Update COSP values Ghana and Côte d' Ivoire

Report

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Content

Introduction

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Introduction

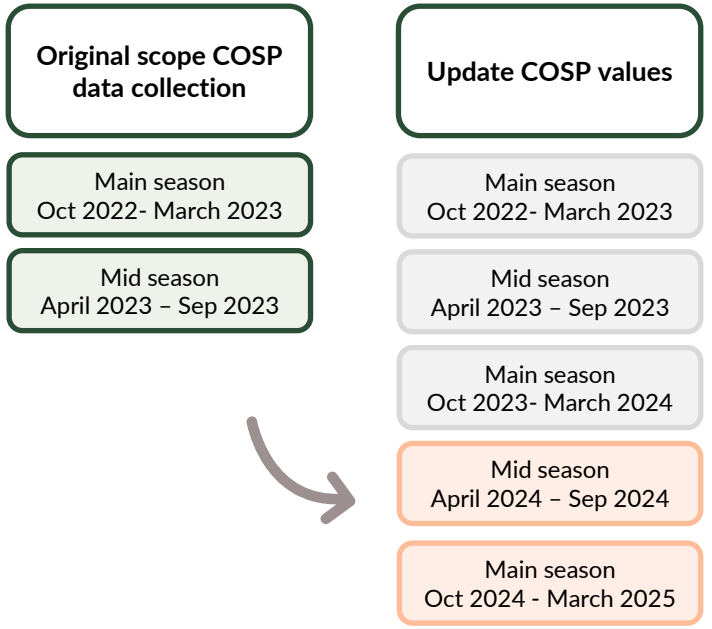
Update and validation of COSP Data for Ghana and Côte d'Ivoire from 2022/2023 to 2024/2025

Fairtrade is dedicated to supporting farmers and workers by ensuring better prices, decent working conditions, and fairer trade practices. Through its pricing mechanism, Fairtrade sets minimum prices to protect producers from market volatility and aims to ensure that they cover the costs of sustainable production. As producers globally are facing higher costs, it is essential to revise Fairtrade prices.

At the end of 2023, Fairtrade collected data on the costs of sustainable production (COSP) in major Fairtrade cocoa-producing countries worldwide. Fairtrade has run the price consultation for all countries except Ghana and Côte d'Ivoire in 2024. Due to a turbulent global cocoa market, the price consultation for Ghana and Côte d'Ivoire was postponed to 2025. The postponement enables more time to understand the supply trends in the two price-regulated countries.

To carry out the price consultation the collected COSP data for Ghana and Côte d'Ivoire, covering harvests 2022/2023 needed to be updated to reflect most recent practices and prices.

Impact Institute has carried out the review and update of the COSP data through a structured process. Together with Fairtrade experts, the COSP data has been validated to ensure representativeness of the data. This report outlines the methodology employed and the resulting COSP values.



Project Phases

The update the Cost of Sustainable Production (COSP) followed three phases

The update the Cost of Sustainable Production (COSP) followed three phases. First, the 2022/2023 COSP data was updated to represent 2024/2025, focusing on trends in key indicators. This was followed by a validation phase in which the updated results were validated with Fairtrade experts and cross-referenced with other datasets. Finally, based on the outcomes of the validation, final values for the key indicators were recommended by Fairtrade experts from Ghana and Côte d'Ivoire to ensure representability of the data. These recommended values were integrated in the calculation model to determine final COSP values for Ghana and Côte d'Ivoire.

This report describes the activities in each of these phases in chapter 2, 3 & 4. In chapter 5 the final COSP values are presented.

Phase 1: Update 2022/2023 to 2024/2025

- Update data of 2022/2023 to data representing 2024/2025
- Focus on key cost indicators: inflation, fertilizers, pesticides, hired labour, fuel cost and productivity levels
- Change in cost indicators based on desk research and survey data filled out by Fairtrade experts

Phase 2: Validation

- Validation sessions with Fairtrade experts to assess:
  - Representativeness of resulting values for cocoa production in Ghana and Côte d'Ivoire
- Cross-reference values with other datasets (Household income study [1] and Agri-Logic dataset[2])

Phase 3: Finalization of COSP values

- Determine final values based on input from Fairtrade experts
- Integrate final values in COSP calculation model

[1]The dataset of the Household Income Study refers to the Cocoa Farmer Household Income study conducted by Fairtrade in collaboration with Impact Institute. In this study primary data was collected from 704 cocoa farmers in Côte d'Ivoire, focused on household income and cost of production of cocoa farming.
[2] Agri-Logic is a consultancy and research institute specializing in sustainable agriculture. In collaboration with Barry Callebaut, IDH and Rainforest alliance, Agri-Logic collects data from cocoa smallholder farmers.

Update 2022/2023 to 2024/2025

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Introduction Phase 1: Update 2022/2023 to 2024/2025

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To update the Cost of Sustainable Production (COSP) data for cocoa in Ghana and Côte d'Ivoire from 2022/2023 to 2024/2025, a structured seven-step process was followed to ensure accuracy, relevance, and stakeholder validation. The process began with identifying key indicators to update based on the 2022/23 dataset, followed by desk research and expert surveys to gather and validate recent data on farming practices and input costs. Insights from both sources were combined to detect trends and inform a validation session. The validated data was then integrated into the updated COSP model, which includes new items such as HREDD compliance costs. This resulted in up-to-date COSP values and underlying cost values that represent 2024/2025.

1 **Identify key indicators to update**

Review the provided COSP dataset and identify key data points and gaps.

2 **Secondary data collection**

Desk research on required indicators for data update and validation.

3 **Primary data collection**

Collecting input from Fairtrade experts via a survey on specific cost items.

4 **Aggregating results of data collection**

Combine insights from data sources to identify trends for the key indicators.

5 **Validation session**

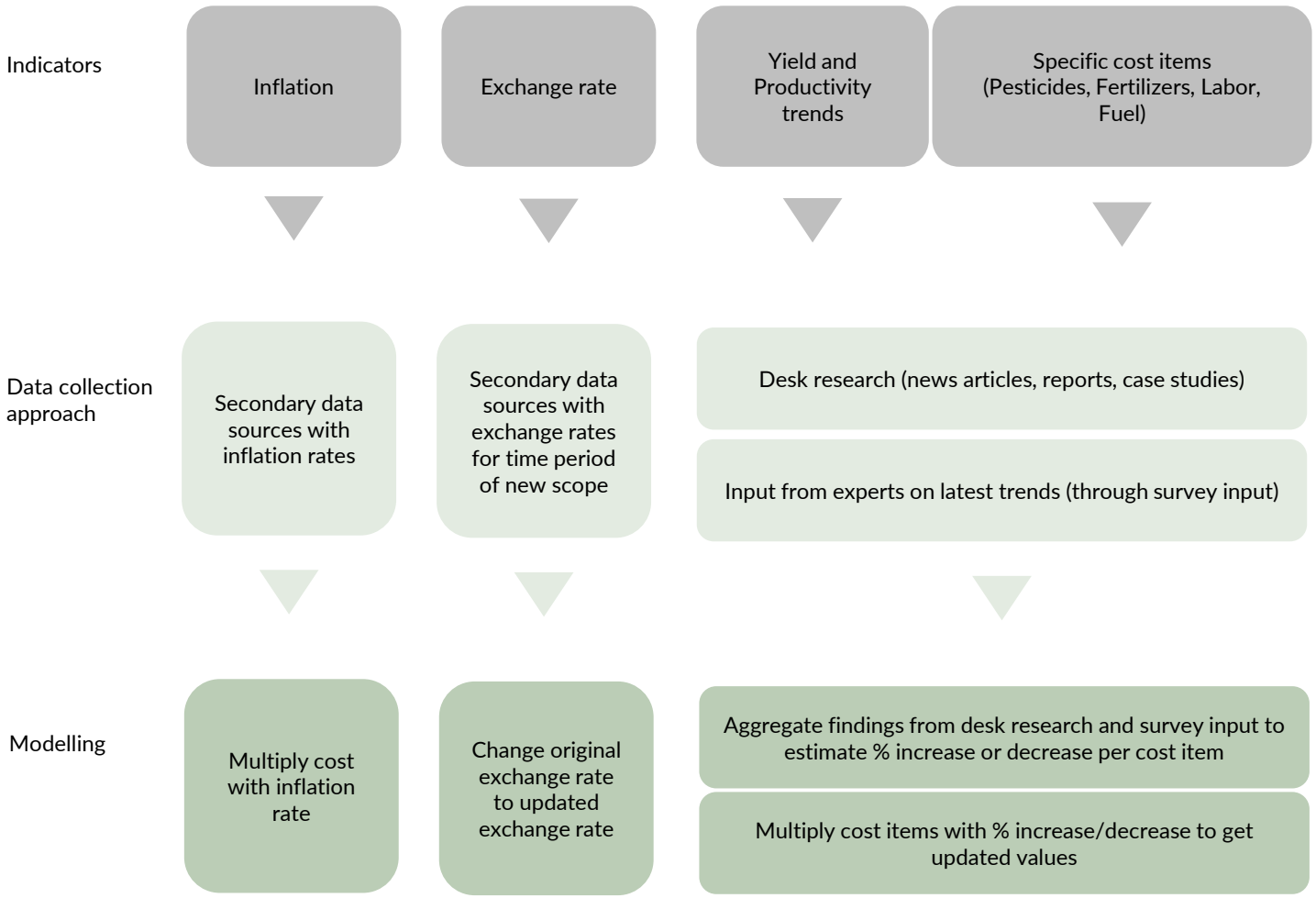
Validate trends with Fairtrade experts

6 **Update in COSP model**

Adjust key indicators in the COSP model based on the results from data collection.

1. Identify key cost indicators

To ensure the COSP update reflects current economic and agronomic realities, key indicators were identified and reviewed using both secondary and primary data sources. The update focused on inflation, exchange rates, yield and productivity trends, and specific cost items such as pesticides, fertilizers, labor, and fuel. For macroeconomic indicators like inflation and exchange rates, official data sources were consulted to apply direct adjustments. For yield and cost-related items, a combination of desk research and expert input was used to capture the latest trends. These insights were translated into percentage changes, which were then applied to the original COSP model to calculate updated cost values.



2. Secondary data collection

Key:

Low ●
Medium ● ●
High ● ● ●

To inform the COSP update with robust evidence, secondary data was gathered for each key indicator. Inflation and exchange rate data, both assessed with high data confidence, were sourced from official statistics, showing notable variation between Ghana and Côte d'Ivoire. Ghana's non-food inflation stood at 33%, while Côte d'Ivoire's was 4.7%. Exchange rates were updated to reflect recent market values. Yield and productivity data combined quantitative insights from USDA and GAIN reports with qualitative sources, whereas data on specific cost items like pesticides, fertilizers, labor, and fuel relied on news articles and sector reports. Data scores indicate varying confidence levels, with the most robust figures supporting macroeconomic indicators.

Indicator	Data quality score	Values Ghana	Values Côte d'Ivoire
Inflation	● ● ●	+33% *Non-food inflation rate*	+4.7%
Exchange rate	● ● ●	15.2 GHS/USD 16.33 GHS/EUR	607.92 XOF/USD 655.957 XOF/EUR
Yield/productivity	● ◗	• Quantitative results from market report USDA and GAIN (Global Agricultural Information Network) • Qualitative insights from news articles	
Specific cost items (Pesticides, Fertilizers, Labor, Fuel)	●	• Qualitative insights from news articles and reports	

3. Primary data collection

Primary data was collected through targeted expert surveys to complement the secondary data and provide context-specific insights. One survey was completed for each cocoa type, conventional and organic, in both Ghana and Côte d'Ivoire, resulting in four completed surveys. Rather than individual respondents, the surveys were filled in collaboratively by Fairtrade Africa colleagues from both Ghana and Côte d'Ivoire with cocoa agronomic background.

Each survey included a comment section to allow qualitative elaboration on the observed trends. These inputs were instrumental in selecting the appropriate intensity of change per indicator and were subsequently validated in a broader session involving additional stakeholders to ensure robustness and alignment.

Sample:

Ghana conventional

Ghana organic

CDI conventional

CDI organic

Example of survey:

Input Category	Season	2022/23→2023/24 change (%)	Estimation % change	2023/24→2024/25 change (%)	Estimation % change
Yield (total production)	Main Seasons Comparison (October - March)	Please choose	Please choose	Please choose	Please choose
Yield (total production)	Mid Seasons Comparison (April - September)	Please choose	Please choose	*Ongoing*	*Ongoing*

Input Category	Season	2022/23→2023/24 change (%)	Estimation % change	2023/24→2024/25 change (%)	Estimation % change
Farm size	Main Seasons Comparison (October - March)	Please choose	Please choose	Please choose	Please choose
Farm size	Mid Seasons Comparison (April - September)	Please choose	Please choose	*Ongoing*	*Ongoing*

Input Category	Season	2022/23→2023/24 change (%)	Estimation % change	2023/24→2024/25 change (%)	Estimation % change
Fertilizer Cost (% per unit)	Main Seasons Comparison (October - March)	Please choose	Please choose	Please choose	Please choose
Fertilizer Use (% quantity applied)	Main Seasons Comparison (October - March)	Please choose	Please choose	Please choose	Please choose
Fertilizer Cost (% per unit)	Mid Seasons Comparison (April - September)	Please choose	Please choose	*Ongoing*	*Ongoing*
Fertilizer Use (% quantity applied)	Mid Seasons Comparison (April - September)	Please choose	Please choose	*Ongoing*	*Ongoing*

Input Category	Season	2022/23→2023/24 change (%)	Estimation % change	2023/24→2024/25 change (%)	Estimation % change
Pesticides Cost (% per unit)	Main Seasons Comparison (October - March)	Please choose	Please choose	Please choose	Please choose
Pesticides Use (% quantity applied)	Main Seasons Comparison (October - March)	Please choose	Please choose	Please choose	Please choose
Pesticides Cost (% per unit)	Mid Seasons Comparison (April - September)	Please choose	Please choose	*Ongoing*	*Ongoing*
Pesticides Use (% quantity applied)	Mid Seasons Comparison (April - September)	Please choose	Please choose	*Ongoing*	*Ongoing*

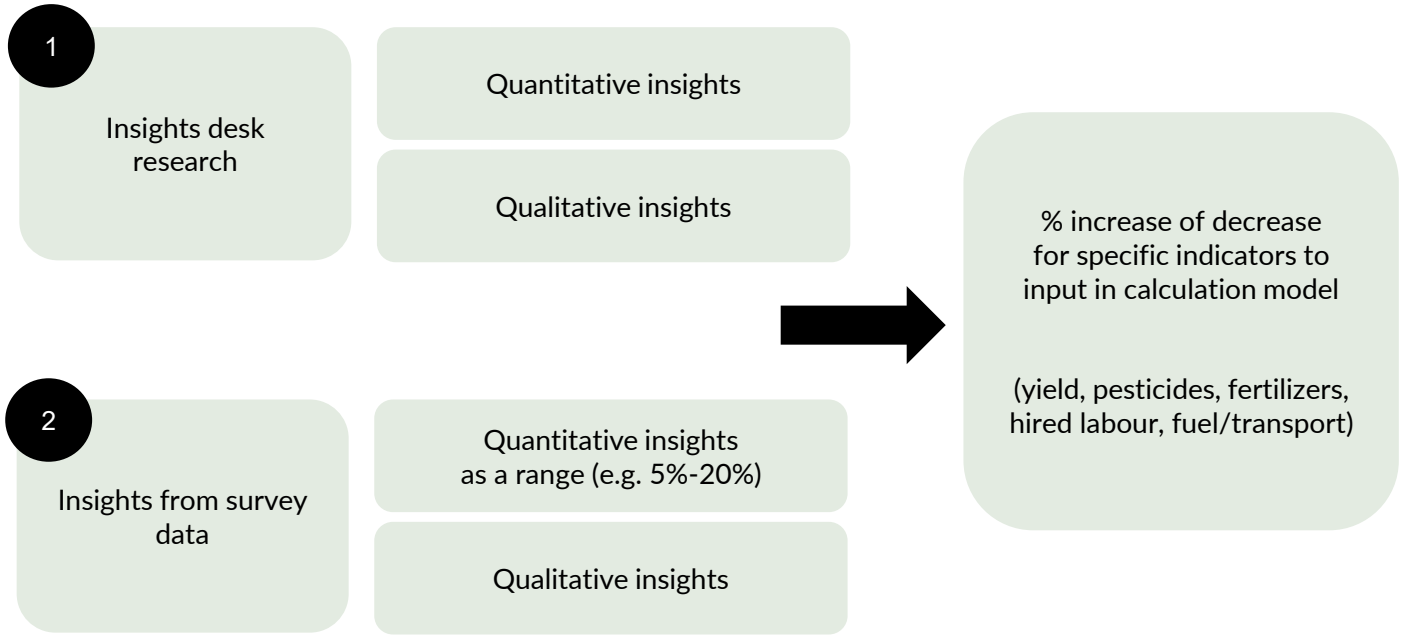
Input Category	Season	2022/23→2023/24 change (%)	Estimation % change	2023/24→2024/25 change (%)	Estimation % change
Hired Labour Cost (% per worker)	Main Seasons Comparison (October - March)	Please choose	Please choose	Please choose	Please choose
Hired Labour Employed (% of hired workers)	Main Seasons Comparison (October - March)	Please choose	Please choose	Please choose	Please choose
Hired Labour Cost (% per worker)	Mid Seasons Comparison (April - September)	Please choose	Please choose	*Ongoing*	*Ongoing*
Hired Labour Employed (% of hired workers)	Mid Seasons Comparison (April - September)	Please choose	Please choose	*Ongoing*	*Ongoing*

Input Category	Season	2022/23→2023/24 change (%)	Estimation % change	2023/24→2024/25 change (%)	Estimation % change
Fuel/Transport Cost	Main Seasons Comparison (October - March)	Please choose	Please choose	Please choose	Please choose
Fuel/Transport Use	Main Seasons Comparison (October - March)	Please choose	Please choose	Please choose	Please choose
Fuel/Transport Cost	Mid Seasons Comparison (April - September)	Please choose	Please choose	*Ongoing*	*Ongoing*
Fuel/Transport Use	Mid Seasons Comparison (April - September)	Please choose	Please choose	*Ongoing*	*Ongoing*

4. Results aggregation

To determine the final percentage changes applied to key cost indicators, findings from both desk research and expert surveys were systematically combined. Desk research provided a mix of quantitative data points and qualitative context, while the survey results offered expert-based estimates, often expressed as percentage ranges, and explanatory commentary. These complementary sources enabled the translation of qualitative and semi-quantitative insights into concrete percentage increases or decreases for indicators such as yield, pesticides, fertilizers, hired labour, and fuel/transport. The resulting figures served as direct inputs into the COSP calculation model.

To aggregate the data in a structured manner, a decision tree was used to guide the steps to aggregation. The decision tree can be found in the Annex A1. Furthermore, the results from the survey and desk research including qualitative context for each indicator for Ghana can be found in Annex A2, and for Côte d'Ivoire in Annex A3. The breakdown of organic differential and HREDD costs can be found in Annex A4.



5. Validation trends key indicators

The percentages change per indicator between 2022/2023 and 2024/2025 were validated with Fairtrade experts to determine the representativeness of the data.

During the validation session, Fairtrade experts agreed that the percentages change presented in the table for each indicator represent the change from 2022/2023 to 2024/2025. Only the variation for fertilizer cost in Côte d'Ivoire determined to be estimated too high, and has therefore been adjusted to 25% in consultation with Fairtrade experts.

The resulting values of this validation session has been used to update the data from 2022/2023 to 2024/2025 in the COSP calculation model.

Indicator	Unit	Variation Ghana	Variation CDI	Possible explanation of differences
Yield	%	-4%	-17%	• CDI experienced steeper decrease in yield through compound factors; unfavorable weather conditions, spread of virus (e.g., CSSVD) and diseases. Ghana was also affected but had better management for cocoa rehabilitation.
Farm size	%	No change	No change	
Fertilizer cost	%	+13%	+25%**	• Fertilizers are cheaper in Ghana, this is shown by the fact that many farmers from CDI go to Ghana to buy fertilizers. • Ghana has more extensive fertilizer subsidy programme.
Fertilizers use	%	No change	No change	
Pesticides cost	%	+13%	+15%	• In Ghana there is more support to pest and diseases in cocoa production. COCOBOD provides support in spraying at no cost for farmer.
Pesticides use	%	+8%	+24%	
Hired labour cost	%	+41%	+43%	• Similar increase in labor cost due to increase in cocoa prices and wage inflation.
Hired labour employed	%	+8%	No change	
Fuel/Transport cost	%	+24%	+9%	• In CDI the fuel prices have been managed better and are therefore less volatile. In Ghana the fuel prices increased more, in line with high inflation rates.
Fuel/Transport use	%	+24%	+24%	

**Based on validation meeting feedback of the 2nd of June

6. Update in COSP model

By applying the percentage changes per indicator (as shown on the previous page) to the COSP calculation model, the resulting values for each indicator reflect projected figures for 2024/2025.

Once the results were obtained, they appeared to be relatively high compared to previous experiences with similar datasets. As a result, it was decided to conduct an additional round of validation. This round focused on assessing the absolute values by revisiting the original 2022/2023 data and evaluating how representative these figures are for the specific country and context. This process is described in the next chapter.

	Ghana		Côte d'Ivoire	
Indicator	**Updated COSP 2024/2025**		**Updated COSP 2024/2025**	
Yield	625 (average) 593 (median)		526 (average) 521 (median)	
Indicator (average)	LCU/ha	EUR/ha	LCU/ha	EUR/ha
Fertilizer cost	**970**	60	**98,308**	150
Pesticide cost	**628**	39	**11,361**	17
Hired labour cost	**10,221**	632	**180,292**	275
Transport cost	**171**	11	**73,217**	112

Validation session

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Introduction Phase 2: Validation

The key indicators from the updated COSP dataset (projected for 2024/2025) were compared with other datasets covering the same time frame. The first comparison involved data from the Cocoa Farmer Income Household Study by Fairtrade. Data was collected in 2023/2024 by Etudes de Marché et Conseils (EMC)[3] in Côte d'Ivoire and updated to reflect 2024/2025 values. In addition, key indicators were compared to average values from the Agri-Logic dataset[4] of 2024/2025 for both Ghana and Côte d'Ivoire. We thank Agri-Logic and its partners Rainforest Alliance, Barry Callebaut and IDH for providing us with data access to conduct data validation.

The comparisons between the datasets were presented during a validation session with Fairtrade experts to re-examine the underlying values of the COSP study and assess whether the reported figures align with the intended scope and purpose of the COSP.

Phase 2: Validation

- Validation session with Fairtrade experts to assess:
  - Validity of change between 2022/2023 to 2024/2025 for key indicators
  - Representativeness of resulting values for cocoa production in Ghana/ Côte d'Ivoire
- Cross-reference values with other datasets (Household income study and Agri-Logic dataset)

COSP 2024/25

Data collection:

- **Data collection by**: Fairtrade International
- **Method:** Focus group discussions

Scope and sample:

- **Country in scope**: CDI & GH
- **Sample:** Fairtrade-certified SPOs and producers
- **Sample size**:
  - 22 SPOs IVC
  - 3 SPOs in GH
- **Geographical area of respondents**: Western Ghana, Côte d'Ivoire

Time period:

- **Primary data covers** October 2022 – September 2023
- **Updated** to April 2024 – March 2025 season via survey and desk research

Household Income Study 2024/25

Data collection:

- **Data collection by**: EMC[3] as part of Fairtrade project (in collaboration with Impact Institute)
- **Method:** Survey-based producer interviews

Scope and sample:

- **Country in scope**: CDI
- **Sample:** Fairtrade-certified producers
- **Sample size**: 704 individual producers from 31 SPOs in IVC
- **Geographical area of respondents**: Centre-West, South-West and South-East of Côte d'Ivoire

Time period:

- **Primary data covers** April 2023 - March 2024
- **Updated** to April 2024 – March 2025 season via survey and desk research

AGRI LOGIC data 2024/25

Data collection:

- **Data collection by:** Agri-Logic as part of collaboration with Barry Callebaut, IDH and Rainforest Alliance.
- **Method:** Farmer Field Books

Scope and sample:

- **Country in scope**: CDI & GH
- **Sample:** producers (includes both Fairtrade certified and non-certified)
- **Sample size**:
  - 1,340 individual producers in IVC
  - 839 individual producers GH
- **Geographical area of respondents**: n/a

Time period:

- **Primary data** March 2024 - February 2025

[3] EMC is an Ivorian organisation that is specialised in market research, opinion polls and socio-economic studies.
[4] Agri-Logic (2025) *Small holder farmer data summary Côte d'Ivoire and Ghana*. This data is collected by Agri-Logic as part of a collaboration with Barry Callebaut, IDH and Rainforest Alliance. The data reflects the status on 04-07-2025 when we received the data.

Comparison Ghana values

Data for Ghana was compared with the Agri-Logic dataset

The updated COSP 2024/2025 data for Ghana shows significantly higher cost estimates than the Agri-Logic dataset for the same period.

- Yield in COSP (625 kg/ha average) is higher than in Agri-Logic (500 kg/ha).
- Fertilizer costs in COSP (60 EUR/ha) are 30 times higher than in Agri-Logic (2 EUR/ha), and
- Pesticide costs (39 EUR/ha) are over three times higher (Agri-Logic: 11 EUR/ha).
- The largest gap is seen in hired labour costs, with COSP reporting 632 EUR/ha compared to just 24 EUR/ha in Agri-Logic.
- Transport costs are only included in COSP (11 EUR/ha).

These differences, especially in input and labour costs, suggest that the COSP data may reflect a different production context or estimation method.

Indicator	Updated COSP 2024/2025		AGRI LOGIC dataset 2024/2025	
Yield	**625** (average) 593 (median)		**500** (average) n/a (median)	
Indicator (average)	LCU/ha	EUR/ha	LCU/ha	EUR/ha
Fertilizer cost	**970**	60	27	2
Pesticide cost	**628**	39	177	11
Hired labour cost	**10,221**	632	381	24
Transport cost	**171**	11	-	-

Comparison Côte d'Ivoire values

Data for Côte d'Ivoire was compared with the Farmer household income dataset and the Agri-Logic dataset

The updated COSP 2024/2025 data for Côte d'Ivoire also shows consistently higher cost estimates compared to the Farmer household income study dataset (HH income study) and Agri-Logic dataset.

- **Yield** in COSP (526 kg/ha) is slightly higher than Agri-Logic (509.55 kg/ha).
- **Fertilizer and pesticide costs** in COSP (167 EUR/ha) is substantially higher than in the HH study (31 EUR/ha) and the Agri-Logic data set (36 EUR/ha) with the difference mainly driven by the fertilizer costs.
- **Hired labour costs** are also significantly higher in COSP (275 EUR/ha) compared to Agri-Logic (113 EUR/ha) and especially the HH study (38 EUR/ha).
- **Transport costs** in COSP (112 EUR/ha) are sharply higher than in the HH study (3 EUR/ha), with no comparable value in Agri-Logic.

These large differences, particularly in labour and input costs, suggest the need for further validation to assess if the variation is due to different methodologies and to assess the representativeness of COSP values within the specific country and context.

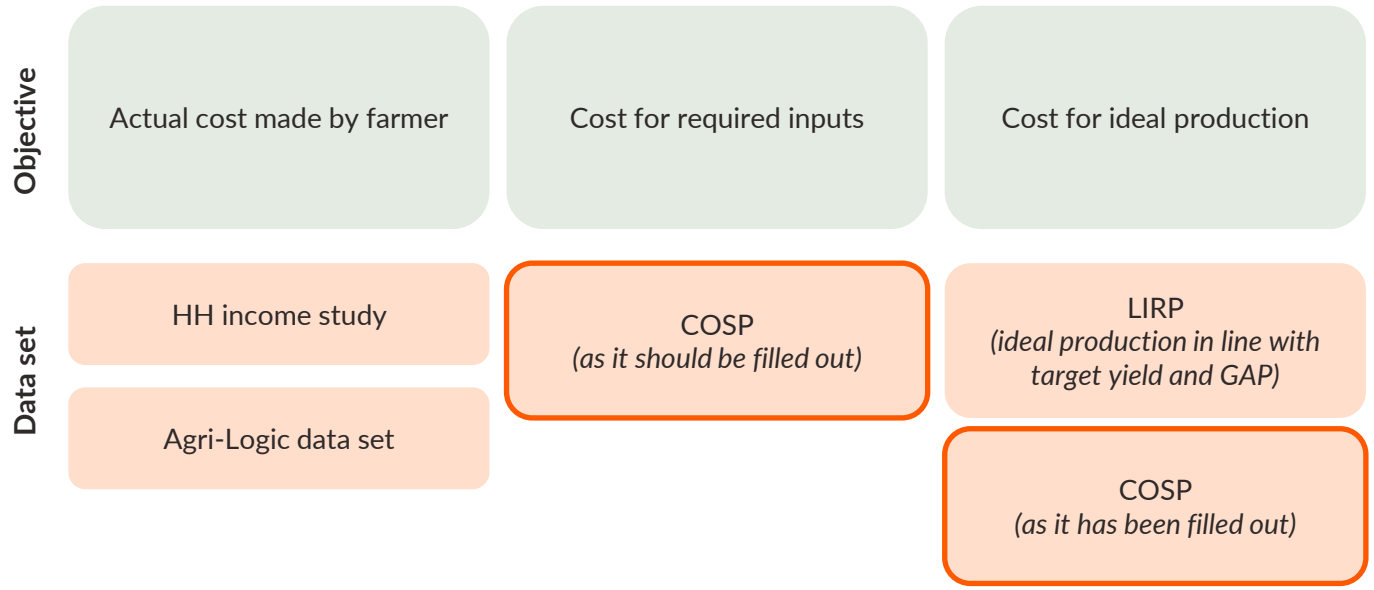
Indicator	Updated COSP 2024/2025		Updated HH income study 2024/2025		Agri-Logic dataset 2024/2025	
Yield	**526** (average) 521 (median)		*Excluded from comparison**		**509.55** (average)	
Indicator (average)	LCU/ha	EUR/ha	LCU/ha	EUR/ha	LCU/ha	EUR/ha
Fertilizer cost	**98,308**	150	20,483 (included in input costs)	31 (included in input costs)	16,367	25
Pesticide cost	**11,361**	17			7,261	11
Hired labour cost	**180,292**	275	24,777	38	74,186	113
Transport cost	**73,217**	112	1,995	3	-	-

*Many farmers in the HH income study reported cocoa yields above expected national and regional levels and this is explored in the upcoming publication of this research in September 2025. Therefore, this yield has not been included in the comparison for the validation

Conclusion validation

The comparisons on the previous pages highlight that the COSP has consistently been filled out with higher values than comparable datasets. Discussions with experts revealed that, in practice, the values for COSP have been filled out to reflect a production scenario at a higher target yield, similar to the Living Income Reference Price [5] (LIRP), rather than its intended purpose of capturing the actual cost of farmers. The original objective of the COSP is to estimate the cost of *required* inputs for the reported level of production, not an ideal situation. While it is important that COSP does not reflect underinvestment, such as lower fertilizer use due to affordability constraints, it should remain grounded in the inputs that farmers Actually need and use to arrive at the reported yield, rather than what would be needed to arrive at an ideal yield scenario.

To update the COSP data collection in line with the objective of the COSP, experts were asked to provide revised estimates for the key indicators. This is further discussed in the next chapter.



[5] Living Income Reference Price is the farmgate price farmers need to earn a living income that covers a decent standard of living, based on local costs, sustainable yields, and viable farm size. It's a voluntary benchmark, higher than the Fairtrade Minimum Price, designed to guide buyers toward fairer, more sustainable sourcing.

Finalization COSP values

04

Introduction Phase 3: Finalization of COSP values

Phase 3: Finalization of COSP values

- Determine final values based on input from Fairtrade experts
- Integrate final values in COSP calculation model

Fairtrade experts were asked to provide revised values that reflect the cost of *required* inputs rather than ideal production scenarios. Specifically, they provided updated cost estimates per hectare for each key indicator, as well as revised yield figures. These per-hectare values were then scaled to the farm level by multiplying them with the average farm size reported per SPO. The resulting figures were integrated into the COSP calculation model. The calculation model automatically runs an outlier correction[6] after which updated COSP values are generated based on the revised values for the key indicators. The following two pages present an overview of the revised expert-recommended values for Ghana and Côte d'Ivoire with page 23 providing insights into how this update affected the results per SPO for total kg cocoa produced, total cost of production and cost of production per kg of cocoa.

[6] Outliers were identified using the interquartile range (IQR) method, with values below *Q1 – 1.5×IQR* or above *Q3 + 1.5×IQR* flagged as outliers. These values were then corrected by replacing them with the median of the distribution.

Recommended values Ghana

Source	COSP update 2024/2025		Recommended values		Comment
Scope	April 2024 - March 2025		April 2024 - March 2025		
Unit	kg/ha		kg/ha		
Yield (average)	625		475		Average yield ranges between 450 -500kg/ha
Yield (median)	592.00		n/a		
Unit	LCU/ha	LCU/kg	LCU/ha	LCU/kg	
Fertilizer cost (average)	970.00	3.00	400	0.84	On the average farmers use about 5 bags per ha per year. Subsidised fertiliser price in Ghana is 80 cedis per bag.
Pesticides cost (average)	628.00	1.40	300	0.63	Ideally, farmers are required to spray four times a year. Cocobod subsidises two times of spraying, and farmers also cover the cost of spraying twice. The average cost of pesticide is 150 Cedis per litre.
Hired labour cost (average)	10,221.00	29.00	4340	9.14	**Pesticide Application** – 1 round is 6 cedis per round @ 15 rounds per year = 90 cedis. **Pruning** – 750 cedis for 1 ha pruning per year **Harvesting** – Communal labour and farmers prepare food. Estimated cost of food would be 750 per ha for the year **Pod Breaking** – communal labour and the farmer prepares food and drinks. Estimated cost at an average of 750 cedis **Weeding** – 1000 cedis per ha @ 2 times in a year – GhC 2000
Transport cost (average)	171.00	0.30	120	0.25	**Transportation of Fermented beans** – average cost of 15 cedis per bag * 8 bags – 120 cedis

Recommended values Côte d'Ivoire

Source	COSP update 2024/2025		Recommended values		Comment
Scope	April 2024 - March 2025		April 2024 - March 2025		
Unit	kg/ha		kg/ha		
Yield (average)	526		500		Average yield range for CDI: 450 - 600kg/ha
Yield (median)	521.00		n/a		
Unit	LCU/ha	LCU/kg	LCU/ha	LCU/kg	
Fertilizer cost (average)	98,308.00	196.00	44,000	88	Most farmers use 2 bags per ha per year. The average price of fertiliser now is 22,000 CFA
Pesticides cost (average)	11,361.00	23.00	11000	22	On average, farmers use 2 litres of pesticides per year. Average market prices of pesticides is 5500 CFA
Hired labour cost (average)	180,292.00	353.00	75,000	150	**NB:** The estimated cost did not include family or communal labour. **Pruning: Average** cost of pruning is 30,000. However, SPOs subsidise 15,000 and farmer pays 15,000 CFA per Ha. **Weeding**: Weeding is done twice a year at an average cost of 20,000CFA as at COSP data collection period. This brings the total to 40,000 CFA **Harvesting**: Most farmers rely on family and communal labour, but provide food and drinks at an average cost of 10,000 CFA **Pod Breaking:** Mostly communal labour and family labour. Farmer provides food and drinks at an average cost of 10,000 CFA **Spraying:** Most farmers do this themselves
Transport cost (average)	73,217.00	148.00	36100	72.2	Transportation of fermented beans from the farm at 12 times harvesting at an average cost of 2000 CFA. Total cost of 24,000 CFA Transportation of beans from village to Cooperative's warehouse – Cost covered by the Cooperative Majority of farmers go the farm either on foot or use bicycles or on motor bikes – estimated annual cost of transportation – 12,100

Results: COSP values for Ghana and Côte d'Ivoire

Updated COSP values - Descriptive values

	Number of SPOs	Individual Producers	Exporting	Conventional / Organic	Intercrops for cash at farmer level	SPO Cocoa sales % vs other crops	**Average yield (kg/ha)**	**Average land size**
Ghana	3	14	0	2 / 1	5-10%	100%	**475**	1.23 ha *(3.05 acres)*
CDI	22	72	4	22 / 0	0-50%	74%-100%	**500**	2.74 ha

Local currency

Updated COSP values – Local currency

			Farmgate			SPO			FOB
			Average of FG	Fixed costs	Variable costs	Average SPO	Fixed cost	Variable cost	Total
Ghana	Conventional	GHS/kg	34.41	14.32	20.09	0.82	0.82	0	35.23
	Organic	GHS/kg	42.46	17.90	24.57	1.04	1.04	0	43.51
CDI	Conventional	XOF/kg	2,077	394	1,683	126	126	0	2,203
	Organic	XOF/kg	2,651	492	2,159	161	161	0	2,813

Euro

Updated COSP values – EURO

			Farmgate			SPO			FOB
			Average of FG	Fixed costs	Variable costs	Average SPO	Fixed cost	Variable cost	Total
Ghana	Conventional	EUR/kg	€2.13	€0.89	€1.24	€0.05	€0.05	€0	€2.18
	Organic	EUR/kg	€2.63	€1.11	€1.52	€0.06	€0.06	€0	€2.69
CDI	Conventional	EUR/kg	€3.17	€0.60	€2.57	€0.19	€0.19	€0	€3.36
	Organic	EUR/kg	€4.04	€0.75	€3.29	€0.25	€0.25	€0	€4.29

Based on average exchange rate April 2024-March 2025
GHS/EUR **16.17**
XOF/EUR **655.96**

USD

Updated COSP values – USD

			Farmgate			SPO			FOB
			Average of FG	Fixed costs	Variable costs	Average SPO	Fixed cost	Variable cost	Total
Ghana	Conventional	USD/kg	$2.28	$0.95	$1.33	$0.05	$0.05	$0	$2.34
	Organic	USD/kg	$2.82	$1.19	$1.63	$0.07	$0.07	$0	$2.89
CDI	Conventional	USD/kg	$3.39	$0.64	$2.75	$0.21	$0.21	$0	$3.60
	Organic	USD/kg	$4.33	$0.80	$3.53	$0.26	$0.26	$0	$4.60

Based on average exchange rate April 2024-March 2025
GHS/USD **15.07**
XOF/USD **611.95**

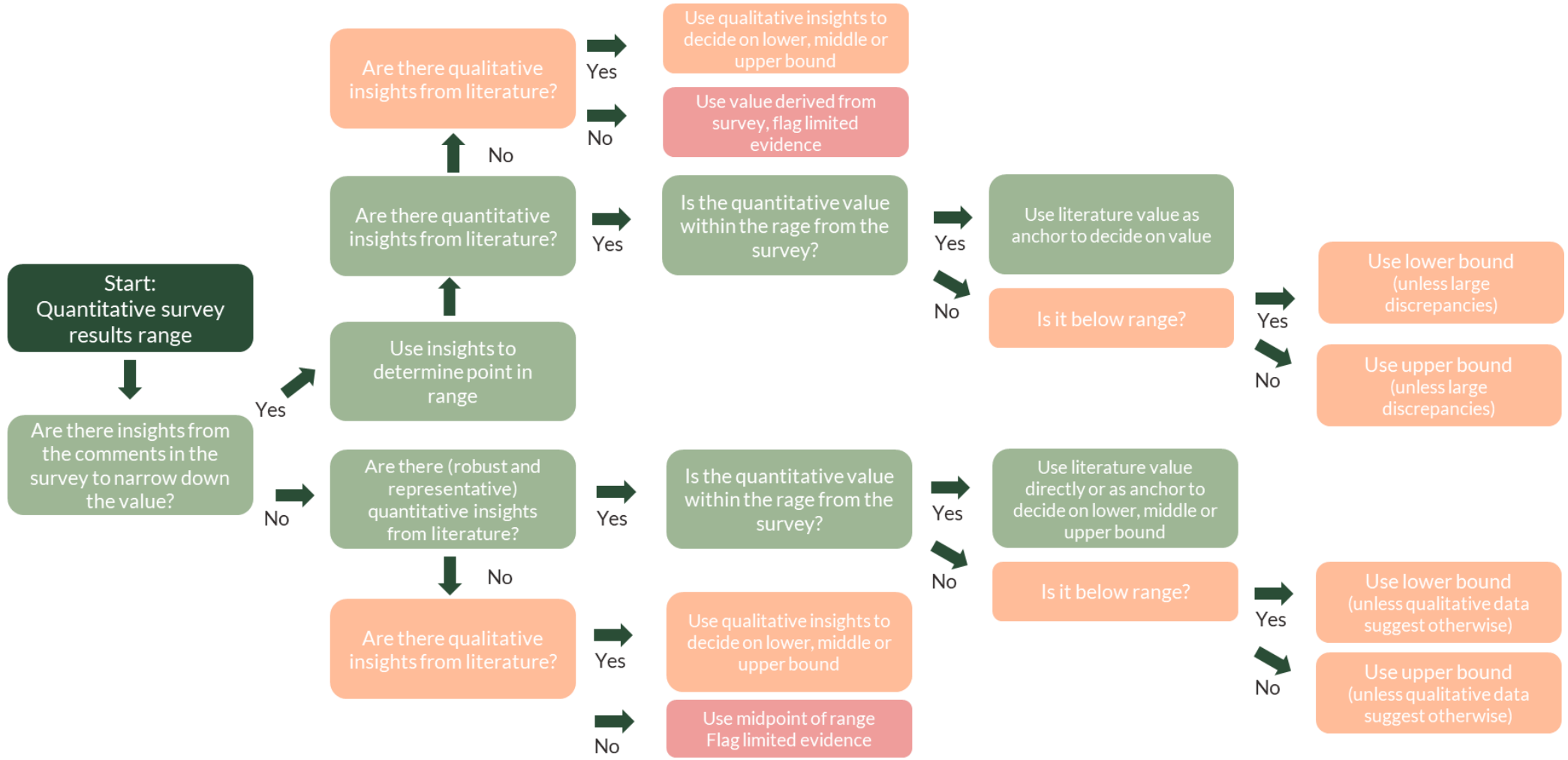
ANNEX

Annex 1:

Decision tree for aggregating qualitative and quantitative data

A.1

Decision tree used for aggregating qualitative and quantitative data



Annex 2:

Breakdown trends per indicator for Ghana

A.2

Ghana: Yield

Yield variation survey vs literature findings

	2022/2023 COSP		OUT OF SCOPE	2024/2025 COSP		SELECTED
Season	Main season	Mid season	Main season	Mid season	Main season	*Mid + Main*
	Oct 2022 – March 2023	April 2023 – Sep 2023	Oct 2023 – March 2024	April 2024 – Sep 2024	Oct 2024 – March 2025	April 2024 – March 2025
Yield (survey)	*Baseline*		↓ -5/**-10%**	↓ -5/**-10%**	↑ 5/10%	
					Weather improvements	
Yield (literature*)	*Baseline*		↓ -10/-20%		↑ 20/30%	↓ **-4%**
			Ageing trees		**Weather improvements**	
			Adverse weather conditions		**Policy reducing informal cross-border trade**	
			Pests and diseases			

*Final yield values for each mid and main season were not directly available in the literature. Estimates were therefore derived using available data on total cocoa production, export volumes, and deliveries to the port, allowing for an approximate calculation of seasonal yield trends.

Ghana: Fertilizer cost and quantity

Cost trends of fertilizer

	PREVIOUS COSP		OUT OF SCOPE	CURRENT SCOPE		SELECTED
Season	Main season	Mid season	Main season	Mid season	Main season	*Mid + Main*
	Oct 2022 – March 2023	April 2023 – September 2023	Oct 2023 – March 2024	April 2024 – September 2024	Oct 2024 – March 2025	April 2024 – March 2025
Fertilizer cost (survey)	***Baseline***		↑ 5/**25%**	*No change*	*No change*	↑ **+13%**
			Shortage			
Fertilizer cost (literature*)	***Baseline***		**Inflation**	**Inflation**	**Inflation**	
Fertilizer use (survey)			*No change*	*No change*	*No change*	**No change**
Fertilizer use (literature*)			No information found			

*For agricultural inputs (e.g., fertilizer, pesticides, labor), precise data on quantity and cost variations were not available. Assumptions were drawn based on observable trends such as labor shortages, increasing pest and disease incidence, and evolving climate patterns impacting input needs and costs.

Ghana: Pesticide cost and quantity

Cost trends of Pesticide

	PREVIOUS COSP		OUT OF SCOPE	CURRENT SCOPE		SELECTED
Season	Main season	Mid season	Main season	Mid season	Main season	*Mid + Main*
	Oct 2022 – March 2023	April 2023 – September 2023	Oct 2023 – March 2024	April 2024 – September 2024	Oct 2024 – March 2025	April 2024 – March 2025
Pesticide cost (survey)	*Baseline*		↑ 5/25% Inflation	↑ 5/25% Inflation	↑ 5/25% Inflation	↑ +13%
Pesticide cost (literature*)	*Baseline*		Cutback gov. support	Cutback gov. support	Gov. support	
Pesticide use (survey)	*Baseline*		*No change*	*No change*	↑ 5/25%	↑ +8%
Pesticide use (literature*)	*Baseline*		No information available			

*For agricultural inputs (e.g., fertilizer, pesticides, labor), precise data on quantity and cost variations were not available. Assumptions were drawn based on observable trends such as labor shortages, increasing pest and disease incidence, and evolving climate patterns impacting input needs and costs.

Ghana: Hired Labour cost and quantity

Cost trends of Hired labour

	PREVIOUS COSP		OUT OF SCOPE	CURRENT SCOPE		SELECTED
Season	Main season	Mid season	Main season	Mid season	Main season	*Mid + Main*
	Oct 2022 – March 2023	April 2023 – September 2023	Oct 2023 – March 2024	April 2024 – September 2024	Oct 2024 – March 2025	April 2024 – March 2025
Hired labour cost (survey)	***Baseline***		↑ 5/25%	↑ 5/25%	↑ 5/25%	↑ +41%
			Increase cocoa price	**Increase cocoa price**	**Increase cocoa price**	
Hired labour cost (literature*)	***Baseline***		**Inflation and labour shortage due to more lucrative activities**			
Hired labour use (survey)	***Baseline***		*No change*	*No change*	↑ 5/25%	↑ +8%
Hired labour use (literature*)	***Baseline***		No information available			

*For agricultural inputs (e.g., fertilizer, pesticides, labor), precise data on quantity and cost variations were not available. Assumptions were drawn based on observable trends such as labor shortages, increasing pest and disease incidence, and evolving climate patterns impacting input needs and costs.

Ghana: Fuel/transport cost and quantity

Cost trends of fuel/transport

	PREVIOUS COSP		OUT OF SCOPE	CURRENT SCOPE		SELECTED
Season	Main season	Mid season	Main season	Mid season	Main season	*Mid + Main*
	Oct 2022 – March 2023	April 2023 – September 2023	Oct 2023 – March 2024	April 2024 – September 2024	Oct 2024 – March 2025	April 2024 – March 2025
Fuel/transport cost (survey)	***Baseline***		↑ 5/25%	↑ 5/25%	↑ 5/25%	↑ +24%
				Fuel price		
Fuel/transport cost (literature*)	***Baseline***		Fuel price	Fuel price	Fuel price	
Fuel/transport use (survey)			↑ 5/25%	↑ 5/25%	↑ 5/25%	↑ +24%
Fuel/transport use (literature*)			No information available			

*For agricultural inputs (e.g., fertilizer, pesticides, labor), precise data on quantity and cost variations were not available. Assumptions were drawn based on observable trends such as labor shortages, increasing pest and disease incidence, and evolving climate patterns impacting input needs and costs.

Annex 3:

Breakdown trends per indicator for Côte d' Ivoire

A.3

Côte d'Ivoire: Yield

Yield variation survey vs literature findings

	2022/2023 COSP		OUT OF SCOPE	2024/2025 COSP		SELECTED
Season	Main season	Mid season	Main season	Mid season	Main season	*Mid + Main*
	Oct 2022 – March 2023	April 2023 – Sep 2023	Oct 2023 – March 2024	April 2024 – Sep 2024	Oct 2024 – March 2025	April 2024 – March 2025
Yield (survey)	*Baseline*		↓ -10/**-20%**	↓ -10/**-20%**	↑ **10**/20%	↓ **-17%**
			Adverse weather conditions		Weather improvements	
Yield (literature*)	*Baseline*		↓ -20/30%	↓ -10/-20%	↑ **10**/20%	
			Ageing trees		Weather improvements	
			Adverse weather conditions		Distribution of new improved cocoa plants	
			Pests and diseases			

*Final yield values for each mid and main season were not directly available in the literature. Estimates were therefore derived using available data on total cocoa production, export volumes, and deliveries to the port, allowing for an approximate calculation of seasonal yield trends.

CDI: Fertilizer cost and quantity

Cost trends of fertilizer

	PREVIOUS COSP		OUT OF SCOPE	CURRENT SCOPE		SELECTED
Season	Main season	Mid season	Main season	Mid season	Main season	*Mid + Main*
	Oct 2022 – March 2023	April 2023 – September 2023	Oct 2023 – March 2024	April 2024 – September 2024	Oct 2024 – March 2025	April 2024 – March 2025
Fertilizer cost (survey)	***Baseline***		↑ 5/25%	↑ 5/25%	↑ 5/25%	↑ **+25%****
Fertilizer cost (literature*)	***Baseline***		**Stable supply**	**Stable supply**	**Stable supply**	
Fertilizer use (survey)			*No change*	*No change*	*No change*	**0%**
Fertilizer use (literature*)			No information available			

**Based on validation meeting feedback of the 2nd of June

*For agricultural inputs (e.g., fertilizer, pesticides, labor), precise data on quantity and cost variations were not available. Assumptions were drawn based on observable trends such as labor shortages, increasing pest and disease incidence, and evolving climate patterns impacting input needs and costs.

CDI: Pesticide cost and quantity

Cost trends of Pesticide

	PREVIOUS COSP		OUT OF SCOPE	CURRENT SCOPE		SELECTED
Season	Main season	Mid season	Main season	Mid season	Main season	*Mid + Main*
	Oct 2022 – March 2023	April 2023 – September 2023	Oct 2023 – March 2024	April 2024 – September 2024	Oct 2024 – March 2025	April 2024 – March 2025
Pesticide cost (survey)	*Baseline*		↑ 5/25%	↑ 5/25%	↑ 5/25%	↑ **+15%**
Pesticide cost (literature*)	*Baseline*		**Disease & use increase**	**Inflation**	**Inflation**	
Pesticide use (survey)	*Baseline*		↑ 5/25% **Pest & diseases**	*No change*	↑ 5/25%	↑ **+24%**
Pesticide use (literature*)	*Baseline*			**Pest & diseases**		

*For agricultural inputs (e.g., fertilizer, pesticides, labor), precise data on quantity and cost variations were not available. Assumptions were drawn based on observable trends such as labor shortages, increasing pest and disease incidence, and evolving climate patterns impacting input needs and costs.

CDI: Hired Labour cost and quantity

Cost trends of Hired labour

<table>
<tr><th></th><th colspan="2">PREVIOUS COSP</th><th>OUT OF SCOPE</th><th colspan="2">CURRENT SCOPE</th><th>SELECTED</th></tr>
<tr><td rowspan="2">Season</td><td>Main season</td><td>Mid season</td><td>Main season</td><td>Mid season</td><td>Main season</td><td>Mid + Main</td></tr>
<tr><td>Oct 2022 – March 2023</td><td>April 2023 – September 2023</td><td>Oct 2023 – March 2024</td><td>April 2024 – September 2024</td><td>Oct 2024 – March 2025</td><td>April 2024 – March 2025</td></tr>
<tr><td>Hired labour cost (survey)</td><td colspan="2">Baseline</td><td>↑ 5/25%
Labour shortage</td><td>↑ 5/25%
Labour shortage</td><td>↑ 5/25%
Increase cocoa price</td><td rowspan="2">↑ +43%</td></tr>
<tr><td>Hired labour cost (literature*)</td><td colspan="2">Baseline</td><td colspan="3">Labor shortage & wage inflation</td></tr>
<tr><td>Hired labour use (survey)</td><td colspan="2">Baseline</td><td>No change</td><td>No change</td><td>No change</td><td rowspan="2">0%</td></tr>
<tr><td>Hired labour use (literature*)</td><td colspan="2">Baseline</td><td colspan="3">No information available</td></tr>
</table>

*For agricultural inputs (e.g., fertilizer, pesticides, labor), precise data on quantity and cost variations were not available. Assumptions were drawn based on observable trends such as labor shortages, increasing pest and disease incidence, and evolving climate patterns impacting input needs and costs.

CDI: Fuel/transport cost and quantity

Cost trends of fuel/transport

	PREVIOUS COSP		OUT OF SCOPE	CURRENT SCOPE		SELECTED
Season	Main season	Mid season	Main season	Mid season	Main season	*Mid + Main*
	Oct 2022 – March 2023	April 2023 – September 2023	Oct 2023 – March 2024	April 2024 – September 2024	Oct 2024 – March 2025	April 2024 – March 2025
Fuel/transport cost (survey)	***Baseline***		↑ 5/25%	↑ 5/25%	↑ 5/25%	↑ +9%
Fuel/transport cost (literature*)	***Baseline***		**Fuel price**	**Inflation**	**Inflation**	
Fuel/transport use (survey)			↑ 5/25%	↑ 5/25%	↑ 5/25%	↑ +24%
				More vehicles used to get to the fields		
Fuel/transport use (literature*)			No information available			

*For agricultural inputs (e.g., fertilizer, pesticides, labor), precise data on quantity and cost variations were not available. Assumptions were drawn based on observable trends such as labor shortages, increasing pest and disease incidence, and evolving climate patterns impacting input needs and costs.

Annex 4:

Organic differential and HREDD costs

A.4

Organic differential

In the expert survey, a dedicated section was included on the production costs of organic cocoa. Experts were asked to indicate the differences in cost between conventional and organic production for key cost categories. Their responses were used to estimate the overall cost differential, allowing for a calculation of the total production cost specific to organic cocoa. This informed the estimation of the organic cost component within the COSP model.

Indicator	Unit	Variation Ghana	Variation CDI
Yield	%	-20/30%	-20/30%
		 **Organic fertilizers, compost and bio-pesticides are often more expensive and harder to source**	
Certification cost	%	+20/30%	+20/30%
		 **Organic certification involves costly inspections, documentation and annual renewal fees**	
Production cost	%	+20/30%	+20/30%

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