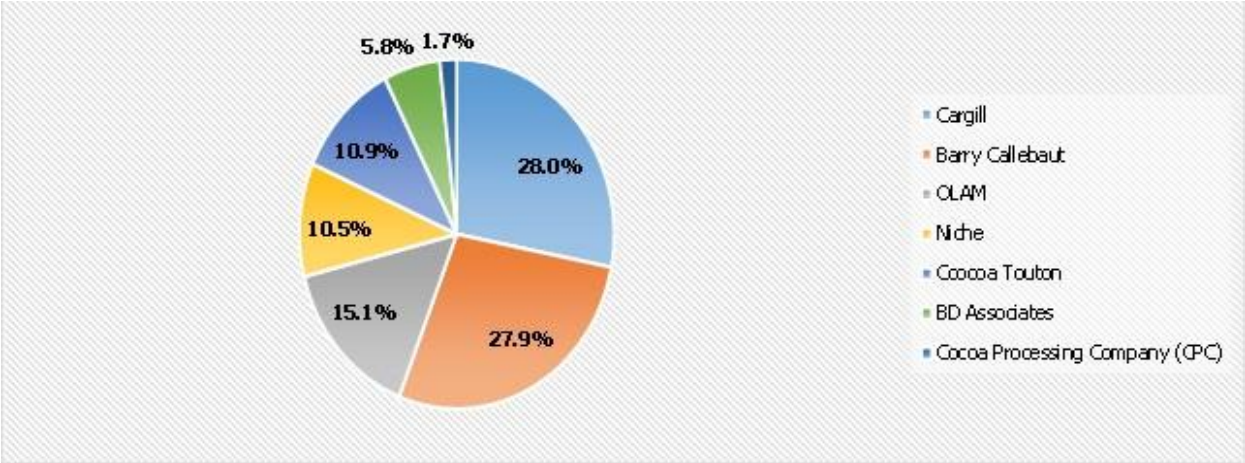
- **Cargill** has one of the largest portions of the local sales since it started operation in 2008. The company has invested $100 million to build a state-of the-art cocoa processing facility in Ghana to produce cocoa liquor, butter and powder. The factory is located in the port city of Tema.
- **Wamco**, a joint venture between German investors and the Ghanaian Government, has a capacity of 47,000 MT which was closed down in 2014 because of severe financial and management problems, but was reopened by Nana Addo Dankwa Akufo-Addo in fulfilment of a campaign pledge he made in the run-up to the December 2016 elections, now producing at a profit of $2 million capacity.
- **Barry Callebaut** only produces cocoa liquor and nibs at its Tema-based factory (which are intended for sale to other domestic subsidiaries). In contrast, Cargill produces cocoa cake and butter, while CPC produces all cocoa products (liquor, cake, butter and powder).
- **France's Cocoa Touton Processing Company (CTPC)**-Touton's first cocoa processing plant, CTPC, was opened in April 2015 in Ghana. Representing an investment of 17 MILL €, it employs 135 workers and has a capacity of 30 000 MT. The plant produces cocoa liquour for export. In addition, a tolling agreement with CPC offers an additional grinding capacity of 40 000 MT. **Cocoa Processing Company (CPC)**, a subsidiary of COCOBOD has an installed capacity of 65,000 MT. The Directors of CPC have been in discussions with Africa Export-Import Bank (Afreximbank) to obtain a US$86.7m loan facility. Management plans to use this loan to settle amounts due to the syndicate of banks

led by Absa and Prudential Banks, US$27.44m and US$2.76m respectively, support its working capital requirements and retool its property, plant, and equipment to expand production capacity. Management expects the agreement to be signed by December 2023 and the first tranche disbursed by January 2024.This was revealed in their 2021-2022 annual report.

- **Plot Enterprise (Gh) Limited** has put up a factory in the highest cocoa producing area of western

Ghana to process cocoa beans into cocoa butter and cocoa powder with a capacity of 30,000 MT.

Figure 7: Cocoa Beans Processed by Factories



Source: Cocobod

Table 4: Market Share of Processed Companies

Company	Processed Beans (MT)	% Share	Grindings Export Revenue $ (FOB)	% Share
Cargill	56,617	28.0%	203,685,793	33.6%
Barry Callebaut	56,408	27.9%	162,059,043	26.8%
OLAM	30,488	15.1%	93,500,960	15.4%
Niche	21,149	10.5%	67,413,664	11.1%
Ccocoa Touton	21,999	10.9%	42,722,232	7.1%
BD Associates	11,717	5.8%	35,450,565	5.9%
Cocoa Processing Company (CPC)	3,490	1.7%	631,255	0.1%
Toal	**201,869**	**100.00%**	**605,463,512**	**100.0%**

Source: Cocobod

1.4. Key Players-LBCs

As per Cocobod's data, there are currently more than 46 Licensed Buying Companies (LBCs) in active operation. Notably, the largest among these LBCs commands a substantial 31% share of the market and is publicly traded. Concurrently, the two primary private buyers collaboratively hold a noteworthy quarter (25%) of the market. Of particular interest is the fact that these LBCs acquire over 80% of the beans in their raw form, suggesting that the value addition occurs in global markets beyond their borders. Dominating the landscape of cocoa procurement is the Produce Buying Company Limited (PBC), asserting its prominence with a significant market share of 31%. In close succession, Armajaro Ghana Limited and Olam

Ghana Limited secure the second and third spots, boasting market shares of 14.01% and 10.66%, respectively. The remaining segment, constituting 44% of the market shares, is distributed among various entities, including Plot Enterprise, ADM Company Ltd, Ceres Demeter Ltd, Cargill, Delfi Ventures, and other LBCs.

Table 5: Key Players.

LICENSED BUYING COMPANIES (LBCs)	
PRODUCE BUYING COMPANY (PBC)	BROSAMAN COMPANY LTD. (BRCL)
FEDERATED COMMODITIES LTD. (FCL)	NYONKOPA COMM. BUYERS LTD. (NCBL)
KUAPA KOKOO LTD. (KKL)	M-GHAZZALLI GHANA LTD. (BRCL)
ADWUMAPA BUYERS LTD. (ABL)	NTHC COMMODITIES LTD. (NTHC)
TRANSROYAL GHANA LTD. (TGL)	LIBERTY COMMODITIES LTD. (LCL)
COCOA MERCHANT GH. LTD. (CMGL)	EDEBO KOKOO COMPANY (EKC)
OLAM GHANA LTD. (OLAM)	FARMERS ALLIANCE CO. LTD. (FACL)
ARMAJARO GHANA LTD. (AGL)	HYPERLINK COMPANY LTD. (HCL)
ROYAL COMMODITIES LTD (RCL)	UNICOM COMMODITIES LTD. (UNICOM)
SIKA ABA BUYERS LTD. (SABL)	CERES DEMETER LTD
EVADOX LTD. (EVL)	NKWA DUA GHANA LTD. (NDGL)
YAYRA GLOVER LTD. (YGL)	FLUDOR GHANA LTD. (FGL)
CDH COMMODITIES LTD. (CDH)	KOKOO ABA BUYERS LTD. (KABL)
UNIVERSAL CO-OPERATIVE LTD. (UCCL)	FIRST SKY COMPANY (FSL)
SPLENDID BUSINESS SERVICES (SBS)	YEMON GHANA LTD. (YEMON)
FREDAKO COCOA COMPANY LTD. (FCCL)	DEMETER COMMODITIES LTD. (DEMETER)
FARMERS STAR LTD. (FSL)	AKYAAMAH AND SONS (AAS)
KUMANKUMA COMPANY LTD. (KCL)	DELFI VENTURES
FORTUNE TREE COMPANY LTD. (FTCL)	FIVE STAR PRODUCE BUYING CO. (FSPBC)
AKUOTECH GHANA LTD. (AKCL)	SASSH ALLIANCE LTD. (SASSH)
ABREMPONG COMMODITIES LTD. (ABREMPONG)	ADINKAFO COMPANY LTD. (ADIKANFO)
NHYIRA DUA GHANA LTD. (NHDGL)	CARGILL KOKOO SOUCING LTD. (CARGILL)
PLOT ENTERPRISE	ADM COMPANY LTD

Source: Cocobod

The fixed minimum purchase price that COCOBOD stipulates means that these companies compete on non-price issues, such as the provision of credit and technical assistance. It can also mean more questionable practices, such as incorrect grading of cocoa quality (and with it pricing). However, the sector is hard to monitor and the fixed-price environment will always lead to inefficiencies.

1.5. Supply Dynamics

Although cocoa beans originated from South America, most cocoa bean production is attributed to

Africa. In 2020/21, Africa's cocoa bean production amounted to around 4.1 million tons and an estimate amount of 3.6 million tons in the 2021/22 crop season. On a country level, the top

two producers of cocoa beans are Côte d'Ivoire and Ghana, with Côte d'Ivoire producing more than twice the volume of cocoa beans of Ghana.

Table 6: Production of Cocoa Beans by Country (Thousand Metric tonnes)

	2020/21		Estimates 2021/22		Forecasts 2022/23	
Africa	4054	77.3%	3589	74.5%	3727	74.8%
Cameroon	292		295		290	
Côte d'Ivoire	2248		2121		2200	
Ghana	1047		683		750	
Nigeria	290		280		280	
Others	177		210		207	

Source: ICCO f = forecast

Supply Chain Procedures

The industry is 100% regulated by COCOBOD and Cocoa is delivered to COCOBOD by LBCs in two ways:

Primary Evacuation

The LBCs use their own vehicles or outsource tractors/ trucks to transport the cocoa from the villages/ farm gates to the district depots or centres.

Secondary Evacuation

The cocoa produce is transported from district depots or centres to designated centres known as Takeover Centres. To ease the congestion of trucks from the farm gates to the depots (or Takeover Centres), evacuation quotes are issued to the LBCs to regulate the specified numbers of truck that each LBC sends to any takeover centre each day.

Quality Control division (QDC) is invited to inspect the quality of the beans and ensure it complies with regulatory policies. LBCs receive the Cocoa Take over Receipts (CTORs) after the Cocoa is handed over to Cocoa Marketing Company (CMC).

The calculation of the bonus and the distribution of the bonus to the cocoa farmers is perhaps the most innovative institutional arrangement to influence price stability and fairness within the cocoa chain. The Ministry of Finance states that farmers are protected from price falls, and only positive adjustments in the producer price is possible.

Terms of Trade for the agro-allied sector

Most importers of agro chemicals enjoy supplier credit from the sellers of up to 182 days, but they will have to make a 30% down payment of the cost of the goods before shipment. Some of the importers also use 91-day cycles for the payment of their goods while retailers enjoy up to 30 to 45 days suppliers' credit from the distributors.

Buyer Power & Terms of trade with customers

The industry has very little leverage over its sole buyer i.e. CMC, a subsidiary of COCOBOD. The Government (through COCOBOD) determines the price at which it would buy produce from LBCs.

COCOBOD secures external funding for the cocoa season and distributes such funds to Licensed Buying Companies (LBCs) at rates slightly below the market rate to finance their operations (16%18% per annum interest (±1%).

In recent times, the Government has favorably considered the LBCs, paying bonuses to them when international prices are above budgetary expectations. This arrangement assures the players of a constant source of financing to carry on their business and to discourage the diversion of cocoa beans to neighbouring countries, which may offer incentives to farmers and LBCs.

COCOBOD, recently finalized a syndicated loan agreement worth $1.13 billion to fund the procurement of cocoa beans for the upcoming 2022/2023 crop season. This substantial loan was successfully secured through the collaboration of more than 20 financial institutions. The agreed interest rate stands at 1.75%, along with the inclusion of the Secured Overnight Finance Rate (SOFA). Peter Mac Manu, the Chairman of COCOBOD, shared that the board aims to achieve a production volume of 850,000 metric tonnes this year, following the failure to meet the target set for the previous year. Several prominent banks participated in this loan arrangement, including Standard Chartered Bank, Rabo Bank, Ghana International Bank, and Natixis, a French investment bank.

The rest are Industrial and Commercial Bank of China and one of Japan’s largest banks, MUFG. The firms are expected to underwrite and lead other banks in securing the funds.

In 2021/2022, Ghana was estimated to have produced about 689 thousand metric tons of cocoa beans. This is expected to increase in 2022/2023 to about 750 thousand metric tons. Production is set to be up due to efforts to improve upon productivity with the free provision of hybrid seedlings to cocoa farmers by COCOBOD over the years. Moreover, COCOBOD continue to provide free of charge fungicides and insecticides to cocoa farmers for spraying their cocoa farms against pests and diseases which are expected to boost production this year. In spite of the stability in the world market price of cocoa, the producer price of cocoa beans for the main crop of the 2022/23 season in Côte d'Ivoire was announced at 900 XOF/kg, which is equivalent to US$1,364 per tonne while in Ghana, cocoa farmers are expected to receive 12,800 Ghana cedis per tonne or US$1,251 per tonne for their cocoa beans.

Notwithstanding the above, COCOBOD’s attractiveness to international money market reflects the body’s sound credit history, the use of future contracts as loan guarantees, and Ghana’s political stability. The government in December 2022 announced a Domestic Debt Exchange Programme (DDEP) which was one of the conditions required to unlock a US$3 billion IMF programme with affected all government securities including Cocoa Bills. In view of that the COCOBOD had to launch a debt securities exchange programme (DDEP) to restructure debts totaling GH₵7.93 billion to enhance its financial situation. Under this initiative, COCOBOD encouraged holders of its short-term debt securities, to voluntarily exchange them for longer-term debt securities with lower average interest rates. This change caused banks to considerably reduce the value of their cocoa bills and led to a significant drop in interest income for these banks. However, this debt exchange has created challenges for domestic investors. They were already dealing with substantial losses in real returns due to high inflation over the years and the sharp depreciation of the Ghana cedi against the US dollar. It's hoped that these series of losses that investors are grappling with will ultimately play a vital role in revitalizing the activity within the local financial market.

Export Destinations

In 2022, Ghana emerged as the second-largest global exporter of Cocoa Beans, with total exports amounting to $2.3 billion. Additionally, Cocoa Beans ranked as the third most exported product from Ghana during the same year. The primary destinations for Ghana's Cocoa Beans exports included the Netherlands ($230 million), Malaysia ($216 million), the United States ($130 million), Brazil ($115 million), and France ($96.3 million). Notably, between 2020 and 2022, the fastest-growing export markets for Ghana's Cocoa Beans were Malaysia ($99.4 million), Brazil ($57 million), and the Netherlands ($51.4 million).

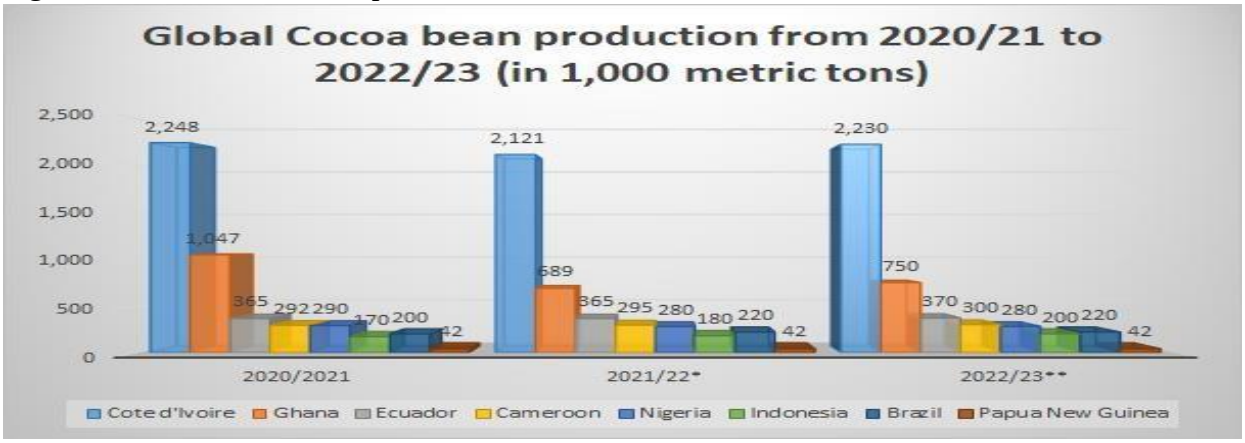
Côte d'Ivoire is currently the leading country in cocoa grinding, as it accounted for an estimated 710,000 metric tonnes (MT) in the 2021/22 season, which represents 14.21% of the global total. This figure marks an increase from the previous season's estimated grinding volume of 620,000 MT, accounting for 12.52% of the world total. The forecast for the 2022/23 season suggests that cocoa grinding in Côte d'Ivoire is expected to reach 750,000 MT.

Ghana’s grind also inched up from 292, 000 MT (6.20% of world total) in 2018/19 to 320,000 MT (6.69% of world total) in 2019/20, reflecting effectiveness of strategies and programs adopted to increase production and quality. This is estimated at 322,000 MT for 2021, estimated at 295,000 MT in 2022 and projected to reach 300,000 MT in 2023.

Figure 8: Ghana’s Cocoa Beans Shipment by Destination

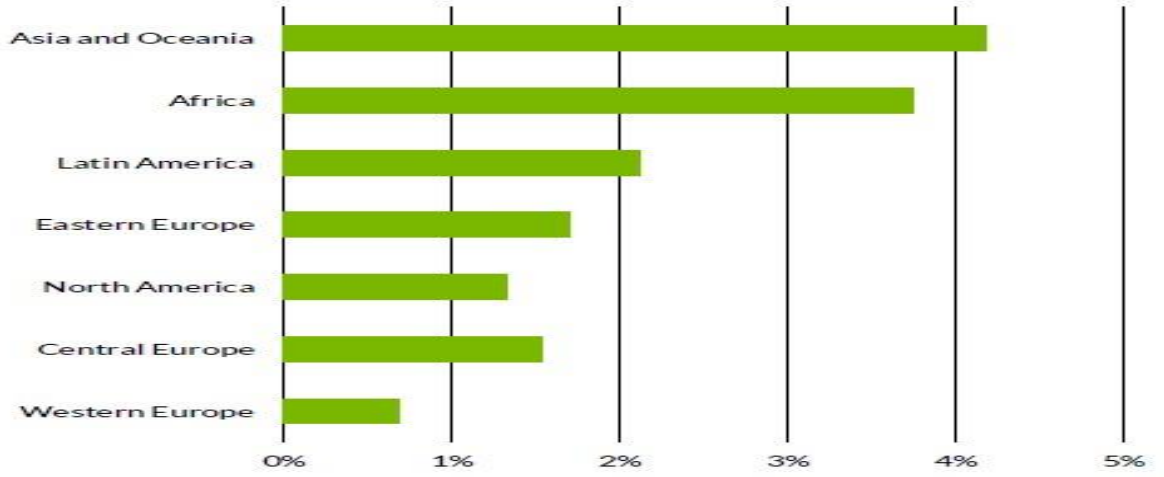
Source: Observatory of Economic Complexity (OEC)

Figure 9: Global cocoa bean production



Source: Statista

Figure 10: Cocoa demand growth by region



Source: LMC International Ltd

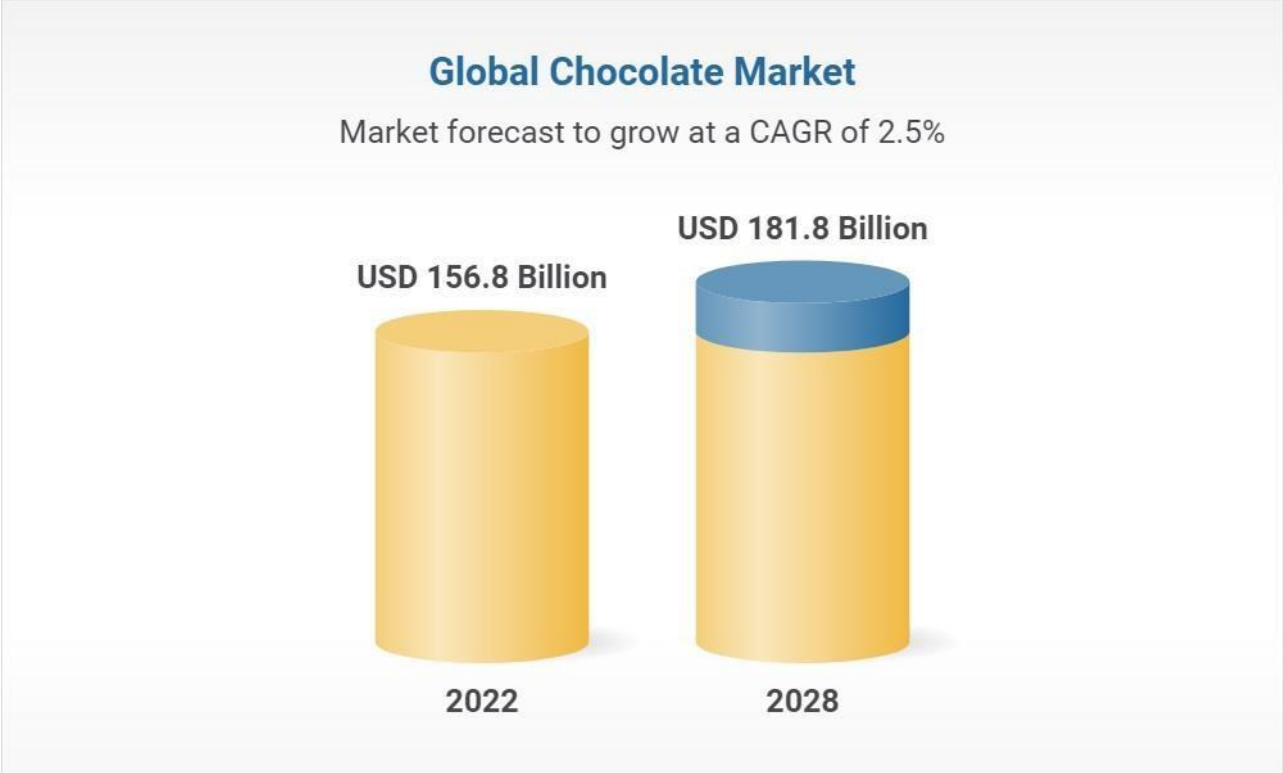
Supplier Power & Terms of trade with suppliers

Although the supplier concentration is low, as there are hundreds of local cocoa farmers that supply cocoa to the LBCs, government regulations limit the industry's leverage over suppliers. The Government's pricing regime determines buying prices and margins along the chain. Ghana, cocoa farmers are expected to receive 12,800 Ghana cedis per tonne or US$1,251 per tonne for their cocoa beans. Ghana has increased its cocoa producer price from GHS660 to GHS800 per bag for its 2022/23 crop. The new farm gate price which represents a 21% enhancement of the 2021/22 rate took effect on the 7th October 2022. Ghana Cocoa Board thus will be buying tonne of the key chocolate ingredient from farmers at GHS12, 800 per tonne representing 89.99% of the net FOB value. The announcement comes after Ghana's neighbor Ivory Coast raised its cocoa producer price by 9% from 825CFA to 900CFA ($1.33) per kilogram in September 2022.This rate is influenced by the mileage and nature of the road network to cover the cost of haulage from farm gates to takeover centers and the port. LBCs often pay cash for produce; to hasten delivery of produce to COCOBOD; and to enable them obtain payments.

Product elasticity

Demand for cocoa products is moderately elastic as the product is not a commodity that is essential to life. Nevertheless, over the last 5 years; demand for cocoa has been steadily growing. The global cocoa and chocolate market size was valued at USD 156.8 billion in 2022. The market is projected to grow to USD 181.8 billion by 2028. The increase represents a compound annual growth rate of 2.5% in the forecast period on the back of strong income growth in emerging market economies. Prices have also increased over the same period.

Figure 11: Global Cocoa and Chocolate Market



Source: Researchandmarkets

Product durability

The industry's products are moderately perishable, as some products may go bad if not well stored. To ensure the durability and the highest quality of the product, the following activities in the value chain must be executed with maximum attention and precision. Pre-harvest (environment, planting materials, pests and diseases)

- Harvesting (including pod opening, storage)
- Fermentation
- Drying
- Storage
- Quality Control – involve farmers
- Transportation and Shipping

The shelf life of cocoa products, depending on the type of product and the storage conditions, can range from less than two to four months.

Availability of Substitutes

There are a number of substitutes, which may be used in place of cocoa products. Some of these include Coffee & Tea (for Cocoa drinks), Aloe Vera, Coconut Milk and Palm extracts (in place of Cocoa Butter) etc. However, for chocolate bars, which account for a significant chunk of cocoa consumption, there are no popular, economically viable substitutes.

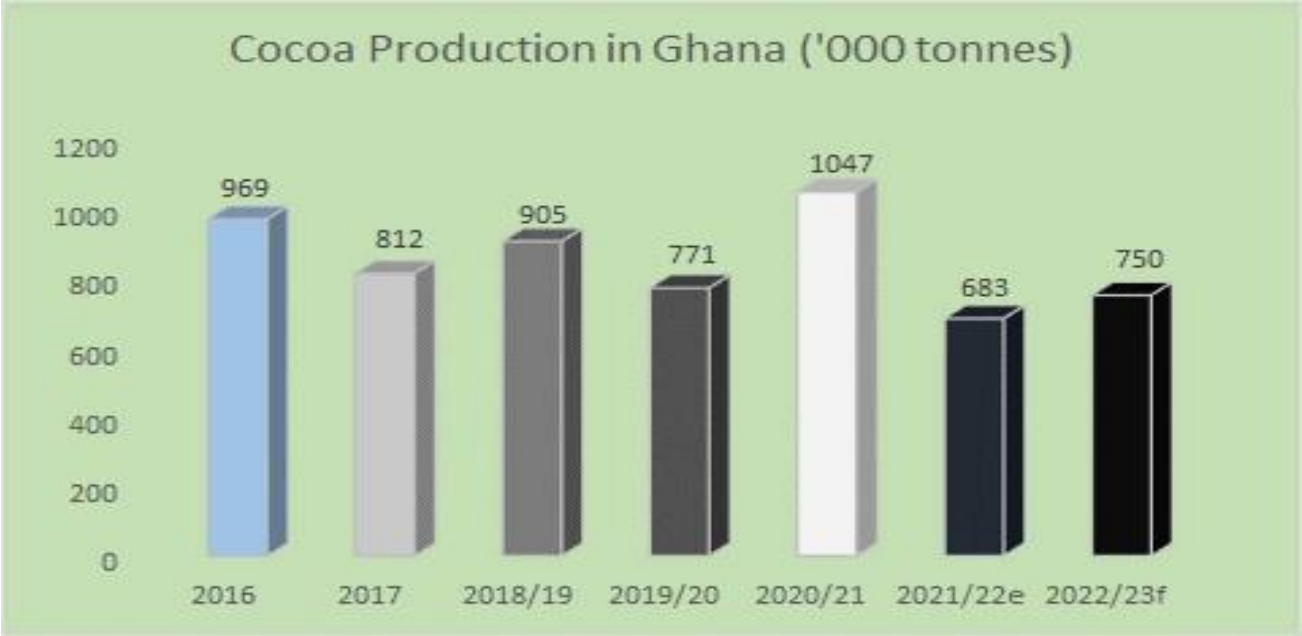
Industry Lifecycle Stage

The industry is perceived to be at a late phase of the early development stage. Demand for the industry products is strong and still growing; additional investment required by the industry players is considerably low and a supply gap still exists.

1.6. Demand and Distribution Dynamics

Demand for cocoa internationally, has been high and this is expected to continue. One of the key drivers for the growth in demand in the cocoa industry is the increasing global popularity of the product for its health benefits.

Figure 12: Volume of Sales 2016 – 2022/23



Source: ICCO e= estimate, f = forecast

Sales volumes were estimated at almost 683,000 metric MT in 2022 from about 1,047,000 metric MT in 2021. This drop in production was due to less conducive weather conditions and the outbreak of swollen shoot disease. The yearly Harmattan wind blowing from across the Sahara was particularly harsh in 2022 and added to a period of severe drought, stunting growth of cocoa pods according to exporters, pod counters and sources at industry regulator COCOBOD told Reuters.

Table 7: Production of cocoa beans (thousand tonnes)

	2020/21		Estimates 2021/22		Forecasts 2022/23	
Africa	4054	77.3%	3589	74.5%	3727	74.8%
Cameroon	292		295		290	
Côte d'Ivoire	2248		2121		2200	
Ghana	1047		683		750	
Nigeria	290		280		280	
Others	177		210		207	
Americas	933	17.8%	963	20.0%	988	19.8%
Brazil	200		220		210	
Ecuador	365		365		400	
Others	368		378		378	
Asia & Oceania	254	4.8%	266	5.5%	265	5.3%
Indonesia	170		180		180	
Papua New Guinea	42		42		42	
Others	42		44		43	
World total	5242	100.0%	4818	100.0%	4980	100.0%

Source: ICCO Quarterly Bulletin of Cocoa Statistics, Cocoa year 2022/23

1.7. Industry Dynamics

Pricing Structure

COCOBOD sets guaranteed producer prices at the start of each season by forward-selling 70% of next season's crop, with the remaining 30% sold in spot sales.

In order to finance bean purchases, COCOBOD raises funds in a syndicated loan that has attracted consistent and growing interest from international banks. COCOBOD's syndicated loan has always been oversubscribed by local and internationals banks, and it remains the all-time largest soft commodity trade finance deal in Sub-Saharan Africa.

Each year, COCOBOD arranges pre-export financing for the industry to aid the LBCs in achieving their purchasing targets. These monies are given to the LBC's (as seed fund) to support their working capital based on their market shares and to be returned at the end of the season after they have made their sales (to support their purchases from the farmers). To qualify for a seed fund, an LBC should operate in the sector on its own for 3 years.

Pricing

Pricing of cocoa is done by a committee known as Producer Price Review Committee (PPRC) which meets quarterly to review the cocoa prices payable to the farmers. This committee comprises of Government, COCOBOD, LBC's and farmer's representatives. The downside however, is a cap on the profits attributable to LBCs as they lack the authority to set higher prices, even in the event of a shortage of supply.

The government of Ghana has raised the producer price for cocoa beans by 21% for the 2022/2023 cocoa crop season. The former Minister for Agriculture, Dr. Owusu Afriyie Akoto made the announcement and said the price has been increased from 10,560 cedis for the last two seasons, to 12,800 cedis ($1,248.78) per tonne for the main crop of the 2022/23 season, effective from Oct. 7, 2023.

The Minister noted that despite the 21% increase, the price is lower than the 900 CFA francs ($1.36) per kilogram set by neighbouring top cocoa producer Ivory Coast on Sept. 30, 2022 raising a risk that cocoa could be smuggled across the border to be sold at higher prices.

1.8. Production Dynamics

Background

Ghana remains the second largest producer of Cocoa in the world (after Cote d'Ivoire) producing 1,047,000 MT, for the 2021/22 and a 683,000 MT for the 2022/23 season.

Ghana, the world's second- largest coco growing country has forecast 750,000 tonnes of cocoa production in the 2022/23 season. The Ghana Cocoa Board (COCOBOD) said the country's graded and sealed cocoa arrivals stood at 350,000 tonnes since the start of this year's harvest on 1st October, 2022 up 76% from 199,000 tonnes in the same period the previous season.

The Cocoa regulator said the producer price to be paid at all buying centres is GHS384 per load of 30 kilograms for grade 1 and 2 cocoa beans or GHS800 per bag of 64 kilogrammes. A tonne of 16 bags is however going for GHS12, 800 ($1207.10). In the latest report (December 2022), the International Cocoa Organisation (ICCO) said that cocoa production during 2021-22 dropped yearon-year in both Cote d'Ivoire (-6%) and Ghana (-34%) as a result of periodically inappropriate weather conditions in the region and devastating effect of the Cocoa Swollen Shoot Virus Disease in Ghana. The reduction in the outputs of the top two

world cocoa producers plunged the global cocoa market into a supply deficit and as such brought the size of the main crop for the 2022-23 season in the two countries to one's attention.

The Cocoa industry is a major employer of labour in Ghana, with around 800,000 cocoa farmers (including many seasonal workers). It is estimated that cocoa production covers an arable land area of 1.2 million hectares spread across 64 cocoa districts.

Cocoa is used for unfinished products such as cocoa butter, cocoa powder and cocoa cake which is further processed into common commodities like chocolate products, chocolate beverage and cocoa butter. The Cocoa bean also serves as raw material for many chemical products, including pharmaceuticals, solvents and fertilizers.

Although Ghana's cocoa is of the same "Forestero" variety grown in Côte d'Ivoire, its mild flavour and high butter content gives it a 7-10% premium over other West African origins.

Other factors in ensuring a premium for Ghanaian beans include the reliability of bean quality-given that Ghana's strict quality controls ensures that only bean counts lower than 100/100g are exported.

1.9. Regulatory Dynamics

Ghana's cocoa industry is regulated by PNDCL Law 81, and the International Cocoa Agreement. COCOBOD, a Government owned entity, has the sole authority to purchase and export cocoa products in Ghana through its subsidiary Cocoa Marketing Company Ghana Ltd (CMC). CMC and Quality Control Division (QCD) are subsidiaries of COCOBOD.

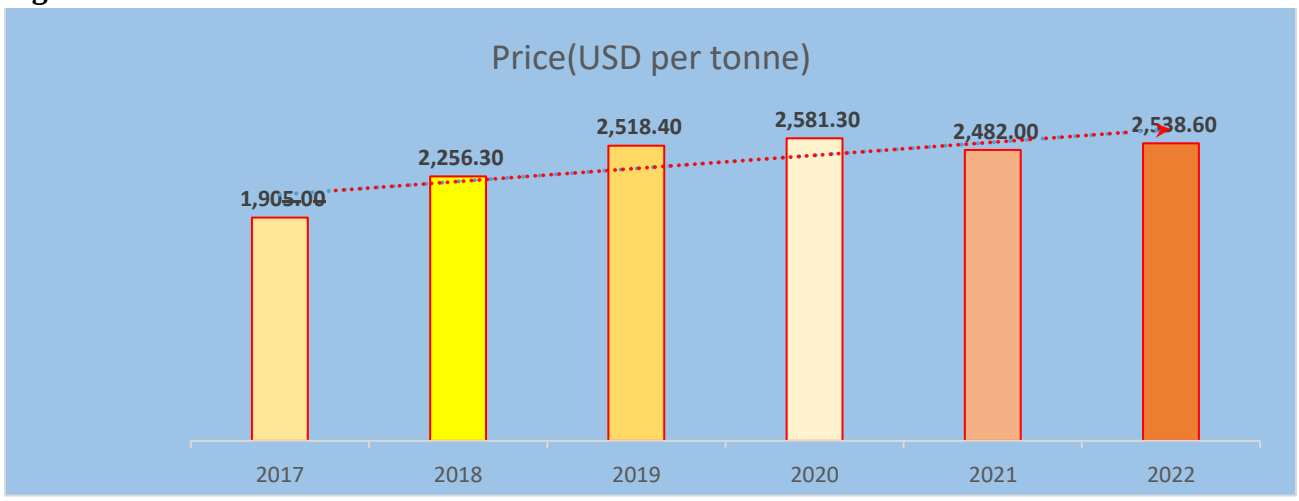
The COCOBOD is a key regulator and therefore, guides the conduct of the cocoa trade (internally and externally), ensuring that contractual parties in the value chain respect the rules of the trade to protect both producers and consumers.

1.10. Trade Dynamics

The major sales objective of COCOBOD is to sell to the external and local markets at the best prices obtainable and to undertake its marketing function in a manner which will maximise the foreign exchange revenue that will accrue to the country. Ghana has seen mixed returns from export revenues over the last five years. Total exports from cocoa stood at $2.299 billion in 2022, a decline from the $2.838 billion recorded in 2021. The third-largest foreign exchange earner, revenue from the 'golden pod' has been on an upward trajectory since 2019. Cocoa is the third largest foreign earner for the country after gold and crude oil. Specifically in 2019, the country earned about $2.2 billion, $2.3 billion in 2020, $2.8 billion in 2021 and as at the end of June 2023, revenue from cocoa beans and products stood at $1.48 billion, according to BoG data.

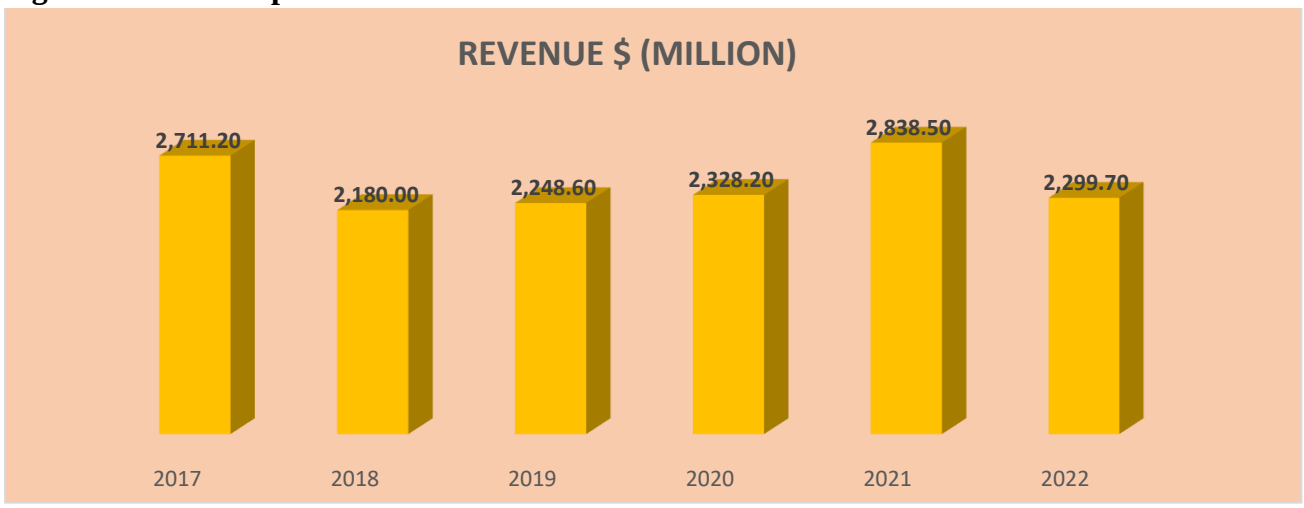
The amounts grossed from the crop were as a result of favourable prices and quantities produced. Information sourced from the Bank of Ghana indicates that global cocoa prices surged from $2984.7 to $3185.3 per tonne, marking a significant year-to-date increase of 25.5% during the initial half of 2023. Back in December 2022, prices stood at $2,538.6 per tonne, climbing to $2,924.4 per tonne in April 2023, reflecting a 15.2% year-to-date increase and a 13.0% rise year-on-year. The Central Bank attributes this growth to reduced production volumes, heightened processing in the leading producer, Ivory Coast, and a surge in global demand. According to the Bank of Ghana, cocoa bean exports reached $1482.5 million in the first half of 2023, primarily propelled by the amplified export volume.

Figure 13: Price of Cocoa from 2017 -2022



Source: Bank of Ghana

Figure 14: Total Export Revenue of Cocoa from 2017 -2022



Source: Bank of Ghana

Trading & Shipping Cocoa Beans

When discussing cocoa trading, a clear distinction must be made between the actual or physical markets and the futures or terminal markets. Nearly all cocoa coming from origin countries is sold through the physical market. The physical market involves the type of business that most people normally think of when talking about trading in commodities. The structure and length of the cocoa marketing channels differ from region to region within the same producing country as well as across producing countries. At one extreme of the spectrum, the marketing channel between cocoa farmers and exporters encompasses at least two middlemen: small traders and wholesalers. Small traders buy cocoa beans directly from farmers, visiting them one by one. In a second stage, small buyers sell the beans to wholesalers, who in turn will re-sell them to exporters. At the other extreme of the spectrum, cocoa beans are sold directly to exporters by farmers' cooperatives or even directly exported by the co-operative. The former typifies the case for Ghana where the sale of cocoa encompasses at least two middlemen i.e. LBCs and a subsidiary of COCOBOD, CMC on to the international cocoa market.

At the Port

Once cocoa beans reach the port of export, they are stocked in warehouses, while being graded and subsequently loaded onto cargo vessels. Warehouses should have cement and non-flammable floors without cracks and crevices where insects can hide. Ideally, the floor level of the warehouse should be higher than the surrounding land to prevent flooding and to allow

water to flow away. In some producing countries, cocoa beans are processed in the conditioning plants, most of them located in port warehouses because of the high moisture level of the beans and a high variance in their quality. Conditioning either by hand or mechanically is also used to blend poor quality with good quality beans.

Cocoa Grading

Cocoa grading differs across producing and consuming countries. However, over the years, the physical market has developed standard practices set out by the main international cocoa trade associations: the Federation of Cocoa Commerce Ltd (FCC) and the Cocoa Merchants' Association of America, Inc. (CMAA). For example, the FCC distinguishes two grades: good, fermented cocoa beans and fair fermented cocoa beans. Samples of good, fermented cocoa beans must have less than 5% mould, less than 5% slate and less than 1.5% foreign matter. A sample of fair fermented cocoa beans must have less than 10% mould, less than 10% slate and less 1.5% foreign matter. These tests are carried out through the so-called cut test. Such a test involves counting off a given number or weight of cocoa beans, cutting them lengthwise through the middle, and then examining them. Separate counts are made of the number of beans which are mouldy, slaty, insect damaged, germinated, or flat.

Shipping

Once cocoa beans have been graded and loaded into cargo vessels, they are shipped either in new jute bags or in bulk. In recent years, shipment of cocoa beans in bulk has been growing in popularity because it can be up to one third cheaper than conventional shipment in jute bags. Loose cocoa beans are loaded either in shipping containers or directly into the hold of the ship, the so-called "mega-bulk" method. The latter mode is often adopted by larger cocoa processors.

Cocoa Futures Contract

In general, cocoa futures contracts are not used to secure the supply of cocoa beans, but rather to offset the risk of adverse price movements. A cocoa futures contract is a commitment to make or to take delivery of a specific quantity and quality of cocoa beans at a predetermined place and time in the future. All contract terms are standardized and set in advance. As a result, cocoa futures contracts are interchangeable, except for delivery time.

There are currently three places where cocoa futures contracts can be exchanged: ICE Futures U.S. (New York), ICE Futures Europe (London) and CME Europe (London).

Prior to March 2015, cocoa futures contracts were quoted only in British pounds sterling and in U.S.
dollars. However, as almost half of the cocoa traded originates from Côte d’Ivoire, Cameroon and Togo (whose currencies are pegged to the Euro), and a third of world cocoa production is processed within the Eurozone, new Euro-denominated contracts were introduced in March 2015, thereby reducing the need to hedge against foreign exchange risks in the cocoa trade. Cocoa futures contacts are now available in the three currencies.

These organized exchanges provide the facilities and trading platforms that bring buyers and sellers together. Moreover, they set and enforce rules to ensure that trading takes place in an open and competitive environment. For this reason, all bids and offers must be made through the Exchange's "Clearing House", via the exchange's electronic order-entry trading system. As a result, the Exchange's Clearing House acts as the buyer to all sellers and the seller to all buyers.

Futures market participants fall into two general categories: commercial (i.e. hedgers) and noncommercial traders (i.e. speculators). Commercial traders are market participants who try

to avoid or reduce a possible loss in the cash market by making counterbalancing transactions in the futures market. On the other hand, non-commercial traders do not produce or use a commodity, but risk their own capital by trading futures in that commodity in the hope of making a profit on price changes.

1.11. Foreign Exchange Dynamics

The annual Ghana syndicated loan, COCOBOD signed $1.13 billion dollars in its annual syndicated loan for cocoa purchases in the 2022/23 crop year with some international financial institutions which alleviated some short-term pressures on reserves and the local currency. This year's COCOBOD cocoa syndicated loan is US$130 million significantly less than the $1.5 billion secured last year. The third-largest foreign exchange earner, revenue from the 'golden pod' has been on an upward trajectory since 2019. It ended 2019 at US$2.28 billion but rose to US$2.33 billion in 2020 before peaking at US$ 2.85 billion 2021 and US$2.30 billion in 2022, according to BoG data.

1.12. Risk considerations

Key Risk Areas

The industry's key risk areas are as follows:

- Poor Crop Yield which will reduce supply.
- Quality Control management.
- Congestion along the Supply Value Chain.
- Cocoa Price Volatility.
- High Interest Rates for facilities.
- Exchange Rate Volatility.
- Diversion of Produce/Smuggling.
- Declining soil fertility.
- Ageing cocoa farmers.
- Overaged cocoa farms.
- Lack of interest by the youth to go into cocoa farming.
- Cocoa swollen shoot virus and other pests and diseases that attack cocoa farms.
- Activities of small-scale mining (galamsey).
- Delays at Inspection Points along the value chain.
- COCOBOD's Substantial Unpaid Receivables by local processing companies amounting to about U$250mn.

Categorization of risk areas into Production, market and environmental risk: -

TABLE 8 - KEY THREATS TO THE COCOA INDUSTRY

PRODUCTION	MARKET	ENABLING ENVIRONMENT
• Black pod disease • Mirids/capsids • Swollen shoot virus • Other pests, diseases, and weeds • Drought/dry spell • Bushfires • Loss of cocoa acreage	• Cocoa price volatility • Exchange rate volatility • Counterparty risk • Input price volatility • Interest rate volatility	• Smuggling • Government Control of the sector • Market regulatory risk • Policy risk • Logistics breakdown Misappropriation of funds

1.13. Key success factors

The industry's key success factors are as follows:

- Good reputation with farmers.
- Efficient management of costs.
- Reliable agents and access to farmers.
- Availability and access to good warehouse for storage.
- Continuous monitoring of the Cocoa quality along the value chain.
- Access to cheap funding and/or a larger share of allocated seed funds.
- Availability of haulage and logistics for swift transportation of produce.

1.14 Outlook/Conclusion for the Cocoa Industry

The cocoa industry in 2022/23 has shown varying trends across different regions. While major cocoa consuming markets in Europe and South-East Asia experienced overall increases in cocoa grindings, North America saw a reduction during Q1-2023. In West Africa, cocoa processing improved year on-year in Côte d'Ivoire but decreased in Ghana during Q4-2022. However, global cocoa prices in recent times have been bolstered by factors such as supply deficit from West Africa and weather-related concerns, leading to price hikes in both London and New York markets.

Despite the challenges faced in Ghana, the production of cocoa beans for 2022/23 is projected to surpass the levels of the previous season, with an increase in the volumes of graded and sealed cocoa beans purchased.

Glossary of Terms

1. CMC -Cocoa Marketing Company
2. CPC - Cocoa Processing Company
3. BMI – Business Monitor International
4. COCOBOD - The Ghana Cocoa Board
5. CRIG - Cocoa Research Institute
6. LBC - Licensed Buying Companies
7. PBC - Produce Buying Company Ltd (Major LBC)
8. ICCO –International Cocoa Organization
9. QCD - Quality Control Division
10. Seed Production Unit (SPU)
11. Cocoa Swollen Shoot Virus Disease Control Unit (CSSVDCU)

Appendix I

Registration process

All sales by the company are made only to firms registered by the COCOBOD as buyers. (Sales made under bilateral arrangements to countries are not covered by this registration requirement).

Firms wishing to be registered as buyers for Cocoa beans and Cocoa Products are required:

1. To apply in writing direct to the Managing Director of the COCOBOD.

2. To provide evidence that they have usefully been employed in some capacity in the cocoa trade in a consuming country or that they are organised in such a way that they can effectively handle the commodity on the International Market.

3. To furnish the COCOBOD with the name(s) and address (es) of their bankers to enable it to ascertain the Firm's financial capacity for buying at last 2,500 MT per crop year at the prevailing prices during the seasons The price per tonne (as at mid- October 2014 was $ 3,179) . LBC's requesting registration were to provide evidence/ capacity to purchase $7, 947,500 worth of cocoa.

4. To provide evidence of their membership of the Federation of Cocoa Commerce Limited and or the New York Cocoa Merchants Association, even if they are members of other Cocoa Associations.

5. Companies satisfying the above requirements are issued with buying licenses, which are renewable for each crop year.

Farmers bring cocoa to up-country buying centres where they are paid and the beans undergo an initial quality check. Given that LBC's receive a commission for every kg they deliver, they need to secure high volumes, which drives strong competition in the field. LBCs' typically pay in cash as prompt payment is the most effective way to win suppliers' loyalty. The relationship between the LBCs' buying agents and farmers is critical.

Quality Control Process

Throughout the world, the standard against which all cocoa is measured is that of Ghana's cocoa which has a high content of theobromine (a primary alkaloid), thus making it the best cocoa for high quality chocolates. This status has been diligently maintained, over the years, through the effective quality control practices of the Quality Control Division (QCD) of COCOBOD, which seeks to maintain a high premium of cocoa on the World's Commodities Markets.

Criteria reviewed during quality inspection

The International Cocoa Standards require cocoa of large quality to be free from foreign materials, thoroughly dried, & free from any adulteration. It must be reasonably free from living insects, broken beans and fragments.

The operational structure is clearly defined. It assigns roles and responsibilities. For example, buyers or their agents cannot present a mixture of different sizes of cocoa beans in one sack

for grading and sealing. There is segregation, sorting and packing same bean-sizes into one sack for grading/sealing –homogeneity. This is a non- negotiable condition for accepting the cocoa for grading.

COCOBOD's quality division (the Quality Control Division) samples and weighs the cocoa. For this, the division charges a price determined in advance by the PPRC.

SOURCING OF COCONUT OIL

IN GHANA:

CHALLENGES, SOLUTIONS

&

CONSUMPTION PATTERNS

1.0 Background

The global organic cooking oil market was **$3.6 billion in 2022** and is expected to hit **$7.39 billion by 2030**, registering a CAGR of 5.1%. The global coconut oil market is segmented into organic coconut oil and conventional coconut oil. Among these, the organic coconut oil segment dominated the global market since 2022. The virgin or extra virgin coconut oil segment is expected to grow at the highest CAGR of 6.1% through 2032. This can be attributed to the rising end-user preference for virgin coconut oil for its various health benefits and better taste and aroma.

The average annual coconut oil price rose by 2.3% year-on-year to **$1,674 per ton in 2022**. In 2021, the average annual coconut oil price soared by 62% year-on-year to $1,636 per ton. Limited supply and high freight rates were the main drivers of that increase. Rising prices for other vegetable oils that follow the same fundamental trend also contribute to the price growth of coconut oil.

Ghana is currently the leading producer of coconut in Africa and number 12 in the world with an annual production of 504,000 metric tonnes (FAO Statistical Database 2022).

With the skyrocketing demand fuelled by its use in diverse sectors including cosmetics, food and beverage, and health, there is an emergent imperative to address sustainable sourcing of coconut oil. This article ventures into the world of coconut oil production in Ghana, outlining the challenges and proposing solutions to ensure a sustainable future for this burgeoning industry. It also talks about the consumption of coconut oil in Ghana in selected regions and districts.

Coconut is considered a very important economic crop in the coastal regions of Ghana, especially in the rural communities providing employment particularly to the youth and womenfolk. The estimated production volume is 504,000 metric tonnes output in 2022. Coconut is a famous oil seed throughout the world and the oil may be obtained directly from the fresh kernel (wet processing) or, more commonly, from the copra (NRI, 1995) either by natural fermentation or mechanical process. The fermentation process involves splitting the nut, grating the meat to fine particles, squeezing the milk either manually or mechanically with or without addition of water and allowing the milk to ferment for 36–48 hours (Kamariah et al., 2008). As the major source of lauric oil, its conventional processing technologies are highly developed, involving modern equipment on large-scale production levels.

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1.1 Introduction to Sustainable Coconut Oil Sourcing

Sustainable sourcing of coconut oil pertains to the procurement and manufacture of coconut oil through methods that are eco-friendly, socially responsible, and economically viable. Coconut oil has traditionally been harvested using low impact methods in the countries it naturally grows. However, with growing global demand, an increase in intensive farming practices has been observed, raising concerns for sustainability and the well-being of coconut farming communities.

Contrary to popular belief, it is not merely the responsibility of farmers or producers, but also of consumers and lawmakers to ensure sustainable sourcing of coconut oil. Strategies can include supporting fair trade by purchasing certified products, promoting organic and diversified farming methods, and implementing policies that curb harmful farming practices.

1.2 The Environmental Impact of Coconut Oil Production in Ghana

While coconut oil is hailed for its multitude of benefits, its production process can significantly impact the environment. Intensive farming practices to meet rising demands result in deforestation, loss of biodiversity, and increased greenhouse gas emissions due to the clearing of land for coconut plantations. According to the World Bank, countries such

as the Philippines and Indonesia, leading producers of coconut oil, have seen significant loss of their forest cover in the past decades.

Moreover, monoculture – the cultivation of a single crop in a given area – can lead to soil degradation, making it harder for other crops to grow in the future. This is especially of concern in regions where local communities rely on diverse farming for their livelihoods.

1.3 Social and Economic Challenges in Coconut Farming Communities

Coconut oil sourcing also poses various social and economic challenges in farming communities. In many coconut-producing regions, the majority of coconut farmers lead subsistence lives, earning less than $2 a day. According to Fair Trade USA, approximately 60 million people in coconut oil producing countries are directly or indirectly dependent on the coconut industry.

Further, the price volatility of coconut products in Ghana exposes the coconut farming communities to significant economic instability. Fluctuating market prices, coupled with low yield due to poor farming techniques, often result in an unreliable income source for the farmers.

Additionally, the hard manual labor involved in coconut farming—often performed under harsh conditions—raises serious concerns regarding workers' rights and safety. Without proper policies in place, such situations can foster exploitation and human rights abuses.

1.4 Deforestation and Biodiversity Loss: A Growing Concern

Deforestation and biodiversity loss are significant concerns related to the coconut oil industry. Within the context of sustainable sourcing of coconut oil, it's essential to understand these environmental challenges.

Tropical rainforests, in Ghana, where coconut trees mainly thrive, are among the most biodiverse ecosystems in the country. However, the increasing demand for coconut oil has

led to significant deforestation in these regions as land is converted into coconut monocultures. According to an article published in November 2020 in the journal "Environmental Research Letters," in coconut producing countries, larger production areas are being deforested to grow coconuts causing a substantial biodiversity loss and the displacement of wildlife.

Furthermore, monoculture plantations deplete soil nutrients resulting in unsustainable agricultural practices. An article by Nutrient Cycling in Agroecosystems published in 2020 revealed this leads to the increased need for fertilizers, which can contaminate local water resources, causing significant ecological and health concerns.

Deforestation also contributes to climate change. According to the WWF (World Wildlife Federation), trees remove carbon dioxide from the atmosphere, storing the carbon and releasing the oxygen. When forests are cut down and burned to create farmland, the carbon they stored is released back into the atmosphere, exacerbating the problem of global warming.

1.5 Sustainable Farming Practices for Coconut Oil Production in Ghana

In response to these environmental concerns, sustainable farming practices have had a vital role to play in the coconut oil industry in Ghana. Agroforestry is one such approach, which involves integrating the growth of coconut trees with other beneficial plants. This method can be a way to maintain biodiversity, improve soil health, and increase income for farmers by providing additional crops. The implementation of agroforestry in coconut production in Ghana is increasingly encouraged by organizations like the United Nations Food and Agricultural Organization.

In addition utilizing organic farming techniques can significantly minimize the impact on the environment. Organic farming refrains from using synthetic fertilizers or pesticides, instead using techniques like composting, natural pest control, and crop rotation. Organic certification programs ensure that coconut farmers follow these best practices.

1.6 Trade and Ethical Sourcing in the Coconut Oil Industry in Ghana

Human rights are equally as important in the sustainable sourcing of coconut oil in Ghana. The fair trade movement deals precisely with this issue, promoting better prices, decent working conditions, local sustainability, and fair terms of trade for farmers and workers in the developing world.

Fairtrade International, a leading organization that sets global Fairtrade Standards, helps to ensure that coconut oil is ethically sourced in Ghana. Companies that use the Fairtrade Mark must pay sustainable prices that never fall lower than the market price, providing farmers and workers in Ghana with some financial stability.

Moreover, ethical sourcing goes beyond fair trade. It’s also about taking responsibility for the social and environmental impacts at every stage of the coconut oil supply chain. It involves ensuring that all workers are treated with dignity and respect, that there are proper health and safety protocols in place, and that there is no forced or child labor.

In summary, while the challenges to the sustainable sourcing of coconut oil are significant in Ghana, there are solutions available. However, implementing these solutions requires effort and commitment from all stakeholders in the coconut oil industry in Ghana, from the farmers to the end consumers.

1.7 Innovations in Coconut Oil Processing and Waste Management

Innovations in the processing and waste management of coconut oil in Ghana are absolutely paramount to ensure that the sourcing of coconut oil becomes more sustainable. For instance, the past decade has seen major strides in the use of an integrated processing approach. This process successively extracts the maximum amount of oil and coconut milk from the copra, thereby significantly reducing waste and increasing overall efficiency.

Additionally, the spatial-temporal coordination system has emerged as a novel approach for managing waste in the coconut oil industry. This system effectively synchronizes and arranges the process of waste collection and disposal, ensuring that waste is managed efficiently, further contributing to the sustainability of the industry.

Research has suggested that implementing a closed-loop supply chain can significantly minimize waste and energy consumption in the coconut oil industry. Waste is thereby transformed from a disposal issue into a valuable resource, where it could be used to create other products such as organic fertilizer, coco peat or to generate energy, thus completing the closed-loop.

1.8 Collaborative Efforts Towards a Sustainable Supply Chain in Ghana

Collaboration among stakeholders is vital in driving sustainable sourcing of coconut oil. From farmers, processors, traders, to consumers, there is an increasing need for all parties to work together towards a common goal of sustainability.

Efforts have been made to adopt ‘green’ supply chain practices in which the environmental impacts of operations, such as the carbon footprint of cultivation and logistics practices, are minimized. In addition, many star companies have made commitments to responsible sourcing, prioritizing suppliers who comply with environmental standards and fair labor practices. Moreover, cooperatives play an important role in helping smallholder farmers get access to sustainable methods of coconut cultivation and fair trade markets, which greatly contribute to sustainability

1.9 Coconut Oil Consumption in Ghana in Selected Districts

Ghana is currently the leading producer of coconut in Africa and number 12 in the world with an annual production of 504,000 metric tonnes (FAO Statistical Database 2022). According to the Vice President of the Coconut Federation of Ghana, Kwaku Boateng, about 1.8 million Ghanaians have gained employment in the coconut sector.

Coconut oil is very much in demand in Ghana. Coconut oils are consumed in every household in Ghana. Unfortunately, the demand for coconut oil is very much greater than can be produced for consumption in Ghana. Consumption of coconut oil in some districts in Ghana showing the supply gaps are elaborated below:

District Level Coconut Oil Consumption in Ghana 2023

District	2023 Demand (m/t)	2023 Supply (m/t)		District	2023 Demand (m/t)	2023 Supply (m/t)
Asunafo South	153	84		Aowin	126	67
Asutifi North	97	51		Bia East	94	56
Asutifi South	147	86		Bia West	83	42
Tano North	98	53		Bibiani-Anhwiaso	175	116
Tano South	109	58		Bodi	19	10
Asunafo North	145	79		Juaboso	123	71
Aburam Kwamankese	85	46		Sefwi Akontombra	84	48
Agona East	82	43		Sefwi-Wiawso	129	72
Agona West	107	54		Suaman	94	59
Ajumako/Enyan/Essia	119	76		Adansi Asokwa	58	28
Asikuma/Odoben	96	49		Adansi North	46	23
Assin Central	105	56		Adansi	67	36
Assin North	89	48		Afigya Kwabre	78	27
Assin South	97	50		Afigya Kwabre South	95	48
Awutu Senya East	127	69		Ahafo Ano South East	68	36
Awutu Senya West	98	53		Asante Akim Central	87	46
Cape Coast	327	179		Asante Akim North	94	49
Effutu	118	72		Asante Akim South	81	43
Ekumfi	94	56		Asokore Mampong	129	65
Gomoa Central	81	45		Asokwa Municipal	174	89
Gomoa East	74	39		Atwima Kwanwoma	106	55
Gomoa West	68	35		Atwima Mponua District	98	49
Komenda/Edina	164	93		Atwima Nwabiagya	105	56
Mfantsiman	89	42		Atwima Nwabiagya N.	137	67
Twifo Atti Morkwa	116	60		Bekwai Municipal	162	82
Twifo/Hemang	81	42		Bosome Freho	153	75
Upper Denkyira East	136	71		Bosomtwe	172	87
Upper Denkyira West	92	47		Ejisu	207	103
Abuakwa North	132	73		Ejura Sekyedumase	145	71
New Juaben Metro	1,783	1,247		Juaben	162	83
Achiase	2			Kumasi Metro	7,291	3,718
Akuapim North	164	93		Kwadaso	429	218
Akuapim South	29	16		Mampong	506	263
Birim Central	41	29		Obuasi East	242	129
Birim South	62	47		Obuasi	263	121
Asuogyaman	124	76		Offinso	348	176
Ayensuano	148	85		Offinso North	327	159
Suhum	227	134		Oforikrom	539	274
Ablekuma Central	129	75		Old Tafo	418	213

Ablekuma North	168	87		Ahanta West	84	47
Ablekuma West	197	15		Amenfi Central	79	41
Accra Metro	8,197	5,272		Amenfi West	159	84
Ada East	72	38		Effia Kwesimintsim	169	86
Ada West	139	72		Ellembelle	249	126
Adentan	236	121		Jomoro	275	146
Ashaiman	384	236		Mpohor	149	78
Ayawaso Central	69	46		Nzema East	396	270
Ayawaso East	291	163		Prestea-Huni Valley	63	35
Ayawaso North	183	98		Sekondi Takoradi Metro	1,283	714
Ayawaso West	95	49		Shama District	518	386
Tema Metro	2607	1484		Tarkwa-Nsuaem	137	75
La Dade Kotopon	82	65		Wassa Amenfi East	116	73
La Nkwantanang	571	342		Wassa East	98	52
Ledzokuku	175	106		Keta	376	162
Adaklu District	96	43		Ketu North	385	231
Afadzato South	82	47		Ketu South	294	176
Agotime Ziope	97	61		Kpando	304	183
Akatsi North	48	37		North Dayi	312	185
Akatsi South	96	53		North Tongu	295	176
Anloga	364	218		South Dayi	284	171
Central Tongu	372	183		South Tongu	261	169
Ho Metro	384	238		East Mamprusi	49	25
Ho West	385	263		West Mamprusi	63	32
Hohoe	378	227		Bunkpurugu	58	31
Atebubu-Amantin	264	135		Nkwanta North	136	76
Kintampo North	339	187		Yunyoo-Nasuan	26	14
Nkoranza South	248	142		Bole District	52	27
Techiman	342	185		Central Gonja	68	35
Kintampo South	214	121		East Gonja	53	27
Nkoranza North	219	116		North East Gonja	61	31
Pru East	182	101		North Gonja	34	18
Pru West	195	109		Sawla Tuna Kalba	53	27
Sene East	173	85		Bole District	52	27
Techiman North	314	172		Central Gonja	68	35
Sene West	191	105		East Gonja	53	27
Daffiama-Bussie-Issa	84	44		North East Gonja	61	31
Lambussie-Karni	92	49		North Gonja	34	18
Lawra	84	45		Dormaa West	165	91
Nadowli-Kaleo	76	41		Tamale Metro	987	513
Nandom	106	56		Sagnarigu	116	64
Sissala East	72	38		Savelugu	148	76
Sissala West	89	45		Yendi	472	241
Mion	65	33		Gushegu	91	47
Wenchi	267	146		Tema West	497	385
Nanumba North	61	32		Nanton	76	39
Sunyani	785	431		Juaman North	109	71
Nanumba South	63	36		Wulensi	79	42
Saboba	71	38		Karaga	68	35
Tatale Sanguli	67	52		Kpandai	162	98
Tolon	48	25		Kumbungu	121	64
Biakoye	109	61		Banda	96	51
Guan	98	56		Berekum East	372	213
Jasikan	171	98		Berekum West	261	143
Kadjebi	106	59		Dormaa Central	254	139
Krachi East	126	70		Dormaa East	157	86

1.10 Future Outlook:

Challenges and Opportunities for Sustainable Sourcing of Coconut Oil

Despite many progress, the future of sustainable sourcing of coconut oil in Ghana still presents both challenges and opportunities.

One major challenge is the changing climate, which significantly affects coconut production. Coconuts are highly susceptible to changes in weather and temperature, hence, global warming posses a great threat to the industry. Concurrently, the high demand and low supply of coconuts often lead to unsustainable farming practices such as deforestation and over-farming, all of which negatively impact the soil and the environment.

However, there are valuable opportunities too. There is a growing demand for sustainable and ethically sourced products, which can give a competitive edge to companies sourcing coconut oil sustainably. Likewise, advancements in technology could aid in developing more efficient and eco-friendly processing techniques. Fresh initiatives, policy revisions aimed at farmer cooperatives, and strict environment protocols could improve the overall sustainability of the sector.

To conclude, the sustainable sourcing of coconut oil involves a wide array of strategies, from innovative processing and waste management to cooperation along the supply chain. Despite the challenges ahead, the future holds intriguing possibilities for those willing to invest in sustainable practices. Whilst the path to a fully sustainable coconut oil industry may be rife with obstacles, the pursuit of such a goal is more imperative now than ever before.

Some of the challenges facing the small-scale coconut farming in Ghana in all the sectors under study include the following:

1. Lack of credit facilities to purchase equipment and raw materials
2. Lack of ready market due to lack of interest as result of bad perception of coconut oil as high in saturated oil, which has unfavorable health implications.
3. Lack of government policies on coconuts and inadequate support.
4. Transportation problems due to inaccessible roads to transport the raw materials to the extraction centers.
5. Lack of innovative skills and technical know-how to improve the industry and export the oil to proceed.
6. High cost of acquisition cost of machines
7. Neglect of the industry by the District Assembly/Local Government.