TURNAROUND STRATEGY PAPER

PREPARED BY

GHANA COCOA BOARD (COCOBOD)

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Acronyms and Abbreviations

AfDB	African Development Bank
BOG	Bank of Ghana
CHED	Cocoa Health and Extension Division
CIF	Cost, Insurance, and Freight
CMC	Cocoa Marketing Company
CMS	Cocoa Management System
COCOBOD	Ghana Cocoa Board
CODAPEC	Cocoa Disease and Pests Control
CRIG	Cocoa Research Institute of Ghana
CRIP	Cocoa Roads Improvement Project
CSDS II	Cocoa Sector Development Strategy II
CSSVD	Cocoa Swollen Shoot Virus Disease
DDEP	Domestic Debt Exchange Programme
EMT	Economic Management Team
FGRM	Feedback and Grievance Redress Mechanism
FOB	Free on Board
GAPs	Good Agronomic Practices
GoG	Government of Ghana
Ha	Hectares
ICCO	International Cocoa Organization
KG	Kilogram
LBCs	Licensed Buying Companies
LID	Living Income Differential
MT	Metric Tonnes
PC	PEG - Post-COVID Programme for Economic Growth
PEPs	Productivity Enhancement Programmes
PPRC	Producer Price Review Committee
QCC	Quality Control Company
SPD	Seed Production Division

EXECUTIVE SUMMARY

1. Ghana accounts for 20% of global production and much of the cocoa is produced by 762,000 smallholder farmers with farm sizes of 2-3 hectares. Ghana's cocoa sector partly owes its prominence in global markets to substantial public investment in the sector and institutional reforms initiated in the mid-1980s. This public investment was in response to economic circumstances at the time. Rather than abolishing the Cocoa Marketing Board, Ghana set out to reform the parastatal, including liberalizing the internal marketing[1] of cocoa in 1993 and committing to increase farmers' share of export prices.

2. The Cocoa Marketing Board established in 1947, which subsequently became Ghana Cocoa Board (COCOBOD), continues to provide services to the sector and retains a monopoly over cocoa purchases and exports. In this capacity, COCOBOD sets producer prices, pays commission to licensed buyers to purchase cocoa and aggregates and stores cocoa beans.

3. However, COCOBOD has since the 2016/17 crop year been confronted by low terminal price of cocoa. To tackle the declining global price and influence the market, Ghana and Cote d'Ivoire entered a joint co-operation on cocoa, to foster development of common solutions, exchange information and articulate common position on the international stage on cocoa issues. Through the cooperation, the Living Income Differential (LID) of $400 per tonne of cocoa exported from the two countries, was successfully implemented. The LID is fully paid to the farmers, as a cushion to adverse effects of low international price of cocoa.

4. In spite of the successful introduction of the LID, the total price received by COCOBOD remains below the $2,600 threshold, determined in 2019. Over the past six years, COCOBOD has invested heavily in the pre-harvest section of the domestic supply chain, aimed at tackling the challenges of production and promoting value addition. Beginning with the adoption of the Second Cocoa Sector Development Strategy for 2017-2027 (CSDS-II), the Board redefined its strategy for the sector with focus on robustness, resilience, and competitiveness. Interventions such as Artificial Pollination, Compensatory-based rehabilitation, Mass pruning, Cocoa Mass Spraying and Hi-Tech, Cocoa Management System (CMS), Cocoa Farmers Pension Scheme have all been rolled out.

5. However, Ghana Cocoa Board (COCOBOD) has been recording losses in its financial statements from 2015/2016 to 2021/2022 financial years, culminating in the erosion of its equity leading to a negative equity in the Management Accounts for the Financial year ended 30th September 2022. The major cost centres driving the loss-making include:

    - Direct Cost (Producer Price, Crop Protection & Soil Fertility Costs);

[1]Privatizing internal marketing

- Administrative Cost (Exchange Losses); and
- Finance Cost (Interest on Cocoa Bills)

6. To reverse the declining fortunes and ensure financial viability of COCOBOD, this Turnaround Strategy is proposed to deal with the structural challenges of the Board. The Strategy derives impetus from the recent prudent measures taken by COCOBOD, including cost control measures, which are beginning to yield positive results. To put things in perspective, COCOBOD made a net profit of GHS2.31 billion for the year ended 30th September 2023.

7. The strategy proposes reforms to enhance revenue and reduce expenditures along with a functional review of departments to improve efficiency. The main goal is to bring about a change in the financial viability of COCOBOD. The following measures are being proposed for implementation in line with the Cocoa Sector Reforms under the broad framework of the Post COVID-19 Programme for Economic Growth (PC-PEG) being implemented by the Government. The broad areas of reforms proposed are:

    a. Compliance with the COCOBOD law with respect to ministerial supervision, in particular oversight on budgets and finances;
    b. Realignment of the Producer Purchase Pricing Mechanism, that guarantees a revenue stream sufficient to recover the Board's operational and financial costs, including stabilization fund scheme;
    c. Cost Rationalization, covering a functional review of all departments and subsidiaries of the Board; and
    d. Rationalization of Quasi Fiscal Expenditure.

8. In line with Government policy to pay remunerative producer price, this turnaround strategy will pursue a higher producer price by ensuring that at least 60% of the Gross FoB and a maximum of 70% of Gross FOB price inclusive of LID is set as the producer price. The gross FoB price is based on an expected value of the weighted average of forward and spot prices taking into account realistic assumptions on production and exchange rate. The intended reforms are expected to influence a positive movement towards a balance budget by reducing deficits arising from higher-than-revenue expenditures and guaranteeing a revenue stream sufficient to recover the Board's operational and financial costs. Implementation of the reforms is expected to result in a zero budget deficit moving forward.

9. COCOBOD shall institute a legally binding framework for the PPRC mechanism. This framework shall provide among others:

    a. The structure – institutions and levels of decision making, including the addition of the Ministry of Finance at the technical level and co-chairing of the policy committee.

    b. Processes – operating procedures and guidelines, and

c. Policies – in relation to minimum and maximum proportions of producer prices and industry costs

10. COCOBOD, in a bid to ensure institutional resilience, will reduce industry cost from 56% to 10% in three (3) years (from 2023 to 2025). This involves implementation of cost rationalization measures, including rationalizing cocoa roads commitments to reduce the overall cost, spreading the payment and completion of the remaining over a period of 8 years.

11. COCOBOD will also phase out the fertilizer input subsidy to farmers, reform the Producer Price Review Mechanism, enhance fiscal discipline and ensure that staff of COCOBOD are effectively deployed through a staff rationalization programme. COCOBOD shall also enhance the internally generated funds of her Divisions and Subsidiaries and implement austerity measures to bring the industry to the path of recovery and prosperity. COCOBOD will deepen its collaboration with the Ministry of Finance to ensure that the Board's return to financial viability is fast-tracked and sustained.

CHAPTER ONE: INTRODUCTION

1.1 Overview of Ghana's Cocoa industry

12. Ghana accounts for 20% of global production and much of the cocoa is produced by 762,000 smallholder farmers with farm sizes of 2-3 hectares. Ghana's cocoa sector partly owes its prominence in global markets to substantial public investment in the sector and institutional reforms initiated in the mid-1980s. This public investment was in response to economic circumstances at the time. Rather than abolishing the Cocoa Marketing Board, the Government set out to reform the parastatal, including liberalizing the internal marketing[2] of cocoa in 1993 and committing to increase farmers' share of export prices.

13. The marketing board established in 1947, which subsequently became COCOBOD is the regulator of the cocoa industry. In this capacity, COCOBOD sets producer prices, pays commission to licensed buyers to purchase cocoa and aggregates and stores cocoa beans. The functions of the Board as defined by the Ghana Cocoa Board Law, 1984 (PNDCL 81) as amended, include:

    - *Scientific research on cocoa,* through the Cocoa Research Institute of Ghana (CRIG),
    - *Technical support on production to farmers*, for control of pests and diseases, and training and extension services to the farmers through the Cocoa Health and Extension Division (CHED).
    - *Issuance of licenses and provision* of guidelines for purchasing cocoa beans by buying companies.
    - *Quality assurance of produce* by inspecting, grading and sealing each consignment of cocoa, through the Quality Control Company.
    - *Sale and exports of cocoa beans through Cocoa Marketing Company*

14. Despite its accomplishments, Ghana's cocoa sector faces challenges and sustainability concerns. Low and stagnant productivity is one of the most persistent and pressing challenges. A large number of cocoa trees are infected with Cocoa Swollen Shoot Virus Disease (CSSVD) and are moribund or over-aged, significantly curtailing the lifespan of those affected. Yet replanting efforts are lagging and a recent acceleration in the spread of CSSVD remains the most pressing issue facing production of cocoa.

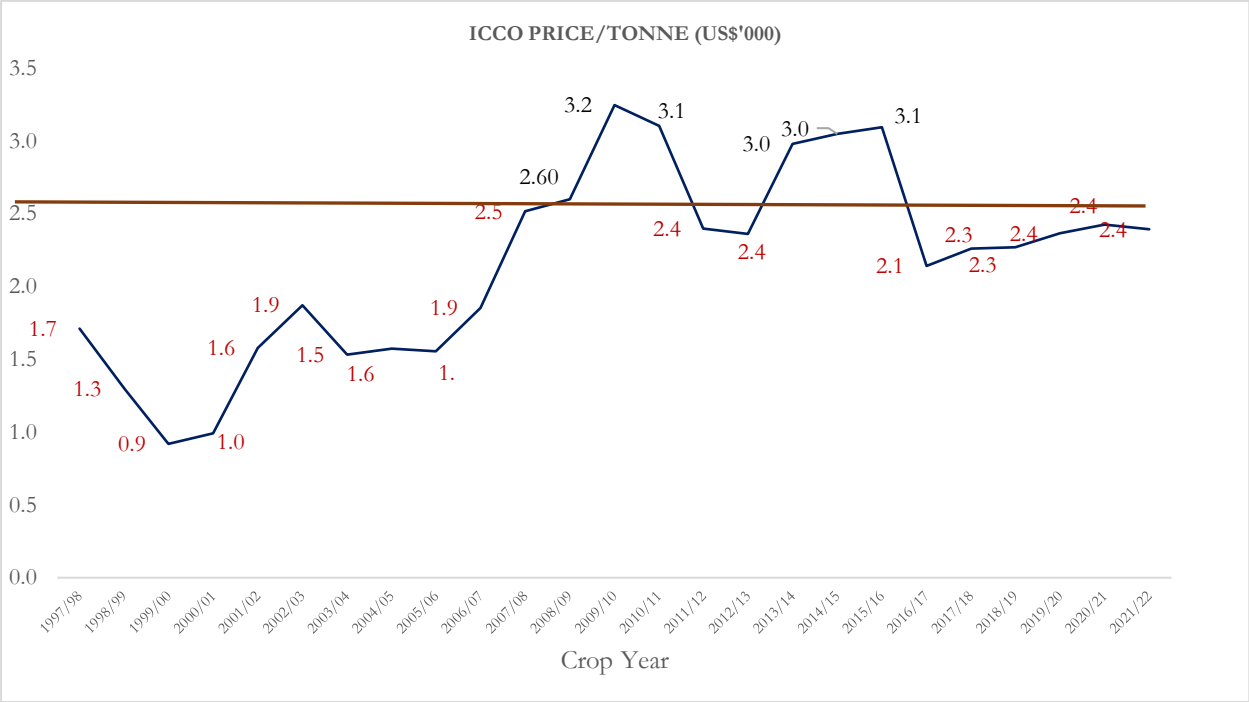
15. While yields are expected to taper off as trees age, the stagnation in productivity has been exacerbated by poor farming practices and a related loss of soil fertility. Even at the trees' peak, potential yields are seldom achieved owing to a lack of intensification as well as to pests and diseases. Yields on cocoa farms are typically one-quarter of their potential, averaging 541 kg/ha in 2018–2021, well below the potential yields of 1,400–3,000 kg/ha

[2] Privatizing internal marketing

attained on research and more productive farms. With limited virgin land left to expand into, closing the yield gap is the main way Ghana can increase cocoa output.

16. The total cost of production by the farmers, logistics, marketing, scientific research, technical and administrative support services, in both Ghana and Cote d'Ivoire was estimated at an average of $2,600 per tonne in 2019. Yet international prices seldom go above this level (Figure 1). Hence the domestic supply chain has been operating under financial strain, often resulting in annual losses to COCOBOD.

Figure 1: Trend in international cocoa price/tonne



17. The international demand of cocoa was heavily impacted by COVID-19, depressing prices below the $2,600 threshold. However, domestic prices could not be reviewed downwards, due to government policy to sustain the interest of cocoa farmers.

1.2 Key developments and Initiatives

18. Over the past six years, COCOBOD has invested heavily in the pre-harvest sector of the domestic supply chain, aimed at tackling the challenges of production and promotion of value addition. Beginning with the adoption of the second Cocoa Sector Development Strategy (CSDS-II) spanning 2017-2027, the Board redefined its strategy for the sector with focus on robustness, resilience and competitiveness.

19. The CSDS-II aims to enhance cocoa productivity by empowering smallholders to adopt modern technologies, and to increase the cocoa industry's efficiency, effectiveness, and

sustainability by modernizing the business environment and increasing access to high value markets. CSDS II proposes investments in climate-smart productivity enhancement including research and development (R&D) and extension, soil fertility management, rehabilitation and replanting, disease and pest control, as well as the marketing and pricing of cocoa, promotion of processing and consumption.

20. In line with the Strategy, COCOBOD has been supporting farmers with requisite technological packages for managing the virulent Cocoa Swollen Shoot Virus Disease, improving soil fertility, and controlling pests, adaptation to climate change and weather variability.

21. The key initiatives implemented include:

    a. ***Artificial Pollination:*** This is the manual pollination of flowers resulting in up to three-fold increase in pod load per pollinated tree. This intervention ensured that farmers have at least 1 acre of highly productive land to compensate for the loss in cut out farms under rehabilitation. In 2020, a total of 167,813 ha of cocoa trees were pollinated;

    b. ***Compensatory-based rehabilitation***: COCOBOD undertook rehabilitation of diseased farms free of charge. The programme involved: a one-off payment of compensation to both the landowners and the tenant farmers; cutting, treatment and replanting of affected farms; and maintenance of the farm for two years before handing over to the farmer.

    c. ***Mass pruning****:* COCOBOD acquired and distributed motorized pruners to cocoa co-operatives. Hitherto, pruning of cocoa farms was done by farmers using cutlasses which was ineffective and inefficient.

    d. ***Cocoa Mass Spraying and Hi-Tech***: The Cocoa Diseases and Pests Control Programme (CODAPEC) and fertilizer access and application programmes (Hi-Tech), have been re-invigorated to increase access to chemicals for pest and disease control and fertilizer for enhancing soil fertility. About 4.5million bags of fertilizer is provided to farmers annually on subsidy basis;

    e. ***Cocoa Management System (CMS):*** This is a comprehensive integrated digital database that captures farm and farmer information, including the polygons and physical conditions of farms and farmer household characteristics. The aim of the system is to create a unique and credible nation-wide farmer/farm identification; enhance effective policymaking; ensure timely delivery of interventions in the cocoa sector; significantly reduce wastage in the cocoa value chain; improve monitoring and evaluation activities and enhance transparency and accountability to promote sustainable cocoa production.

    f. ***Cocoa Farmers Pension Scheme***: COCOBOD is rolling out a contributory scheme under the new three-tier pension scheme for cocoa farmers.

22. To tackle the declining global price and influence the market, Ghana and Cote d'Ivoire entered the joint co-operation on cocoa. The aim of the cooperation was to foster development of common solutions, exchange information and articulate common positions on the international stage on cocoa issues.

23. Through the cooperation, the Living Income Differential (LID) of US$400 per tonne of cocoa sold from the two countries, was successfully implemented. The LID is fully paid to the farmers, as a cushion against the adverse effects of low international price of cocoa. This is the first successful cooperation by producer countries to influence incomes of cocoa farmers through an international pricing mechanism.

24. In spite of the gains in productivity and the additional US$400 to the international price of cocoa, the sector's performance is yet to reach the desired level. The cocoa industry suffered the severe impact of COVID-19 which exacerbated an already low international price of cocoa as against the rising cost of operations, resulting in operational losses to COCOBOD.

1.3 Recent Performance

25. Recent external demand and supply shocks have impacted negatively on the performance of the cocoa sector. On the supply side, cocoa production was on the rise after the 2014/15 contraction occasioned by the El Nino effect. Output peaked at 1.047million tonnes in 2020/21, owing to a combined effect of productivity enhancement programmes and good weather.

26. However, the predominant focus on increasing productivity was not coupled with adequate strategies for dealing with CSSVD. This led to the rapid spread of the virulent disease, outpacing containment measures. In the disease hotspot areas, for instance in the western north region which hitherto accounted for 25% of the national output, production declined by 61% percent in five years, from 209,000 tonnes in 2017/18 to 88,000 tonnes in 2021/22 years. The disease now covers 400,000 ha of productive farmlands. The Board acquired a US$600 million African Development Bank (AfDB) facility to deal with the diseased farms. An amount of US$350 million had been drawn as at August 2021, targeted at treating 156,700 ha of affected farms. Propping production on the remaining productive farms require additional investments in soil nutrition, crop protection, adoption of climate smart practices and improved efficiency in implementation of such interventions.

27. The general post pandemic economic recovery is positively affecting global demand for cocoa. The recent recovery in price is attributed to an outlook which points to a 3-year global production deficit, particularly Ghana and Cote d'Ivoire. Notwithstanding, current average price achieved (2022/23 crop year) remains below the threshold of US$2,600 per tonne, required for the industry to breakeven, as at 2019 when the LID was introduced.

28. The US$2,600 per tonne is the breakeven for the entire industry, which includes the farmers, other supply chain actors and COCOBOD as determined in 2019. This is applicable if COCOBOD is strictly adhering to its core functions. The US$2,600 threshold is made of two components; US$1,690 for the farmer to cover production cost, and US$910 for post-harvest activities. The underpinning analysis of the US$2,600 threshold is presented in Table 1:

Table 1: Cost of Production of Cocoa

	Variable	**Amount (US $) (Average cost / per year)**
1	*Acquisition of land and land charges ha*	20.49
2	*Preparation of the land per ha*	32.91
3	*Nursery per ha*	17.14
4	*Transplanting of cocoa sowing per ha*	34.23
5	*Tools per ha*	38.62
6	*Maintenance by ha*	493.08
7	*Harvest / Post harvest per ha*	156.45
8	*Income from plantain*	-40.17
9	**Total net cost of production per ha**	**752.76**
10	Net cost of production per tonne	1,505.53
11	Margin of producer (12.3%)	185.18
12	**Average cost of the produce per tonne**	**1,690.71**
13	Intermediate input cost (Post farmgate cost)	911.52
14	**F.O.B** price of cocoa **per tonne**	**2,602.23**

29. The US$2,600 threshold may not necessarily be the breakeven point for COCOBOD. Hence this strategy proposes the gradual phase-out of the quasi-fiscal expenditures, as these additional quasi-fiscal activities of COCOBOD renders this threshold insufficient for a breakeven.

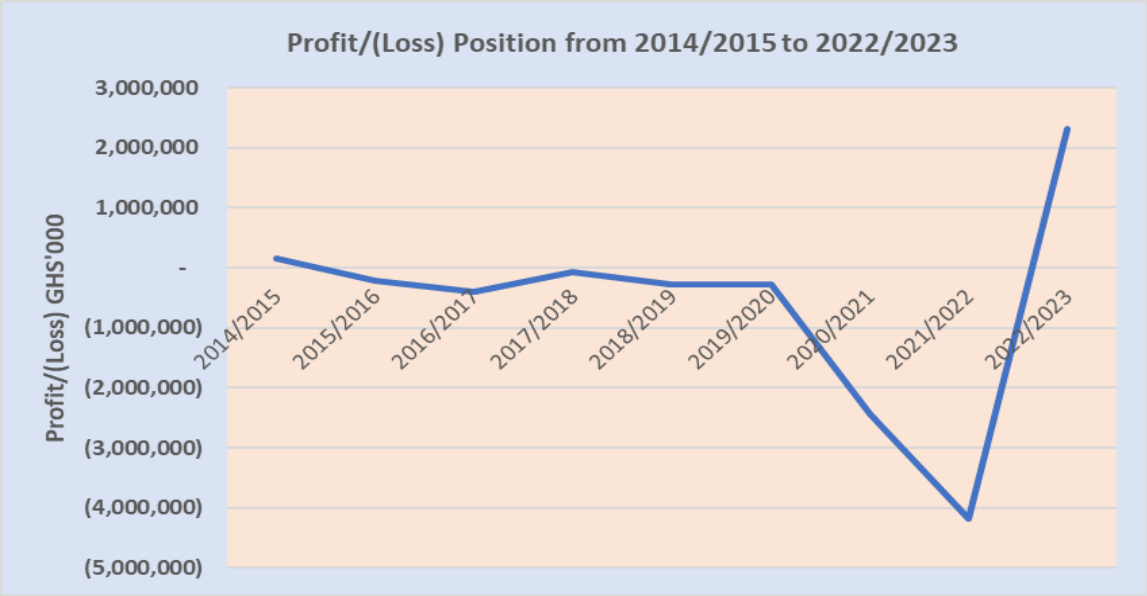
30. Meanwhile the cost of operations and provision of support services have been rising. Expenditures on inputs (fertilizers, crop protection chemicals) and social infrastructure have contributed to an expanded industry cost, from 16% in 2016/17 to 58% in 2022/23, impacting negatively on the budget and the overall financial statements of COCOBOD.

31. Profit/(Losses) made from 2014/2015 to 2021/2022.

Table 2: Extract from COCOBOD's Financial Statements

S/n	Year	Standalone Profit/(Loss) GHS('000)	AfDB/CS Profit/(Loss) GHS('000)	Comments
1	2014/2015	152,147	-	COCOBOD H/O, Divisions & Subsidiaries
2	2015/2016	(216,678)	-	COCOBOD H/O, Divisions & Subsidiaries
3	2016/2017	(394,851)	-	COCOBOD H/O, Divisions & Subsidiaries
4	2017/2018	(78,474)	-	COCOBOD H/O, Divisions & Subsidiaries
5	2018/2019	(274,521)	-	COCOBOD H/O, Divisions & Subsidiaries
6	2019/2020	(283,177)	(133,039)	COCOBOD H/O, Divisions, Subsidiaries & AfDB/CS (PEPs)
7	2020/2021	(2,425,839)	(415,539)	COCOBOD H/O, Divisions, Subsidiaries & AfDB/CS (PEPs)
8	2021/2022	(4,175,069)	(335,037)	COCOBOD H/O, Divisions, Subsidiaries & AfDB/CS (PEPs)
9	2022/2023	2,305,130	(874,901)	COCOBOD H/O, Divisions, Subsidiaries & AfDB/CS (PEPs)

Figure 2: Graphical representation of financial performance of COCOBOD from 2014/2015 to 2021/2022



32. COCOBOD has been recording losses in its financial statements from 2015/2016 to 2021/2022 financial years, culminating in the erosion of its equity leading to a negative equity in the Management Accounts for the Financial year ended 30th September 2022. The major cost centers driving the loss-making include:

- Direct cost (producer price, crop protection & soil fertility costs);
- Administrative cost (exchange losses); and
- Finance cost (interest on cocoa bills).

1.4 Rationale for Reforms

33. To reverse the declining fortunes and ensure financial viability of COCOBOD, this Turnaround Strategy is proposed to deal with the structural challenges of the Board. The Strategy derives impetus from the recent prudent measures taken by COCOBOD, including cost control measures, which are beginning to yield positive results. For example, for the year ended 2022/2023 COCOBOD made a net profit of GHS2.3 billion.

34. The strategy proposes reforms to enhance revenue and reduce expenditures along with a functional review of departments to improve efficiency. The main goal is to bring about a change in the financial viability of COCOBOD. The following measures are being proposed for implementation in line with the Cocoa Sector Reforms under the broad framework of the Post COVID-19 Programme for Economic Growth (PC-PEG) being implemented by the Government. The broad areas of reforms proposed are:

35. The broad areas of reforms proposed are:

    a. Compliance with the COCOBOD law with respect to ministerial supervision, in particular oversight on budgets and finances;
    b. Realignment of the Producer Purchase Pricing Mechanism, that guarantees a revenue stream sufficient to recover the Board's operational and financial costs;
    c. Cost Rationalization, covering a functional review of all departments and subsidiaries of the Board; and
    d. Rationalization of Quasi Fiscal Expenditure.

CHAPTER TWO: PROPOSED REFORMS

2.1 Ministerial Supervision

36. Prior to 2017, the Minister for Finance provided its ministerial oversight role over the Cocoa Sector even though the 1984 COCOBOD Law placed the sector under the minister responsible for Trade.

37. Section 39 of the COCOBOD law, 1984 (PNDCL 81) was amended in 2020 (Act 1035) to place the ministerial supervision of COCOBOD under the Minister responsible for Agriculture, to align with the government's policy of placing all agricultural commodities under the Ministry of Food and Agriculture.

2.1.1 Key Issue

38. COCOBOD is under the supervision of the Minister responsible for Agriculture. However, the COCOBOD law, 1984 (PNDCL 81) provides specific roles for the Minister responsible for Finance especially in relation to COCOBOD budget, finances and audit (Sections 19, 22, 24, 29 and 33- Appendix 5). Since 2017, when COCOBOD was placed under the Ministry of Food and Agriculture, the financial oversight by Ministry of Finance had become less effective. Another weakness is that the Ministry of Finance which is expected to provide oversight over the financial operations of COCOBOD is not represented on the technical committee nor the policy committee of the PPRC.

2.1.2 Proposed Changes

39. COCOBOD proposes the enforcement of the law which provides that the Ministry of Finance to exercise its oversight responsibilities over COCOBOD's finances. In this regard, COCOBOD will deepen its collaboration with the Ministry of Finance to ensure the Board's return to financial viability is fast-tracked and sustained. The Ministry of Finance has already established a "Cocoa Desk" as part of measures to strengthen the Ministry's financial oversight whilst limiting fiscal risks.

2.2 Review of Producer Pricing Mechanism

40. The producer pricing mechanism is the system for determination of producer prices, expenditures of COCOBOD and margins of stakeholders along the pre-sale section of the supply chain. The mechanism works under a sharing arrangement whereby the entire revenue to be generated from cocoa sales is shared amongst stakeholders after the deduction of the industry costs. This entire revenue to be generated is termed as the Gross FoB value. Producer prices, margins and rates of various stakeholders are negotiated in this FoB sharing arrangement. Thus, the budget of COCOBOD is derived from this mechanism.

41. The FoB price represents the average price of forward sales, undertaken prior to the commencement of the crop year. The gross revenue is determined as a product of the

average FoB price, projected output and the exchange rate. Industry costs[3] are first determined and the remaining FoB value is shared among the stakeholders, i.e. farmers, Licensed buyers, haulers and COCOBOD through a negotiation process.

42. Over the past three decades, this mechanism for the determination of producer prices, and negotiation of margins, rates and fees have successfully managed the producer price determination as well as revenue determination of key services in the supply chain. The key stakeholders work under the structure of the Producer Price Review Committee.

43. The Committee is organized at two levels, a policy committee which provides policy insight in the determination of the producer price and the technical committee which provides the analytical insights that underpin the decisions of the Policy Committee. The policy committee is chaired by the Minister responsible for cocoa with the Deputy Chief executive of COCOBOD in charge of operations as the secretary. The secretary of the policy committee chairs the technical committee and is supported by Director of Research Monitoring and Evaluation as the secretary.

44. The other members of the policy committee are representatives COCOBOD, Farmers, Bank of Ghana (BOG), Licensed Cocoa Buyers' Association of Ghana (LICOBAG), Haulers and a representative from the Institute of Statistical, and Social and Economic Research (ISSER) of the University of Ghana.

2.2.1 Key Issues

45. Notwithstanding the consultative nature of the price determination process, the mechanism has a number of limitations which has resulted in sub-optimal outcomes, particularly in relation to producer prices and COCOBOD finances. The industry cost component for example, has increased significantly over the past few years, from 16 percent of the FoB price per tonne in 2016, to 36 percent in 2021. However, in 2022/2023 COCOBOD was able to reduce it to 21%. These costs are primarily driven by the high cost of inputs (fertilizers and agrochemicals) procurement and distribution regime, construction of roads, and increasing cost of debt servicing by the Board. These have exerted a depressing effect on the farmer price, excluding the Living Income Differential (LID), as well as margins to private sector entities in the domestic supply chain.

46. Therefore, there is the need to re-examine the industry cost with the view to minimizing its adverse impact on producer price and margins of stakeholders including the operations

[3] Industry costs represent expenditure on items that are directly attributable to the development and effective functioning of the cocoa industry. All stakeholders benefit and therefore share in the industry cost. The industry cost comprise crop commitments: crop set aside for the repayment of financial obligations of the industry; Bui Dam repayment; Farmers Pension Scheme; Operational inputs (jute sacks, twines and stencil ink); cocoa pests and diseases management cost; soil fertility improvement; rehabilitation diseased and moribund cocoa trees; child Education support (rehabilitation of dilapidated basic school buildings in cocoa communities and improvement of roads in cocoa growing areas.

of COCOBOD, while optimizing effectiveness in the delivery of services and efficient utilization of operational inputs.

47. In addition, the workings of the PPRC are not guided by a standard operating procedure or guidelines approved by stakeholders. The current procedure begins with a determination of the gross FoB value and industry cost by COCOBOD, then cost of haulage and operations of licensed buyers are obtained from them and compiled with the operational cost of COCOBOD (covering warehousing marketing, quality control, research, extension, and technical support services to farmers including seedling production and distribution as well as administrative and operational overheads). Various scenarios of the producer price and margins are created and considered by the Technical Committee, whose recommendation feeds into the policy committee for consideration and finalization.

48. While this undocumented procedure has worked well over the past 30 years, with the involvement of all relevant stakeholders, the absence of clear guidelines and the Ministry of Finance in the PPRC have given rise to perceptions of opaqueness in the price determination process. Particularly the increasing lump sum allocations to expenditure items under the industry costs category have raised concern by stakeholders since it has an impact on their margins.

2.2.2 Proposed Producer Pricing Reform

The following reforms are proposed to the Producer Pricing Mechanism in line with the overall goal of ensuring sustainability and financial viability and increased transparency.

2.2.3 Improve the Operations of the PPRC

49. To improve the operations of the PPRC and its technical sub-committee and make it more efficient and effective, COCOBOD will develop a standard operating procedure or guidelines to be approved by stakeholders to guide the operations of the PPRC. In addition, the Ministry of Finance (MoF) will be represented and co-chair the technical sub-committee and policy Committee (PPRC). The Director at the MoF responsible for the "Cocoa Desk" at the Ministry will co-chair the technical sub-committee whilst the Minister responsible for Finance will co-chair the PPRC with the Minister responsible for Agriculture.

2.2.4 Determination of Producer Price Based on Gross FoB instead of Net FoB

50. This proposal aims to provide the farmer with a fair, transparent and remunerative producer price (farmgate price).

51. In line with government policy to pay remunerative producer price, this turnaround strategy will pursue a higher producer price (inclusive of LID) by ensuring that ***at least 60% of the Gross FoB and at most 70% of Gross FOB*** price is set as the producer price, to be reviewed annually. The Gross FoB price is the expected weighted average price of all categories of beans sold on the international market (forward & spot) based on realistic assumptions on production and exchange rate. It needs to be mentioned that the buyer's margin has also been pegged at a minimum of 9% and a maximum of 11% of the determined producer price.

52. The balance of the FoB price after allocation to the farmer will be allocated for industry cost, margins of LBCs and hauliers and other COCOBOD operations such that all together, COCOBOD will operate a balanced annual budget without carrying forward arrears in financial obligations in the form of budgets deficit. This is to prevent the accumulation of arrears in financial obligations through operating annual budget deficits.

53. By allocating a greater portion of the FoB price to the farmer, COCOBOD will be able to gradually withdraw from the activities classified under industry cost meant for the benefit of the farmer. The objective is that the enhanced producer price should enable the farmer to undertake the recommended Good Agronomic Practices (GAPs) and other necessary interventions from their own resources whilst COCOBOD provides assistance through farmer education and improved extension support.

54. It must be noted that the producer price achieved by this methodology should be monitored against the farm gate price announced in neighbouring countries each year. The implication is that a high tendency exists for Ghana to lose part of its crop through smuggling if price differential exists between its producer price and the producer price existing in neighbouring countries.

2.2.5 Legally binding framework for setting the farmer producer price.

55. COCOBOD shall institute a legally binding framework for the PPRC mechanism. This framework shall provide among others:
    i. The structure – institutions and levels of decision making;
    ii. Processes – operating procedures and guidelines;
    iii. Policies for benchmarking producer prices and industry costs – in relation to minimum and maximum proportions of producer prices and industry costs; and
    iv. Stabilization fund mechanisms with clear governance structure.

56. The LID mechanism has a concept of price stabilization of shoring up producer prices, when achieved FOB is above a defined threshold of US$2,900 per tonne. When the achieved weighted average for the season (LID inclusive) is above the threshold of US$2,900 gross FoB, the excess value will be paid into the stabilization fund, set up under the Cote d'Ivoire-Ghana Cocoa Initiative Secretariat in both countries (i.e., Ghana and Cote d'Ivoire).

57. The gross FoB threshold above which monies will be set aside into the Stabilization will be reviewed annually before the start of the season in light of changing market dynamics and the determined producer price for the farmer. Also, the threshold will be reviewed accordingly when the producer price paid to the farmer is changed in the course of the season.

58. The achieved weighted average of gross FoB will be reported by the external auditors of both countries to the Secretariat to determine the value of payments to be made into the Stabilization Fund.

59. Pending the full implementation of this joint scheme, COCOBOD would adopt this concept and establish a stabilization fund to be managed by COCOBOD in line with the Cocoa Sector Development Strategy (CSDS II), and under the joint supervision of the Ministry of Agriculture and Ministry of Finance.

60. When the achieved FOB is above US$2,900, the excess is paid into the COCOBOD stabilization fund. And when it's below US$2,200 per tonne, payments are made from the stabilization fund, to shore up the producer price. However, the withdrawal should not exceed more than 80% of the total amount in the fund. The amount in the fund would determine the top-up required for the producer price.

61. Legislation governing the operation of the Stabilization fund will be provided for in the producer pricing legislation. This will include a governance structure for the management of the stabilization fund.

62. A stand-alone position paper on the reviewed PPRC mechanism for endorsement by all stakeholders is attached (Appendix 1).

2.2.7 Risk and Mitigation measures on producer price reforms

63. The exchange rate volatility, and in particular the depreciation of the Ghana Cedi against the US$, EURO and the CFA constitute the major risk to the proposed reforms on producer prices. Depreciation of the Cedi in the last and first quarter of the fiscal year, often incentivize smuggling of cocoa to neighboring countries, leading to lower recorded output in Ghana.

64. To mitigate this risk, COCOBOD is to intensify its cooperation with counterparts in Cote d'Ivoire, under the auspices of the Cote d'Ivoire – Ghana Cocoa Initiative to have a uniform price between the two countries for the purchase of cocoa from the farmers in both countries.

65. In addition, diplomatic channels of cooperation between Ghana and Cote d'Ivoire are to be explored, particularly security cooperation to reduce cross border smuggling.

66. COCOBOD will also liaise with the security agencies to strengthen the border controls to curb possible smuggling of cocoa to neighboring countries.

2.2.8 Impact on COCOBOD's financial performance

67. The above reforms are expected to jointly influence a positive movement towards balance budget by reducing deficits arising from higher-than-revenue expenditures and guaranteeing a revenue stream sufficient to recover the Board's operational and financial costs. Implementation of the reforms is expected to result in a zero deficit budget from the 2024/2025 financial year onwards.

2.2.9 Implementation and Action Plan

68. The implementation of the proposed reforms will take effect in the 2023/24 season. Prior to this date, intensive consultations with relevant stakeholders shall be undertaken, culminating in Cabinet approval of the reforms. The public, cocoa farmers, external stakeholders, and relevant MMDAs will then be engaged to disseminate the reforms. The engagement of cocoa farmers as the primary stakeholders in the cocoa industry will commence in 2024/2025.

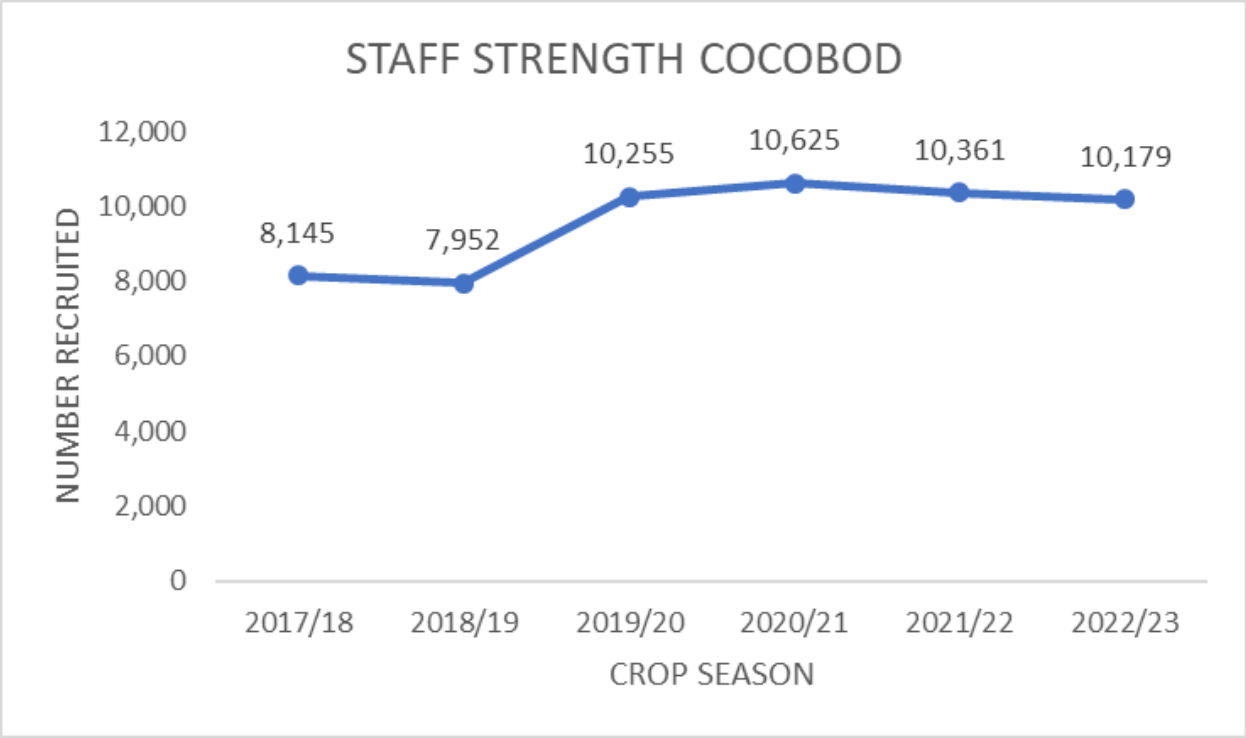
2.2.10 Functional Review of Departments

69. This review is proposed to examine the functions of the various departments of COCOBOD with the view of identifying factors for improving efficiency and effectiveness of the operational and administrative functions of the Board. Efficiency improvements will require cost rationalization measures including staff rationalization and enhancement of Internally Generated Funds (IGFs).

2.3 Staff Rationalization

70. The staff strength of COCOBOD has been rising over the past decade, in line with expansion in the scope of its operations. The increase has been driven in part, by the rise in the number of extension officers recruited from 2018 to 2023. This was to ensure that cocoa farmers receive the technical support that they require to improve their farms and enhance their livelihood. Staff numbers at the end of 2022/23 crop year stood at 10,179.

Figure 3:Staff strength of COCOBOD



2.3.1 Key Issue

71. The new direction of COCOBOD as a modernized and financially viable entity, require significant changes to the functions of the various departments, along with realignment of competences and expertise of staff to respond to the expanded scope of its operations.

2.3.2 Proposed Changes

72. To improve labour productivity and cut costs, the following reforms shall be implemented:

    a. COCOBOD shall undertake a functional review of staff to assess and align competencies to tasks. If found necessary, staff will be redeployed to departments where they will be more relevant and productive. The exercise will commence effective in Q2 of 2024 and completed by end of Q3 2025.
    b. COCOBOD shall institute measures to improve the internally generated funds of divisions and subsidiaries. Strategies to improve internally generated funds is attached as Appendix II and implementation are ongoing.
    c. COCOBOD shall freeze recruitment in the interim but shall replace critically essential staff that separate.
    d. COCOBOD shall wean itself from all quasi-fiscal activities from the medium to long term through prudent measures. The award of new cocoa roads contracts to cease forthwith effective 2023/2024 financial year.

2.3.3 Expected Impact

73. It is expected that the above initiatives will lead to increase in productivity and overall efficiency.

2.4 Restructuring of Cocoa Bills

74. The Government of Ghana, through the Ministry of Finance has assessed debt levels of State-Owned Enterprises which could potentially become a contingent liability of the Government. The Ministry of Finance, with its advisors and in consultation with the Bank of Ghana, has assessed the cocoa bills held by COCOBOD and has come to the conclusion that, based on the size of the debt, it would be prudent to consider cocoa bills under the debt sustainability programme by restructuring both the marketable and non-marketable cocoa bills as part of the overall Government's Domestic Debt Exchange Programme.

2.4.1 Key Issues

75. Ghana Cocoa Board is confronted with significant debt accruing from cocoa bills that have been rolled over since 2016/2017 and 2017/2018 crop years. The cocoa bills were issued to supplement the producer price paid to farmers when the international price of cocoa fell sharply from around $3,000 to $2,000 per tonne. The reduction in revenue also led to deficit budget financing leaving no financial headroom for COCOBOD to settle maturing cocoa bills. The high debt level required the restructuring of the cocoa bills to bring the debt to sustainable levels.

2.4.2 Proposed changes

76. The Government through the Ministry of Finance is in the process of offering five (5) series of cocoa bonds with maturity periods ranging from 2024/2025 to 2028/2029 in exchange for the existing marketable cocoa bills of GH₵7.93 billion. This has since been executed. The cocoa bills exchange programme will convert the marketable cocoa bills from having a short-term tenor of 182-days into a long-term liability.

77. This will effectively terminate the rollover and further growth of the cocoa bills every 182-days as was the case. The cocoa bonds will provide COCOBOD with a capped long-term liability with a fixed semi-annual interest/coupon payment and scheduled maturity dates for settlement.

2.4.3 Expected Impact

78. The restructuring exercise would significantly reduce COCOBOD's finance costs, gearing ratio as well as rollover risk, thereby improving the solvency position and outlook of its balance sheet.

2.5 Reduction in Industry Cost

79. Industry costs are cost items that directly affect the development and effective functioning of the cocoa industry. The industry cost currently constitutes 56% of Gross FoB. The current industry cost is unsustainable and must be reduced to place COCOBOD on the path of profitability.

2.5.1 Key Issue

80. The high industry cost has contributed to the deficit financing of COCOBOD's operations.

2.5.2 Proposed Changes

81. COCOBOD shall gradually reduce the industry cost from 56% to 10% by 2026/2027 crop year through the following initiatives.

2.6 Cocoa Roads

82. The cocoa roads improvement project (CRIP) started in the 2000s during which COCOBOD made contributions to the road fund for the improvement of cocoa feeder roads to ease evacuation of cocoa from the hinterlands to the takeover centers. This contributed to the improvement of livelihoods in the cocoa growing communities and also helped in the reduction of evacuation costs to COCOBOD. The first phase spanned a three-year period from 2014/2015 to 2016/2017. The second phase, CRIP 2, commenced in the 2018/2019 and work is currently ongoing on most of the awarded roads many of which are at various stages of completion.

2.6.1 Key issues

83. COCOBOD's inability to settle certificates of works on the cocoa roads remains a major challenge to the sustainability of the programme. The implementation of the programme places a huge financial burden on COCOBOD resulting in liability build up.

2.6.2 Proposed changes

84. COCOBOD has undertaken to reduce the cocoa roads commitment from GHS24 billion to GHS6.52 billion and finance this payment through the PPRC mechanism over an 8-year period.

85. Thus, **the Strategy will phase out cocoa roads in the following steps**
    i. Discontinuation of roads contracts on which the work done is less than 50%;
    ii. Further cost cutting on remaining commitments;
    iii. These two measures bring the total commitment to GHS11.75billion

iv. Of this amount, payments to date amounts GHS6.91billion. leaving an outstanding amount of GHS6.53 as shown in Table 3. This amount is then spread over an 8-year period to be financed through annual PPRC mechanism.

Table 3: Rationalisation of Cocoa Roads

S/N	Description	Amount (GHS)	Net Amount (after rationalisation) (GHS)
a	Total commitment before rationalization		24,793,394,559.58
	Less:		
b	Proposed savings made from rationalization		11,751,504,514.91
			13,041,890,044.66
	Add:		
c	Claims for Interest on Delayed Payments as at Feb. 2024 (CRIP I)	264,689,988.78	
d	Supervision service charge by GHA as at Dec. 2021	85,310,011.22	
e	Supervision service charge by DFR	40,000,000.00	
f	Logistics for COCOBOD monitoring team and Others	10,000,000.00	400,000,000.00
			13,441,890,044.66
	Less:		
g	Work done/Payment to date (as at 29th February 2024) *		6,914,580,004.29
			6,527,310,040.37
	Total commitment after rationalization		**6,527,310,040.37**

2.6.3 Risk and mitigation

86. The possible risk settlement of contracts and refusal by some contracts to abrogate their contracts could affect the implementation of this cost reduction measure. In addition, the additional cost of delay in payments and variations due to high inflation could increase the project payments in future years. Bad cocoa roads also attract higher evacuation rates, thereby increasing the operational cost of COCOBOD.

87. COCOBOD's negotiation with contractors to ensure smooth settlement on the reduced contract sums or compensation for cancellation of contracts is progressing smoothly. The Board will still pursue acquisition of a low-interest facility to settle road commitments, that will be repaid with non-collateralized crops within a short period of time. COCOBOD will negotiate with haulers and evacuators for a low cost of evacuating cocoa from unmotorable areas.

2.6.4 Impact on COCOBOD's financial performance

88. The long-term loan to repay existing commitments will increase the finance cost of COCOBOD. However, the motorable roads in cocoa communities will reduce evacuation costs to COCOBOD and facilitate primary and secondary evacuation of cocoa.

2.6.5 Phasing out of Fertilizer Subsidy Programme

89. COCOBOD shall gradually phase out of the fertilizer subsidy programme. The aim of the phase out is to reduce industry cost and create a more sustainable financing for the Board. It is expected that the 1,389 additional Cocoa Extension Agents recruited in recent times and trained (and provided with motorbikes and other tools of trade) will provide the needed technical support to farmers to motivate them to adopt good agricultural practices to increase their yield and incomes.

90. Scientific evidence suggests that continuous application of fertilizer yield the best results when done for a continuous three years with a break for assessment of impact on cocoa production. To enable COCOBOD operate within its allocated 22-32% of gross FoB with the objective of achieving sustainable annual budgets, COCOBOD proposes to reduce the subsidy on fertilizers from the 82% in 2023/2024 to between 75-25% in the next 3 years (2024/2025 to 2026/2027) and complete withdrawal in the 4th year (2027/2029). Input dealers will be encouraged to deal directly with cocoa farmers upon COCOBOD's withdrawal. For the 2024/2025 crop season, COCOBOD expects to recover an amount of GHS158.36 million from the farmer cooperatives that equates to about 54% of the value of fertilizer programme for the year.

91. In this regard, COCOBOD seeks to reduce the cost of fertilizer purchases which has direct cash flow implications on its budget and finances. The implementation of the Cocoa Management System (CMS) which has comprehensively digitized farmer data and cocoa purchasing operations will enable COCOBOD to assist in deducting farmer purchases of fertilizers on account of input dealers. Given the change from a percentage of Net FoB to Gross FoB, farmers will be well remunerated to purchase the fertilizers directly when COCOBOD withdraws.

2.6.6 Strategies to ensure access to fertilizer after withdrawal.

92. There are efficient pathways that have proven reliable in input distribution to farmers in the cocoa landscape in Ghana. The pathway envisaged will rely largely on the valuable information provided through the Cocoa Management Systems (CMS). The CMS will provide information about farmers and their farms and the location of cocoa sheds and purchasing clerks. The following pathways will be used in the absence of the subsidized fertilizer programme:

*Figure 4:**(Pathway 1): LBCs facilitation of fertilizer access to farmers***

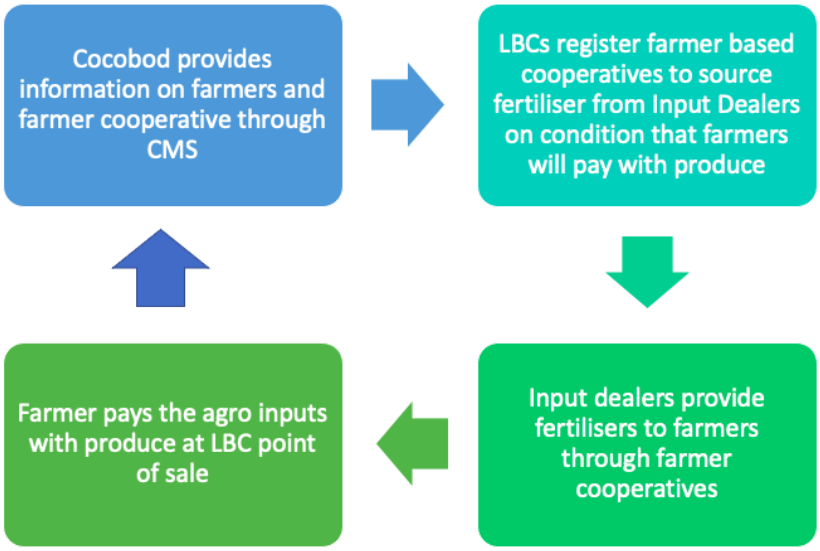


*Figure 5: **(Pathway 2): Input Dealer facilitation of Farmers' Demand for Fertilizer***

*Figure 6:**(Pathway 3): Cocoa Farmer Cooperative Facilitation of fertilizer access to farmers***

2.6.6 Risk and mitigation measures

93. The possible risk associated with the implementation of the phased withdrawal from the Hi-tech programme (Fertilizer) is the increasing cost of the inputs and their availability on both the local and international markets. Also, the possible exchange rate volatility that recently caused input costs to increase could cause the cost of the inputs to be higher than the budget cost. The cost of the inputs to be borne by the farmer will also increase due to the risk of their unavailability in both the local and international markets and exchange rate volatility.

94. COCOBOD will ensure that the procurement of the inputs will be on a value-for-money and cost-saving basis to ensure that the purchases of the inputs are within the approved budget. COCOBOD will ensure that the co-operatives in the various communities are reformed for accountability and traceability and sensitized on the need for repayment of the fertilizer costs issued to them for applications.

95. The Cocoa Management System (CMS) will be operationalized to aid in the implementation of the phased subsidy withdrawal. Access to fertilizer will be enhanced through innovative private sector-led initiatives such as input credits through the CMS (Figures 4, 5 and 6)

2.7 Operational Inputs (Jute sacks, stencil ink, twine)

96. The operational inputs used by COCOBOD for the purchase of cocoa from farmers comprise of jute sacks, twines and stencil ink. These inputs are allocated to the LBCs for bagging of cocoa beans purchased. The operational inputs are industry cost and thus supplied to the LBCs free of charge to ensure quality standards are maintained in respect

of packaging. As part of measures to reduce the cost of operational inputs outside the reduction in cost due to production shortfall, COCOBOD will engage a wider range of input suppliers and subject them to aggressive negotiation to drive down prices. COCOBOD will also undertake an enhanced monitoring to ensure the judicious use of inputs to achieve further savings.

2.7.1 Key Issues

97. For the period 2021/2022 and 2022/2023, COCOBOD has procured 75,000 bales of jute sacks each season in anticipation of a crop produce of 850,000 tonnes each season. Production for the 2021/2022 crop year was 683,564.38 tonnes. Production for 2022/2023 is projected to be around 700,000 tonnes. The shortfall in production for the 2 consecutive years has resulted in some surplus stocks of jute sacks that could supplement a reduction in the procurement of jute sacks for the 2023/2024 crop season. The reduction in the quantity of jute sacks, twine and stencil will result in cost saving to improve the finances of COCOBOD.

2.7.2 Proposed Changes

98. The quantity of jute sacks, twine and stencil to be procured for 2023/2024 shall be reduced by 40% (i.e., 30,000 bales with commensurate quantities for twine and stencil ink) due to the availability of stocks from the production shortfall for the two crop seasons. In the Medium-term COCOBOD will work with Ministry of Trade and Industry and Ministry of Finance to source locally produced jute sacks as part of measures intended to reduce the cost of these inputs.

2.7.3 Impact of the Reform

99. The proposed reduction in jute sacks procurement will generate savings of GH₵234.44 million.

2.7.4 Risks and mitigation measures

100. The possible risk of cutting operational inputs by 40% will be the unavailability of operational inputs to meet the demand from LBCs in the case of production significantly exceeding the projected crop production of 800,000 tonnes.

101. COCOBOD through the Research, Monitoring, and Evaluation Department will continuously monitor production trends during the season with on-field data to be able to promptly notify Management of the need for additional purchase of operational inputs or otherwise.

2.8 Cocoa Diseases and Pest Control Programme

100. Pests and diseases associated with cocoa farming include capsid infestation and black pod diseases caused by the various fungal strains of phytophthora. Effective diseases and pests' control ensure the protection of the crop so that the potential yield is attained.

101. COCOBOD has since 2001 implemented the Cocoa Diseases and Pest Control Programme to protect the crop against the incidence of pests and diseases and subsequently improve yield. The implementation of the Pests and Diseases control programme led to an improvement in yield from 375kg/ha to 450 kg/ha from 2001 to 2008. Through the implementation of the programme and other Productivity Enhancement Programmes, yield from cocoa has increased to 600 kg/ha. However, the sustainability of the programme depends on the effective participation of stakeholders including the participation of private input dealers.

2.8.1 Key Issues

102. COCOBOD currently operates a budget deficit and may not be able to procure agrochemical inputs for the current four round spraying regimes. Farmers shall be required to supplement with another two rounds of spraying.

2.8.2 Proposed Changes

103. To ensure efficiency of the programme, strategic stocks of the recommended agrochemicals (insecticides and fungicides) will be procured to combat diseases and pests. The surveillance and disease monitoring teams of Cocoa Health and Extension Division (CHED) will carry out continuous disease surveillance for immediate action as soon as an outbreak is identified, in order to achieve the envisaged objective. This will eliminate blanket purchases of chemicals which places a huge financial burden on the Board.

104. CODAPEC cost will be reduced by 50%. Strategic stocks will be determined and maintained to curtail disease and pest outbreaks. Improvements in cultural practices on cocoa farms will be enhanced to reduce pests and diseases pressures, diminishing agro-chemicals use.

2.8.3 Risks and mitigation measures

105. The possible risk associated with the 50% purchase of CODAPEC inputs could result in the inability of the cocoa farmer to have access to agrochemicals recommended by COCOBOD. Farmers may not be able to undertake the additional two rounds of spraying.

106. COCOBOD will encourage private involvement in the supply and distribution of agrochemical inputs to cocoa farmers.

CHAPTER 3: OPTIONS AND IMPACTS CONSIDERED FOR PRODUCER PRICE REFORMS

107. COCOBOD's proposed scenario and projections for the sharing of FOB with cocoa farmers in Ghana and other key stakeholders. These scenarios were developed in June 2023 for 2023/24 cocoa season. The objective of these scenarios and projections is to ensure that the cocoa farmer is paid a remunerative producer price based on the achieved gross FoB to mitigate the smuggling of cocoa across borders as well as secure adequate revenue streams to cover the operational and financial costs of COCOBOD.

The preferred scenario for 2023/2024 financial year is analyzed below. **50% subsidy on fertilizer, 64.60% of Gross F.O.B to the farmer.**

108. The variables in each of the scenario are explained below:

109. **Gross F.O.B. Price (US$/tonne) without LID*:*** COCOBOD has projected the gross F.O.B price without the Living Income Differential (LID) to be US$2,200.00 per tonne. This assumption was based on the forward contract sales for the 2023/2024 crop season.

110. **Exchange Rate: (GHS/USD)*:*** The exchange rate used in the projection was BoG's GHS/USD rate of 11.5000/1.0000.

111. **Cocoa Production (tonnes)*:*** Cocoa production for 2023/2024 is projected to be 850,000 tonnes.

112. **Gross F.O.B. Value (GH¢)*:*** The gross F.O.B. value for 2023/2024 is projected to be GH¢ 21.51 billion with an estimated cocoa production of 850,000 tonnes, gross F.O.B. without LID of USD 2,200, and an exchange rate (GHS/USD) of 11.5000.

Table 4: Gross FoB- 2023/24

No.	Variables	US$	GHs
1	Gross FOB Price per tonne (Without LID)	2,200	25,300
2	Exchange Rate (GHs/US$)		11.50
3	Cocoa Production (tonnes)		850,000
4	Gross FOB Price Value	1,870,000,000	21,505,000,000

113. **Contract Prefinance*:*** The contract prefinance in 2023/2024 was USD 90 million. The Ghana Cedis equivalent amounts to GHS 1.04 billion using the GHS/USD exchange rate of 11.5000.

114. **Crop commitments (Loans)*:*** The crop commitments comprise loans expected to be repaid in the 2023/2024 crop season using the expected crops in the 2023/2024 season.

The loans comprise the principal repayment of the Cocoa Bills Bonds, the 10-year BoG loans, and the AfDB long-term facilities. The total crop commitments (loans) expected to be repaid in 2023/2024 amount to GHS 1.95 billion. The breakdown is as follows:

Table 5: Details of crop commitments (loans)

S/No.	Description	Amount (GHS)	% applied	% payable in 2023/24	Amount payable in 2023/24 (GHS)
1	Cocoa Bills Bonds	7,931,007,973.00	5%	100%	396,550,398.65
2	10 year BoG Loan	1,384,202,546.31	100%	60%	830,521,527.79
3	AfDB Long Term Facility	359,454,956.37	100%	200%	718,909,912.74
	Total	**9,674,665,475.68**			**1,945,981,839.18**

115. **Bui Dam Delivery Commitment*:*** The Bui Dam delivery commitment expected to be paid is estimated to be GHS 202.40 million. (10,000 tonnes at a discounted Gross F.O.B of 80%).

116. **COCOBOD's Contribution to Farmer's Pension Scheme (1%):** COCOBOD's estimated contribution to the Farmer's Pension Scheme in 2023/2024 is GHS 138.92 million (1% of the producer price without LID (GHS 16,343.80) multiplied by the expected crop production of 850,000 tonnes).

117. **Fertilizer sales proceeds**

The fertilizer sales proceeds are estimated to generate GHS 12.00 million in income from the previous year's fertilizer sales (GHS 12.84 million).

118. **Gross FOB plus proceeds from fertilizer sales less commitments**

The Gross FOB plus proceeds from fertilizer sales, less commitments, is estimated to be GHS 5.59 billion. The breakdown is (GHS 21.51 billion plus GHS 12.00 million of fertilizer sales proceeds less GHS 5.59 billion of commitments).

Cocoa Roads

119. Cocoa Roads contracts expected to be repaid are GHS 6,636,931,971.86 (GHS 6.64 billion) within 8 years; hence, the amount expected to be paid in 2023/2024 is GHS 829,616,496.48 (GHS 829.62 million).

CODAPEC (Crop protection)*:*

120. The cost of CODAPEC estimated for 2023/2024 to protect the crop is estimated to be 25% of 2022/2023 CODAPEC input purchases (GHS 2,393,035,022.00). The amount estimated to cater for the CODAPEC activities to protect the crop is GHS 598.26 million.

Hi-Tech (fertilizer application)

121. The estimated amount for Hi-tech (fertilizer application) for 2023/2024 is expected to be GHS 281.83 million, a quarter of the value of fertilizer purchased in 2022/2023 which amounts to GHS 1.13 billion.

Operational Input Cost (jute sacks, stencil ink & twines)

122. The operational input cost, which comprises of Jute sacks, stencil inks, and twine was projected to USD 33.93 million). The Ghana Cedis equivalent is GHS 390.19 million, using the GHS/USD exchange rate of 1, is expected to be purchased in 2023/2024.

Gross FOB (GH¢)

123. The gross F.O.B. is the difference between the gross F.O.B after deducting the industry cost and including the fertilizer receivables for the given crop season. The net F.O.B. under scenario 3 amounted to GHS 5.59 billion (GHS6,571.56/tonne).

Sharing Of Gross F.O.B. (GH¢/Tonne)

124. The sharing of gross F.O.B. per tonne is between the farmers and other stakeholders, with the farmers taking the majority of the share.

125. The total sharing of the gross F.O.B. per tonne amounted to GHS 26,120.53 leading to a GHS820.53 deficit per tonne (GHS 697.45 Million deficit).

Table 6: ***Sharing of gross FoB***

Assumption summary	
	2023/2024
	Scenario
Gross F.O.B share to the farmer	***64.60%***
Fertilizer Subsidy to COCOBOD	***50%***
1. Gross F.O.B Price (US$/tonne)	2,200.00
2. Exchange Rate: (GH¢/US$1)	11.5000
3. Cocoa Production (tonnes)	850,000.00
4. Gross F.O.B. Value (GH¢)	21,505,000,000.00
5. Gross FOB/tonne(without LID)	25,300.00
6. Gross FOB/tonne (with LID)	29,900.00
7. Less Contract Prefinance	1,035,000,000.00
8. Less Crop commitments(loans)	1,945,981,839.18
9. Less Bui Dam Delivery Commitment	202,400,000.00
10. Less COCOBOD's Contribution to Farmer's Pension Scheme	138,922,300.00
11. Plus Fertiliser sales proceeds	12,000,000.00
12. Less Cocoa Roads	829,616,496.48
13. Less Disease and Pest Control (CODAPEC) Cost (GH¢)	598,258,755.50
14. Less Operational Input Cost (GH¢)	390,188,531.25
15. Less Rehabilitation (CSSVD & Moribund) (GH¢)	175,627,200.00
16. Less Fertilizer Application (GH¢)	281,829,705.60
17. Net Industry Cost (GH¢)	5,585,824,828.01
16. Net FOB/Tonne (GH¢)	6,571.56
18. GROSS FOB/SHARE (WITHOUT LID)	25,300.00
19. FARMERS SHARE WITHOUT LID (55%)	16,343.80
20. GROSS FOB WITHOUT LID LESS FARMER'S SHARE	8,956.20
21. Industry Cost/tonne	6,571.56
22. GROSS FOB WITHOUT LID DUE OTHER STAKEHOLDERS	2,384.64
Net Savings	
	Scenario
SHARING OF GROSS F.O.B. (GH¢/TONNE)	**Rates (GH¢/tonne)**
23. Net industry Cost/Tonne (GH¢)	5,595.38
24. Farmers	16,328.00
25. Buyers` Margin	1,884.94
26. Hauliers	408.42
27. CMC's internal marketing	220.00
28. Disinfestation/grading/sealing	394.00
29. Crop Financing	531.92
30. Scale Insp/Phytosanitary	3.78
31. Rehabilitation (Coffee)	2.27
32. COCOBOD	602.80
33. Haulage Vat	85.77
34. MOFA-Monitoring & Evaluation	63.25
35. Gov't	0.00
TOTAL	**26,120.53**
	Scenario
36. LID($)	400.00
37. LID(GHC)	4,600.00
38. Producer Price (plus LID)(GHC)	20,928.00
39. Producer price/bag (GHC)	1,308.00
40. Producer price/tonne ($)	1,819.83

Producer Price (GROSS+ LID)

126. The producer price per tonne, together with the LID, is projected to increase under the scenarios from the current year's value of GHS12,800.00 per tonne.

Under the preferred scenario the producer price per tonne is 64.60% of the gross F.O.B. (GHS16,328.00) together with a LID of GHS4,600.00 amounting to GHS20,928.00 per tonne. The producer price per bag is estimated to be GHS1,308.00 which is a 63.50% increase from the current year's producer price of GHS800.00 per bag. The comparison between the producer price paid to farmers in Ghana and Cote d'Ivoire shows a higher rate per bag for Ghana by GHS120.50.

Table 7: Producer price scenarios (Gross + LID)

	Scenario 3
36. LID($)	400.00
37. LID(GHC)	4,600.00
38. Producer Price (plus LID)(GHC)	20,928.00
39. Producer price/bag (GHC)	1,308.00
40. Producer price/tonne ($)	1,819.83
41. Deficit (per tonne)	**(820.53)**
42. Total Deficit	**(697,450,001.53)**

Preferred Scenario

127. The preferred scenario for the 2023/2024 season is recommended based on the following assumptions:
   a) The share of the gross F.O.B. to be paid to the farmer will be 64.60%, which amounts to GHS16,328.00, together with LID (GHS4,600.00) will increase the proposed producer price to farmers to GHS20,928.00 per tonne.
   b) The proposed producer price per bag will be GHS 1,308.00, a 63.50% increase from GHS800.00 per bag in 2022/2023.
   c) The proposed producer price per bag would be competitive, and discourage cross boarder smuggling of cocoa.
   d) With the difference of GHS 120.50, we expect the smuggling of cocoa to neighbouring countries to be reduced.
   e) The proposed fertilizers to be purchased for 2023/2024 are expected to be 50% of the 2022/2023 Hi-Tech (GHS 3.07 billion).

Projection for the next five years

128. The projection for 2024/2025 to 2028/29 are presented in Chapter Six (6) of this Strategy.

Basis for Producer Pricing on Gross F.O.B instead of Net F.O.B

129. The above scenarios show that producer price determination has been done on Gross FOB instead of Net FOB. This has been done to avoid the challenges associated with producer price determination including the concerns about lack of transparency in price determination based on Net FOB. In the past, producer price determination had been done based on net FoB obtained by taking out industry cost from the gross FOB. The industry cost includes the following:

- Subsidized Fertilizer cost
- Crop protection chemicals (CODAPEC)
- Industry Inputs (Jute sacks, Twine, stencil inks etc)
- Cocoa Roads expenditure
- Rehabilitation costs (prior to the commencement of the AfDB rehabilitation programme)
- Bui Dam cocoa delivery commitment
- Farmer Pension Scheme commitment

130. The challenge with this formula was that these costs were perceived not to be objectively verifiable. There were occasions where farmers complained of unfairness in the distribution of fertilizers, crop protection chemicals and other benefits embedded in the industry cost. Other stakeholders also complained of lack of transparency in arriving at the industry cost.

131. Thus, the gross FOB formula is adopted in this turnaround document to deal with these challenges. This affords greater transparency since the gross FOB is more visible and objectively verified by the actual achieved prices on the terminal.

132. The proposal to increase the produce price from the current GHS 12,800 per tonne to GHS 19,900 for the 2023/24 is to motivate farmers to maintain their farms and obtain decent incomes adequate to minimize the living income gap in Ghana. The proposed price also seeks to prevent loss of cocoa farms to illegal mining and other competing land use options, as well as, bringing Ghana's producer price to competitive levels with neighboring countries to prevent smuggling.

Balancing viability of COCOBOD with farmer incomes

133. The producer pricing mechanism adopted in this turnaround strategy recognizes the intricate link between farmer incomes and the viability of COCOBOD. Whereas appreciable farmer incomes are required to sustain cocoa production in the medium to long term, it cannot be pursued at the detriment of financial viability of COCOBOD and relevant stakeholders in the domestic supply chain. Therefore, this turnaround strategy seeks to obtain a balance between viability of COCOBOD and farmer incomes, so as to ensure the sustainability of the cocoa industry in Ghana.

134. The strategy also assesses the cost savings associated with the cost rationalization measures and payment of farmers at Gross FoB. An analysis of the industry cost savings of 2022/23 crop year compared to the impending projections for the 2023/24 crop year, shows a reduction of industry cost per tonne from GHS21,687.38 to GHS7,085.75 per tonne. This represents a savings of 67.33%. the major cost savings were attributable to:

- A reduction of 499.84% in expenditure in the control of disease and pests, from GHS4,479.72 per tonne to GHS746.82 per tonne.
- A reduction of 216.74% in the cost of fertilizer from GHS4,688 per tonne to GHS1,480.17 per tonne.
- A reduction in operational input cost by 137.47% from GHS776.99 per tonne to GHS310.36 per tonne.
- The restructuring of the cocoa bills debt resulted in a reduction of 174.56% from GHS6,678.5 per tonne to GHS2,432.48 per tonne in the payment of loans.

The detailed changes are presented in Table 8.

Table 8: Producer price – 2023/24

	PREVIOUS CROP YEAR (2022/23)		CURRENT CROP YEAR (2023/24)	
VARIABLES	VALUES	DOLLAR EQUIV. (US$)	VALUES	DOLLAR EQUIV. (US$)
1. Gross F.O.B Price (US$/tonne)	2,050.00	2,050.00	2,200.00	2,200
2. Exchange Rate: (GH¢/US$1)	10.6706	10.6706	10.98	10.98
3. Cocoa Production (tonnes)	655,000.00	655,000.00	800,000.00	800,000.00
4. Gross F.O.B. Value (GH¢)	14,327,948,150.00	1,342,750,000.00	19,318,992,000.00	1,760,000,000.00
5. Gross FOB/tonne	21,874.73	2,050.00	24,148.74	2,200.00
6. Less Contract Prefinance	2,677,270,141.00	250,901,555.77	878,136,000.00	80,000,000.00
7. Less Crop commitments(loans)	4,374,464,031.94	345,073,317.00	1,945,981,839.18	177,282,957.46
8. Less Bui Dam Delivery Commitment	98,319,558.40	9,214,060.92	193,189,920.00	17,600,000.00
9. Less COCOBOD's Contribution to Farmer's Pension Scheme (1%)	55,883,028.00	5,237,102.69	124,800,688.32	11,369,600.00
10. Plus Fertiliser sales proceeds	12,844,511.50	1,203,729.08	780,537,903.47	71,108,612.19
11. Less Cocoa Roads	524,421,511.28	49,146,393.95	1,101,527,802.88	100,351,453.80
12. Less Disease and Pest Control (CODAPEC) Cost (GH¢)	2,934,215,888.76	79,395,366.90	597,454,044.38	54,429,295.18
13. Less Operational Input Cost (GH¢)	482,729,941.05	45,239,250.00	248,288,837.74	22,619,625.00
14. Less Rehabilitation (CSSVD & Moribund) (GH¢)	-	-	-	-
15. Less Fertilizer Application (GH¢)	3,070,773,567.87	287,778,903.52	1,535,386,783.94	139,876,901.43
16. Net Industry Cost (GH¢)	14,205,233,156.80	1,070,782,221.67	5,844,228,012.97	532,421,220.67

SHARING OF GROSS F.O.B. (GH¢/TONNE)

	CURRENT CROP YEAR (2022/23)- WITHOUT LID					
	Rates (GH¢/tonne)	% of Gross FOB per tonne	US Dollar Equiv. (US$/Tonne)	Rates (GH¢/tonne)	% of Gross FOB Per tonne	% Change
17. Net industry Cost/Tonne (GH¢)	21,687.38	99.14	2,032.44	7,305.29	30.25	(66.32)
18. Farmers	8,531.76	39.00	799.56	15,600.09	64.60	82.85
19. Buyers` Margin	1,000.00	4.57	93.72	1,200.00	4.97	20.00
20. Hauliers	408.42	1.87	38.28	408.42	1.69	-
21. CMC's internal marketing	195.00	0.89	18.27	214.50	0.89	10.00
22. Disinfestation/grading/sealing	313.00	1.43	29.33	344.30	1.43	10.00
23. Crop Financing	6,415.61	29.33	601.24	1,973.35	8.17	(69.24)
25. Scale Insp/Phytosanitary	3.78	0.02	0.35	3.78	0.02	-
26. Rehabilitation (Coffee)	2.27	0.01	0.21	2.27	0.01	-
27. COCOBOD	548.00	2.51	51.36	602.80	2.50	10.00
28. Gov't		-	-	-	-	-
TOTAL	39,105.22	178.77	1,632.32	27,654.80	114.52	(29.28)

	PREVIOUS CROP YEAR (2022/23)		CURRENT CROP YEAR (2023/24)	
30. LID($)	400.00		30. LID($)	**400.00**
31. LID(GHC)	4,268.24		31. LID(GHC)	**4,390.68**
32. Producer Price (plus LID)	**12,800.00**		32. Producer Price (p	**19,990.77**
33. Deficit (per tonne)	(17,230.49)		33. Deficit (per tonne	- **3,506.06**
34. Total Deficit	***(11,285,973,320.69)***		***34. Total Deficit***	- ***2,804,844,056.97***

b. Strategies to finance the budget deficit for 2023/2024

135. Ghana Cocoa Board proposes the scenario above which gives a budget deficit of GHS697.45 million in 2023/2024, and will be financed as follows:

- Receivables from the Ministry of Finance, under the cocoa deliveries to Genertec in respect of the Bui Dam Offset Agreement, excess export duty and agreed revenue support amounting to GHS2,257,025,757.14 as of June 2023. The latest tranche of GHS993.81million was paid by the Government in April 2021. COCOBOD expects at least 50% of this amount from Ministry of Finance to finance the projected cocoa in 2023/24 crop. Thus, an amount of GHS1,128,512,878.57 will be obtained to offset the deficit.

- **Adoption and implementation of crop financing and sales strategies.** This will be achieved by reducing the reliance on the Annual Syndicated loan, which requires that we lock in a large quantity of forward sales contracts within a short period of time to enable the drawdown of the Facility before the start of the season. Despite the benefits of forward sales, in a normal market (where forwards trades at a premium to spot), the commitment of large volumes of contracts reduces the flexibility to achieve higher prices because buyers are aware of the timing of sales leading to pre-hedging and an ensuing lower price. In periods when the market is inverted (when spot is trading at a premium to the forward contracts) there are lost opportunities that could have been capitalized on from the higher spot prices as seen in the 2022/23 season, where forward prices the beginning of the season in October to December 2022, was trading at an average of $2,200 -$2,400 compared to spot levels of $3,800 in August 2023.

- COCOBOD could therefore have a hybrid of crop financing made up of the annual syndication and other trade financing options that does not put pressure to sell most of the crop forward, releasing some volumes of crop for potential spot sales in an inverted market and does not make our sales strategy predictable leading to greater price discovery.

- **Cost-cutting and rationalization strategies** will be implemented to ensure that the COCOBOD is highly liquid during the peak season (from October to January of the following year) to be able to secure most of the crop available at the opening of the main crop season. The non-direct cost of purchases will be deferred while COCOBOD will fully concentrate on the direct costs to secure the crop from October to January the following year. Also, the available crop after payment of the annual syndication loan will be sold at the increased spot price, which is higher than the forward sale contract price.

- **Enhance generation of Internally Generated Funds (IGF)** that will enable COCOBOD's head office, divisions, and subsidiaries to generate revenue to reduce budget deficits *(Appendix 1).* For instance, CRIG (COCOBOD) to generate funds from research, consultancy, by-product development and commercializing new products.

- COCOBOD will adopt and implement debt recovery strategies for their outstanding receivables such as fertilizer, seed funds outstanding and local factories deliveries. The recovery of the outstanding debts will serve as an additional income to reduce the budgeted deficit balance in 2023/2024.

2023/2024 Mid-year Review

136. COCOBOD revised the initial data for the 2023/2024 season during the middle part of the 2023/2024 season on account information obtained from the field. The changes were mainly in respect of production, direct cost and exchange rate that affected the initial PPRC agreed share of FoB for stakeholders. The changes are indicated in the table below:

Table 9: 2023/2024 midyear review

S/No.	Key changes	2023/2024	2023/2024	Variance	Variance
		Initial	Revised		%
1	Production (tonnes)	850,000	501,434	(348,566)	-41.01%
2	Producer Price per tonne (GHS)	20,928.00	33,120.00	12,192	58.26%
3	Buyers' Margin per tonne (GHS)	1,883.52	2,980.80	1,097	58.26%
4	Exchange Rate (GHS/US$)	11.5000	12.5857	1.0857	9.44%

Production

137. COCOBOD projected a decline in crop production for 2023/2024 from 850,000 tonnes to 501,434 tonnes. The decline in production was due to extreme weather conditions experienced at the beginning of the 2023/2024 season. Also, the increase in cocoa smuggling, illegal mining, and the prevalence of the CSSVD in most cocoa-growing areas also reduced the forecast of production for 2023/2024.

Producer Price per tonne

138. During the mid-year review of 2023/2024 crop season, COCOBOD revised the producer price/farmgate price per tonne from GHS20,928.00 to GHS33,120.00. The decision to increase the farmgate price by 58% was in responses to farmer agitation on account of the bullish prices on the terminal market and also curb the widespread smuggling of cocoa beans from Ghana to the neighbouring countries. The strategic intervention was implemented by the two leading producers of cocoa (Cote d'Ivoire and Ghana) that were facing similar challenges in the course of season. The increase took effect from April to the end of the season in mid-September 2023/2024.

Buyers' Margin per tonne

139. COCOBOD adjusted the buyers' margin for 2023/2024 from GHS1,883.52 at the beginning of the season to GHS2,980.80 in April 2024. The increase was due to the increase in the producer price per tonne during mid-year, of which the buyer's margin is 9% of the producer price to enable LBCs to cover their cost of operations. The strategy to increase the buyers' margin was to encourage LBCs to go back to the field to purchase cocoa for COCOBOD.

Exchange Rate

140. The exchange rate initially applied in the conversion of USD figures at the beginning of the 2023/2024 season of GHS15.000:US$1.000 increased by 9.44% to GHS12.5857:US$1.000 during the mid-year review. The increase was in line with the GHS/US$ exchange volatility that prevailed at the time.

CHAPTER FOUR: REVIEW OF LEGAL FRAMEWORK AND REGULATIONS

141. This Turnaround Strategy shall be implemented within the existing legal framework governing the operations of COCOBOD. The Strategy does not require any amendment to the COCOBOD Law or related legislation.

142. The relevant sections of the COCOBOD Law to be complied with in the implementation of the reforms are provided in Appendix 5.

143. However, to ensure effective implementation of the reforms on producer price, COCOBOD will work with the Ministry of Finance, Ministry of Food and Agriculture, cocoa farmers association as well as other relevant stakeholders to develop a framework on the Revised Producer Price Mechanism which all stakeholders will sign up to.

CHAPTER FIVE: OTHER REVENUE ENHANCEMENT MEASURES

144. COCOBOD's main source of revenue has been and will continue to remain the sale of cocoa beans. The key strategy has been to optimize sale prices through a mix of forward and spot sales. However, this strategy is highly susceptible to volatility in prices and production. Thus, in periods where the realized price or production is lower than expected, revenues tend to be adversely affected.

145. The option of insurance on either price or production or both has been examined and found to be sub-optimal for the purpose of enhancing COCOBOD revenues, given the scale of production and cocoa price volatility on the terminal market. On one hand, weather risks insurance packages are often limited in scope and require substantial investments in weather prediction and data collection on weather variables. On the other hand, price insurance requires accurate prediction of volatility band, and limited contracts to execute. Meanwhile, COCOBOD employs numerous contracts of varying delivery periods, locations and bean quality. This complexity hinders the use the single price insurance (whether a 'put' or 'call' option) for all contracts.

146. Therefore, this strategy considers two key options of enhancing revenue from the mainstream while enhancing other internal funds generations measures.

147. Graduation of discount on sale of Light crop beans to local processing companies: Ghana offers additional discount 7.5% to the 12.5% existing market discount on light crop beans to domestic processes. The aim of the discount was to incentivize domestic processing of cocoa, create employment and raise the value of exports. Domestic processing has increased significantly since the introduction of the policy in 1993. However, this increase coincided with implementation of free zones, which offered significant investment incentives to agro-processing, as well as a general shift towards back integration by cocoa processing companies.

148. COCOBOD analysis shows that that discount has not exerted a significant effect on the positive rise in installed capacity and volumes processed. In addition, the volumes of light crop size beans produced annually is lower than the processing, thus diminishing the relevance of the discount in influencing the profitability of the processing companies.

149. The current discount constitutes a subsidy to processing companies, at a time when the finances of COCOBOD are strained. The subsidy has averaged 28.60 million annually over the past 6 years. Besides, the current strategy is to deepen value addition to the tertiary level, where the value and potential impact on the economy is higher.

5.1 Proposed Reform

150. The revenue enhancement measures proposed in this strategy includes the establishment of the Stabilization Fund (see section 2.2.6) as well as increased mobilization of Internally Generated Funds (IGF) (see Appendix 1).

151. ***Stabilization fund:*** This is a fund set aside by COCOBOD when it has a budget surplus to cushion farmers in the event of a drop in the FoB price of cocoa. In the past the stabilization fund was not backed by dedicated governance structure and law. These limitations weakened its implementation. The LID mechanism has a concept of price stabilization of shoring up producer prices, when achieved FOB is above a defined threshold of US$2,900 per tonne. When the achieved weighted average gross FoB for the season (LID inclusive) is above the threshold, the excess value will be paid into the stabilization fund, set up under the Cote d'Ivoire-Ghana Cocoa Initiative Secretariat in both countries (i.e., Ghana and Cote d'Ivoire).

152. ***Graduation of discount on sale of Light crop beans to local processing companies***: Ghana offers additional discount 7.5% to the 12.5% existing market discount on light crop beans to domestic processes. The aim of the discount was to incentivize domestic processing of cocoa, create employment and raise the value of exports. Domestic processing has increased significantly since the introduction of the policy in 1993. However, this increase coincided with implementation of free zones, which offered significant investment incentives to agro-processing, as well as a general shift towards back integration by cocoa processing companies.

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154. The current discount constitutes a subsidy to processing companies, at a time when the finances of COCOBOD are strained. The subsidy has averaged 28.60 million annually over the past 6 years. Besides, the current strategy is to deepen value addition to the tertiary level, where the value and potential impact on the economy is higher.

155. The Turn Around Strategy is to implement the graduated discounts as provided by the CSDS II. The Strategy provides that "discount on the light crop and other lower bean size categories will be pegged to the prevailing market rates applicable in the world market. In addition, extra discounts will be determined by the stage of processing[4] for which the cocoa bean is required at the following rate:

[4] The stages of processing are categorized as primary processing which include Liquor, butter, cake and powder. Secondary processing covers liquid chocolate or coating (couverture), while tertiary processing refers to finished chocolate or Confectionery products.

- Primary Processing - 2.5% discount above market;
- Secondary Processing – 5.0% discount above market; and
- Tertiary Processing – 7.5% discount above market.

156. The strategy defines primary processing to include Liquor, butter, cake, and powder. Secondary processing covers liquid chocolate or coating (couverture), while tertiary processing refers to finished chocolate or Confectionery products.

157. The revenue enhancement measures proposed in this strategy includes the establishment of the Stabilization Fund (see section 2.2.6) as well as increased mobilization of Internally Generated Funds (IGF) (see Appendix 1) .

5.2 Institutional consultation

158. COCOBOD engaged with the Ministry of Finance and the Ministry of Agriculture in developing this cocoa sector strategy reform. The Board has also engaged domestic and processing companies, particularly concerning the proposed subsidy change for processing light crop beans. This is to ensure broader consensus among relevant stakeholders, for the successful implementation of the turnaround strategy.

CHAPTER SIX: COCOBOD 2022/23 FULL YEAR AUDITED FINANCIALS

6.3 2022/23 FULL YEAR AUDITED ACCOUNTS

Statement of Comprehensive Income

159. The production achieved for the 2022/2023 crop was 656,156 tonnes, against a target of 800,000 tonnes. This represents a 17.98% decrease below the targeted production. This also represents a 4.01% decrease in production compared to 2021/2022 output of 683,564 tonnes. Due to the early opening of 2023/2024 on September 8, 2023, an additional crop of 16,344 tonnes for the 2023/2024 crop was taken over in 2022/2023 hence, the total crop received in 2022/2023 was 672,500 tonnes. This, compared to the 2021/2022 crop of 683,564 tonnes, shows a decrease of 1.62%.

160. The decrease was a result of:
- the unfavourable weather conditions,
- the spread of the Cocoa Swollen Shoot Virus Disease and the cutting of diseased trees,
- cocoa smuggling, and the effect of
- illegal mining activities at cocoa growing areas

Average Price

161. The average price achieved for 2022/2023 was US$2,494 per tonne for export sales, which is a 1.76% increase from the average price achieved for 2021/2022 of US$2,451 per tonne, while the average price for domestic sales achieved for 2022/2023 was US$2,366 per tonne, a 11.62% increase from US$2,120 per tonne achieved in 2021/2022.

162. The average exchange rate was GHS10.7754/US$1.0000 for 2022/2023, compared to the average exchange rate of GHS6.6290/US$1.0000 in 2021/2022.

Revenue:

163. Revenue achieved for 2022/2023 was GHS17.68 billion. This represents an increase of 41.72% over the 2021/2022 revenue of GHS12.47 billion. The increase in sales revenue resulted mainly from:

- a 1.76% increase in the average export sales price from USD2,451/MT in 2021/2022 to USD2,494/MT in 2022/2023.
- a 11.62% increase in local sales price from USD2,120/MT in 2021/2022 to USD2,366/MT in 2022/2023.
- a 62.55% increase in the average exchange rate (GHS/USD) from 6.6290/1.000 in 2021/2022 to 10.7754/1.000 in 2022/2023.

Other Operating Income

164. Other operating income fell from GHS496.83 million in 2021/2022 to GHS436.98 million in 2022/2023, representing a 12.05% decrease. The 12.05% decrease in other operating income was mainly attributed to:

- Sundry income decreased by 13.26%, which was a decrease from GHS 485.84 million in 2021/2022 to GHS 421.40 million in 2022/2023. Sundry Income is made up of revenue from medical services, sample residue and sweepings, insurance claims, income from consultancy and research services at CRIG, and the sale of cocoa beans, coffee, cashew, and other farm products.

- Dividend received decreased from GHS738,000 in 2021/2022 to GHS2,579.61 in 2022/2023.

Financial Income

165. Financial income increased by 35.35% from GHS458.18 million in 2021/2022 to GHS620.17 million in 2022/2023. This was mainly due to the following:

- a 60.88% increase in interest on fixed deposits, i.e., from GHS287.30 million in 2021/2022 to GHS462.20 million in 2022/2023. The increase was the result of deliberate investment strategies that ensured that optimum amounts of funds were invested without compromising operations, as well as holding investments for longer tenure to take advantage of high interest rates.

- a 53.51% increase in bank interest earned, i.e., from GHS47.52 million in 2021/2022 to GHS72.95 million in 2022/2023, due to better negotiated overnight rates on call deposit accounts.

Direct Costs

166. Direct costs increased by 2.40%, from GHS11.25 billion in 2021/2022 to GHS11.52 billion in 2022/2023. This was due mainly to the following:

- a 1.84% increase in the cost of inventory included in the cost of sales in 2022/2023 as a result of the increase in producer price from GHS10,560/MT in 2021/2022 to GHS12,800/MT in 2022/2023, representing a 21.21% increase, even though production decreased by 4.01% in 2022/2023.

- Also, the buyers' margin and evacuation cost increased from GHS742.85 million in 2021/2022 to GHS931.77 million in 2022/2023. The 25.43% increase was a result of an increase in the buyers' margin rate from GHS 836.10 per tonne in 2021/2022 to GHS 1,000 per tonne in 2022/2023 and an increase in the evacuation cost from GHS 268.19 in 2021/2022 to GHS 408.42 in 2022/2023.

- an 8.85% increase in Cocoa Hi-Tech expenses, (fertilizer application) from GHS 801.06 million in 2021/2022 to GHS 871.99 in 2022/2023. This was mainly due to the cost of fertilizers and the increase in GHS/USD exchange rates.

- a 5.40% increase in other direct costs, which were mainly expenses incurred on cocoa rehabilitation, farmers compensation, nursery, and inspection and collection charges. In 2022/2023, other direct costs increased to GHS 144.43 million from GHS 137.03 million in 2021/2022.

Gross Profit Margin

167. The Gross Profit Margin, which represents the percentage of gross profit to revenue, increased from 9.82% in 2021/2022 (GHS 1.23 billion) to 34.79% in 2022/2023 (GHS 6.16 billion) representing a 254.69% increase. This means, for every GHS1.00 revenue made, we had about GHS0.35 left for overhead expenditure. The increase in Gross Profit Margin was a result of the increase in gross profit of 402% as a percentage of the revenue made for the period.

Distribution Expenses

168. Distribution expenses increased from GHS203.36 million in 2021/2022 to GHS247.50 million in 2022/2023, representing a change of 21.71%. This was mainly due to an increase in storage and shipping costs (14.14%), sales commission to CMC (42.27%), and port handling costs (124.57%).

Administrative Costs

169. Administrative expenses increased from GHS2.64 billion in 2021/2022 to GHS3.62 billion in 2022/2023, representing a change of 37.40%. This resulted mainly from the following:

- Director's remuneration increased from GHS1.16 million in 2021/2022 to GHS1.70 million in 2022/2023, i.e., a 45.75% increase in 2022/2023. The increase resulted from expenditure incurred for meetings held outside Accra to enable the Board members to visit and assess all COCOBOD operations across the various regions.

- Maintenance and utility costs increased from GHS70.80 million in 2021/2022 to GHS94.23 million in 2022/2023, i.e., a 33.10% increase in 2022/2023.

- The amortisation of intangible assets increased from GHS182.30 million in 2021/2022 to GHS196.93 million in 2022/2023, showing an increase of 8.02%. This was a result of the movement of completed roads from Contract Assets to Intangible Assets, increasing the amortized amount for Intangible Assets.

- The amortisation of right of use leased assets increased from GHS30.52 million in 2021/2022 to GHS34.70 million in 2022/2023, showing an increase of 13.70%.

- Head Office and Divisions operations increased from GHS486.01 million in 2021/2022 to GHS1.18 billion in 2022/2023. The main driver of the increase was the increased cost for rehabilitated farms (PEPs), operational expenses of COCOBOD Head Office and its Divisions, as well as the increased cost of Grading & Sealing/Fumigation & Disinfestation expenses due to the effect of the USD/GHC exchange rate on inputs purchased.

- Legal and professional expenses increased by 95.56% in 2022/2023, i.e., from GHS244,300 in 2021/2022 to GHS477,750 in 2022/2023. The main driver was the professional fees incurred on the cocoa bills exchange programme.

- Rent and rates increased by 17.86% in 2022/2023, i.e., from GHS60.08 million in 2021/2022 to GHS70.81 million in 2022/2023. These are mainly the insurance premiums paid to insure COCOBOD's properties, rents on office buildings, and the cost of property rates for COCOBOD's properties, amongst others.

- Bond Expenses of GHS246.65 million relate to the difference between the face value of Government bonds issued to repay its indebtedness to COCOBOD and the value COCOBOD received from the bonds on the market for 2019/2020 (GHS60.53 million) and 2020/2021 (GHS179.71 million), respectively.

Exchange Difference

170. The net exchange difference increased from negative GHS968.46 million in 2021/2022 to positive GHS1.70 billion in 2022/2023, representing a change of 275.28%. The exchange gains resulted from the translation of receivables, amounts due from related parties, loans receivable, and bank balances denominated in foreign currencies. The exchange loss resulted from the translation of secured bank loans, trade, and other accounts payable, as well as lease liabilities denominated in foreign currencies.

171. Ghana experienced exchange rate stability on its currencies, which positively impacted the operations of COCOBOD, hence leading to a net exchange gain of GHS 1.70 billion (275.28% change) in 2022/2023.

Finance Costs

172. Finance costs increased from GHS2.53 billion in 2021/2022 to GHS2.74 billion in 2022/2023, representing a change of 8.35%. This resulted mainly from:

- Increase in interest on loans and borrowings by 8.20% from GHS2.52 billion in 2021/2022 to GHS2.72 billion in 2022/2023. This was due to high interest rates during each maturity and the rollover of cocoa bills at an average interest rate of 30%, leading to increased interest expense.

- The interest on the finance lease is the finance cost associated with COCOBOD's lease liability for rented warehouses. Interest increased to GHS15.18 million in the 2022/2023 financial year from GHS10.50 million in 2021/2022, representing 44.61%.

Net Profit

173. Ghana Cocoa Board (COCOBOD) recorded a net profit of GHS2.31 billion in 2022/2023, compared to the net loss of GHS4.18 billion in the 2021/2022 financial year, representing a 155.21% change over the period. This was attributed to:

- a 41.72% increase in revenue in 2022/2023 as a result of an increase in the average price of cocoa by 3.36%, i.e., from USD2,397 in 2021/2022 to USD2,477 in 2022/2023, and a 62.55% increase in the average exchange rate (GHS/USD) from 6.6290/1.000 in 2021/2022 to 10.7754/1.000 in 2022/2023.

- a 35.35% increase in financial income in 2022/2023 as a result of a 60.88% increase in interest on fixed deposits due to the placement of funds in fixed deposits and a 53.51% increase in bank interest earned on call deposits and current accounts.

- a 275.28% movement in the net exchange difference in 2022/2023, i.e., from an exchange loss of GHS968.46 million in 2021/2022 to an exchange gain of GHS1.70 billion in 2022/2023. This was mainly due to the USD/GHS exchange rate's stability and its positive impact on COCOBOD's transactions over the period.

6.1.2 Statement of Financial Position

Non-Current Assets

174. The net book value of non-current assets was GHS13.31 billion in 2022/2023, up from the 2021/2022 figure of GHS11.60 billion, representing a 14.75% change over the period. The increase in the net book value of COCOBOD was mainly due to the following:

- Contract assets increased from GHS5.57 billion in 2021/2022 to GHS7.29 billion in 2022/2023, representing a 30.81% change. The increase was due to additional work done on cocoa roads.
- Investment Property increased from GHS116.29 million in 2021/2022 to GHS146.64 million in 2022/2023, representing a 26.09% change over the period. The increase was as a result of the fair value gains of GHS30.34 million in 2022/2023.
- Trade and other receivables (non-current assets) increased from GHS686.70 million in 2021/2022 to GHS845.49 million in 2022/2023, representing a change of 23.12%. This relates to a 24.39% increase in the amount due from related parties in 2022/2023, and loan receivables relating to PBC Loan also increased by 14.06%, i.e., from GHS84.39 million in 2021/2022 to GHS96.25 million in 2022/2023.

Current Assets

175. The current assets were GHS13.39 billion in 2022/2023, up from the 2021/2022 figure of GHS13.11 billion, representing a 2.18% change over the period. This was analysed as follows:
- ***Inventories:*** Inventories increased by 21.05% from GHS1.81 billion in 2021/2022 to GHS2.19 billion in 2022/2023. The cocoa beans stock at the end of the year increased from GHS82.20 million in 2021/2022 to GHS321.61 million in 2022/2023, representing a 291.24% increase. The other consumables and inputs, which are mainly stocks of cocoa bags (jute sacks) and goods in transit, chemicals, motorized pruners/slashers and their components, increased by 8.21% in 2022/2023, i.e., from GHS1.73 billion in 2021/2022 to GHS1.87 billion in 2022/2023.

- ***Other financial assets:*** Other financial assets (fixed deposit investments) increased by 0.25% from GHS167.68 million in 2021/2022 to GHS168.10 million in 2022/2023.

- ***Trade and other receivables:*** Trade and other receivables increased by 4.76% from GHS9.50 billion in 2021/2022 to GHS9.95 billion in 2022/2023. This is due to the increase in trade receivables (37.39%), amounts due from related parties (11.29%), and loans receivable (19.71%). The trade receivables comprised of the local factories receivables for cocoa delivered.

Current Liabilities

176. The current liabilities were GHS10.18 billion in 2022/2023, reducing from the 2021/2022 figure of GHS11.62 billion, representing a 12.39% decrease over the period. This is analysed as follows:

- ***Loans and borrowings:*** The current portion of the loan and borrowing was valued at GHS1.49 billion in 2022/2023 as against the GHS1.93 billion recorded in 2021/2022, representing a 22.74% decrease. The decrease was a result of the decrease in unsecured bills and notes payable (Cocoa bills) over the period. Cocoa bills were exchanged from short-term cocoa bills to 5-year bonds with the commercial banks, and 50% of the non-marketable portion (GHS3.70 billion) with Bank of Ghana was converted to Government's stake in COCOBOD by the Government of Ghana in 2022/2023. The current loans and borrowings amount of GHS1.49 billion is made up of the current portion of the Cocoa Bonds and Interest payable (GHS454.93 million), the current portion of the AfDB secured bank loan (GHS825.23 million), and the unsecured bills (GHS212.04 million).

- ***Contract liabilities:*** Contract liabilities decreased from GHS2.81 billion in 2021/2022 to GHS1.01 billion in 2022/2023. The decrease was as a result of the decrease in the amount payable to local factories due to an increase in the delivery of commitments.

Non-Current Liabilities

177. The non-current liabilities decreased from GHS17.02 billion in 2021/2022 to GHS14.45 billion in 2022/2023, representing a 15.09% change. This was analysed as follows:

- Loans and borrowings decreased from GHS16.66 billion in 2021/2022 to GHS14.13 billion in 2022/2023, representing a 15.09% change. The decrease was a result of the reduction in the non-marketable securities payable to MOF, that is, from GHS5.26 billion in 2021/2022 to GHS3.70 billion in 2022/2023. The other portion of the loans and borrowings are the non-current portion of Cocoa Bonds (GHS7.29 billion), the BOG 10-year loans (GHS1.41 billion), and the non-current portion of the AfDB loan (GHS1.72 billion).

- The non-current portion of the lease liability of COCOBOD decreased from GHS127.16 million in 2021/2022 to GHS80.52 million in 2022/2023, representing a 36.68% change.

Total Equity

178. The total equity increased from a negative GHS3.94 billion in 2021/2022 to a positive GHS2.07 billion in 2022/2023. This was a result of the increase in the capital contribution from GHS393,000 in 2021/2022 to GHS3.70 billion in 2022/2023 and the net profit recorded in the current year.

CHAPTER SEVEN: COCOBOD FIVE YEAR FINANCIAL PROJECTIONS (2024/25 – 2028/29)

179. The financial projections for the next five years are presented below.

GHANA COCOA BOARD **Cashflow projections from 2023/2024 to 2028/2029**

GHS'000	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029
Key assumptions:						
Exchange rate (GHS/US$)	13.3610	13.7810	13.9170	14.3500	14.6083	14.7544
Assumed weighted average Cocoa FOB (US$)	2,861	4,000	4,077	4,154	4,154	4,231
Farmgate price (as a share of average price in Cedi)	62.47%	65.00%	65.00%	65.00%	65.00%	65.00%
Production volume	501,434	810,000	850,000	850,000	919,000	790,000

Financials Statement on Cash Basis:	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029
A. Total Revenues	**21,850,465.88**	**45,817,525.68**	**49,465,757.21**	**51,944,463.64**	**57,093,503.28**	**50,517,647.10**
Sale of cocoa beans (local + exports)	19,165,178.21	44,650,440.00	48,227,757.69	50,666,538.46	55,765,499.68	49,313,687.80
Fertilizer sales	150,750.00	158,362.50	167,116.88	177,184.41	192,621.29	-
IGFs	784,448.02	781,557.61	841,000.51	867,870.43	899,224.93	944,186.18
Other operating income	224,695.98	227,165.58	229,882.13	232,870.35	236,157.38	259,773.12
Government transfers for Genertec/Bui Dam	1,525,393.67				-	-
B. Expenditures (a+b+c+d)	**20,714,132.41**	**39,478,245.45**	**41,899,552.99**	**43,774,065.91**	**47,519,910.09**	**40,277,260.51**
a. Farmers' services provision	**2,939,927.78**	**3,049,637.09**	**3,093,689.14**	**3,448,310.02**	**3,733,932.23**	**1,592,394.63**
Cocoa roads payment	1,141,705.61	900,000.00	1,000,000.00	1,400,000.00	2,100,000.00	-
Fertilizer program	501,312.90	293,102.89	315,649.27	248,010.14	-	-
Codapec	598,258.76	628,171.69	598,258.76	628,171.69	568,345.82	556,978.90
Mass Pruning	69,261.97	76,188.17	82,283.22	87,220.21	95,942.23	94,023.39
Bui commitment	239,200.00	241,592.00	243,713.60	241,740.00	-	-
Farmers' pension	-	245,577.42	266,162.63	280,542.50	308,775.64	273,915.12
Industry input (sacks, twine, ink)	390,188.53	665,004.91	587,621.67	562,625.47	660,868.54	667,477.22
b. Direct cost	**13,704,520.79**	**32,157,825.15**	**34,727,734.12**	**36,474,747.32**	**40,141,709.38**	**35,514,403.99**
Payment to farmers	11,971,882.32	29,022,786.00	31,348,042.50	32,933,250.00	36,247,574.79	32,053,897.07
Payment to LBCs, hauliers/Evac, other	1,282,350.61	2,959,411.95	3,204,064.42	3,365,870.12	3,718,507.39	3,284,879.72
Pest and disease control (Rehab activities)	450,287.85	175,627.20	175,627.20	175,627.20	175,627.20	175,627.20
Other direct costs (if any) paid to outside Cocobod	-	-	-	-	-	-
c. Organizational cost	**2,521,727.03**	**2,495,869.43**	**2,543,291.83**	**2,583,733.79**	**2,689,784.48**	**2,613,080.89**
Administrative cost (cash based only)	2,266,981.77	2,299,849.43	2,317,021.83	2,334,836.79	2,393,772.74	2,345,897.28
Distribution expenses/margins/fees	254,745.27	196,020.00	226,270.00	248,897.00	296,011.74	267,183.61
d. Interest expense	**1,547,956.82**	**1,774,913.79**	**1,534,837.91**	**1,267,274.78**	**954,484.01**	**557,381.00**
Interest on Cocoa bills (Bonds)	1,031,031.04	896,004.29	707,371.81	515,515.52	257,757.76	-
Other Interest costs (ASL, AfDB, BoG)	516,925.78	878,909.50	827,466.10	751,759.26	696,726.25	557,381.00
Net inflow before amortization (Primary balance) (A - B)	**1,136,333.47**	**6,339,280.23**	**7,566,204.22**	**8,170,397.73**	**9,573,593.19**	**10,240,386.58**
C. Amortization	**1,106,300.26**	**3,282,368.49**	**3,220,212.79**	**2,319,981.25**	**1,936,951.72**	**-**
Cocoa Bond	387,390.34	1,549,561.37	1,936,951.72	1,936,951.72	1,936,951.72	
Cocoa Bills Individual Holders		162,384.11				
AfDB facility	718,909.91	739,901.47	729,580.05	383,029.53	-	-
BoG 10-years Loan	-	830,521.53	553,681.02	-	-	-
D Net inflow after amortization (A - B - C)	**30,033.21**	**3,056,911.74**	**4,345,991.43**	**5,850,416.49**	**7,636,641.47**	**10,240,386.58**
E. Budget transfer from MOF (-D if D<0, zero otherwise)						

Memo:	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029
ASL	7,680,000.00	16,052,400.00	20,125,500.00	21,525,000.00	22,362,450.00	23,480,572.50
Per unit PPP (incl. LID) - USD	1,820	2,600	2,650	2,700	2,700	2,750
New unit PPP (incl. LID) - USD	**2,500**					
Per unit PPP (incl. LID) - GHC	20,928	35,831	36,880	38,745	39,442	40,575
New unit PPP (incl. LID) - GHC	**33,120**					
Per unit PPP (exl. LID) - GHC	16,328	30,318	31,313	33,005	33,599	34,673
New unit PPP (exl. LID) - GHC	**27,821**					
Buyers` Margin	1,884.00	3,224.75	3,319.20	3,487.05	3,549.82	3,651.71
Hauliers	408.42	428.84	450.28	472.80	496.44	506.37
CMC's internal marketing	220.00	242.00	266.20	292.82	322.10	338.21
Revised						
Current production (tonnes)	**380,218**					
Expected Tonnage to be purchased (tonnes)	**121,217**					
New Producer Price per tonne (GHS)	**33,120**					
New Producer Price per bag (GHS)	**2,070**					
New Buyers` Margin per tonne (GHS)	**2,980**					
Hauliers rate per tonne (GHS)	**408.42**					

APPENDICES

Appendix 1: Strategies for generating additional IGF

Division/Subsidiary	Sources of internal revenue generation	Strategies to increase IGF	Expected additional income generated (GH¢)
CRIG	Research and Consultancies	- Open up opportunities for joint product development with advanced laboratories - At least 10% overhead charges on commissioned projects - Budgeting for personnel costs on foreign-funded projects, where allowable	
	By-product development and commercializing new products	- Increased capacity to produce soaps, body lotions and biscuits - Contracts with Start-ups to supply tailor-made products - Increased capacity for cashew processing – 100 acres established at Bole - New products such as anti-moss to be produced on largescale and commercialized - Shea biodiesel at B15 to be commercialized, particularly useful in spraying machines	

Seed Production Division	Sale of cocoa pods to Liberia and Sierra Leone	- exporting of more hybrid cocoa seed pods to the countries at a pod price of US$ 2.00. -	
	Sale of cocoa pods to NGOs such as World Cocoa Foundation (WCF)	- Currently the pods are given to the NGOs for free. The proposal is to start selling the pods for about 5ghc per pod.	
Cocoa Health and Extension Division	Training of staff of Agro-chemical companies	Charge Agro-chemical companies a fee for training of their staff and the facilitation of their engagements with cocoa farmers on their products	
	Sale of cocoa products and by-products	Act as sales agents for cocoa processing company products and by-products from CRIG	
	Operations of Bunso Cocoa College	Modernize and improve facilities at BCC and hire out for more cash	
	Facilitation of cocoa sustainability projects	Charge facilitation fees engaged in cocoa sustainability projects	
QCC	Disinfestation Service Charge	charging fee for rendering disinfestations services to Licence Buying Companies and the Board	

	Commercial disinfestation activities	- Aggressive marketing strategies to other prospective areas such as Schools, public and private universities, public spaces such as Airports (Kumasi, Tamale international airports). - Advertise in the traditional media to make our services known to the general public.	
	Warehouse inspection and certification	Charge inspection and certification fees for first time applicants and annual renewal fees	
	Inspection of shipholds and containers	Charge cocoa buyers for the inspection of containers before shipment	
	Education of Licence Buying Company Agents	Periodic training of LBC agents to facilitate quality assurance	
	Pesticides Residue Analysis	Carrying out tests for private companies at a fee	
Cocoa Clinic	**QCC training School**	Upgrade of facilities of the Training school to warrant a charge of competitive rates for services	

CMC	**Sweepings, residue**		
Seed fund interest, call interest/investment incomes from accounts			

Appendix 1A: Summary of IGF Projections

IGF BY DIVISIONS AND SUBSIDIARIES				
Division/Subsidiary	**Expected Revenue for 2022/2023**	**Projections for 2023/2024**	**Projections for 2024/2025**	**Projections for 2025/2026**
CRIG	19,706,655.50	20,691,988.27	22,140,427.45	23,247,448.82
QCC	43,527,707.51	89,423,677.73	93,269,335.81	107,388,838.34
SPD	5,776,913.73	2,294,421.32	2,500,000.00	2,700,000.00
CHED	12,670,435.98	51,399,745.83	53,826,105.23	56,863,440.87
COCOA CLINIC	75,277,297.07	90,638,190.08	99,821,739.23	110,800,779.14
CMC		58,195,637.50	79,615,865.63	84,505,120.00
TOTAL	**156,959,009.79**	**312,643,660.73**	**351,173,473.35**	**385,505,627.17**

Appendix 1B: IGF Projections by CRIG

COCOA RESEARCH INSTITUTE OF GHANA (CRIG)				
PROJECTED INTERNALLY GENERATED REVENUE/FUND (IGF) FOR THREE YEARS ENDING 2026				
IGF	**Expected Revenue for 2022/2023**	**Projections for 2023/2024**	**Projections for 2024/2025**	**Projections for 2025/2026**
Interest on Investment	2,254,324.20	2,367,040.41	2,532,733.24	2,659,369.90
Interest on Staff Loans	30,000.00	31,500.00	33,705.00	35,390.25
Staff Housing Rents	1,072,000.64	1,125,600.67	1,204,392.71	1,264,612.35
Sale of Cocoa Beans	1,484,485.92	1,558,710.22	1,667,819.93	1,751,210.93
Sale of Coffee	220,500.00	231,525.00	247,731.75	260,118.34
Sale of Cola	15,787.50	16,576.88	17,737.26	18,624.12
Sale of Other Farm Produce	333,033.00	349,684.65	374,162.58	392,870.70
Rest House Revenue	668,494.50	701,919.23	751,053.57	788,606.25
School Fees	888,264.00	932,677.20	997,964.60	1,047,862.83
Consultancy Fees	9,179,703.00	9,638,688.15	10,313,396.32	10,829,066.14
Sale of By-Products (NPDU)/CPC	2,506,872.75	2,632,216.39	2,816,471.53	2,957,295.11
Sundry Income	692,249.49	726,861.96	777,742.30	816,629.42
Bindery Income	360,940.50	378,987.53	405,516.65	425,792.48
Total	**19,706,655.50**	**20,691,988.27**	**22,140,427.45**	**23,247,448.82**

Appendix 1B: IGF Projections by Quality Control Company Ltd (QCC)

	BUDGET 2022/2023 GH¢	PROPOSED INCREASE 2023/2024 GH¢	PROPOSED INCREASED2024/2025 GH¢	PROPOSED INCREASE 2025/2026 GH¢
PROPOSED IGF				
Service Charge on Container Inspection		3,360,000.00	3,696,000.00	4,065,600.00
Warehouse Inspection and Certification		414,800.00	414,800.00	414,800.00
Traditional Disinfestation		40,000,000.00	42,000,000.00	44,100,000.00
Inspection of Shipholds		2,160,000.00	2,376,000.00	2,613,600.00
Training of License Buying Agents		2,250,000.00	2,250,000.00	2,250,000.00
Pesticide Residue Analysis (Japan)		3,000,000.00	3,000,000.00	3,000,000.00
Other Pesticide Analysis for Procesing Companies		450,000.00	675,000.00	1,012,500.00
Grading & sealing Coffee	108	162	243	425,000
Income - Assets Disposal	85,000	85,000	85,000	85,000
Commercial Disinfestation	3,321,396	2,321,396	2,553,535	2,808,889
Interest on staff loans	42,845	42,845	42,845	47,130
Staff Housing Rents	620,000	713,000	713,000	713,000
Laboratory Analysis	320,000	320,000	320,000	320,000
Income from Sample Residue	36,095,229	30,000,000	30,000,000	30,000,000
Training School Income	185,000	292,000	321,200	353,320
Interest on call/current Account	1,198,480	2,000,000	2,400,000	2,640,000
Grading & sealing Cashew	9,450	14,175	21,263	9,750,000
Grading & sealing Sheanut	200	300	450	150,000
Investment Income	1,650,000	2,000,000	2,400,000	2,640,000
Sub Total	**43,527,708**	**89,423,678**	**93,269,336**	**107,388,838**

Appendix 1C: IGF Projections by SEED PRODUCTION UNIT (SPD)

INTERNALLY GENERATED FUND (IGF) PROJECTION FOR 2023/2024 - 2025/2026 CROP YEAR							
Table 1 - PROJECTIONS IN FIGURES							
S/N	ITEM		2021/2022	2022/2023	2023/2024	2024/2025	2025/2026
1	DRY COCOA BEANS			8%	10%	5%	5%
2	COFFEE BERIES				10%	5%	5%
3	PODS	WCF/OTHER ORG.	175,173	462,350	500,000	500,000	500,000
4		EXPORT	38,400	2,700	10,000	10,000	10,000
5	OTHER CROPS			10%	SAME	SAME	SAME
6	INCOME ON INVESTMENT		5,776,913.73	2,294,421.32	2,500,000.00	2,700,000.00	3,000,000.00
EXPORT =SIERRA LEONE AND LIBERIA AT USD 2.00 PER POD							
TABLE 2 : PROJECTIONS IN REVENUE (GHC)							
S/N	ITEM		2021/2022	2022/2023	2023/2024	2024/2025	2025/2026
1	DRY COCOA BEANS		132,082.07	237,747.73	261,522.50	274,598.62	288,328.55
2	COFFEE BERIES		51,336.25	51,336.25	56,469.88	28,234.94	29,646.68
3	PODS	WCF/OTHER ORG. (GHC)	-	-	2,500,000.00	2,500,000.00	2,500,000.00
4		EXPORT(USD)	76,800.00	5,400.00	20,000.00	20,000.00	20,000.00
5	OTHER CROPS		60,236.00	66,259.60	66,259.60	66,259.60	66,259.60
6	INCOME ON INVESTMENT		5,776,913.73	2,294,421.32	2,500,000.00	2,700,000.00	3,000,000.00
COST OF POD FOR EXPORT IS USD 2.00 AND PROPOSED FOR SALE TO WEF/OTHERS IS GHC 5.00							
OTHER CROPS : PLANTAIN, COCOYAM, PALM FRUITS /OIL, FUEL WOOD/TIMBER , COCONUT CITRUS ETC							

Appendix 1D: IGF Projections by Cocoa Health and Extension Division (CHED)

CHED PROJECTED FUNDS FROM INTERNALLY GENERATED SOURCES COVERING A PERIOD OF THREE YEARS					
DETAILS	**CURRENT YEAR 2022/2023 GH¢**	**YAER -1 GH ¢**	**YEAR -2-GH¢**	**YEAR- 3-GH ¢**	**ASSUMPTIONS**
1.SHORT TERM INVESTMENTS(Interest on investments)	***8,573,319.36***	***9,430,651.30***	***10,287,983.23***	***11,573,981.14***	These are short-term investment income from T'bills and call accounts. Projected to increase by 10% annually from the base year
2.REVENUE FROM BUNSO					
i.Short term investments (Interest on investments)	220,000.00	248,600.00	280,918.00	317,437.34	BCC investments incomes. Projected to increase by 13% annually
ii.Crops	29,414.32	40,664.32	74,414.32	91,289.32	
iii Accomodation.	652,000.00	684,600.00	718,830.00	754,771.50	
iv.Other facilities	2,395,702.30	2,515,487.42	2,641,261.79	2,773,324.88	
v. Training	800,000.00	1,030,400.00	1,081,920.00	1,441,920.00	
Sub-Total	***4,097,116.62***	***4,519,751.74***	***4,797,344.11***	***5,378,743.04***	
3.SHARE CROPPING;Cocoa rehab farms		***2,992,062.50***	***3,938,345.60***	***4,694,102.00***	This is based on share cropping of farms with farmers who are not able to manage their farms. CHED will enter into agreements to share crop and improve productivity of these farms. A third of the proceeds will be for CHED.
4.AGRO INPUTS		-	-	-	Keeping it flat throughout the 3 years.
i.Foliar	-	2,198,000.00	2,198,000.00	2,198,000.00	We need to engage with all the
ii.Granular	-	24,727,500.00	24,727,500.00	24,727,500.00	Agrochemical dealers and will need
iii.Flowering Inducers	-	1,318,800.00	1,318,800.00	1,318,800.00	COCOBOD to put in the structures and
iii.Fungicide	-	1,153,950.00	1,153,950.00	1,153,950.00	mechanisms so CHED can benefit from
iv.Insecticide	-	3,297,000.00	3,297,000.00	3,297,000.00	this commission to enable us reinforce
v.PPE	-	32,973.30	32,973.30	32,973.30	extension messaging to farmers on
vi.Motorised Spraying Machines	-	549.50	549.50	549.50	behalf of the suppliers and to
Vii.Pneumatic Spraying Machines	-	2,747.50	2,747.50	2,747.50	
Sub-TOTAL		***32,731,520.30***	***32,731,520.30***	***32,731,520.30***	
5. COCOA PRODUCTS		***725,760***	***870,912***	***1,045,094***	Increase of 20% every year. These are Cocoa Products sold at the district level to farmers and others to raise some income for the districts.
6.SUSTAINABILITY PROJECTS		***1,000,000.00***	***1,200,000.00***	***1,440,000.00***	Increase of 20% every year. Engagement of Sustainability Companies such as Mondelez, Cargill, Touton, World Cocoa Foundation, RainForest Alliance, International Cocoa Initiative and others
TOTAL	***12,670,435.98***	***51,399,745.83***	***53,826,105.23***	***56,863,440.87***	

Appendix 1D: IGF Projections by Cocoa Clinic

COCOA CLINIC				
REVENUE PROJECTIONS FOR 2022/2023 TO 2025/2026				
	2022/2023	**2023/2024**	**2024/2025**	**2025/2026**
REVENUE HEADS	**AMOUNT GHS**	**AMOUNT GHS**	**AMOUNT GHS**	**AMOUNT GHS**
DRUGS	23,777,194.00	25,707,118.50	27,770,282.66	29,975,820.74

LABORATORY	6,917,840.00	8,209,810.73	9,419,185.21	10,502,391.50
SPECIALIST CONSULTATION	4,089,600.00	5,003,197.92	6,011,103.48	7,184,660.03
ADMISSION	1,993,950.00	2,497,962.92	2,852,480.51	3,256,299.32
XRAY	7,672,440.00	9,831,034.58	11,075,584.22	12,695,669.89
THEATRE	3,260,000.00	4,271,589.00	4,418,253.00	5,280,667.88
GEN. CONSULTATION	16,137,300.00	20,425,271.96	23,216,119.03	26,390,360.65
NHIS CONSULTATION (20% OF GEN CTN)	640,160.00	658,160.00	678,148.00	697,148.00
ENDOSCOPY	602,000.00	865,806.48	1,093,200.46	1,361,444.76
REGISTRATION (25% OF CTN)	800,200.00	1,036,040.61	1,155,185.28	1,324,118.99
SUB TOTAL	**65,890,684.00**	**78,505,992.70**	**87,689,541.85**	**98,668,581.76**
OTHER INCOME				
INVESTMENT INCOME	6,388,958.06	8,257,728.29	8,257,728.29	8,257,728.29
INTEREST ON BANK BALANCE	2,994,634.77	3,870,565.43	3,870,565.43	3,870,565.43
MISE INCOME	3,020.24	3,903.66	3,903.66	3,903.66
SUB TOTAL	**9,386,613.07**	**12,132,197.38**	**12,132,197.38**	**12,132,197.38**
TOTAL	**75,277,297.07**	**90,638,190.08**	**99,821,739.23**	**110,800,779.14**

Appendix 1D: IGF Projections by Cocoa Marketing Company (CMC)

No.	**Revenue Source/Details**	**2023/2024**	**2024/2025**	**2025/2026**
		(GHS)	**(GHS)**	**(GHS)**
	Tonnage	700,000	750,000	800,000
1	Income from Sweeping/Sample Residua/Cuttings	34,664,437.50	53,092,265.63	56,800,800.00
2	Other Handling Income	15,400,000.00	17,250,000.00	17,920,000.00
3	Income from Reachstackers (Lift off/Lift on)	8,131,200.00	9,273,600.00	9,784,320.00
		58,195,637.50	**79,615,865.63**	**84,505,120.00**

Appendix 2: ***Industry Cost Savings Analysis for 2023/24***

Assumption summary			
	2022/2023	2023/2024	Cost Savings
	Base year	Scenario 3	for 2023/2024
Gross F.O.B share to the farmer		***64.60%***	***based on scenario 3***
Fertilizer Subsidy to COCOBOD		***50%***	***GHS***
1. Gross F.O.B Price (US$/tonne) without LID	2,050.00	2,200.00	
2. Exchange Rate: (GH¢/US$1)	10.6706	10.9767	
3. Cocoa Production (tonnes)	655,000.00	800,000.00	
4. Gross F.O.B. Value (GH¢)	14,327,948,150.00	19,318,992,000.00	
5. Less Contract Prefinance	2,677,270,141.00	878,136,000.00	1,799,134,141.00
6. Less Crop commitments (Loans)	4,374,464,031.94	1,945,981,839.18	2,428,482,192.76
7. Less Bui Dam Delivery Commitment	98,319,558.40	193,189,920.00	- 94,870,361.60
8. Less COCOBOD's Contribution to Farmer's Pension Scheme (	55,883,028.00	124,800,688.32	- 68,917,660.32
9. Plus Fertiliser sales proceeds	12,844,511.50	780,537,903.47	767,693,391.97
10. Gross FOB plus proceeds from fertiliser sales less commitm	7,134,855,902.16	16,957,421,455.97	
11. Less Cocoa Roads	524,421,511.28	1,101,527,802.88	- 577,106,291.60
12. Less CODAPEC (crop protection)	2,934,215,888.76	597,454,044.38	2,336,761,844.38
13. Less Hi-tech (fertilizer application)	3,070,773,567.87	1,535,386,783.94	1,535,386,783.94
14. Less Operational Input Cost (jute sacks, stencil ink & twines)	482,729,941.05	248,288,837.74	234,441,103.31
15. Net FOB (GH¢)(Item 10 minus industry)	122,714,993.20	13,474,763,987.04	
16. Net FOB/Tonne (GH¢)	187.35	16,843.45	
17. GROSS FOB/SHARE (WITHOUT LID)		24,148.74	
18. FARMERS SHARE WITHOUT LID (%)		15,600.09	
19. GROSS FOB WITHOUT LID LESS FARMER'S SHARE		8,548.65	
20. INDUSTRY COST/TONNE		7,305.29	
21. GROSS FOB WITHOUT LID DUE OTHER STAKEHOLDERS		1,243.37	
Net Savings			**8,361,005,143.83**

Appendix 3 : Relevant Sections of the COCOBOD Law

19. Internal auditor

(1) The Board shall have an internal auditor.

(2) Subject to this Act, the internal auditor is responsible to the Chief Executive for the performance of the functions of office.

(3) As part of the functions under this Act, the internal auditor shall, at intervals of three months, prepare a report of the internal audit work carried out by the internal auditor during the period of three months immediately preceding the preparation of the report, and submit the report to the Chief Executive who shall convene a meeting of the management as soon as possible to discuss the internal auditor's report.

(4) The internal auditor's report shall cover the financial and operational transactions of the departments, the divisions and the subsidiaries under the Board.

(5) Without prejudice to the general effect of subsection (3), the internal auditor shall make in each report the observations that appear to the internal auditor necessary as to the conduct of the financial affairs of the Board during the period to which the report relates.

(6) The internal auditor shall send a copy of each report prepared under this section to the Minister and (a) a copy to the Minister responsible for Finance, (b) a copy to the Auditor-General, and (c) a copy to the chairman of the board of directors.

(7) This section shall be read as one with the Internal Audit Agency Act, 2003 (Act 658) and where there is a conflict that Act shall prevail

22. Estimates of income and expenditures

(1) The Board shall submit to the Minister at the times and in the form that the Minister may, in consultation with the Minister responsible for Finance direct, detailed estimates of the Board's income and expenditure for the following financial year.

(2) Subject to any other enactment, the expenditure of the Board shall be in accordance with the estimates approved by the Minister acting in consultation with the Minister responsible for Finance.

24. Bank accounts and borrowing powers

(1) The Board may have bank accounts determined by the directors.

(2) Subject to any other enactment, the Board may open and operate foreign exchange accounts including accounts outside the Republic into which shall be paid not less than five percent of its earnings to the Republic through the export of Ghana cocoa and any other agricultural products and derived from the operations of the Board under this Act.

(3) Subject to article 181 of the Constitution and in compliance with clause (4) of that article, the Board may obtain loans and any other credit facilities on the guarantee of the Government from banks approved by the Minister responsible for Finance.

(4) In addition to the powers of the Board under subsection (3), the Board may, with the approval of the Minister responsible for Finance, borrow from any other source.

(5) The Board may borrow temporarily by way of overdraft or otherwise, the sums of money that it requires for meeting its current obligations or performing its functions.

(6) The Minister responsible for Finance may, on behalf of the Government, guarantee the performance of an obligation or undertaking of the Board under this Act.

(7) The Minister responsible for Finance may, in consultation with the Minister, prescribe the maximum sums of money which the Board may borrow under this Act.

(8) Loans derived whether from outside or within the Republic as well as the agreements providing for joint ventures involving the Board shall be subject to clause (4) of article 181 of the Constitution.

29. Payments into Consolidated Fund At the end of each financial year, after the Board has made provision for bad and doubtful debts, depreciation of assets, contributions to staff and superannuation funds and for any other contingencies, and after appropriation has been made to the Farmer's Welfare Fund under section 27, a part of the profits of the Board remaining as directed in writing by the Minister after consultation with the directors and with the Minister responsible for Finance, shall be paid into the Consolidated Fund.

33. Annual report

(1) The Directors shall as soon as possible after the expiration of each financial year of the Board but within six months after the termination of that year, submit to the Minister an

annual report of the Board dealing generally with the activities and operations of the Board within that year which shall include,

(a) a copy of the audited accounts of the Board together with the Auditor-General's report on the audited accounts,

(b) a statement of the directions given to the Board under section 32,

(c) each report submitted by the internal auditor under section 19 in relation to that financial year, and (d) any other information that the Minister may request.

(2) A copy of the annual report shall be forwarded by the directors to

(a) the Minister responsible for Finance,

(b) the Bank of Ghana, and

(c) the Central Bureau of Statistics.

(3) The Minister shall, not later than three months after receiving the annual report, lay a copy of the annual report before Parliament. (4) The directors shall submit to the Minister any other reports on the Board's financial affairs that the Minister may by writing reasonably request

Appendix 4: Rationalization of Cocoa Roads

S/N	Description	Amount (GHS)	Net Amount (after rationalisation) (GHS)
a	Total commitment before rationalization		24,793,394,559.58
	Less:		
b	Proposed savings made from rationalization		11,751,504,514.91
			13,041,890,044.66
	Add:		
c	Claims for Interest on Delayed Payments as at Feb. 2024 (CRIP I)	264,689,988.78	
d	Supervision service charge by GHA as at Dec. 2021	85,310,011.22	
e	Supervision service charge by DFR	40,000,000.00	
f	Logistics for COCOBOD monitoring team and Others	10,000,000.00	400,000,000.00
			13,441,890,044.66
	Less:		
g	Work done/Payment to date (as at 29th February 2024) *		6,914,580,004.29
			6,527,310,040.37
	Total commitment after rationalization		**6,527,310,040.37**

Appendix 5: Income Statement for 2022/2023

GHANA COCOA BOARD				
INCOME STATEMENT FOR THE YEAR ENDED 30TH SEPTEMBER 2023				
		2023 AUDITED ACCOUNTS GHS'000	**2022 AUDITED ACCOUNTS GHS'000**	**% Change**
Revenue	1	**17,676,662**	**12,473,283**	**41.72**
Direct costs	2	(11,518,733)	(11,248,230)	2.40
Gross profit/(loss)		**6,157,928**	**1,225,053**	**402.67**
Gross profit Margin (%)		**34.84**	**9.82**	**254.70**
Other operating income	3	436,975	496,827	(12.05)
Net Exchange Gain	5a	1,697,511	-	-
Impairment Gain	6	-	-	-
Total Other Operating Income		**2,134,486**	**496,827**	**329.62**
Distribution expenses	4	(247,503)	(203,359)	21.71
Administrative expenses	5	(3,622,030)	(2,636,210)	37.40
Net Exchange Loss	5a	-	(968,463)	(100.00)
Impairment Loss	6	(31,540)	(55,759)	-
Total Operating Expenses		**(3,901,074)**	**(3,863,792)**	**0.96**
Operating profit/(loss)		**4,391,341**	**(2,141,911)**	**(305.02)**
Financial costs	7	(2,736,720)	(2,525,800)	8.35
Financial income	8	620,167	458,180	35.35
Fair value gain on investment property		30,341	34,462	-
Net profit /(loss) for year		**2,305,130**	**(4,175,069)**	**(155.21)**
Other Comprehensive Income				
Revaluation of property, plant and equipment				-
Re-measurement of defined benefit liability		(1,393)	1,535	(190.75)
Equity investment af FVOCI-net change of fair value		(813)	(2,205)	(63.14)
Total other comprehensive income for the year		**(2,206)**	**(671)**	**228.94**
Total comprehensive income for the year		**2,302,925**	**(4,175,739)**	**(155.15)**

Appendix 6: ***Balance Sheet for 2022/2023***

GHANA COCOA BOARD				
BALANCE SHEET AS AT 30TH SEPTEMBER 2023				
Non-current assets	NOTE	**2023 AUDITED ACCOUNTS GHS'000**	**2022 AUDITED ACCOUNTS GHS'000**	**% Change**
Intangible assets	9	960,483	1,001,098	(4.06)
Contract assets	10	7,290,918	5,573,851	30.81
Property, plant and equipment	11	3,972,419	4,096,931	(3.04)
Investment Property	12	146,635	116,293	26.09
Right of Use Asset	13	61,029	90,659	(32.68)
Investments in subsidiaries & Affiliates	14	23,914	23,914	-
Investments in Associates	14a	36	36	-
Other investments	15	5,676	6,489	(12.52)
Trade and other receivables	16	845,493	686,702	23.12
		13,306,603	**11,595,973**	**14.75**
Current assets				
Inventories	17	2,193,099	1,811,701	21.05
Other financial assets	18	168,097	167,679	0.25
Trade and other receivables	19	9,951,666	9,499,099	4.76
Cash and cash equivalents	20	1,079,455	1,628,575	(33.72)
		13,392,317	**13,107,055**	**2.18**
Total assets		**26,698,920**	**24,703,028**	**8.08**
Equity		**2023 AUDITED ACCOUNTS GHS'000**	**2022 AUDITED ACCOUNTS GHS'000**	**% Change**
Capital contribution		3,702,036	393	941,197.17
Fair value reserve		(361)	452	(179.94)
Revaluation reserve		3,399,750	3,399,751	(0.00)
Retained earnings	15	(5,032,217)	(7,335,954)	(31.40)
Total equity		**2,069,209**	**(3,935,357)**	**(152.58)**
Current liabilities		**2023 AUDITED ACCOUNTS GHS'000**	**2022 AUDITED ACCOUNTS GHS'000**	**% Change**
Loans & borrowings	21	1,492,209	1,931,490	(22.74)
Trade and other payables	22	7,560,256	6,846,909	10.42
Contract liabilities	23	1,013,701	2,806,469	(63.88)
Lease Liability	25	112,851	33,978	232.13
		10,179,017	**11,618,848**	**(12.39)**
Non-current liabilities		**2023 AUDITED ACCOUNTS GHS'000**	**2022 AUDITED ACCOUNTS GHS'000**	**% Change**
Loans and borrowings	26	14,134,159	16,661,012	(15.17)
Employee benefits	27	236,018	231,370	2.01
Lease Liability	28	80,517	127,157	(36.68)
		14,450,694	**17,019,539**	**(15.09)**
Total liabilities		**24,629,711**	**28,638,386**	**(14.00)**
Total equity and liabilities		**26,698,920**	**24,703,028**	**8.08**

IFRIC 12

Service Concession Arrangements

In November 2006 the International Accounting Standards Board issued IFRIC 12 *Service Concession Arrangements*. It was developed by the Interpretations Committee.

Other Standards have made minor consequential amendments to IFRIC 12. They include IFRS 9 *Financial Instruments* (Hedge Accounting and amendments to IFRS 9, IFRS 7 and IAS 39) (issued November 2013), IFRS 15 *Revenue from Contracts with Customers* (issued May 2014), IFRS 9 *Financial Instruments* (issued July 2014), IFRS 16 *Leases* (issued January 2016) and *Amendments to References to the Conceptual Framework in IFRS Standards* (issued March 2018).

IFRIC 12

CONTENTS

FOR THE ACCOMPANYING GUIDANCE LISTED BELOW, SEE PART B OF THIS EDITION

INFORMATION NOTES

ILLUSTRATIVE EXAMPLES

FOR THE BASIS FOR CONCLUSIONS, SEE PART C OF THIS EDITION

BASIS FOR CONCLUSIONS

IFRIC Interpretation 12 *Service Concession Arrangements* (IFRIC 12) is set out in paragraphs 1–30 and Appendices A and B. IFRIC 12 is accompanied by information notes, illustrative examples and a Basis for Conclusions. The scope and authority of Interpretations are set out in the *Preface to IFRS Standards*.

IFRIC 12

IFRIC Interpretation 12

Service Concession Arrangements

References

- *Framework for the Preparation and Presentation of Financial Statements*1
- IFRS 1 *First-time Adoption of International Financial Reporting Standards*
- IFRS 7 *Financial Instruments: Disclosures*
- IFRS 9 *Financial Instruments*
- IFRS 15 *Revenue from Contracts with Customers*
- IFRS 16 *Leases*
- IAS 8 *Accounting Policies, Changes in Accounting Estimates and Errors*
- IAS 16 *Property, Plant and Equipment*
- IAS 20 *Accounting for Government Grants and Disclosure of Government Assistance*
- IAS 23 *Borrowing Costs*
- IAS 32 *Financial Instruments: Presentation*
- IAS 36 *Impairment of Assets*
- IAS 37 *Provisions, Contingent Liabilities and Contingent Assets*
- IAS 38 *Intangible Assets*
- SIC-29 *Service Concession Arrangements: Disclosures*2

Background

1 In many countries, infrastructure for public services—such as roads, bridges, tunnels, prisons, hospitals, airports, water distribution facilities, energy supply and telecommunication networks—has traditionally been constructed, operated and maintained by the public sector and financed through public budget appropriation.

2 In some countries, governments have introduced contractual service arrangements to attract private sector participation in the development, financing, operation and maintenance of such infrastructure. The infrastructure may already exist, or may be constructed during the period of the service arrangement. An arrangement within the scope of this Interpretation typically involves a private sector entity (an operator) constructing the infrastructure used to provide the public service or upgrading it (for example, by increasing its capacity) and operating and maintaining that infrastructure for a specified period of time. The operator is

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1 The reference is to the IASC's *Framework for the Preparation and Presentation of Financial Statements*, adopted by the Board in 2001 and in effect when the Interpretation was developed.

2 The title of SIC-29, formerly *Disclosure—Service Concession Arrangements*, was amended by IFRIC 12.

paid for its services over the period of the arrangement. The arrangement is governed by a contract that sets out performance standards, mechanisms for adjusting prices, and arrangements for arbitrating disputes. Such an arrangement is often described as a 'build-operate-transfer', a 'rehabilitate-operate-transfer' or a 'public-to-private' service concession arrangement.

3 A feature of these service arrangements is the public service nature of the obligation undertaken by the operator. Public policy is for the services related to the infrastructure to be provided to the public, irrespective of the identity of the party that operates the services. The service arrangement contractually obliges the operator to provide the services to the public on behalf of the public sector entity. Other common features are:

(a) the party that grants the service arrangement (the grantor) is a public sector entity, including a governmental body, or a private sector entity to which the responsibility for the service has been devolved.

(b) the operator is responsible for at least some of the management of the infrastructure and related services and does not merely act as an agent on behalf of the grantor.

(c) the contract sets the initial prices to be levied by the operator and regulates price revisions over the period of the service arrangement.

(d) the operator is obliged to hand over the infrastructure to the grantor in a specified condition at the end of the period of the arrangement, for little or no incremental consideration, irrespective of which party initially financed it.

Scope

4 This Interpretation gives guidance on the accounting by operators for public-to-private service concession arrangements.

5 This Interpretation applies to public-to-private service concession arrangements if:

(a) the grantor controls or regulates what services the operator must provide with the infrastructure, to whom it must provide them, and at what price; and

(b) the grantor controls—through ownership, beneficial entitlement or otherwise—any significant residual interest in the infrastructure at the end of the term of the arrangement.

6 Infrastructure used in a public-to-private service concession arrangement for its entire useful life (whole of life assets) is within the scope of this Interpretation if the conditions in paragraph 5(a) are met. Paragraphs AG1–AG8 provide guidance on determining whether, and to what extent, public-to-private service concession arrangements are within the scope of this Interpretation.

7 This Interpretation applies to both:

(a) infrastructure that the operator constructs or acquires from a third party for the purpose of the service arrangement; and

(b) existing infrastructure to which the grantor gives the operator access for the purpose of the service arrangement.

8 This Interpretation does not specify the accounting for infrastructure that was held and recognised as property, plant and equipment by the operator before entering the service arrangement. The derecognition requirements of IFRSs (set out in IAS 16) apply to such infrastructure.

9 This Interpretation does not specify the accounting by grantors.

Issues

10 This Interpretation sets out general principles on recognising and measuring the obligations and related rights in service concession arrangements. Requirements for disclosing information about service concession arrangements are in SIC-29. The issues addressed in this Interpretation are:

(a) treatment of the operator's rights over the infrastructure;

(b) recognition and measurement of arrangement consideration;

(c) construction or upgrade services;

(d) operation services;

(e) borrowing costs;

(f) subsequent accounting treatment of a financial asset and an intangible asset; and

(g) items provided to the operator by the grantor.

Consensus

Treatment of the operator's rights over the infrastructure

11 Infrastructure within the scope of this Interpretation shall not be recognised as property, plant and equipment of the operator because the contractual service arrangement does not convey the right to control the use of the public service infrastructure to the operator. The operator has access to operate the infrastructure to provide the public service on behalf of the grantor in accordance with the terms specified in the contract.

Recognition and measurement of arrangement consideration

12 Under the terms of contractual arrangements within the scope of this Interpretation, the operator acts as a service provider. The operator constructs or upgrades infrastructure (construction or upgrade services) used to provide a public service and operates and maintains that infrastructure (operation services) for a specified period of time.

13 The operator shall recognise and measure revenue in accordance with IFRS 15 for the services it performs. The nature of the consideration determines its subsequent accounting treatment. The subsequent accounting for consideration received as a financial asset and as an intangible asset is detailed in paragraphs 23–26 below.

Construction or upgrade services

14 The operator shall account for construction or upgrade services in accordance with IFRS 15.

Consideration given by the grantor to the operator

15 If the operator provides construction or upgrade services the consideration received or receivable by the operator shall be recognised in accordance with IFRS 15. The consideration may be rights to:

(a) a financial asset, or

(b) an intangible asset.

16 The operator shall recognise a financial asset to the extent that it has an unconditional contractual right to receive cash or another financial asset from or at the direction of the grantor for the construction services; the grantor has little, if any, discretion to avoid payment, usually because the agreement is enforceable by law. The operator has an unconditional right to receive cash if the grantor contractually guarantees to pay the operator (a) specified or determinable amounts or (b) the shortfall, if any, between amounts received from users of the public service and specified or determinable amounts, even if payment is contingent on the operator ensuring that the infrastructure meets specified quality or efficiency requirements.

17 The operator shall recognise an intangible asset to the extent that it receives a right (a licence) to charge users of the public service. A right to charge users of the public service is not an unconditional right to receive cash because the amounts are contingent on the extent that the public uses the service.

18 If the operator is paid for the construction services partly by a financial asset and partly by an intangible asset it is necessary to account separately for each component of the operator's consideration. The consideration received or receivable for both components shall be recognised initially in accordance with IFRS 15.

19 The nature of the consideration given by the grantor to the operator shall be determined by reference to the contract terms and, when it exists, relevant contract law. The nature of the consideration determines the subsequent accounting as described in paragraphs 23–26. However, both types of consideration are classified as a contract asset during the construction or upgrade period in accordance with IFRS 15.

Operation services

20 The operator shall account for operation services in accordance with IFRS 15.

Contractual obligations to restore the infrastructure to a specified level of serviceability

21 The operator may have contractual obligations it must fulfil as a condition of its licence (a) to maintain the infrastructure to a specified level of serviceability or (b) to restore the infrastructure to a specified condition before it is handed over to the grantor at the end of the service arrangement. These contractual obligations to maintain or restore infrastructure, except for any upgrade element (see paragraph 14), shall be recognised and measured in accordance with IAS 37, ie at the best estimate of the expenditure that would be required to settle the present obligation at the end of the reporting period.

Borrowing costs incurred by the operator

22 In accordance with IAS 23, borrowing costs attributable to the arrangement shall be recognised as an expense in the period in which they are incurred unless the operator has a contractual right to receive an intangible asset (a right to charge users of the

public service). In this case borrowing costs attributable to the arrangement shall be capitalised during the construction phase of the arrangement in accordance with that Standard.

Financial asset

23 IAS 32 and IFRSs 7 and 9 apply to the financial asset recognised under paragraphs 16 and 18.

24 The amount due from or at the direction of the grantor is accounted for in accordance with IFRS 9 as measured at:

(a) amortised cost; or

(b) fair value through other comprehensive income; or

(c) fair value through profit or loss.

25 If the amount due from the grantor is measured at amortised cost or fair value through other comprehensive income, IFRS 9 requires interest calculated using the effective interest method to be recognised in profit or loss.

Intangible asset

26 IAS 38 applies to the intangible asset recognised in accordance with paragraphs 17 and 18. Paragraphs 45–47 of IAS 38 provide guidance on measuring intangible assets acquired in exchange for a non-monetary asset or assets or a combination of monetary and non-monetary assets.

Items provided to the operator by the grantor

27 In accordance with paragraph 11, infrastructure items to which the operator is given access by the grantor for the purposes of the service arrangement are not recognised as property, plant and equipment of the operator. The grantor may also provide other items to the operator that the operator can keep or deal with as it wishes. If such assets form part of the consideration payable by the grantor for the services, they are not government grants as defined in IAS 20. Instead, they are accounted for as part of the transaction price as defined in IFRS 15.

Effective date

28 An entity shall apply this Interpretation for annual periods beginning on or after 1 January 2008. Earlier application is permitted. If an entity applies this Interpretation for a period beginning before 1 January 2008, it shall disclose that fact.

28A–28C [Deleted]

28D IFRS 15 *Revenue from Contracts with Customers*, issued in May 2014, amended the 'References' section and paragraphs

13–15, 18–20 and 27. An entity shall apply those amendments when it applies IFRS 15.

28E IFRS 9, as issued in July 2014, amended paragraphs 23–25 and deleted paragraphs 28A–28C. An entity shall apply those amendments when it applies IFRS 9.

28F IFRS 16, issued in January 2016, amended paragraph AG8. An entity shall apply that amendment when it applies IFRS 16.

Transition

29 Subject to paragraph 30, changes in accounting policies are accounted for in accordance with IAS 8, ie retrospectively.

30 If, for any particular service arrangement, it is impracticable for an operator to apply this Interpretation retrospectively at the start of the earliest period presented, it shall:

(a) recognise financial assets and intangible assets that existed at the start of the earliest period presented;

(b) use the previous carrying amounts of those financial and intangible assets (however previously classified) as their carrying amounts as at that date; and

(c) test financial and intangible assets recognised at that date for impairment, unless this is not practicable, in which case the amounts shall be tested for impairment as at the start of the current period.

Appendix A

Application guidance

This appendix is an integral part of the Interpretation.

Scope (paragraph 5)

AG1 Paragraph 5 of this Interpretation specifies that infrastructure is within the scope of the Interpretation when the following conditions apply:

(a) the grantor controls or regulates what services the operator must provide with the infrastructure, to whom it must provide them, and at what price; and

(b) the grantor controls—through ownership, beneficial entitlement or otherwise—any significant residual interest in the infrastructure at the end of the term of the arrangement.

AG2 The control or regulation referred to in condition (a) could be by contract or otherwise (such as through a regulator), and includes circumstances in which the grantor buys all of the output as well as those in which some or all of the output is bought by other users. In applying this condition, the grantor and any related parties shall be considered together. If the grantor is a public

sector entity, the public sector as a whole, together with any regulators acting

in the public interest, shall be regarded as related to the grantor for the

purposes of this Interpretation.

AG3 For the purpose of condition (a), the grantor does not need to have complete

control of the price: it is sufficient for the price to be regulated by the grantor,

contract or regulator, for example by a capping mechanism. However, the

condition shall be applied to the substance of the agreement. Non-substantive

features, such as a cap that will apply only in remote circumstances, shall be

ignored. Conversely, if for example, a contract purports to give the operator

freedom to set prices, but any excess profit is returned to the grantor, the

operator's return is capped and the price element of the control test is met.

AG4 For the purpose of condition (b), the grantor's control over any significant

residual interest should both restrict the operator's practical ability to sell or

pledge the infrastructure and give the grantor a continuing right of use

throughout the period of the arrangement. The residual interest in the

infrastructure is the estimated current value of the infrastructure as if it were

already of the age and in the condition expected at the end of the period of the

arrangement.

AG5 Control should be distinguished from management. If the grantor retains both

the degree of control described in paragraph 5(a) and any significant residual

interest in the infrastructure, the operator is only managing the infrastructure on the grantor's behalf—even though, in many cases, it may have wide managerial discretion.

AG6 Conditions (a) and (b) together identify when the infrastructure, including any replacements required (see paragraph 21), is controlled by the grantor for the whole of its economic life. For example, if the operator has to replace part of an item of infrastructure during the period of the arrangement (eg the top layer of a road or the roof of a building), the item of infrastructure shall be considered as a whole. Thus condition (b) is met for the whole of the infrastructure, including the part that is replaced, if the grantor controls any significant residual interest in the final replacement of that part.

AG7 Sometimes the use of infrastructure is partly regulated in the manner described in paragraph 5(a) and partly unregulated. However, these arrangements take a variety of forms:

(a) any infrastructure that is physically separable and capable of being operated independently and meets the definition of a cash-generating unit as defined in IAS 36 shall be analysed separately if it is used wholly for unregulated purposes. For example, this might apply to a private wing of a hospital, where the remainder of the hospital is used by the grantor to treat public patients.

(b) when purely ancillary activities (such as a hospital shop) are unregulated, the control tests shall be applied as if those services did not exist, because in cases in which the grantor controls the services in the manner described in paragraph 5, the existence of ancillary activities does not detract from the grantor's control of the infrastructure.

AG8 The operator may have a right to use the separable infrastructure described in paragraph AG7(a), or the facilities used to provide ancillary unregulated services described in paragraph AG7(b). In either case, there may in substance be a lease from the grantor to the operator; if so, it shall be accounted for in accordance with IFRS 16.

Appendix B

Amendments to IFRS 1 and to other Interpretations

The amendments in this appendix shall be applied for annual periods beginning on or after 1 January 2008. If an entity applies this Interpretation for an earlier period, these amendments shall be applied for that earlier period.

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The amendments contained in this appendix when this Interpretation was issued in 2006 have been incorporated into the text of IFRS 1, IFRIC 4 and SIC-29 as issued on or after 30 November 2006. In November 2008 a revised version of IFRS 1 was issued. In January 2016 IFRIC 4 was superseded by IFRS 16 Leases.

Appendix 7. ***ACCOUNTING POLICY ON CHEMICALS & FERTILIZERS APPLICATION***

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ACCOUNTING POLICY ON CHEMICALS & FERTILIZERS APPLICATION

Traditionally, the expenditure incurred on chemicals and fertilizers used for CODAPEC and Hi-tech operations respectively were fully written off in the year of acquisition or expenditure. However, the research findings in respect of COCDAPEC and Hi-tech operations suggest that the benefits to be derived from the activities are realised over period of 2-3 years.

Hi-tech Operations

The fertilizers for the Hi-tech programme are usually ready for application by February in the financial year. The application of fertilizers to cocoa farms are carried out in the months of April, May and June (i.e. the peak of the rainy season) to enable optimum absorption of nutrients. The expected benefit to be derived from the fertilizer application would be realised partially during the harvest period that commences from October onwards, which is the start of a new financial year. This implies that the benefit falls in the second year of the fertilizer application. Research conducted has estimated that 70% of the benefit accruing from fertilizer application will be realised in the second year with the residual benefit of 30% accruing in the third year. Therefore expenditure in the year of purchase will be fully deferred and apportioned as stated above in second and third years.

CODAPEC Operations

COCOBOD procures insecticides and fungicides for the treatment of Capsid and Black pod diseases respectively. Insecticides procured in the year are applied in the period April/May and September/October for the control of myriads that causes the capsid disease. Research shows that approximately 70% of the insecticide applied protects the pods while the remaining 30% protects the tree. Therefore benefit accruing to the tree will realised immediately (i.e. year of expenditure) while that of the pod will be realised during harvesting period which falls in the next financial year. Similarly, fungicides procured in the financial year are applied in the period May to October for the control of Black pod disease. Again research has shown that approximately 70% of the fungicide applied protects the pods while the remaining 30% protects the tree. Therefore benefit accruing to the tree will realised immediately while that of the pod will be realised during harvesting period which falls in the next financial year.

Use of estimate and judgments

For the purpose of appropriately recognising the expenditure on chemicals and fertilizers in the financial statements, management is required to make judgments, estimates and assumptions that are based on research that affect the application of accounting policies. Management intend to review on an ongoing basis the underlying judgments, estimates and assumptions.

The matching concept states that expenses should be recognized and recorded when those expenses can be matched with the revenues those expenses helped to generate. Consequently, the recognition and disclosure with respect to expenditure on chemicals and fertilizers have been treated in accordance with the apportionment outlined above. Page **2** of **16**

RETURNS ON INVESTMENTS IN CROP PROTECTION AND PLANT NUTRITION

Summary

Ghana's cocoa sector is operating below its potential yield level and its continued competitiveness as the second largest producer of cocoa in the world is threatened by consistent low productivity. Crop protection, Soil fertility maintenance and Rehabilitation of aged farms have the constraints and options for higher yields and when appropriately manipulated within the context of Good Agronomic Practices could lead to increased productivity. There are opportunities to improve the performance of a crop by manipulating the environment of the crop directly through the fertilizer application, pests and diseases control. The agronomic view of crop improvement sought the optimal combination of management options for improved performance. In this direction, the CODAPEC programme was introduced during the 2001/2002 cocoa season, as part of efforts to assist all cocoa farmers in the country to control Capsid/Mirid pests and Black Pod disease. The Hi-TECH programme was also initiated in 2002 to encourage farmers to use fertilizers to address the issue of declining soil fertility in most cocoa producing areas and also help rejuvenate old cocoa farms to improve productivity. The assessment of the benefits of these activities undertaken by COCOBOD is based on the yield of cocoa. The annual yield of cocoa is obtained from October to September in the subsequent year which falls outside the current year where crop protection and soil fertility maintenance activities are undertaken. Thus, the activities undertaken in the crop season is best assessed in the subsequent year when harvesting is done. Narratives on the roles of insecticides, fungicides and fertilizers in the processes leading to the harvesting of higher quality and healthy mature pods 5 to 6 months after flower initiation, apparently show that some benefit, though intangible, are derived in the very year that the inputs are procured. It is therefore plausible to attach monetary value to the intangible services provided by these inputs leading up to the improved yields. It is therefore proposed that 30% of returns on investment be assigned to the year when the investments were made and the remaining 70% spread over two years as the benefits are cumulative and long lasting as shown by research results.

Introduction

Ghana's cocoa sector is operating below its potential yield level and its continued competitiveness as the second largest producer of cocoa in the world is threatened by consistent low productivity which is among the lowest in the world. Cocoa yield has been on average 25 percent less than the average yield level of the ten largest cocoa producing nations and over 40 percent below the average yield level of neighboring Côte d'Ivoire (Mohammed *et al*, 2011). Presently, the productivity of cocoa farms in Ghana is estimated at 450 kg dry cocoa beans per hectare annually. This is below the 700 – 900 kg dry cocoa beans ha-1 annually projected for Ghana by the World Bank (World Bank, 1987). The low productivity is mainly due to the fact that most farmers in Ghana do not control pests and diseases in accordance with research recommendations (Humado, 1999; Gerken *et al*., 2001) coupled with continuous cropping with little or no added fertilizer input leading to depleted soil fertility (Afrifa *et al*., 2006; Appiah *et al*, 2000). Page **3** of **16**

The factors which affect productivity can be categorized as: 1. Extrinsic factors which are beyond the control of the individual farmer and with no direct effect on yield and 2. Intrinsic factors which operate within the cropping system and have direct effect on yield (Wessel and Quist-Wessel, 2015).

A linkage of the various factors and how they cause low yield is shown in Fig. 1. In this model farm gate cocoa price, high input prices, lack of access to loans and credits and small farm size are considered as external factors beyond the control of the individual farmer. They affect the general conditions for cocoa production but have no direct effect on yield. Direct effects (Farm maintenance, Crop protection, Soil fertility maintenance and Rehabilitation of aged farms have the constraints and options for higher yields and when appropriately manipulated within the context of Good Agronomic Practices could lead to increased productivity.

Figure 3: Causes of low yield in farmers' cocoa

(Source: Wessel and Quist-Wessel, 2015).

There are opportunities to improve the performance of a crop by manipulating the genotype of component plants or by manipulating the environment of the crop either directly (through the use of irrigation, fertilizer, pest and disease control) or indirectly (through planting distance, plant density and plant arrangement). The agronomic view of crop improvement has focused on the latter by seeking the optimal combination of management options for improved performance (Cooper and Hammer, 1996). In this direction, the CODAPEC programme was introduced during the 2001/2002 cocoa season, as part of efforts to assist all cocoa farmers in the country to control Capsid/Mirid pests and Black Pod disease. The Hi-TECH programme was also initiated in 2002 to encourage farmers to use fertilizers to address the issue of declining soil fertility in most cocoa producing areas and also help rejuvenate old cocoa farms to improve productivity.

Black Pod Disease

Black pod disease is the most destructive of a number of diseases, which attack the developing or ripening cocoa pod worldwide. In Ghana, the disease is caused by two *Phytophthora* species:

P. palmivora and *P. megakarya*. *P. palmivora* and *P. megakarya* cause significant pod rot and losses due to canker. They attack all parts of the cocoa tree at all stages of the growing cycle. Generally, losses due to *P. megakarya* range from 60 to 80% in newly affected farms to about 100% in old affected farms in the black pod season (May to mid June). *P. palmivora* causes 20 to 30% pod losses through Black pod rot. The genus *Phytophthora* kills up to 10% of trees annually through stem canker (Quest, 2007).
Disease losses can be reduced through integrated management practices that include pruning and shade management, regular and complete harvesting, sanitation and infected pods and pod case removal/disposal, appropriate fertilizer application and targeted fungicide use (Quest, 2007).

Capsid (Mirids) Pests
Capsids, also known as Mirids, are the most economically important insect pest of cocoa in West Africa. The most common mirid species in Ghana are *Distantiella theobromae* and *Sahlbergella singularis*. These are sucking insects that cause damage to the cocoa crop through feeding. They damage the soft, young tissues of cocoa trees by piercing young shoots with their mouth parts, injecting poisonous saliva and then sucking liquid food out of the wound (lesion) so made. These wounds (lesions) frequently become infected with fungus, notably *Calonectria rigidiuscula*. As a result, the affected shoot die-back. In young cocoa the whole plant may be killed (Wilson, 1999). Capsids thus make cocoa difficult to establish. On mature cocoa, Capsid damage occurs year after year in small, scattered areas called 'Capsid pockets', again causing die back. If such damage persists, even for a few months only, the trees in the Capsid pockets cease to yield and finally die. In certain years, Capsids become very numerous and extend over very wide areas, causing so-called 'Capsid blast' by killing off the terminal shoots of the affected trees.
Crop losses in cocoa due to Capsids and mealybugs have been estimated at 25 to 30% per annum (Padi and Owusu, 1998).

The impact of mirids on cocoa productivity is mostly assessed for *S. singularis* and *D. theobroma* species in cocoa growing area in Africa. However, a recent study in Cameroun showed that Helopeltis *spp* (cocoa mosquito mirid) caused damage (abortion of developing immature pods-known as cherelle wilt) through feeding. Up to 80% of cherelles and 0.4% of immature fruits attacked were aborted. The paper called for the review of the status of the cocoa mosquito as an economically important pest (Mahob *et al*., 2018).

The greatest damage occurs in lightly shaded and unshaded cocoa where the highest insect populations are found and more or less permanently new flushes are formed. Although proper shade management can prevent major pest outbreaks additional chemical control with insecticides is often needed.

Soil Fertility
The development and expansion of the cocoa industry in Ghana was based on the exploitation of the fertility accumulated by the virgin forest in what is termed the 'forest rent' approach to cocoa production. In the forest rent approach, when virgin forest land is first cultivated, the

farmer enjoys the benefit or rent of undiminished soil fertility and low disease levels. When the forest is cleared nutrients are rapidly released and thus provide the soil with high levels of available nutrients for a few years. The removal of the forest vegetation leads to a decline in soil fertility and productivity within 2 to 3 years to below 50% of its initial value. Ahenkorah and Akrofi (1969) estimated the loss to an average annual marketable harvest of 400,000 tonnes of dry cocoa beans at 16,000 tonnes of NPK. Urquhart (1955) reported that the amount of major nutrients removed annually from the soil by cocoa (yield of 560 kg/ha) in the beans were 13.5, 3.4 and 11.2 kg/ha of N, P, and K, respectively. Ahenkora *et al*. (1974) observed that there was a loss of about 54,000 kg humus/ha within a 15-year period of continuous cocoa cropping. Attendant to this was a total depletion of more than 66 per cent exchangeable bases. Appiah *et al*. (1997) estimated the total amount of nutrient removal by exportable cocoa beans and cocoa pod husk over a 10-year period at over 232,000 tonnes.

Most soils under cocoa in Ghana are exhausted of their nutrient reserves and out of the fertile phase after several years of cultivation without replenishment. Consequently, the productivity of these soils has declined. Appiah *et al*. (2000) reported that fertilized cocoa plots showed an increase in yield over unfertilized plots during a 4-year trial period on peasant farms in Ghana. The gross yields of the fertilized plots exceeded those of the unfertilized plots by 61.7% in the 1st year, 99.8% in the 2nd year, 116.0% in the 3rd year and 106.0% in the 4th year. At the end of the 4th year, 75% of the farms had yields more than 1000 kg/ha. There were no significant differences between the age of the farms and the variety of cocoa with fertilizer responses. Furthermore, there was no direct relationship between fertilizer treatment and incidence of diseases and pests.

Plants, like all other living things, need food for their growth and development. They require 16 essential elements. Carbon, hydrogen and oxygen are derived from the atmosphere and soil water. The remaining 13 essential elements (nitrogen, phosphorus, potassium, calcium, magnesium, sulphur, iron, zinc, manganese, copper, boron, molybdenum and chlorine) are supplied either from soil minerals and organic matter or by organic and inorganic fertilizers.

Each type of plant is unique and has a minimum requirement level. Below this minimum level, plants start to show nutrient deficiency symptoms. Excessive nutrient uptake can also cause poor growth because of toxicity. Details of leaf symptoms and nutrient levels of nitrogen, phosphorus, potassium, calcium, magnesium, sulphur, iron, zinc, manganese, copper, boron and molybdenum in deficient cocoa plants have been documented by Lockard and Asomaning (1964). A general description of nutrient deficiency symptoms of the 13 essential elements and how they affect growth, development and yield following Uchida (2000) are shown in the appendix.

Annual growth cycle of cocoa

Flush cycle and Leaf growth

The cocoa tree develops a vertical stem and forms 3 to 5 horizontal branches called jorquettes or fans. Leaves form at the growing end of the stem and on the fan branches. Leaves on fan branches grow alternatively in series of groups known as flushes.
The development of a water deficit during the dry season in field-grown cocoa plants is claimed to be an important factor in the control of the flush growth pattern (Alvim, Machado and Velio, 1972). The transition from dormancy to growth of the shoot apex at the start of the new flush cycle is thought to occur following the decline in plant water deficit either through leaf shedding, or the start of the rainy season, and the consequent reduction in the high levels of shoot ABA produced in the preceding period of water deficit (Alvim et al., 1974). The various stages of the flush cycle have been described by Greathouse *et al*. (1971) for cocoa plants growing under conditions of controlled temperature and light intensity and by Vogel (1975) for young cocoa plants growing outdoors in a shaded tropical environment.
Nutrients for a flush of growth are drawn from the older leaves and stem. If soil fertility is low, flush growth can cause major defoliation of the tree. The extent of this defoliation is often used as a guide to the soil's fertility status. Generally, 8 to 10 healthy leaves are required for the development of one pod.

Flowering in Cocoa
Cocoa exhibits a season-related phenological pattern of flowering and fruit set involving overlapping cycles. There is a high correlation between the level of available phosphorus in the soil and flowering, as well as pod yield.
The phenological pattern of flowering of cocoa consists of segmental flowering in repeated phases. There are many fluctuations in the floral abundance with peaks and declines in flower production. Floral production generally increases in the major rainy season which begins in the month of April and peaks in July. During this period flowering is high and is borne in the canopy, on the branches and on trunks of the cocoa trees. Flowering generally reduces in the minor rainy season from September to November and is restricted to the canopy and branches leaving the trunks with little or no flowers. From December which marks the beginning of the dry season, flowering is sparse even in the canopy whiles the trunks were completely flowerless. This trend continued throughout the dry season which in late March. In this regard, CRIG follows a cropping season which commences in April and ends in March.

Fruit-Set
The floral phenological pattern coincides with the activity of the main pollinators of cocoa which results in enhanced reproductive capacity for increased production of cocoa. Cocoa fruit develop after pollination which is largely by insects (Ceratopogonid midges- Forcipomyia spp).
Normally only 5% of the flowers are successfully pollinated, the rest will drop within a day or two of opening. Fruit (small, medium, and large pods) production starts in April. Fruit-set is low in April but gradually increases till it peaks in September. The production of new pods or

cherelles increases during the major rainy season (June, July, and August), but is evenly distributed from the minor season through to the dry season.
Over the first four to six weeks, fruit expansion is extremely slow. It then accelerates and reaches peak expansion at around 75 days when the size of pod is just over 10cm in diameter. These small, developing fruit are known as 'cherelles' and over the first three months around 80% dry on the branch, becoming unproductive and dropping from the tree. This abortion of pods, known as 'cherelle wilt', is a physiological disorder which is influenced by moisture stress and nutrient stress. After three months, hormones produced in the fruit will prevent further wilting. By aborting fruits early in their development, plants conserve many of the necessary resources for future fruit and vegetative growth. Calcium and boron applications have been shown to reduce cherelle wilt and increase the number of pods held on the tree. Fruit pods mature after 5-6 months taking on a yellow or darker red color.

Harvesting
Upper Amazon and Hybrid cocoa varieties have a longer spread of flowering due to the fact that the branches and trunks flower in turns. Flowering starts on the tree trunk at the beginning of the rainy season but by the close of the year, the branches become the main flower-bearing part of the tree. This flowering behavior therefore allows for continuous pollination and fruiting. Consequently, harvesting of cocoa is not a one-time activity for the farmer but a series of activities which may begin from one year and end in the following year. In seasonal wet and dry environments as occurs in Ghana, the main crop occurs 5 to 6 months after the start of the rainy season around September to March and therefore the crop year begins in October, when purchase of the main crop begins, with a smaller mid (light) crop cycle beginning in July. There is wide differential between the main crop and mid crop harvests with the mid crop accounting for only 15 to 20% of the total harvest. Vaughton and Ramsey (1995) identified two proximate ecological mechanisms which account for this pattern that is, insufficient pollen delivery to stigmas and limited resources for maturation of fruits and seeds.

Yield as Assessment of Operational Cost
Higher and improved cocoa production requires good agronomic practices (GAPs) and effective extension services. Activities under GAPs including pruning, weeding, crop protection and soil fertility management are undertaken all year round starting from February. COCOBOD supports farmers to adopt GAPs to improve yield by providing among other things inputs for Crop protection (Insecticides, Fungicides, Spraying machines and Personal Protective Equipment) and Soil Fertility maintenance (Inorganic and organic Fertilizers). As indicated above, the crop year (Financial year) of COCOBOD begins in October which also marks the market opening (main crop season) of the produce and ends in September of the ensuing year.
The assessment of the benefits of these activities undertaken by COCOBOD is based on the yield of cocoa. The annual yield of cocoa is obtained from October to September in the subsequent year which falls outside the current year where crop protection and soil fertility maintenance activities are undertaken. Thus, the activities undertaken in the crop season is best assessed in the subsequent year when harvesting is done. For instance, the returns on the cost of Crop

protection and Soil fertility maintenance inputs and their applications in 2017/18 financial year (October, 2017 to September, 2018) are realized from the yield obtained in the 2018/19 financial year (October, 2018 to September, 2019). However, from the foregoing narratives on the roles of insecticides, fungicides and fertilizers in the processes leading to the harvesting of higher quality and healthy mature pods 5 to 6 months after flower initiation, it is apparent that some benefit, though intangible, were derived in the very year that the inputs were procured. It is therefore plausible to attach monetary value to the intangible services provided by these inputs leading up to the improve yields. The case is even stronger for fertilizers based on the observations of Appiah *et al*., (2000) where gross yields of the fertilized plots exceeded those of the unfertilized plots by 61.7% in the 1st year. In the case of crop losses due to Capsids is mitigated by effect insecticidal protection and about 25% of the crop is save in the year of input application, the 25% can be assigned a monetary value. It is therefore proposed that 30% of returns on investment be assigned to the year when the investments were made and the remaining 70% spread over two years as the benefits are cumulative and long lasting as shown by the results of Appiah et al., (2000). Page **9** of **16**

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Annexes on Nutrient Function

Nitrogen

Nutrient functions

• N is biologically combined with C, H, O, and S to create amino acids, which are the building blocks of proteins. Amino acids are used in forming protoplasm, the site for cell division and thus for plant growth and development.

• Since all plant enzymes are made of proteins, N is needed for all of the enzymatic reactions in a plant.

• N is a major part of the chlorophyll molecule and is therefore necessary for photosynthesis.

• N is a necessary component of several vitamins.

• N improves the quality and quantity of dry matter in leafy vegetables and protein in grain crops.

Deficiency symptoms

• Stunted growth may occur because of reduction in cell division.

• Pale green to light yellow color (chlorosis) appearing first on older leaves, usually starting at the tips. Depending on the severity of deficiency, the chlorosis could result in the death and/or dropping of N from the older to the younger tissues.

• Reduced N lowers the protein content of seeds and vegetative parts. In severe cases, flowering is greatly reduced.

• N deficiency causes early maturity in some crops, which results in a significant reduction in yield and quality.

Phosphorus

Nutrient functions

• In photosynthesis and respiration, P plays a major role in energy storage and transfer as ADP and ATP (adenosine di- and triphosphate) and DPN and TPN (di- and triphosphopyridine nucleotide).

• P is part of the RNA and DNA structures, which are the major components of genetic information.

• Seeds have the highest concentration of P in a mature plant, and P is required in large quantities in young cells, such as shoots and root tips, where metabolism is high and cell division is rapid.

• P aids in root development, flower initiation, and seed and fruit development.

• P has been shown to reduce disease incidence in some plants and has been found to improve the quality of certain crops.

Deficiency symptoms

• Because P is needed in large quantities during the early stages of cell division, the initial overall symptom is slow, weak, and stunted growth.

• P is relatively mobile in plants and can be transferred to sites of new growth, causing symptoms of dark to blue-green coloration to appear on older leaves of some plants. Under severe deficiency, purpling of leaves and stems may appear. Page **12** of **16**

• Lack of P can cause delayed maturity and poor seed and fruit development.

Potassium

Nutrient functions

• Unlike N and P, K does not form any vital organic compounds in the plant. However, the presence of K is vital for plant growth because K is known to be an enzyme activator that promotes metabolism.

 K assists in regulating the plant's use of water by controlling the opening and closing of leaf stomates, where water is released to cool the plant.

• In photosynthesis, K has the role of maintaining the balance of electrical charges at the site of ATP production.

• K promotes the translocation of photosythates (sugars) for plant growth or storage in fruits or roots.

• Through its role assisting ATP production, K is involved in protein synthesis.

• K has been shown to improve disease resistance in plants, improve the size of grains and seeds, and improve the quality of fruits and vegetables.

Deficiency symptoms

• The most common symptom is chlorosis along the edges of leaves (leaf margin scorching). This occurs first in older leaves, because K is very mobile in the plant.

• Because K is needed in photosynthesis and the synthesis of proteins, plants lacking K will have slow and stunted growth.

• In some crops, stems are weak and lodging is common if K is deficient.

• The size of seeds and fruits and the quantity of their production is reduced.

Calcium

Nutrient functions

• Ca has a major role in the formation of the cell wall membrane and its plasticity, affecting normal cell division by maintaining cell integrity and membrane permeability.

• Ca is an activator of several enzyme systems in protein synthesis and carbohydrate transfer.

• Ca combines with anions including organic acids, sulphates, and phosphates. It acts as a detoxifying agent by neutralizing organic acids in plants.

• Ca is essential for seed production in peanuts.

• Ca indirectly assists in improving crop yields by reducing soil acidity when soils are limed.

Deficiency symptoms

• Ca is not mobile and is not translocated in the plant, so symptoms first appear on the younger leaves and leaf tips. The growing tips of roots and leaves turn brown and die.

• Ca deficiency is not often observed in plants because secondary effects of high acidity resulting from soil calcium deficiency usually limit growth, precluding expressions of Ca deficiency symptoms.

• Without adequate Ca, this in the form of calcium pectate is needed to form rigid cell walls, newly emerging leaves may stick together at the margins, which cause tearing as the leaves expand and unfurl. This may also cause the stem structure to be weakened.

• In some crops, younger leaves may be cupped and crinkled, with the terminal bud deteriorating.

• Buds and blossoms fall prematurely in some crops.

Magnesium

Nutrient functions

• The predominant role of Mg is as a major constituent of the chlorophyll molecule, and it is therefore actively involved in photosynthesis.

• Mg is a co-factor in several enzymatic reactions that activate the phosphorylation processes.

• Mg is required to stabilize ribosome particles and also helps stabilize the structure of nucleic acids.

• Mg assists the movement of sugars within a plant.

Deficiency symptoms

• Because Mg is a mobile element and part of the chlorophyll molecule, the deficiency symptom of interveinal chlorosis first appears in older leaves. Leaf tissue between the veins may be yellowish, bronze, or reddish, while the leaf veins remain green. Corn leaves appear yellow-striped with green veins, while crops such as potatoes, tomatoes, soybeans, and cabbage show orange-yellow color with green veins.

• In severe cases, symptoms may appear on younger leaves and cause premature leaf drop.

• Symptoms occur most frequently in acid soils and soils receiving high amounts of K fertilizer or Ca.

Sulphur

Nutrient functions

• S is essential in forming plant proteins because it is a constituent of certain amino acids.

• It is actively involved in metabolism of the B vitamins biotin and thiamine and co-enzyme A.

• S aids in seed production, chlorophyll formation, nodule formation in legumes, and stabilizing protein structure.

Deficiency symptoms

• Younger leaves are chlorotic with evenly, lightly colored veins. In some plants (e.g., citrus) the older leaves may show symptoms first. However, deficiency is not commonly found in most plants.

• Growth rate is retarded and maturity is delayed.

• Plant stems are stiff, thin, and woody.

• Symptoms may be similar to N deficiency and are most often found in sandy soils that are low in organic matter and receive moderate to heavy rainfall.

Boron

Nutrient functions

• B is necessary in the synthesis of one of the bases for RNA formation and in cellular activities.

• B has been shown to promote root growth.

• B is essential for pollen germination and growth of the pollen tube.

• B has been associated with lignin synthesis, activities of certain enzymes, seed and cell wall formation, and sugar transport. Page **14** of **16**

Deficiency symptoms
• Generally, B deficiency causes stunted growth, first showing symptoms on the growing point and younger leaves. The leaves tend to be thickened and may curl and become brittle.
• In many crops, the symptoms are well defined and crop-specific, such as:
• peanuts: hollow hearts
• celery: crooked and cracked stem
• beets: black hearts
• papaya: distorted and lumpy fruit
• carnation: splitting of calyx
• Chinese cabbage: midribs crack, turn brown
• cabbage, broccoli, and cauliflower: pith in hollow stem
 Cocoa: Profuse chupon formation and the appearance of a few curled leaves which will be almost normal green in colour.

Copper
Nutrient functions
• Cu is essential in several plant enzyme systems involved in photosynthesis.
• Cu is part of the chloroplast protein plastocyanin, which forms part of the electron transport chain.
• Cu may have a role in the synthesis and/or stability of chlorophyll and other plant pigments.
Deficiency symptoms
• Reduced growth, distortion of the younger leaves, and possible necrosis of the apical meristem.
• In trees, multiple sprouts occur at growing points, resulting in a bushy appearance. Young leaves become bleached, and eventually there is defoliation and dieback of twigs.
• In forage grasses, young leaf tips and growing points are affected first. The plant is stunted and chlorotic.
Chlorine
Nutrient functions
• Cl is essential in photosynthesis, where it is involved in the evolution of oxygen.
• Cl increases cell osmotic pressure and the water content of plant tissues.
• Cl is found in many bacteria and fungi.
• Cl reduces the severity of certain fungal diseases, e.g., take-all disease of wheat.
Deficiency symptoms
• Chlorosis of younger leaves and wilting of the plant.
• Deficiency seldom occurs because Cl is found in the atmosphere and rainwater.

Nutrient functions
• Fe is essential in the heme enzyme system in plant metabolism (photosynthesis and respiration). The enzymes involved include catalase, peroxidase, cytochrome oxidase, and other cytochromes.
• Fe is part of protein ferredoxin and is required in nitrate and sulfate reductions.
• Fe is essential in the synthesis and maintenance of chlorophyll in plants.
• Fe has been strongly associated with protein metabolism.
Deficiency symptoms
• Interveinal chlorosis in younger leaves. The youngest leaves maybe white, because Fe, like Mg, is involved in chlorophyll production.
• Usually observed in alkaline or over-limed soils.
Manganese
Nutrient functions
• Mn primarily functions as part of the plant enzyme system, activating several metabolic functions. It is a constituent of pyruvate carboxylase.
• Mn is involved in the oxidation-reduction process in photosynthesis.
• Mn is necessary in Photosystem II, where it participates in photolysis.
• Mn activates indole acetic acid oxidase, which then oxidizes indole acetic acid in plants.
Deficiency symptoms
• Symptoms first appear as chlorosis in young tissues. Unlike Fe chlorosis symptoms, in dicots Mn chlorosis shows up as tiny yellow spots.
• In monocots, greenish-grey specks appear at the lower base of younger leaves. The specks may eventually become yellowish to yellow-orange.
• In legumes, necrotic areas develop on the cotyledons, a symptom known as marsh spots.
Molybdenum
Nutrient functions
• Mo is a necessary component of two major enzymes in plants, nitrate reductase and nitrogenase, which are required for normal assimilation of N.
• Mo is required by some soil microorganisms for nitrogen fixation in soils.
Deficiency symptoms
• Deficiency symptoms resemble those of N because the function of Mo is to assimilate N in the plant. Older and middle leaves become chlorotic, and the leaf margins roll inwards.
• In contrast to N deficiency, necrotic spots appear at the leaf margins because of nitrate accumulation.
• Deficient plants are stunted, and flower formation may be restricted.
• Mo deficiency can be common in nitrogen-fixing legumes.
Zinc

• Zn is required in the synthesis of tryptophan, which in turn is necessary for the formation of indole acetic acid in plants.
• Zn is an essential component of several metallo-enzymes in plants (variety dehydorgenases) and therefore is necessary for several different functions in plant metabolism.
• The enzyme carbonic anhydrase is specifically activated by Zn.
• Zn has a role in RNA and protein synthesis.

Deficiency symptoms

• Interveinal chlorosis occurs on younger leaves, similar to Fe deficiency. However, Zn deficiency is more defined, appearing as banding at the basal part of the leaf, whereas Fe deficiency results in interveinal chlorosis along the entire length of the leaf.
• In vegetable crops, color change appears in the younger leaves first. The new leaves are usually abnormally small, mottled, and chlorotic.
• In citrus, irregular interveinal chlorosis occurs with small, pointed, mottled leaves. Fruit formation is significantly reduced.
• In legumes, stunted growth with interveinal chlorosis appears on the older, lower leaves. Dead tissue drops out of the chlorotic spots.