

IMPACT OF THE LIVING INCOME FOR COCOA FARMERS IN CÔTE D'IVOIRE

A chainwide collaboration to move from concept to reality

Final report – November 2023

[impactinstitute.com](https://www.impactinstitute.com)



November 2023

ABOUT IMPACT INSTITUTE

Impact Institute is a social enterprise with the mission is to empower organizations and individuals to realize the impact economy by creating a common language for impact and providing the tools to use it. Impact Institute develops open-source standards for impact measurement and valuation and provides organizations with the tools, training, and services to implement them.

www.impactinstitute.com

DISCLAIMER

Impact Institute (a tradename of 21 Markets BV with office at Amsterdam, the Netherlands) has developed this publication for a partnership consisting of Colruyt Group, Rikolto International, Fairtrade Belgium, Puratos, Agro-Insight, Access Agriculture and Enterprise Cooperative de Saint Paul. The conclusions and results in the publication are based on the data, scope and limitations as presented herein and on sources that are considered reliable, but no guarantee is provided on the accuracy, correctness, or completeness, either expressed or implied, of the publication. Neither Impact Institute nor any of its group companies are responsible or liable for loss or damages related to the use of the publication or the information presented herein. The document is written and made available under Dutch law. All copyrights in this document are reserved by Impact Institute.



SUMMARY

The living income project contributes to farmer household income through payment of premiums and project activities

Living income for cocoa farmers in Côte d'Ivoire is a collaborative project with various actors in the cocoa value chain that work together towards providing cocoa farmers with a living income. Value chain actors aim to achieve this by paying the living income reference price (LIRP) for cocoa sold by 102 households in Colonel and Daregba. The project acknowledges that paying a decent price alone is not sufficient for farmers to reach a living income. Therefore, the project takes an integrated approach to support farmers in increasing their household income. This integrated approach takes into consideration six drivers; productivity, quality, income diversification, access to finance, agroforestry/reforestation and price.

As part of the project, Impact Institute has calculated the household income of the 102 households in this project and assessed the contribution of the six drivers to household income. The results show that the average household income of the 102 households is \$3,132 for the cocoa season of 2021-2022. This indicates that

farmers are earning on average 45% of the living income benchmark which is set at \$6,904 per year.

Analysis of the drivers shows that the payment of premiums by value chain partners contributes to a significant increase of household income with 31%. This indicates that price and quality premiums are a key driver of household income.

Furthermore, results show that productivity levels positively correlate with household income. Increasing productivity levels can therefore contribute to an increase in household income. However, due to small farm sizes of around 2.2 hectares, farmers are limited in their ability to generate sufficient income through cocoa production alone, even with increased productivity levels. Because farm size plays an important role in the ability of farmers to reach a living income through cocoa production, this has been identified as an additional driver in the project.

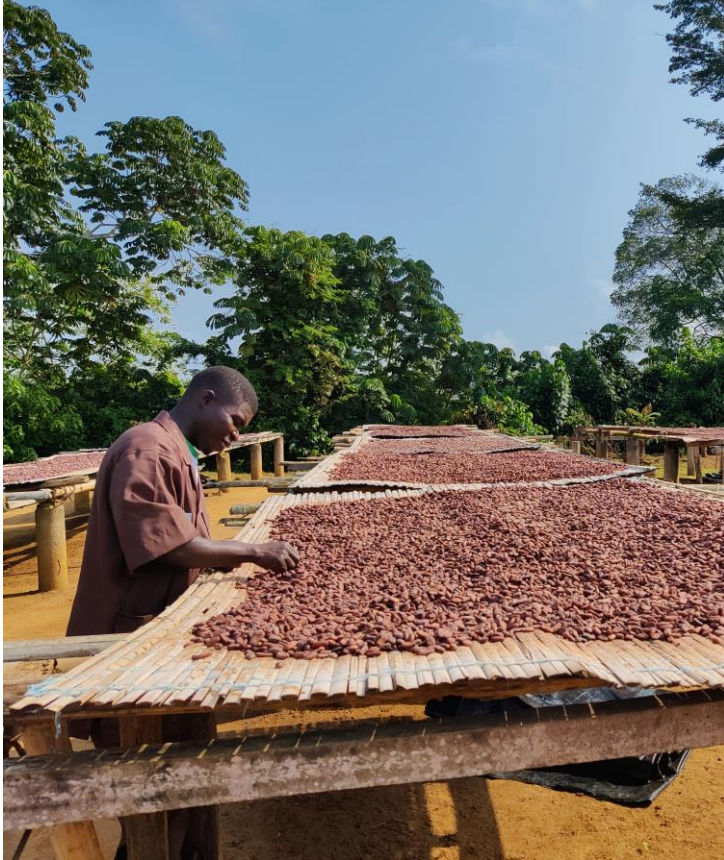
As the project recognizes the limitations that farmers

face in achieving sufficient income through cocoa production alone, the project aims to support farmers and their communities in establishing diversified income generating activities. The activities show potential for generating income within the community and contributing to farmer household income.

Additional data collection on the various activities undertaken within the project is needed to gain robust insights into the effectiveness of the activities on household income in the long term.



CONTENT



01	Introduction	Page 5
02	Living income analysis	Page 10
03	Driver analysis	Page 21
04	Conclusion	Page 63
05	Annex	Page 67



Introduction

01

INTRODUCTION

This document contains the results of the living income analysis and tests the living income model

This study is part of the project “A Living Income for Cocoa Farmers in Côte d’Ivoire”. This is a chainwide collaboration composed by Colruyt Group, Rikolto International, Fairtrade Belgium, Puratos, Agro-Insight, Access Agriculture and Ivorian cocoa cooperative Enterprise Cooperative de Saint Paul (ECSP). All partners will be referred to as “project partners” from now on.

The cross-sector partnership aims to bring a living income for cocoa growers from concept to reality for 102 cocoa growing households in two communities of San Pedro, Daregba and Colonel in Côte d’Ivoire.

To achieve this, a main component of the project is the payment of the living income reference price. However, the project is built on the premise that, for cocoa growing families to achieve and sustainably maintain a living income, it is not sufficient to simply pay the living income reference price. Therefore, the project takes an integrated approach in which cocoa growers are stimulated to become entrepreneurs to allow them to

earn an income from the cocoa as well as other farm activities and viable enterprises.

Six different aspects are considered in the integrated approach: Productivity, Quality, Income diversification, Access to finance, Agroforestry/reforestation and Price. Together these parameters form the living income model. The project partners have asked Impact Institute to validate this living income model and help understand the relationship between the 6 parameters and the impact these parameters have on household income.

This report contains an analysis of the living income of 102 cocoa growing households in the communities Colonel and Daregba in Côte d’Ivoire. The analysis on living income is followed by an analysis of the different drivers that potentially influence farmers household income. The results from this report will provide a starting point for creating a business case and scaling up the project to locally, internationally and internally.



INTRODUCTION | PROJECT CONTEXT

The projects focuses on 102 farming households in Colonel and Daregba

Globally, Côte d'Ivoire is the leading producer of cocoa, responsible for supplying approximately 40% of total global cocoa supplies to the world market. Cocoa is an important cash crop for many farmers in Côte d'Ivoire.

Cocoa farmers in Côte d'Ivoire face several challenges that impact their livelihoods and wellbeing. Many farmers operate in rural areas and lack access to essential services such as healthcare, education, and finance. Additionally, they face environmental challenges such as soil degradation, deforestation, and climate change, which impact crop yields and productivity. Furthermore, cocoa farmers often face low prices for their crops due to market fluctuations and unequal power dynamics in the cocoa supply chain. These challenges, have left many cocoa farmers in Côte d'Ivoire in poverty.

Most farmers are not able to afford decent livelihoods due to low productivity, small farm sizes, low prices and lack of alternative income-generating activities.

The project aims to contribute to securing long-lasting improvements for the living conditions and environment of 102 cocoa farming households in the project's key target communities: **Colonel** and **Daregba**, located in San Pedro. The communities Colonel and Daregba are Fairtrade certified and both communities are part of Puratos' Cacao-Trace program.

Project implementation started in August 2020 and will run until 30th June 2023.



Map of Côte d'Ivoire
The communities Colonel and Daregba are located in the region of San Pedro



INTRODUCTION | VALUE CHAIN

Project partners have different roles and responsibilities in the value chain and the project

The project partners within the cross-sector partnership are part of the cocoa supply chain from farmer to retailer. A simplified overview of the value chain is visualized on the right.

Fresh beans are delivered from cocoa farmers to the post-harvest centers for fermentation and drying with support of the ECSP cooperative. After fermentation and drying, the dry beans are delivered to the OLAM factory in San Pedro for processing in which the beans are turned into chocolate liquor. This is sent to Puratos in Belgium for processing of the chocolate, which is tuned into chocolate bars (Boni Chocolat Noir 72% tablet) by Q-Chocolate to be sold by Colruyt.

Other project partners (Rikolto, Agro-insight, Access Agriculture) are not part of the cocoa value chain but are closely involved with the implementation of the project activities.



INTRODUCTION | ANALYSIS AND REPORT

The report includes a living income analysis and a driver analysis

The following report consist of two parts covering two different analyses:

1) Living income analysis

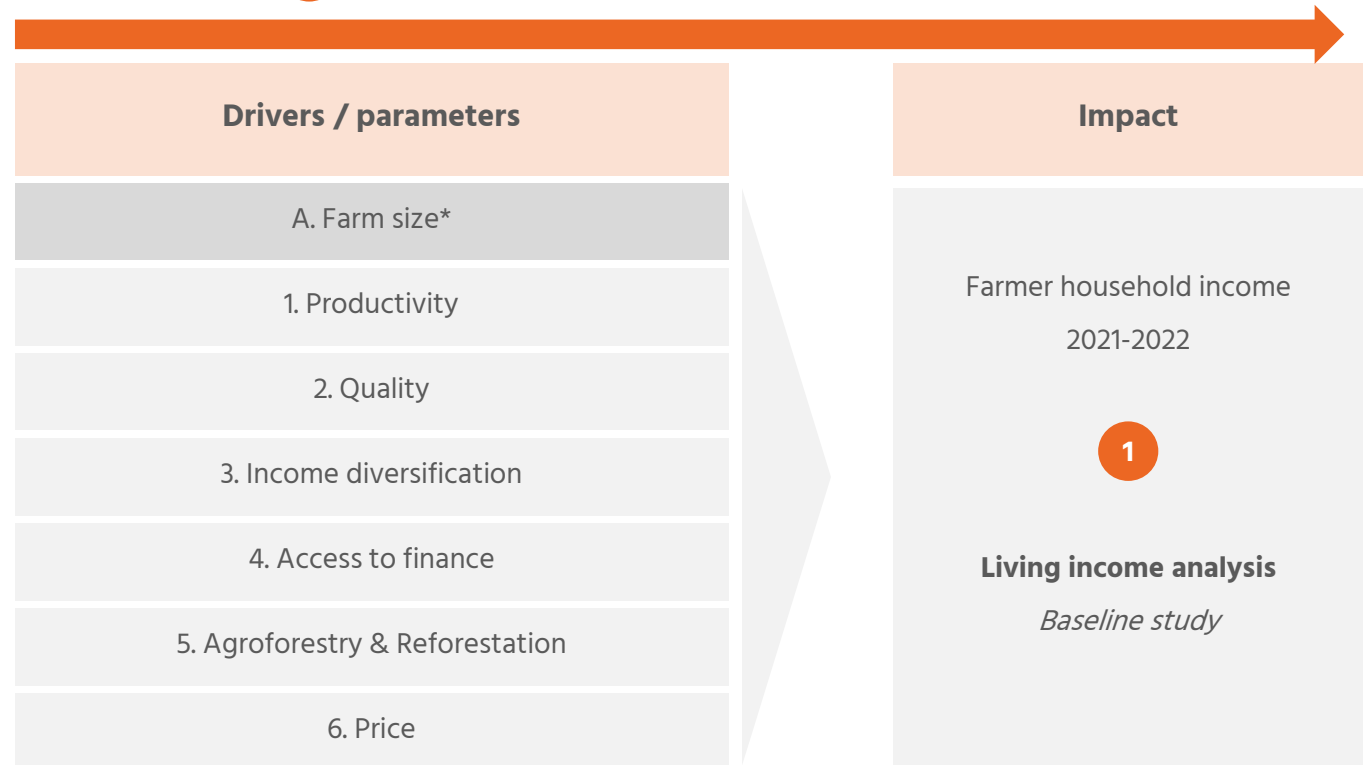
The living income analysis is an assessment of the household income of the 102 farming families in this project and the existing gap between the actual incomes and the living income that farmers need to meet basic needs such as food, housing, healthcare, education and other essential expenses.

2) Driver analysis

The driver analysis is an assessment of the drivers that are identified in the project as key contributors to farmer household income. The aim of the driver analysis is to understand the underlying factors of farmer household income and which drivers should be prioritized to increase the effectiveness of the project. The theory of change of the project consist of six drivers (1-6). During the project and analysis, 'farm size' (A) has been identified as an additional driver.

Key assumptions and limitations are described in [Appendix I](#).

2 Driver analysis: insight into the drivers of farmer household income



Living income analysis

03

LIVING INCOME ANALYSIS | INTRODUCTION

In this study the household income for 102 cocoa growing households in 2021-2022 is calculated

1

Living income analysis Baseline study

Calculation of household income for the 102 cocoa growing households in 2021-2022

- **Data sources:**
 - Farm Record Tool: October 2021 – September 2022
 - Additional questionnaire: December 2022
- **Number of farmers:** 102
- **Cooperative:** Entreprise Coopérative de Saint Paul' (ECSP)
- **Communities:** Colonel and Daregba

The first analysis of this report is the living income analysis. The objective of this analysis is to gain insight into the actual household income of the cocoa farmers in Colonel and Daregba and the gap between the actual income and living income.

The living income assessment is based on two data sources, with primary data collected from 102 cocoa growing households in Colonel and Daregba:

- 1. Farm Record Tool:** data collected from the 102 farms via Rikolto using the farm book of records. The data has been collected for October 2021 - September 2022. A detailed overview of all data points included in the Farm Record Tool are included in [Annex II](#).
- 2. Additional questionnaire:** an additional questionnaire was developed to conduct interviews with the 102 farmers on data points that were not yet included in the Farm Record Tool. The interviews have been conducted by Rikolto in

December 2022. The data points included in this questionnaire have been included in [Annex III](#).

This chapter first gives a brief overview of the underlying methodology and indicators used for the living income analysis. This is followed by the results of the analysis, providing insight in to descriptives, the average and median farmer household income and distribution of household income within the research sample.



LIVING INCOME ANALYSIS | METHODOLOGY (1/2)

The gap between the farmer household income and the living income benchmark is the living income gap

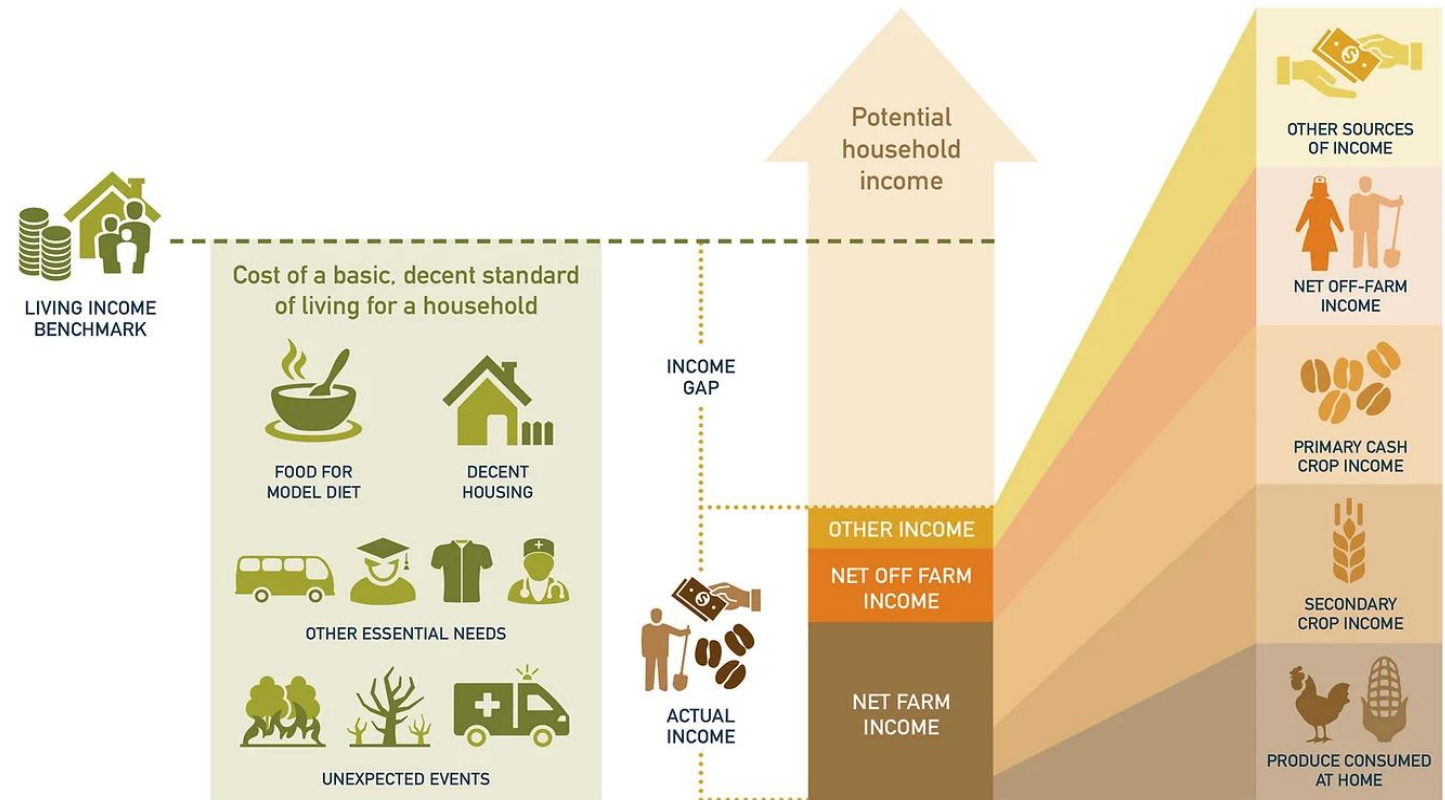
The visual on the right presents a breakdown of the various aspects that make up the living income benchmark and farmer household income.

The living income benchmark consists of the living income in a particular country or region that is needed by a household to afford a decent standard of living for all members of that household. Elements of a decent standard of living include food, housing, other essential needs and provision for unexpected events.

Farmer household income should cover these costs for it to be a living income. Farmer household income is measured as the sum of net farm income, net off farm income and other income.

The gap between the farmer household income and the living income benchmark is the living income gap.

The living income benchmark used in this study is detailed on the next page.



Source: Living income community of practice (2022)



LIVING INCOME ANALYSIS | METHODOLOGY (2/2)

The living income benchmark and exchange rate are determined for the time period October 2021 – September 2022

The living income benchmark for Côte d'Ivoire is based on the living income benchmark of 298,983 CFA/family/month (\$476 dollar per family/month) for Côte d'Ivoire for June 2022 as published by the Living Income Community of Practice.

Within this current living income assessment, the living income benchmark is corrected to account for the typical household size within the sample, using the median household size of 7. As a result, the living income benchmark for a family of 7 is 4,185,762 CFA per year or \$6,904 USD per year. A more in-depth calculation of the living income benchmark and related sources is provided in [Appendix IV](#).

In this living income assessment, the income of farmers is measured for the time period of October 2021 – September 2022, which covers the main and mid cocoa season. The exchange rate used in this study is 606.32 CFA/\$ which is based on the average exchange rate between October 2021 and September 2022 as measured on the first day of the month.

Indicator	Unit	Value
Living income benchmark 2022 ¹ <i>For a family of 6 (2 adults, 4 children)</i>	CFA/month	298,983
Household size (median value) <i>(based on data received on the 102 farmer households)</i>	# people	7
Living income benchmark 2022 <i>(based on median household of 7)</i>	CFA/year	4,185,762
Exchange rate ²	CFA/\$	606.32
Living income benchmark 2022 <i>(based on median household of 7)</i>	\$/year	6,904



¹Based on Anker & Anker research: Living Income Benchmark June 2022 Côte d'Ivoire, Rural cocoa growing areas. Study can be found [here](#).

²Exchange rate is based on the average exchange rate between October 2021-September 2022

LIVING INCOME ANALYSIS | DESCRIPTIVES

Descriptive statistics for the 102 households in Colonel and Daregba

The table on the right contains key descriptive statistics relating to the data collected from the 102 cocoa farming households included in this study for the time period of October 2021 – September 2022.

Both the average and median of each variable are included in order to provide better insight into the distribution and skewness of data. Averages tend to be pulled up by high values, whereas medians represent the center of the distribution. A large difference between the median and average value indicates a high level of variability in the data.

Number of farmers	102 farmers
<i>Number of farmers Colonel</i>	40 farmers
<i>Number of farmers Daregba</i>	62 farmers
Time period study	October 2021 – September 2022

Indicator	Unit	Average	Median*
Total farm area	ha	4.4	3.0
Area of cocoa production	ha	2.2	2.0
Percentage of trees below 5 years	%	6%	0%
Percentage of trees between 5-25 years	%	64%	88%
Percentage of trees over 25 years	%	30%	0%
Kilos of cocoa produced per year (October - September)	kg/year	1,431	1,320
Productivity per year Oct – Sep (sales to Puratos and pisteurs)	kg/ha/year	649	650
Sales to Puratos main season (October-March)	kg/ha	420	401
Sales to Puratos mid season (April - September)	kg/ha	93	80
Profit per kg cocoa	\$/kg cocoa	\$2.24	\$2.12
Household size	# people	7.7	7

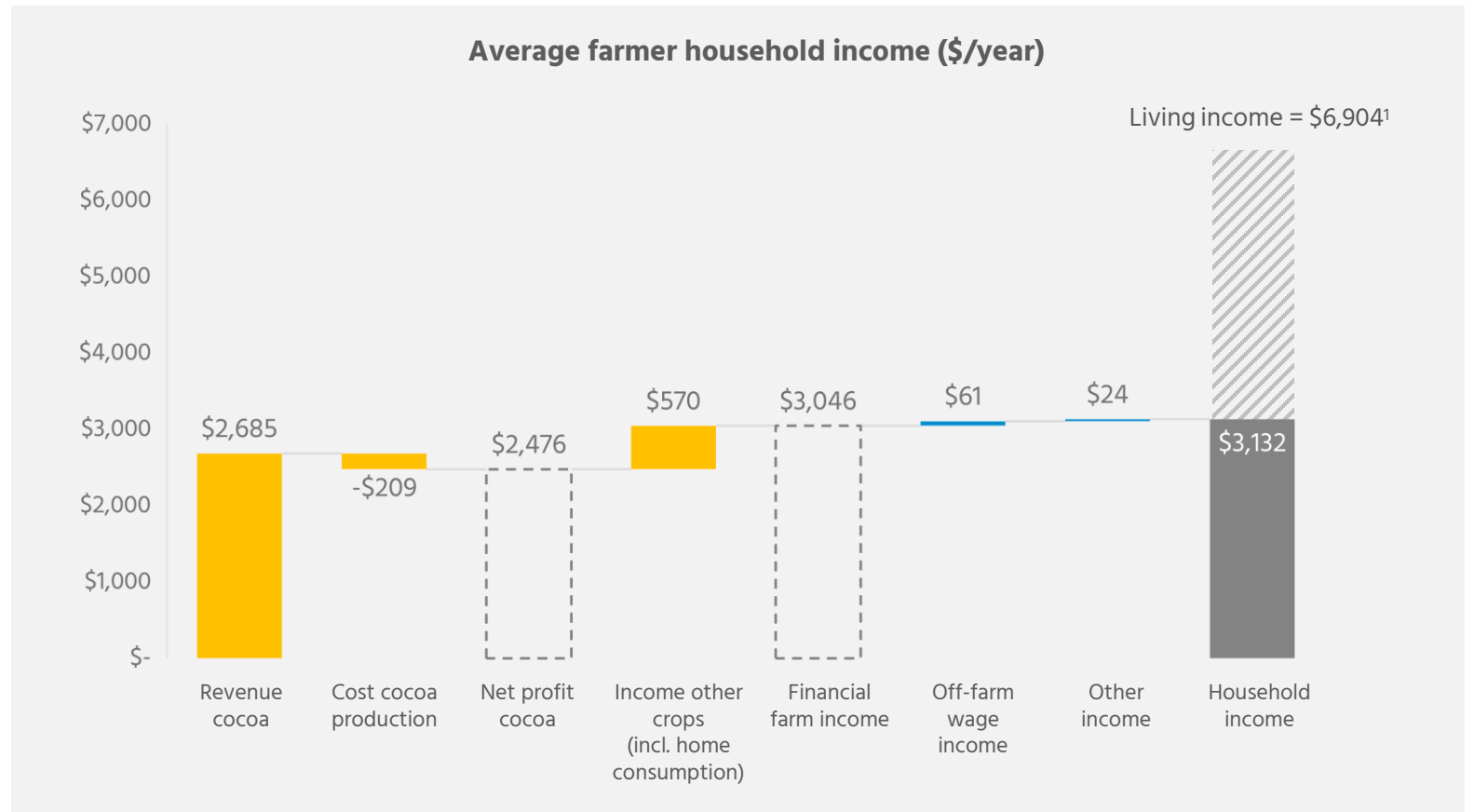


LIVING INCOME ANALYSIS | HOUSEHOLD INCOME (1/4)

The average household income is \$3,132 per year

The average household income of the 102 households is \$3,132 per year. This income is not sufficient to make the living income of \$6,904 a year. The average farmer earns 45% of a living income with an average living income wage gap of \$3,772 per year.

Cocoa is the main source of income: 79% of average farmer income stems from the profit on cocoa. Next to the income from cocoa, the average household makes 18% of their income from the production of other crops, this includes both sales of other crops and home consumption. Off-farm wage income account respectively for 2% and other income (including income from selling fertilizer, sewing shop, rental income and selling of other items) accounts for 0.8% of the average household income.



¹ Based on a median household size of 7, since medians are less susceptible to the values of outliers

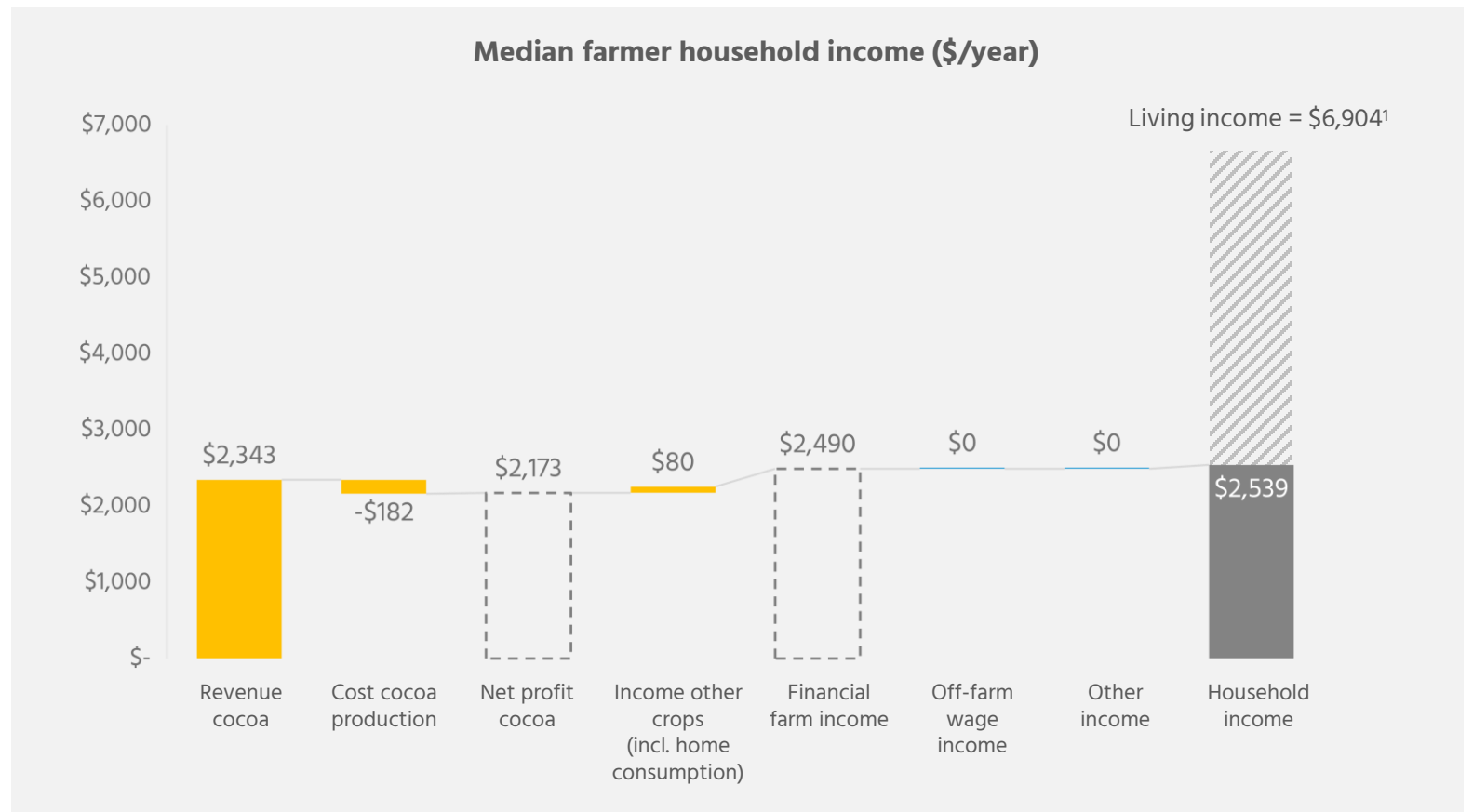
LIVING INCOME ANALYSIS | HOUSEHOLD INCOME (2/4)

The median household income is \$2,539 per year

The median household income of the 102 households is \$2,539 per year. The median household income makes up 37% of a living income with a living income gap of \$4,365 per year.

The median household makes 86% of their income from selling cocoa, 3% from selling other goods and 0% from off-farm income and other income.²

The large differences between average and median values for the income of other crops, off-farm wage income and other income can be explained by the fact that a significant number of farmers did not report any income from sources besides cocoa.

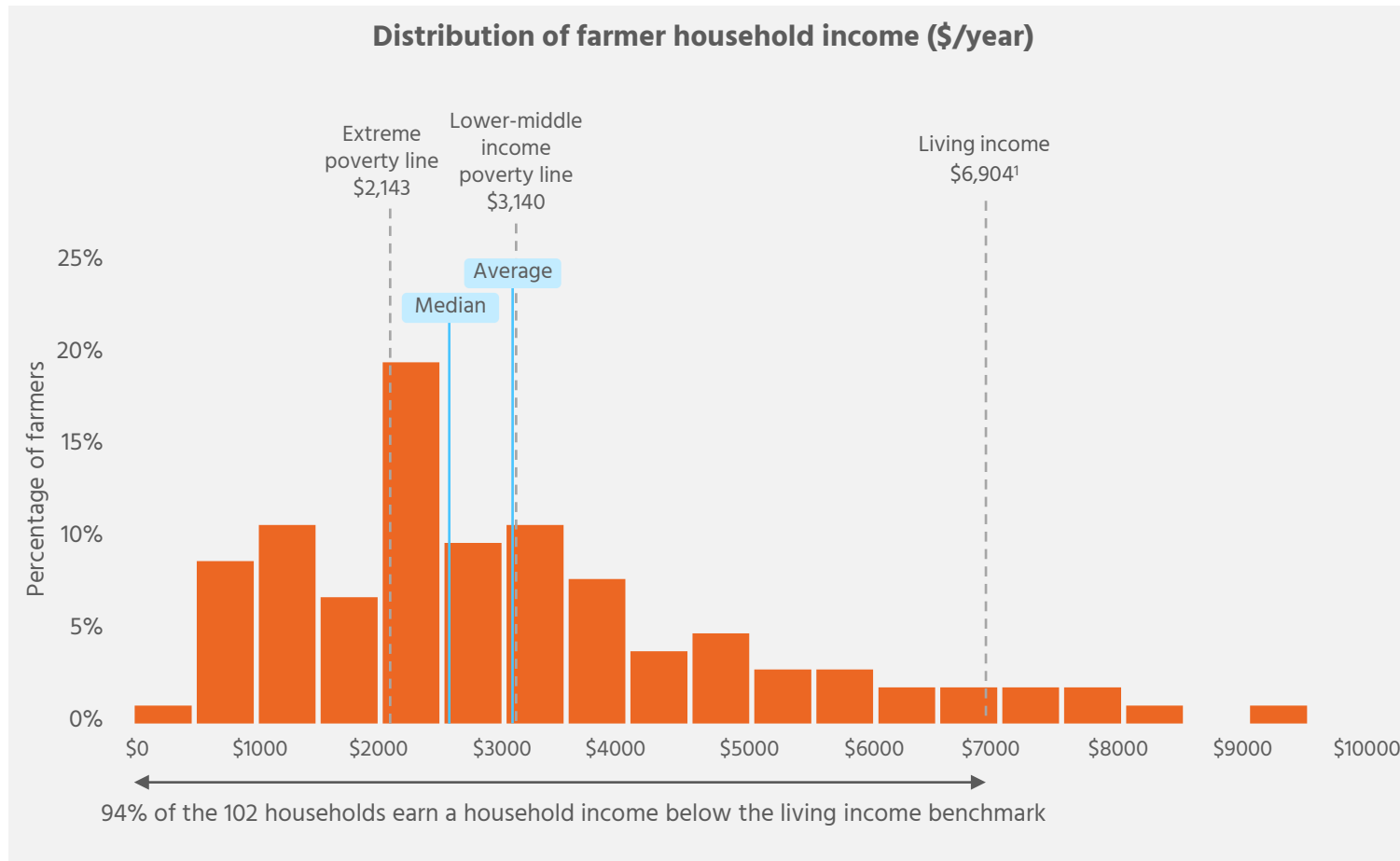


¹ Based on a median household size of 7, since medians are less susceptible to the values of outliers

² The sum of the percentages does not add up to 100% since the percentages are based on median values.

LIVING INCOME ANALYSIS | HOUSEHOLD INCOME (3/4)

The distribution of farmer household income shows that 94% earns an income below the living income benchmark



The graph on the left shows the distribution of farmer household income in \$/year for the 102 farmer households. 94% of the farmer households earn below the living income benchmark of \$6,904 per year. The graph indicates the average income of \$3,132 per year and the median income of \$2,539 per year.

The graph also shows the poverty line for low-income and low-middle income as calculated by the World Bank. The poverty line of low-income, also called the extreme poverty line, is set at \$2.15 p.p.p.d. in 2022. Correcting this for the purchasing power parity² (PPP) in Côte d'Ivoire gives \$0.83 per person per day, and a total of \$2,143 per year for a median family of 7. Of the 102 farmers, 33% of the farmers earn below the extreme poverty line.

The lower-middle income poverty line of \$3.15 p.p.p.d. translates to a value of \$1.23 in Côte d'Ivoire. For a median household of 7, this is an income of \$3,140 per year. Of the 102 farmers, 58% of the farmers earn below the lower-middle income poverty line.



¹ Based on a median household size of 7, since medians are less susceptible to the values of outliers

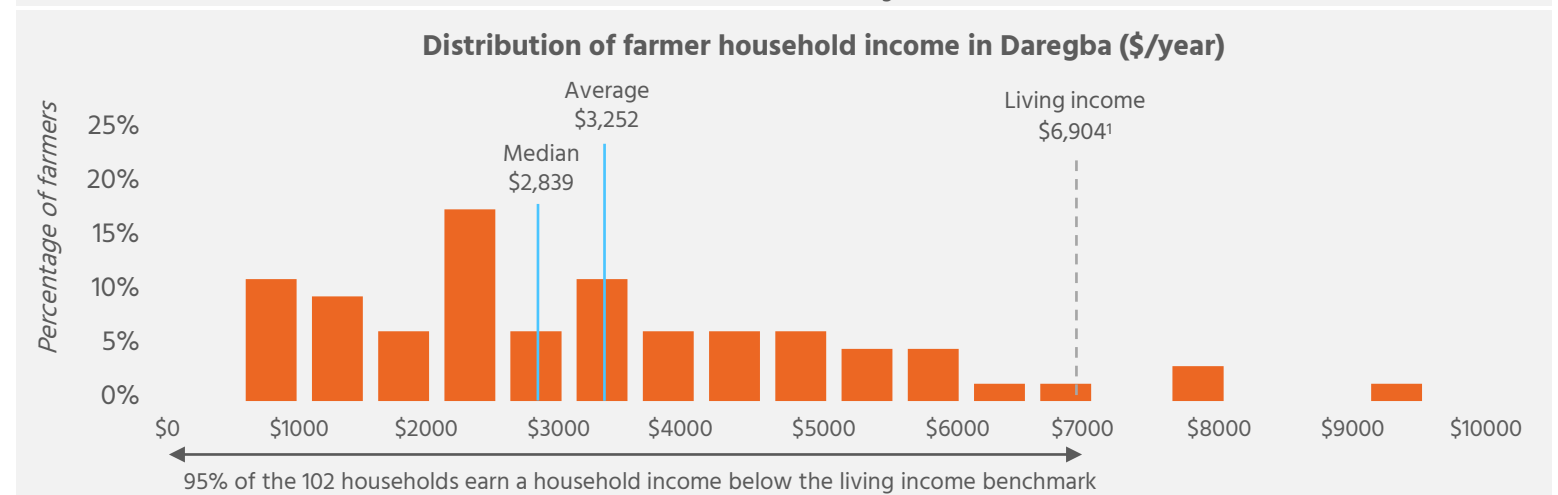
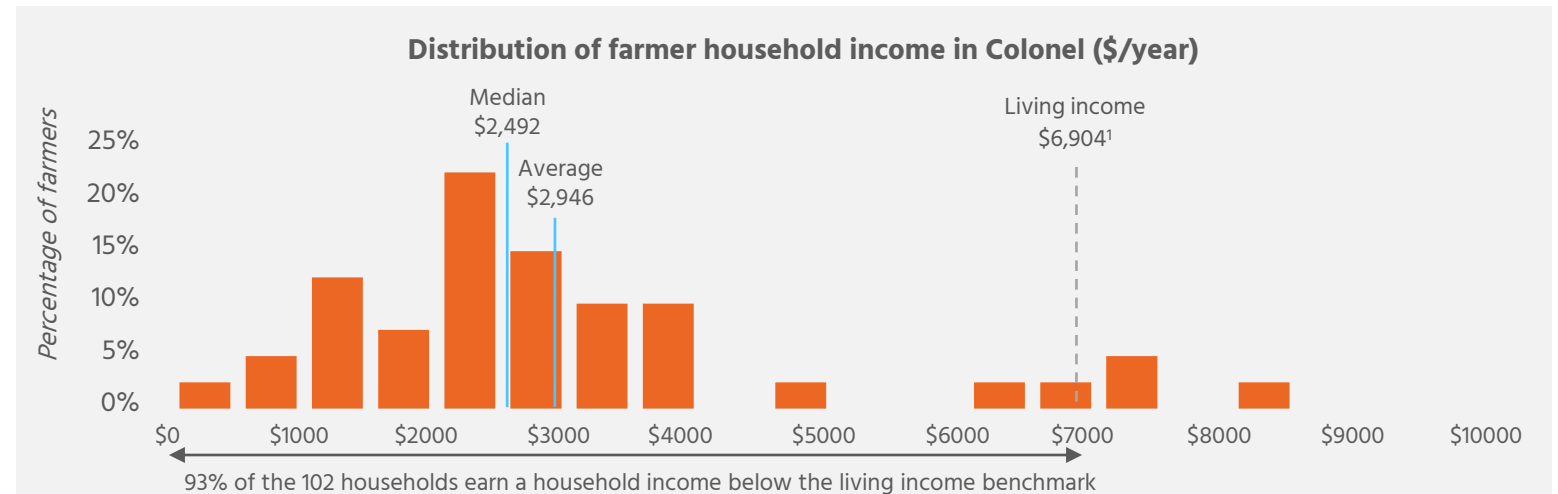
² The most recent published PPP for Côte d'Ivoire was published in 2021 with a value of 236.56 (LCU per International \$)

LIVING INCOME ANALYSIS | HOUSEHOLD INCOME (4/4)

The farmer household income in Daregba is on average slightly higher compared to farmer household income in Colonel

This page provides insight into the distribution of farmer household income within the two separate communities. The distribution of incomes for Colonel are mostly concentrated between the \$2,000 and \$3,000, with an average income of \$2,946 per year and a median income of \$2,492 per year.

Farmer household incomes in Daregba are overall higher and more widely distributed, with the median income at \$2,839 per year and the average income at \$3,252 a year.



¹ Based on a median household size of 7, since medians are less susceptible to the values of outliers

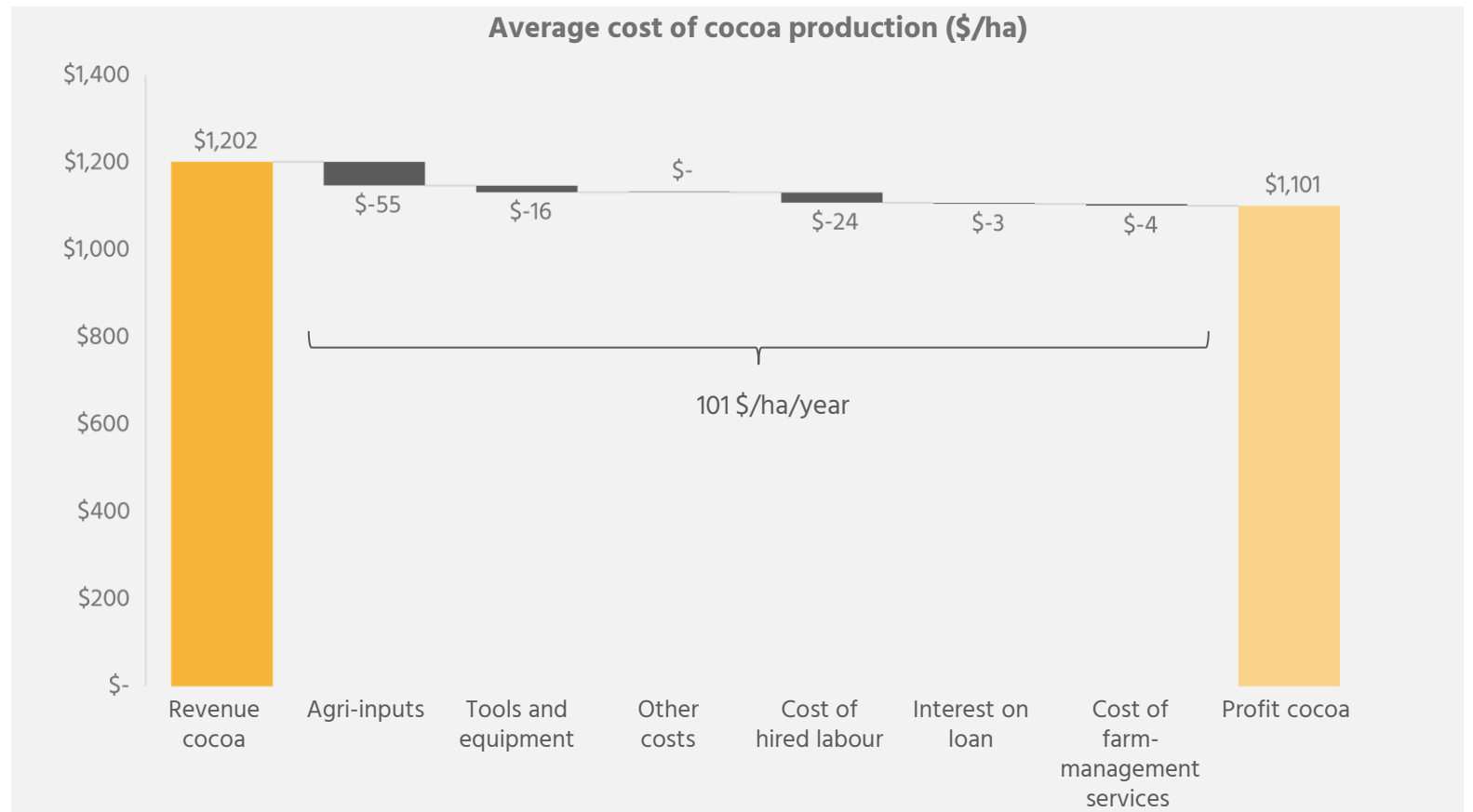
LIVING INCOME ANALYSIS | PRODUCTION COST

Production cost of cocoa are low but in line with other studies

The cost of production is on average \$101 per ha/year, resulting in a cost revenue ratio of 8.4%. Though the results show that the cost of cocoa production is low, the results are in line with findings of other studies. For example, the study by IDH on cocoa farmers in Côte d'Ivoire published in 2021 reported a cost revenue ratio of 10.7%¹.

Of the cost reported, 54% are the results of the cost of agricultural inputs.

Cost of farm management services are the cost of payment for the Agricultural Service Provider Units (ASPU) led by youth in the community to provide farmers with farm management services. From the 102 farmers in the sample, 25 farmers reported using the ASPU services. For the farmers that used the ASPU services, the average cost is \$30 per year.



LIVING INCOME ANALYSIS | CONCLUSION AND LIMITATIONS

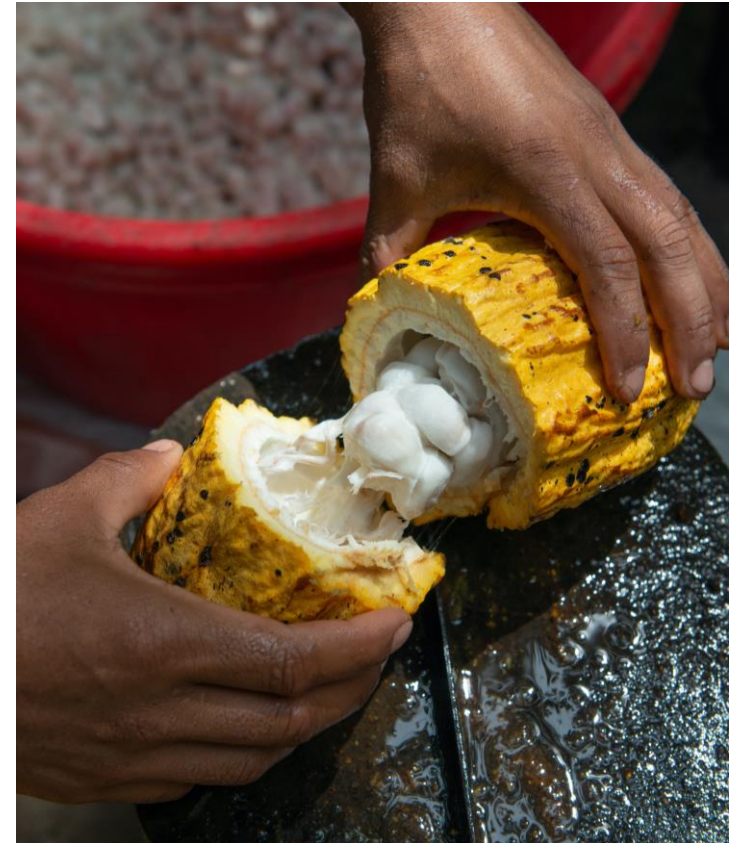
Farmer currently earn on average 45% of a living income of which 79% of the household income comes from cocoa production

The average household income of the 102 households in Colonel and Daregba is **\$3,132 per year** for the cocoa season from October 2021 till September 2022. This income is not sufficient to make the living income of \$6,904 a year. The average farmer earns **45% of a living income** with an average living income wage gap of \$3,772 per year. Based on the results of the assessment, 94% of the 102 households earn a yearly income below the living income benchmark. Looking at the distribution of household income, the results show that 33% of the farmers earn below the extreme poverty line set by the World Bank at \$2.15 p.p.p.d. in 2022.

The living income assessment shows that cocoa is the main source of income with on average 79% of farmer income coming from the profit of cocoa. Next to the income from cocoa, the average household makes 18% of their income from the production of other crops, this includes both sales of other crops and home consumption of crops. Other income sources such as wage income only contribute marginally to household income.

It is important to note that data on off-farm income or wage income from household members has been collected in December 2022 through an additional questionnaire. This influences the reliability of the data since it relies heavily on the recall of the farmers from the past year. It is recommended to include off-farm income from household members in the Farm Record Tool to systematically record all income streams within a household.

The results of the living income assessment indicate some differences between the two communities in household income. Average household income is slightly higher in Daregba with \$3,252 compared to Colonel with \$2,946 per year. The drivers of household income and drivers of the differences between the communities is discussed in the driver analysis in the next chapter.



Driver analysis

Analysis of the effect of activities and drivers on farmer household income in 2021-2022

03

DRIVER ANALYSIS | INTRODUCTION

The driver analysis assesses the seven drivers that potentially contribute farmer household income

2

Driver analysis

Analysis of drivers for household incomes of the 102 cocoa growing households in 2021-2022

- **Timeline data collection:**
 - Farm Record Tool: October 2021 – September 2022
 - Additional questionnaire: December 2022
- **Number of farmers:** 102
- **Cooperative:** Entreprise Coopérative de Saint Paul' (ECSP)
- **Communities:** Colonel and Daregba

Within the project, six drivers have been included in the approach to achieve a living income for farmers. During the project and analysis of the collected data, one additional driver has been identified: *farm size*. This additional driver has been added to the analysis to better understand how the different drivers contribute to a living income for cocoa farmers. The seven drivers discussed in this chapter are:

- A. Farm size
 1. Productivity
 2. Quality
 3. Income diversification
 4. Access to finance
 5. Agroforestry and reforestation
 6. Price

The next two pages provide a short description of each driver and an explanation of its function within the living income model. Following this introduction, the chapter provides an analysis for each separate driver and gives insights into its (potential) contribution to living income for cocoa farmers.

Firstly, an introduction is given for each driver with relation to farmer household income. Secondly, interesting insights obtained from the data received from the Farm Record Tool and the additional questionnaire are presented. Lastly, where possible, more in-depth insights are given into what indicators and activities influence the driver. If primary data is not available for certain indicators, the estimation is made using secondary data sources.



INTRODUCTION | LIVING INCOME MODEL (1/2)

This chapter considers seven drivers that potentially contribute to living income

The theory of change of the project is based on a living income model consisting of six drivers that are considered important contributors to achieving a living income. For each driver the project has established various project activities that aim to contribute to the driver, and subsequently, increasing farmer household income. During the project 'farm size' has been identified as an additional driver. The seven drivers are explained below:

A. Farm size

Farm size has been identified as a driver of household income because the size of the cocoa farm strongly affects the total quantity of cocoa that farmers are able to produce. Moreover, farm size is a crucial datapoint within the data collection process as it enables the ability to gain a robust understanding of productivity levels of farmers.

1. Productivity

The project and corresponding project activities aim to increase the productivity of the farmers up to 800 kg/ha.

The aim is not to increase the overall cocoa production in the community, but rather to intensify existing production systems to produce more cocoa on smaller or the same land size. This provides farmers the opportunity to free up part of their land for crop diversification activities.

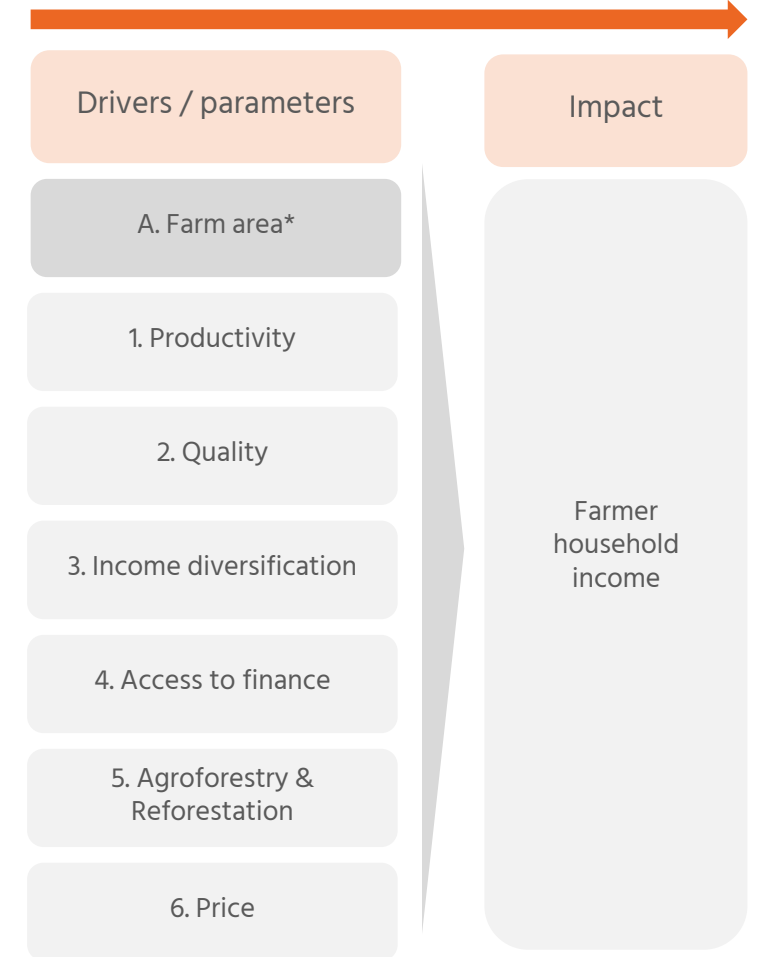
2. Quality

The project aims to improve bean quality in the communities up to Puratos' Gold Standard so that farmers can receive the Cacao Trace premium. To increase bean quality and lower transport costs, drying and fermentation centres are set up that are in line with the specification of Puratos.

3. Income diversification

Since most cocoa growing household's farm size and productivity levels are below expected levels to reach a living income, the project promotes income diversification among cocoa farmers to increase their resilience. This includes cassava and cowpea farming and other promising crops.

Living income model Beyond Chocolate project



INTRODUCTION | LIVING INCOME MODEL (2/2)

This chapter considers seven drivers that potentially contribute to living income

4. Access to finance

One of the challenges that farmers face is the lack of access to finance to be able to invest in their farms or income diversification activities. Part of the project activities include the establishment of Village Savings and Loans Associations (VSLAs) that can provide farmers with easy access to finance for cocoa growers.

5. Agroforestry/reforestation

Agricultural expansion is a key driver of deforestation, resulting in the loss of protected areas in Côte d'Ivoire. The project aims to support cocoa farmers in increasing productivity levels so that more cocoa can be produced on smaller areas of land, freeing up land for reforestation purposes. Furthermore, the project promotes dynamic agroforestry systems among cocoa farmers that will enhance biodiversity and make the farm systems more resilient to climate changes.

The agroforestry and reforestation activities are the responsibility of Puratos who in return work with the

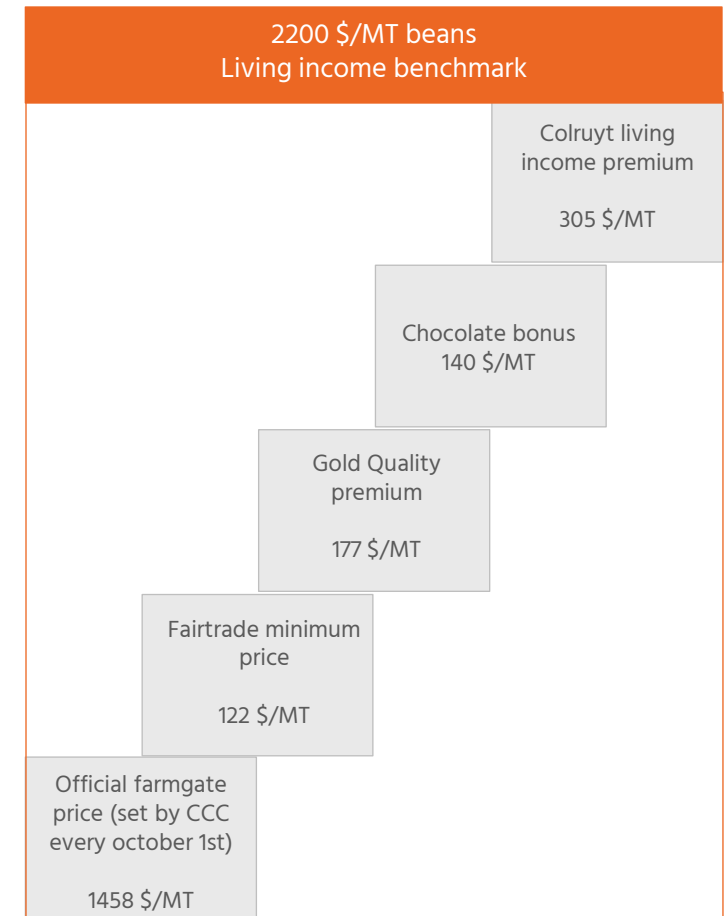
organisation Pur Projet to implement the activities.

6. Price

A key aspect of the project is the payment of premiums to cocoa farmers. Farmers receive a premium for Fairtrade Certified production and farmers can receive premium payments from Puratos for delivering cocoa that confirms to the quality standard for Cocoa-Trace.

Unique to this project is the payment of the living income premium paid by Colruyt. From the start of the second year of the project, Colruyt buys 100 tonnes per year from ECSP for the production of the Boni Chocolat Noir 72% tablet. For this 100 tonnes, Colruyt pays a premium to close the gap with the living income reference price, on top of the other premiums that farmers receive. The living income reference price used to determine the premium is calculated and published by Fairtrade.¹

The visual on the right shows the price structure of cocoa for the value chain of this project for 2021-2022.



¹ Fairtrade, 2022. Fairtrade Living Income Reference Prices for Cocoa. Update October 2022.



Farm size

03.A

FARM SIZE | INTRODUCTION

Farm size has been identified in the current project as a driver of household income

The size of a cocoa farm plays a key role in determining the ability of cocoa farmers to earn a living income. In Côte d'Ivoire cocoa farms are typically small and family-owned. The farm is often passed from one generation to the next, in which the farm is divided between family members, resulting in smaller farm areas with each generation.

A small land size limits the ability to increase cocoa production or to use land for diversification of crops. With a small farm size, cocoa farmers cannot rely on cocoa production alone to earn a living income. Even when farmers receive a fair price for cocoa, the total cocoa production will be too small to produce enough cocoa to earn a living income.

Increasing land size however is not a straightforward answer for earning a living income. The decrease in availability of land has increased the cost of land and as available land get scarcer, the risk of deforestation in

protected forest areas increases. Furthermore, expanding the land to a farm size of which the work cannot be covered by the household alone will require additional hired labour. This can result in a large increase in production costs due to increasing costs of hired labour that is needed to cover the work on the farm.

Data collection and validation for the current study has shown that farm size can be hard to determine as it can be difficult for farmers to accurately estimate their farm sizes. Farm size is however a key indicator in the calculation of yield and revenue per hectare. Within this current project it was found that estimations of farm size were difficult to obtain from farmers directly. Therefore, GPS data has been used to validate the reported farm sizes. This validated data has been used for the corresponding calculations in this current study.



FARM SIZE | RESULTS (1/4)

Farm sizes in Colonel and Daregba range from 0.5 to 4 hectares

The results of the current project rely on self-reporting of farmers through the Farm Record Tool. However, the reported farm sizes in the Farm Record Tool were significantly higher than expected (average of 4.7 ha, median of 3.9 ha). The high farm sizes in turn resulted in lower-than-expected productivity levels (since productivity levels are calculated as total yield divided by farm size). Rikolto indicated that illiteracy and language barriers make it difficult for farmers to estimate farm sizes. Since both data points were not in the expected range, an additional step was undertaken to validate the data points with various stakeholders. The cooperative ECSP and Puratos were asked to provide additional available information on farm size and yield.

The information provided by Puratos has been used to validate the reported farm sizes. Puratos uses GPS polygon mapping to estimate farm size, which is a more robust approach for estimating farm sizes than self-reporting of farmers. Puratos has mapped 99 farm plots with an estimated 192 hectares. This information translates to an average of 1.94 hectares.

This data has been used by Rikolto to validate results and collect additional data from farmers to estimate the farm sizes. The additional information used includes estimations of the time it takes to complete harvest and the distance between trees.

The exercise of validation and using different information points to estimate farm sizes has resulted in the average and median farm sizes displayed in the table below. Farm sizes range from 0.5 to 4 hectares.

	Farm size	
	Average	Median
Total (N= 102)	2.2	2.0
Colonel	2.0	2.0
Daregba	2.3	2.0

The process undertaken within the current project has highlighted the difficulty of obtaining accurate data on farm sizes and the importance of validating data points. Specifically, for key data points such as farm size and yield, it is important to not only rely on self-reporting of farmers but to validate the collected data by comparing it to other existing studies and to use available data from other stakeholders.

One of the lessons learnt from this process is to involve more stakeholders in the data collection and to request any data that is available from these stakeholders. This can include the cooperative, but also other partners such as Puratos. Collaborations with local partners on the ground, such as Rikolto, can help facilitate the data collection from stakeholders. Secondly, specifically for farm size it is recommended to supplement the self-reported data with GPS mapping data. Though GPS data is time consuming to collect, it significantly improves the accuracy of the data. For future studies it is recommended to use GPS mapping per farm to determine the farm size per farmer.

The validated farm sizes by Rikolto have been used in the current project for the calculations for productivity and the other drivers mentioned in this report.



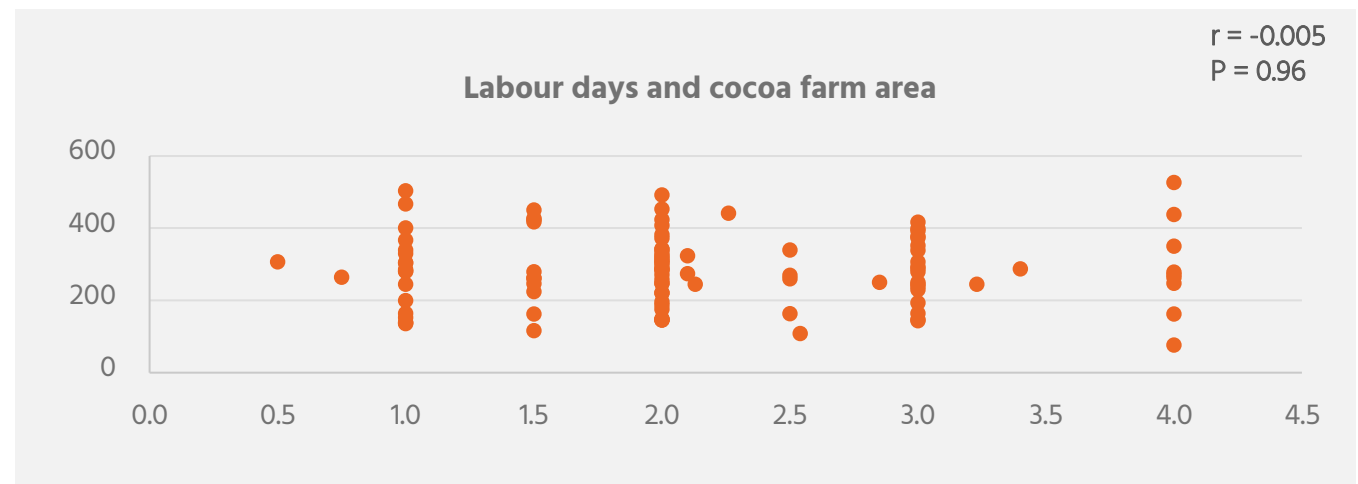
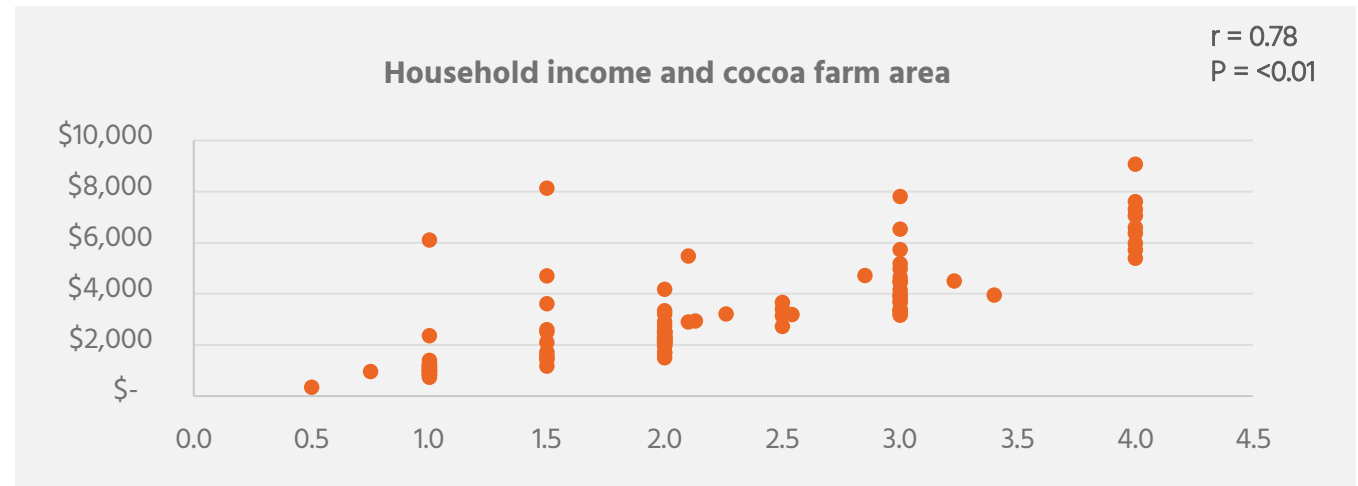
FARM SIZE | RESULTS (2/4)

There is a positive relationship between cocoa farm size and household income

The data from the 102 households in Colonel and Daregba show a strong positive correlation between household income and farm size. The graph on the top-right shows the linear relation between household income and farm size, where larger farms have a higher household income.

The graph on the bottom-right shows the relationship between total labour days (household labour and hired labour) and cocoa area. The results do not show a strong correlation between those two variables. This means that changes in the size of the cocoa area does not result in changes in the amount of labour days used on the farm. This potentially indicates that household labour is not used very efficiently.

It is however important to note that within the collected data on the number of labour days per year, it is not specified what part of the labour is for cocoa production and what part of labour is for other agricultural production or work on the farm. It is recommended for future data collection to include these indicators in the Farm Record Tool to better understand the labour required for cocoa production.



FARM SIZE | RESULTS (3/4)

Farm sizes in Colonel and Daregba are smaller than the determined 'viable farm size'

The Living Income Reference Price (LIRP) is calculated as the price that farmers should receive to obtain a living income with the assumption that farmers have at least a viable farm size and a yield of 800 kg/ha. Fairtrade International has calculated the size of a cocoa farm in Côte d'Ivoire that fully absorbs the available household labour, which is the 'viable farm size'. The farm size was established at 5.3 hectares, based on 2.5 FTE working on the farm. Of the 5.3 hectares it is assumed that 4.4 hectares is used as productive cocoa area. Per hectare 125 labour days are needed to manage the farm.

The communities Colonel and Daregba have an average household size of 7.7 with on average 3.1 FTE available¹ (based on the number of adults between the 18-50 year). Though the available labour is higher than in the LIRP calculation, the farm sizes are significantly smaller than the productive cocoa area of 4.4 ha. This is an important aspect, as this means that even though farmers receive the LIRP for the cocoa they sell, they are not able to earn a living income only by producing and selling cocoa due to their small farm sizes.

The average labour days currently used per hectare for cocoa production in Daregba are close to the estimated 125 labour days needed for management of the farm. In Colonel however, the average labour days per hectare are higher. This indicates that farmers can potentially manage their farms more efficiently while still being able to reach the productivity benchmark of 800 kg/ha. Furthermore, the total average labour days available is 770 days per farm (based on 3.1 FTE). This is higher than the average labour days currently used per farm. This indicates that households could potentially manage larger farms while relying mostly on household labour.

Expanding farm sizes could therefore be an important contributor to living income. However, it is important to note that expanding farm sizes is not a straightforward measure that can easily be taken by farmers. Agricultural land is becoming scarcer in Côte d'Ivoire, resulting in the endangering of protected forest areas. As expanding cocoa farm area is difficult to implement, measures should therefore focus on increasing productivity on the land that farmers have and promoting diversified agricultural systems. Farms can also potentially be managed more efficiently, freeing up time of household members to use for other income generating activities.

	Farm size		Total labour days (per ha)		Family labour days (per ha)		Hired labour days (per ha)	
	Average	Median	Average	Median	Average	Median	Average	Median
Total (N= 102)	2.2	2.0	160	135	156	130	4.7	1.6
Colonel	2.0	2.0	214	173	205	171	8.3	5.2
Daregba	2.3	2.0	126	106	124	103	2.4	1.3



¹Based on the assumption that 2 adults corresponds to 1.61 FTE to correct for labour force participation rate, unemployment rate and part-time employment rate, as mentioned in Anker Living Wage report for rural Côte d'Ivoire 2020.

FARM SIZE | RESULTS (4/4)

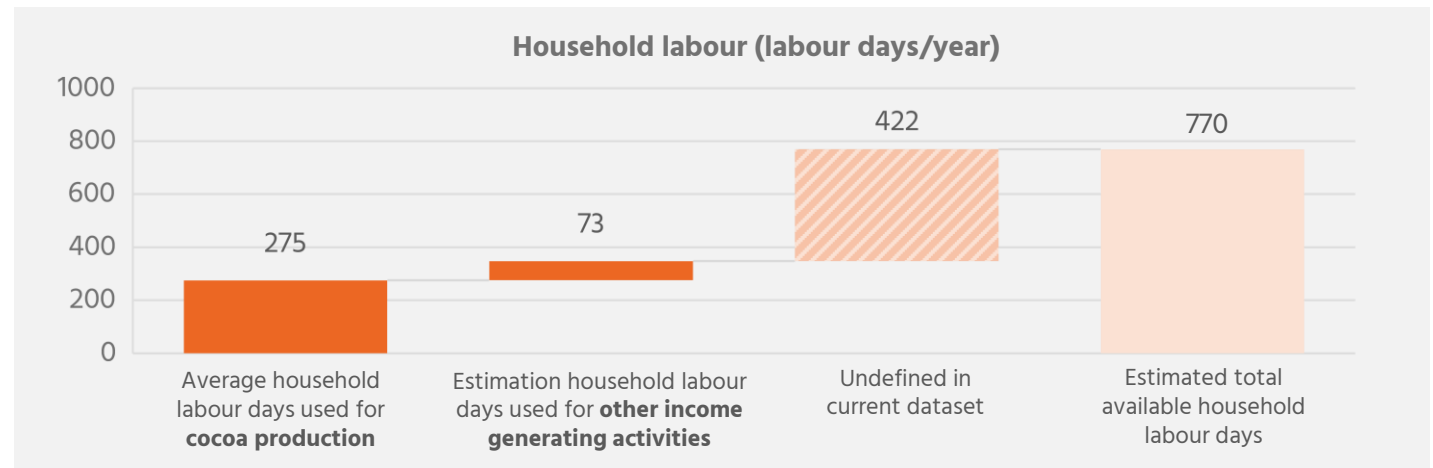
Current data may not capture all labour days spent by households on cocoa production or other income generating activities

As mentioned on the previous page, the available household labour for the 102 households in this study is 3.1 FTE¹ (based on an average of 3.9 adults between 18-50 years per household). With the assumption that 1 FTE corresponds to 246 labour days, the available household labour days in the current sample are an average 770 days per household per year.

Current data indicates households require 275 household labour days per household for cocoa production. This corresponds to 35% of the total available household labour that is used to generate 79% of the average income of the 102 households. Part of the household labour is also used for the production of other crops or other income generating activities. Of the average income of households 21% comes from other sources than cocoa production. Assuming the same amount of labour is used to generate the same amount of income, the labour days used for other income generating activities next to cocoa production is estimated to be 73 labour days per year (9% of available household labour). The estimation of available labour days per year and estimated labour days used are shown on the right.

These results imply 55% of household labour days are not accounted for in the dataset. These days may either not be spent on labour (cocoa production or other income generating activities) or may be spent on labour but not registered. Moreover, the total household labour days available to the average household are estimated based on assumptions, meaning reality may deviate from this estimate. To understand the best strategies for supporting farmers in reaching a living income, it is recommended to gain

a better understanding of how household labour is currently used. Understanding what part of the household labour is used for agricultural production and what part of the household labour is available can provide insight into the possibilities farmers have to realise a living income. Moreover, understanding the obstacles that households face in using available household labour for income generating activities could help steer the project activities towards supporting households overcoming these obstacles.



¹ Based on the assumption that 2 adults corresponds to 1.61 FTE to correct for labour force participation rate, unemployment rate and part-time employment rate, as mentioned in Anker Living Wage report for rural Côte d'Ivoire 2020.

Productivity

03.1

PRODUCTIVITY | INTRODUCTION

Productivity levels in Côte d'Ivoire are below the potential productivity levels for cocoa

Productivity levels are an important factor for determining overall cocoa production and corresponding income from cocoa production. As highlighted in studies on cocoa production in Côte d'Ivoire, the productivity levels are often low with averages ranging from 300-500 kg/ha.¹ These numbers are far below potential yields within cocoa production worldwide, which range from 1000 kg/ha to 1900 kg/ha.

Corresponding with the findings in other studies, the productivity levels in the communities Colonel and Daregba have historically been low and below potential productivity levels.

Increasing productivity levels has therefore been one of the objectives of the project. Project activities relating to the intensification of cocoa production are the training of youth to provide farm services, training of farmers on adaptation of good agricultural practices and production of compost, and the introduction of agroforestry systems.

Though the aim of the project is to increase productivity levels, the objective is not to increase overall cocoa production. Rather, the project aims to help farmers intensify the current production systems so that farmers are able to produce more cocoa on the current or smaller land size. This will provide farmers with the opportunity to free up part of their farm area for crop diversification activities that can provide farmers with additional income next to cocoa production.

The current target within the project is to increase productivity to 800 kg/ha. However, as pointed out in the Cocoa Barometer 2022, an increase in productivity also requires an increase in labour hours. If no additional household labour is available, this means that farmers will have to hire additional labour, which can result in a large increase of costs. It is therefore important to gain a better understanding of the additional costs that potentially arise with an increase in productivity and how this influences the farmer household income.



PRODUCTIVITY | RESULTS (1/2)

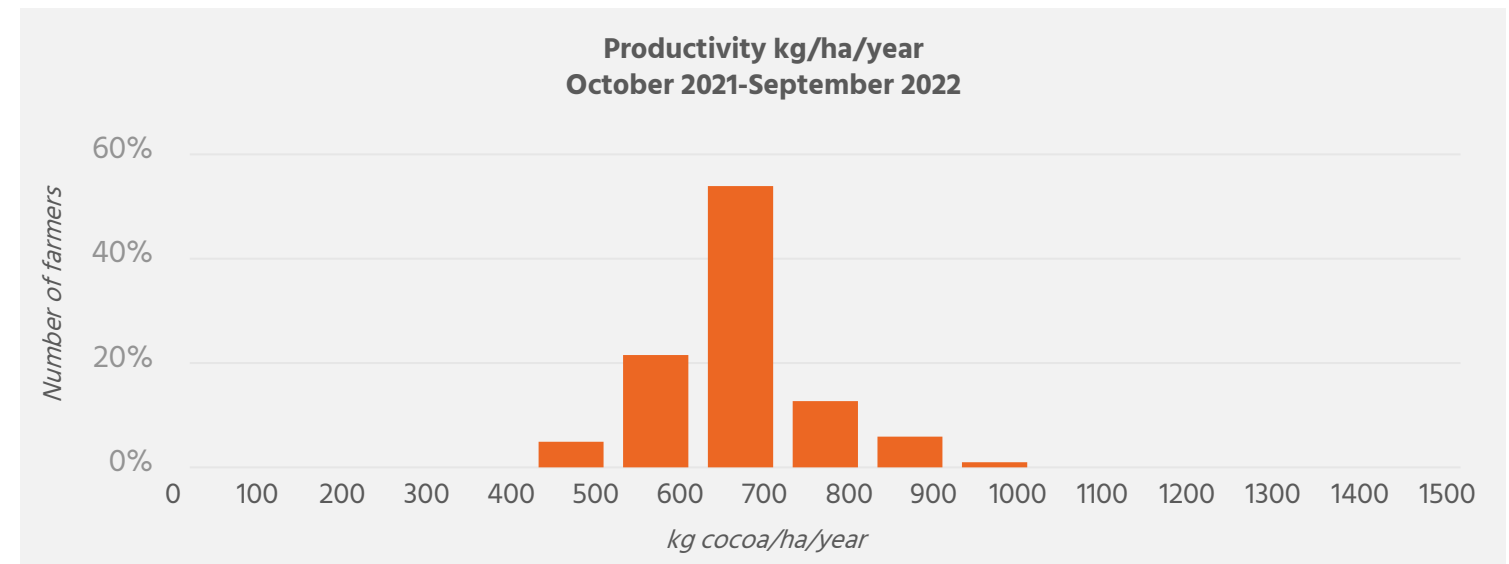
The average productivity of cocoa farmers in Colonel and Daregba is 649 kg/ha/year

The average productivity of cocoa farmers in Colonel and Daregba is 649 kg cocoa/ha/year. One of the targets within the project is to increase productivity levels to 800 kg/ha/year. Currently, 7% of the farmers report yield above the productivity level of 800 kg cocoa/ha/year. The productivity levels of the 102 households range between 445 and 904 kg/ha/year. The productivity levels in this study are slightly above productivity levels found in other studies that calculated the productivity levels of cocoa farmers in Côte d'Ivoire.¹

Productivity levels are estimated based on yield data that consist of reported cocoa sales to Puratos and sales to pisteurs (other local cocoa buyers). Because the data on sales to pisteurs is not divided into main and mid season, the average and median sales per hectare per season are solely based on sales to Puratos.

In line with the production cycle of cocoa, sales to Puratos per hectare are highest in the main season, with an average of 420 kg cocoa/ha. The productivity in the mid season is considerably lower with 93 kg cocoa/ha.

Productivity and sales (kg cocoa/ha)			
	Yearly productivity (kg/ha) (Sales to Puratos and pisteurs)	Sales to Puratos (kg/ha) Main season (Oct-March)	Sales to Puratos (kg/ha) Mid season (April – Sep)
Average	649	420	93
Median	650	401	80



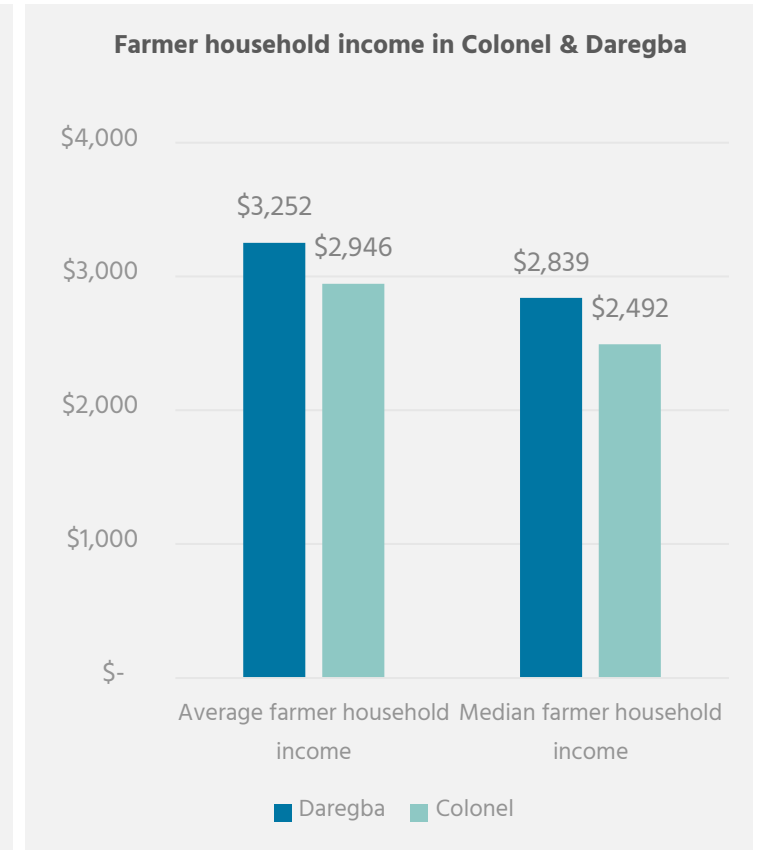
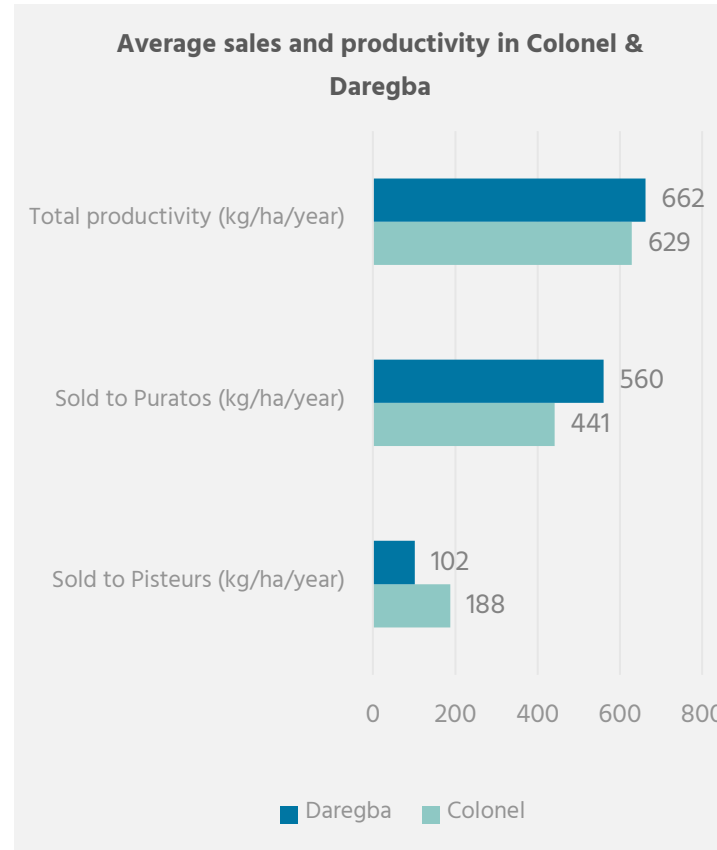
¹Bymolt, R., Laven, A., Tyszler, M. (2018). Demystifying the cocoa sector in Ghana and Côte d'Ivoire. Chapter 10, Production and yield. The Royal Tropical Institute (KIT).

PRODUCTIVITY | RESULTS (2/2)

The average productivity and sales of cocoa farmers are higher in Daregba compared to Colonel

The results from the driver analysis show various differences between the two communities, Colonel and Daregba. Farmers in Colonel (40 farmers) report an average productivity level of 629 kg/ha/year, with cocoa sales to Puratos of 441 kg/ha per year (70% of cocoa) and sales to pisteurs of 188 kg/ha/year (30% of cocoa production). The productivity levels in Daregba are higher, with productivity levels of 662 kg/ha/year. Farmers in Daregba (62 farmers) report cocoa sales to Puratos of 560 kg/ha/year (85% of cocoa production) and cocoa sales to pisteurs of 102 kg/ha/year (15% of cocoa production).

These results indicate that farmers in Daregba produce more cocoa in general and sell more cocoa to Puratos. Cocoa sold to Puratos provides farmers with a higher revenue due to premiums, which farmers would not receive if they sold this cocoa to pisteurs. The effect of this is seen in the difference in household income between the communities. The graph on the right side shows that the average farmer household income in Daregba is higher than in Colonel.



PRODUCTIVITY | DRIVERS (1/2)

Correlations provide insight into the relationship between different variables

Based on the available data that was collected through the Farm Record Tool and the additional questionnaire, a Pearson Correlation was conducted to gain insight in variables that potentially influence the productivity level of farmers. A Pearson correlation is a measure of the linear relationship between two sets of data. The results provide a number between -1 and 1, which indicates if the relationship between the variables is positive or negative, as well as the strength of the relationship.² A correlation

between two variables, however, does not indicate that there is a causal relationship. A correlation merely indicates that variation in a 'independent variable' relates to an increase or decrease of an 'dependent variable'. The table below provides insight in the correlations that are significant, as well as the correlation that were tested but did not show significant relationship between the variables.

Dependent variable	Independent variable	Correlation	Correlation value	P-value ¹
Productivity (kg/ha/year)	Farmer household income	Positive correlation	0.38	0.000*
	Cocoa area (ha)	Positive correlation	0.30	0.001*
	Labour days (household + hired) (per ha/year)	Negative correlation	-0.14	0.14
	Cost of production (per ha/year)	Negative correlation	-0.003	0.96
	Hired labour days (per ha)	Positive correlation	-0.01	0.92
	Percentage of trees younger than 5 years	Negative correlation	-0.08	0.49
	Percentage of trees 5-25 years	Positive correlation	0.18	0.07
	Percentage of trees older than 25 years	Negative correlation	-0.14	0.16

* Values for which the correlation is statistically significant

The results show a significant correlation between farmer household income and productivity, indicating, as expected, that productivity is an important driver of household income.

There is a significant positive relationship between productivity and cocoa area, which means that the larger the cocoa area, the higher the productivity levels. This indicates that larger farms are more productive than smaller farms.

These results show that there is a no significant relationship between the investments made by farmers (cost of production per ha and labour input per ha) and the productivity per ha.

These results indicate that farmers who have trees between 5-25 years have a higher productivity than farmers who have more trees either younger than 5 years or older than 25 years. However, the results are not statistically significant.



¹ If the p-value is below 0.05 the variable gives a significant contribution to the dependent variable

² A correlation coefficient value greater than 0.5 or less than -0.5 can be considered a strong relation, a correlation coefficient between 0.3 and 0.5 or -0.3 and -0.5 can be considered a relationship of moderate strength and a correlation coefficient value between 0 and 0.3 and -0.3 and -0.5 is considered a weak relationship.

PRODUCTIVITY | DRIVERS (2/2)

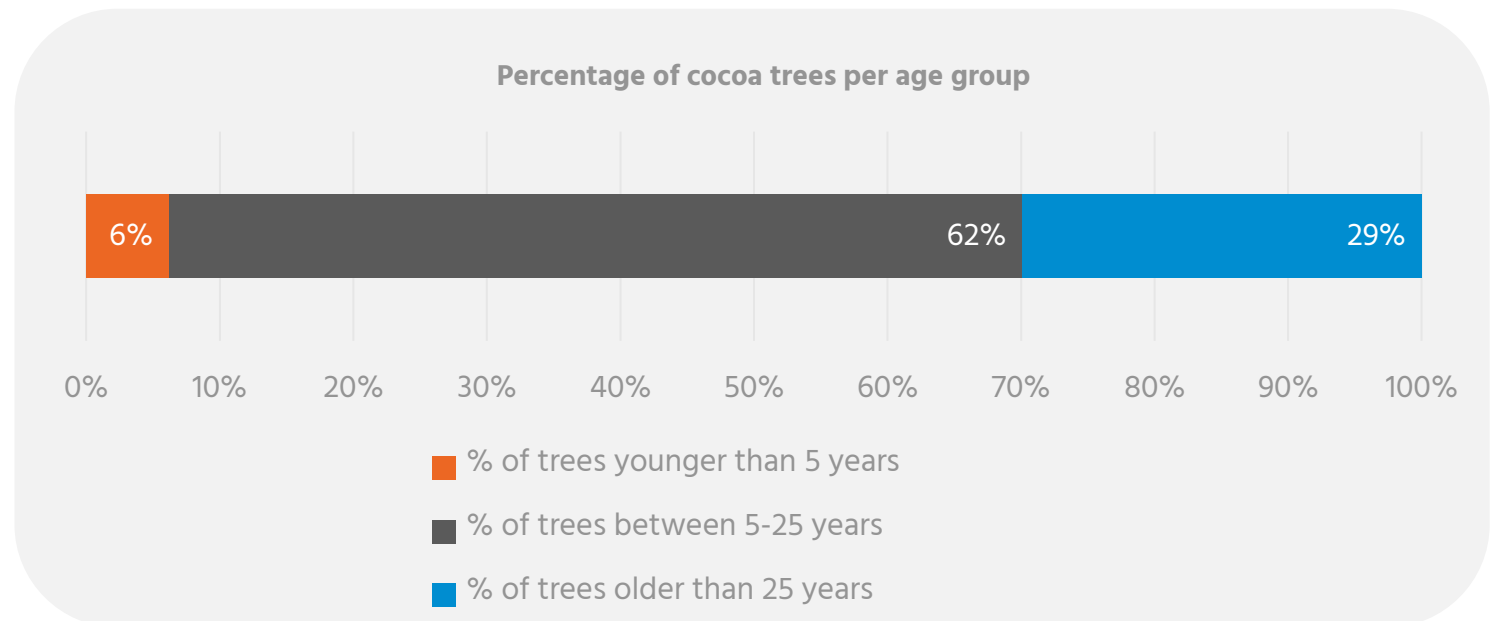
Cocoa trees younger than 5 years and older than 25 years can contribute to lower productivity levels

The correlation analysis presented on the previous page did not find a statistically significant relationship between productivity levels and the age of trees. The analysis did indicate however, that there is a negative relationship between productivity levels and the two variables *cocoa trees younger than 5 years* and *cocoa trees older than 25 years*. This means that an increase in the percentage of cocoa trees younger than 5 years or older than 25 years corresponds to a decrease in productivity levels. These findings correspond with the production cycle of cocoa trees. Cocoa trees take a few years to become productive, with peak productivity between 5 and 25 years. After around 25 years, the productivity levels of the trees decrease.

The additional questionnaire conducted in December 2022 also included indicators to gain insight into the age of the cocoa trees on the farms of the 102 households. The results show that on average, 62% of the cocoa trees are in their productive years, between 5 and 25 years old.

Furthermore, 6% of the cocoa trees is on average younger than 5 years, while 29% is older than 25 years. From 25 years onwards, cocoa trees decrease in productivity and become more sensitive to disease. The cocoa trees that are past the peak of their productive life could limit cocoa farmers in reaching

higher productivity levels. It can therefore be beneficial to see how the project can support cocoa farmers in timely replanting of their cocoa trees to optimize productivity levels of the cocoa trees on their farms.



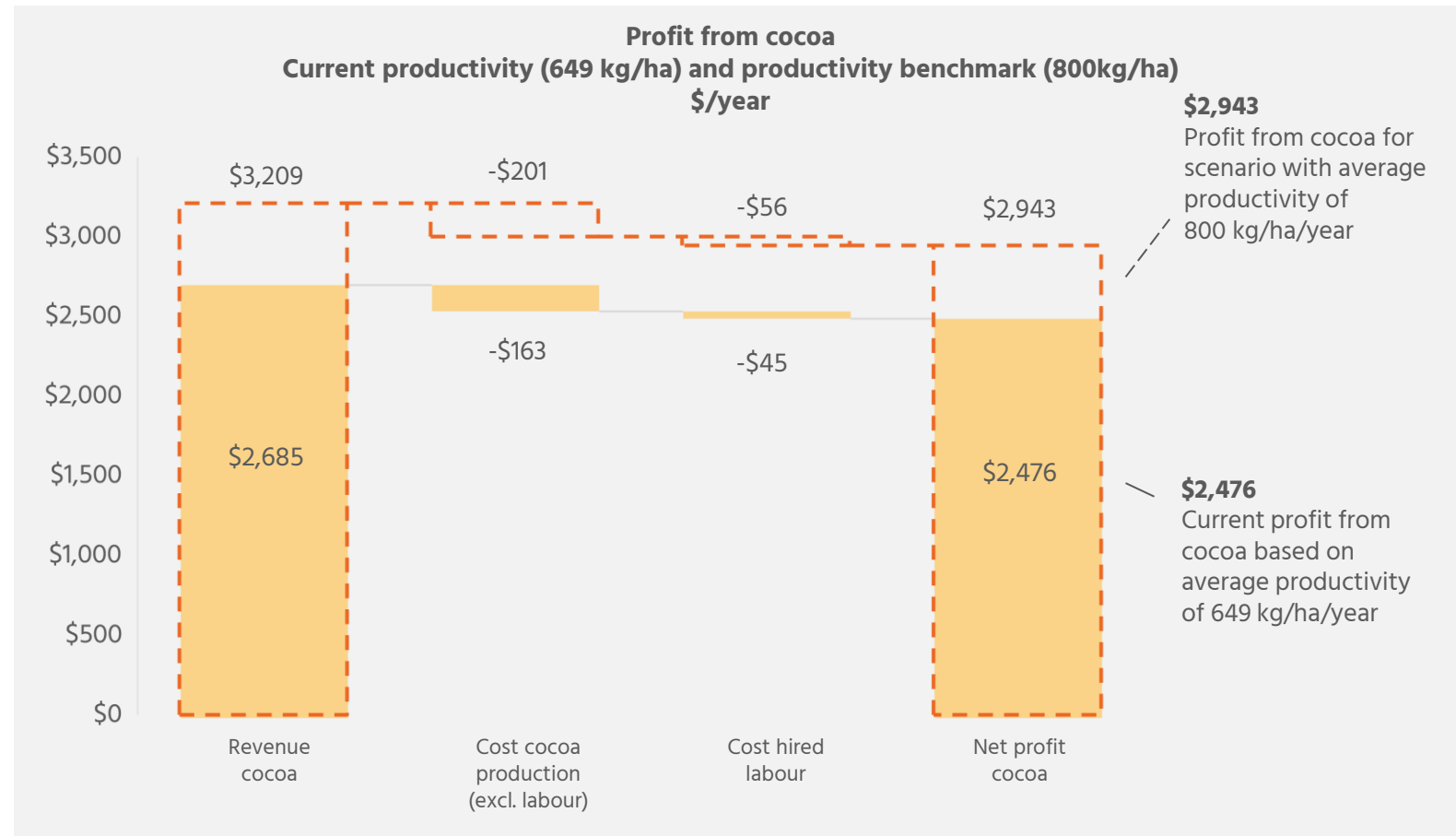
PRODUCTIVITY | EFFECT ON FARMER INCOME (1/2)

Increased productivity levels result in an increase of profit from cocoa

To understand how productivity levels affect the profit that farmers earn from cocoa and subsequently household income, an estimation is made of the income and costs for the scenario in which the farmers in this study have a productivity level of 800 kg/ha. The profit made from cocoa for the scenario of 800 kg/ha is compared to the current scenario (649 kg/ha). The following assumptions are made in this estimation:

- Farmers receive an average price of CFA 1,121 (\$1.85) per kg/cocoa¹ in both scenarios.
- The production cost, excluding hired labour costs, are assumed to scale linearly with productivity based on the average of \$0.12 per kg cocoa.
- According to the calculation for the Living Income Reference Price by Fairtrade, an average yield of 800 kg/ha requires 125 labour days per hectare.² Current labour input (160 days per hectare) is higher than the estimated labour input (125 days per hectare) required for productivity levels of 800 kg/ha. It is therefore assumed that farmers do not need to hire much additional labour, but that the cost of hired labour scale linearly with the production of cocoa with \$0.04 per kg cocoa produced.

The next page describes the results of this estimation regarding living income.



¹Based on average price of; cocoa sold with all premiums (Puratos and Colruyt premium), only Puratos premium (quality premium and chocolate bonus) and without premium (market price of 825 CFA/kg)

²Based on Fairtrade (2019). Fairtrade Living Income Reference Price for Cocoa, Explanatory note

PRODUCTIVITY | EFFECT ON FARMER INCOME (2/2)

Increased productivity levels result in an increase of farmer household income

Comparing the farmer household income in the current scenario with an average of 649 kg/ha and the scenario in which farmers have productivity levels of 800 kg/ha shows an increase in farmer household income.

As the previous page presented, the profit of cocoa in the scenario of 800 kg/ha increases with \$467 dollar per year compared to the current scenario. This results in an overall increase in farmer household income from \$3,132 per year in the current scenario to an average household income of \$3,599 per year for the scenario of 800 kg/year.

As this analysis shows, an increase in productivity to 800kg/ha does not result in a living income for farmers under current conditions. The living income gap between the estimated income in the scenario of 800 kg/ha and the living income benchmark can be explained by the fact that farmers only receive living income reference price for the cocoa they sell during the main season to Puratos and Colruyt. For the cocoa in mid season they do

not receive the Colruyt premium, but only the premiums from Puratos. Moreover, part of the cocoa is sold to pisteurs for which cocoa farmers do not receive any premium.

Another aspect that contributes to the living income gap is the small farm size. The Fairtrade Living Income Reference Price is based on a scenario where farmers have a viable farm size of 5.3 hectares of which 4.4 productive cocoa area. This is twice the size of the average farm size of the 102 households in this study. This means that even though farmers have production level of 800 kg/ha and receive the living income reference price for all their cocoa, they still would not be able to reach a living income.



¹ Based on a median household size of 7, since medians are less susceptible to the values of outliers

² See explanatory note Fairtrade Living Income Reference Price for Cocoa (2019)

PRODUCTIVITY | CONCLUSIONS AND LIMITATIONS (1/2)

Certain limitations and considerations should be taken into account in regard to the data collected, calculations and results

The results set out in this chapter show that productivity level is an important variable to gain insight into the opportunities that farmers have to increase their income from cocoa. However, productivity levels are difficult to measure and rely heavily on accurate reporting of (productive) cocoa area, quantities of harvest, cocoa loss and sales.

The current productivity levels are calculated based on data reported in the Farm Record Tool and validated by value chain actors and partners on the ground. The calculation of productivity levels is made by using the amount of cocoa sold and the cocoa area as reported by farmers in the Farm Record Tool. Some limitations and considerations should be taken into account in regard to the data collected, the calculations and the results:

I. The yield data is based on sales to Puratos and pisteurs. The cocoa sales to Puratos has been

reported systematically every month in the Farm Record Tool. The sales to pisteurs however has not been reported in the Farm Record Tool but has instead been estimated at the end of the season with assistance of Rikolto. This data is therefore less reliable as it relies on the recall of farmers. It is therefore recommended to *integrate cocoa sales to other buyers* within the Farm Record Tool to systematically report on this throughout the cocoa season.

II. Similarly, it is possible that part of the cocoa production is not sold but is lost due to disease or pests, during post-harvest processes such as transportation and fermentation or due to lack of quality. It is recommended to either include indicators in the Farm Record Tool for farmers to report on the loss of cocoa or to gain a more high-level insight into the average loss of production in

the communities. Understanding how much of the cocoa production actually gets sold will provide a better understanding of productivity levels as well as opportunities to decrease the loss of cocoa where possible.

III. Finally, in the current analysis, the calculation of productivity is based on the reported cocoa area. However, it is possible that this cocoa area includes areas that are (re)planted and not yet productive. This could potentially mean an underestimation of the yield per ha of productive cocoa area. It is recommended to include data indicators in the Farm Record Tool on percentage of productive and unproductive farm area to increase the accuracy of the productivity levels.



PRODUCTIVITY | CONCLUSIONS AND LIMITATIONS (2/2)

Productivity levels provide insight into the opportunities that farmers have to increase their income from cocoa

The analysis for productivity indicates that productivity is an important driver for farmer household income. Farmers with higher productivity levels also have a higher farmer household income. This is also reflected in the observed differences between the communities, in which the farmers in Daregba have higher productivity levels compared to Colonel as well as a higher average household income. The higher household income in Daregba is not only due to the higher productivity, but potentially also to the higher percentage of cocoa sold to Puratos for which farmers receive a higher price compared to sales to pisteurs.

Results show that an increase in productivity can lead to additional cocoa sales, and therefore increased income from cocoa. However, as different scenario analyses have shown, with current farm sizes (average of 2.2 ha), solely focusing on increasing productivity levels to 800 kg/ha is not sufficient to bridge the living income gap. This aligns

with the previous chapter, indicating that farm size plays an important role in the ability of farmers to earn a living income from cocoa production. However, as has been mentioned before, expanding farm sizes should be carefully considered as a larger farm will require more labour days and can drive up production costs due to additional hired labour costs if there is no additional household labour available. Furthermore, promoting the expansion of farm sizes can in turn threaten protected forest areas.

Project activities should therefore focus on increasing productivity levels within the boundaries of what is possible for farmers to manage with household labour and limited use of hired labour. One of the aspects of increasing productivity could be to look at the age of cocoa trees and ensuring that cocoa farmers have the majority of cocoa trees within the peak productive life phase.





Quality

03.2

QUALITY | INTRODUCTION

Farmers receive a quality premium upon delivery to the fermentation centers

Quality of cocoa beans is of key importance for cocoa producers and chocolate manufactures. Poor quality cocoa beans affect the quality of chocolate produced. The quality of cocoa beans is mostly affected through post-harvest activities such as poor fermentation processes. Fermentation and drying done on the farm by the farmer his or herself often leads to bad quality of beans.

To improve the quality of cocoa beans ECSP in partnership with Puratos has constructed centralized fermentation and drying centres in San Pedro to improve the quality of cocoa beans from the area. Farmers can bring the cocoa to the fermentation center where the cocoa is dried and fermented according to the quality standards set by Puratos. This provides farmers the possibility to earn an additional income through the Gold Quality Premium paid by Puratos for quality cocoa beans.

The centralized fermentation centers in San Pedro contribute to the increased quality of cocoa, however

there are logistical issues such as the need for quick transport of the wet cocoa beans to the fermentation center. Part of the project is to build decentralized fermentation centers within the communities that would provide easier access to fermentation centers for famers in Colonel and Daregba.

The fermentation and drying center in Colonel has been operating since November 2020. The fermentation and drying center in Daregba will be utilized in the upcoming 2022/2023 cropping season.

Currently all 102 households receive the Gold Quality Premium of 100 CFA/kg for delivery of quality cocoa beans. This contributes to the household income of the farmers. The next page provides more details on the contribution of the Gold Premium to farmer household income.

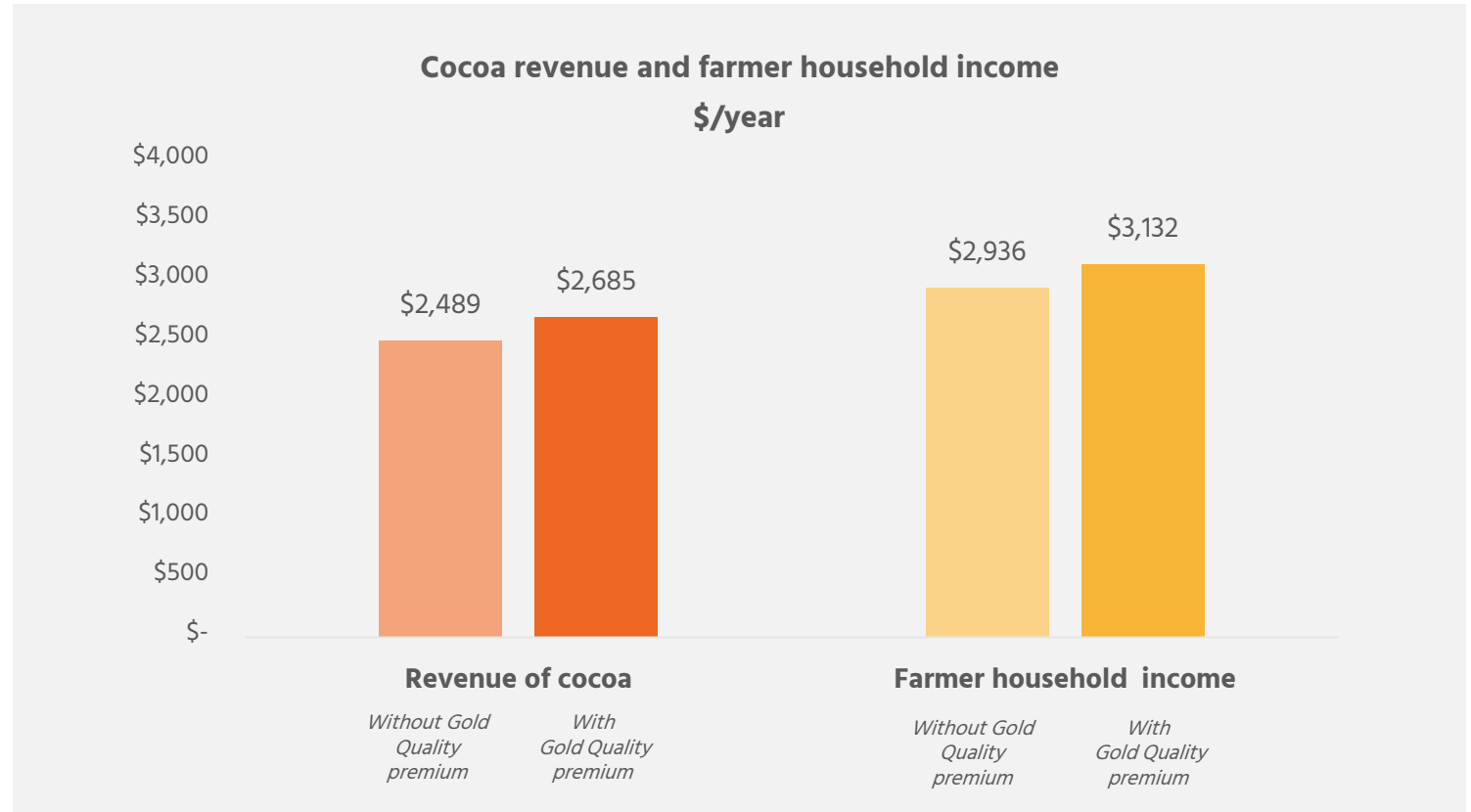


QUALITY | RESULTS

The Gold Quality Premium contributes to an increase of farmer household income

Farmers receive the Gold Quality Premium directly upon delivery of fresh cocoa beans to the fermentation and drying center. The Gold Quality premium that farmers receive is 100 CFA/kg cocoa and is paid by Puratos.

On average, this results in an increase of 7.9% of revenue from cocoa. The increase in revenue results in an average increase of farmer household income of \$196 per year compared to farmers that do not receive the Gold Quality Premium.



QUALITY | CONCLUSION AND LIMITATIONS

Certain limitations and considerations should be taken into account in regard to the data collected, calculations and results

Based on the data collected, all 102 farmers reported having access to the fermentation centers. Of the total cocoa sales reported, 80% is sold to Puratos for which farmers receive the Gold Quality premium. The other 20% is sold to pisteurs (other local cocoa buyers) without any premiums. For the cocoa they sell, this additional premium increases farmer's revenue by 7.9% which increases the total farmer income.

Part of the project focuses on building decentralized fermentation centers that are located within the community, to make the fermentation centers more easily accessible for farmers. To understand the impact of these decentralized fermentation centers it is recommended to collect the following additional data points to provide better insight in the current processes of fermentation and how decentralized fermentation centers can improve current processes:

- Cost related to transportation of the cocoa to the fermentation centers. The centralized fermentation centers are located in San Pedro and need to be transported by the farmer to the fermentation center. This could lead to additional costs for either transportation of the farmers themselves to the fermentation center or paying for transportation services to the fermentation center. Currently the farmers have not reported transportation costs in the Farm Record Tool. It would be important to gain more insight into the current cost of post-harvest practices, to understand in what way the decentralized fermentation centers benefit cocoa farmers.
- Part of the cocoa produced is sold to pisteurs. Farmers do not receive any premiums for the cocoa that is sold to pisteurs and therefore miss out on additional income. It is recommended to work together with partners on the ground to gain a better understanding

why farmers sell cocoa to pisteurs instead of Puratos. Reasons could be due to low quality of the cocoa beans which cannot be sold for the Gold Quality premium. However, project partners have also mentioned that the Fermentation and Drying centers are not available at certain times of the year (specifically September), which is why farmers sell their cocoa to pisteurs to still be able to earn money in September. A better understanding of the obstacles that farmers face in selling their cocoa through Puratos can provide with specific interventions to decrease these obstacles.



Income diversification

03.3

INCOME DIVERSIFICATION | INTRODUCTION

The project implements various activities to increase income diversification among farmers

Another aspect of increasing the farmer household income and resilience is to promote income diversification among cocoa farmers in both communities. Income diversification is important to provide cocoa farmers with additional income streams, as well as make cocoa farmers more resilient by decreasing the reliability on one crop. Increasing resilience is especially important considering climate change which increases the risk of weather fluctuations that can influence the crop and increases the vulnerability of farmers.

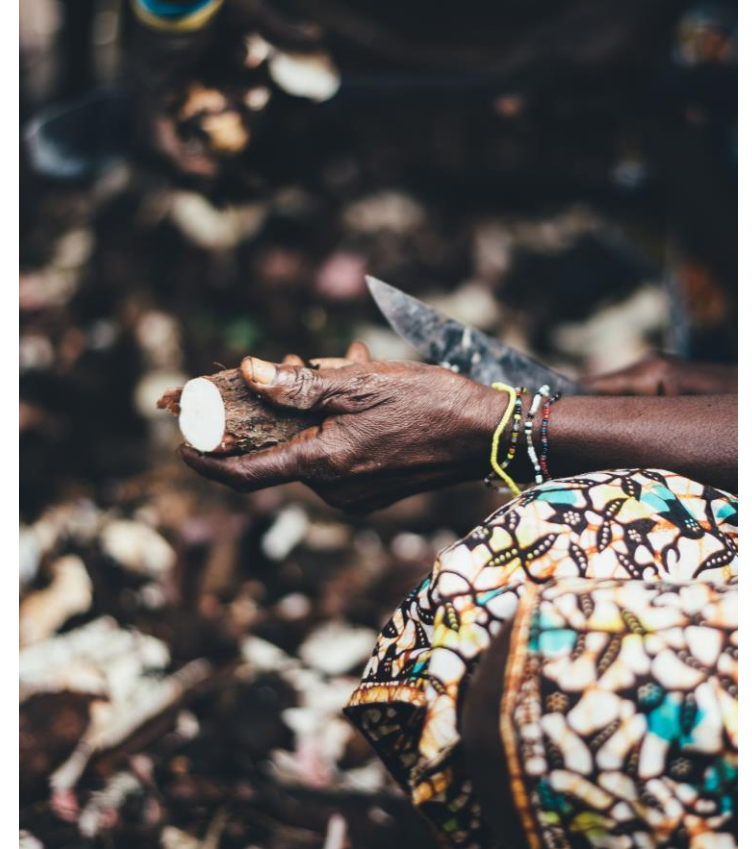
The project explores opportunities to promote intercropping with food crops such as cassava and cowpea. The production of cassava and cowpea take place at community farms. Other activities to increase additional income are also explored within the project such as poultry farming, fruit and vegetable farming.

Within the Farm Record Tool, data is collected on the revenue from the on-farm production of other non-food

crops (such as rubber), food crops (rice, yam) and livestock production. Next to income diversification on the farm, the Farm Record Tool also includes indicators on other income sources. Moreover, with the additional questionnaire wage-income from household members earned outside the farm for during the crop season 2021-2022 was also collected.

The Farm Record Tool only includes data on income that the individual farmer reported. Income that is generated through community projects is not included. Information on how the income of community projects (cassava and cowpea farming, poultry farming) that is divided among community members is not documented. Therefore, the income of these community activities are not included in the current analysis.

The next page provides a more detailed overview of the income received by farmers from other sources beside cocoa production. This is based on the data reported by farmers themselves in the Farm Record Tool.

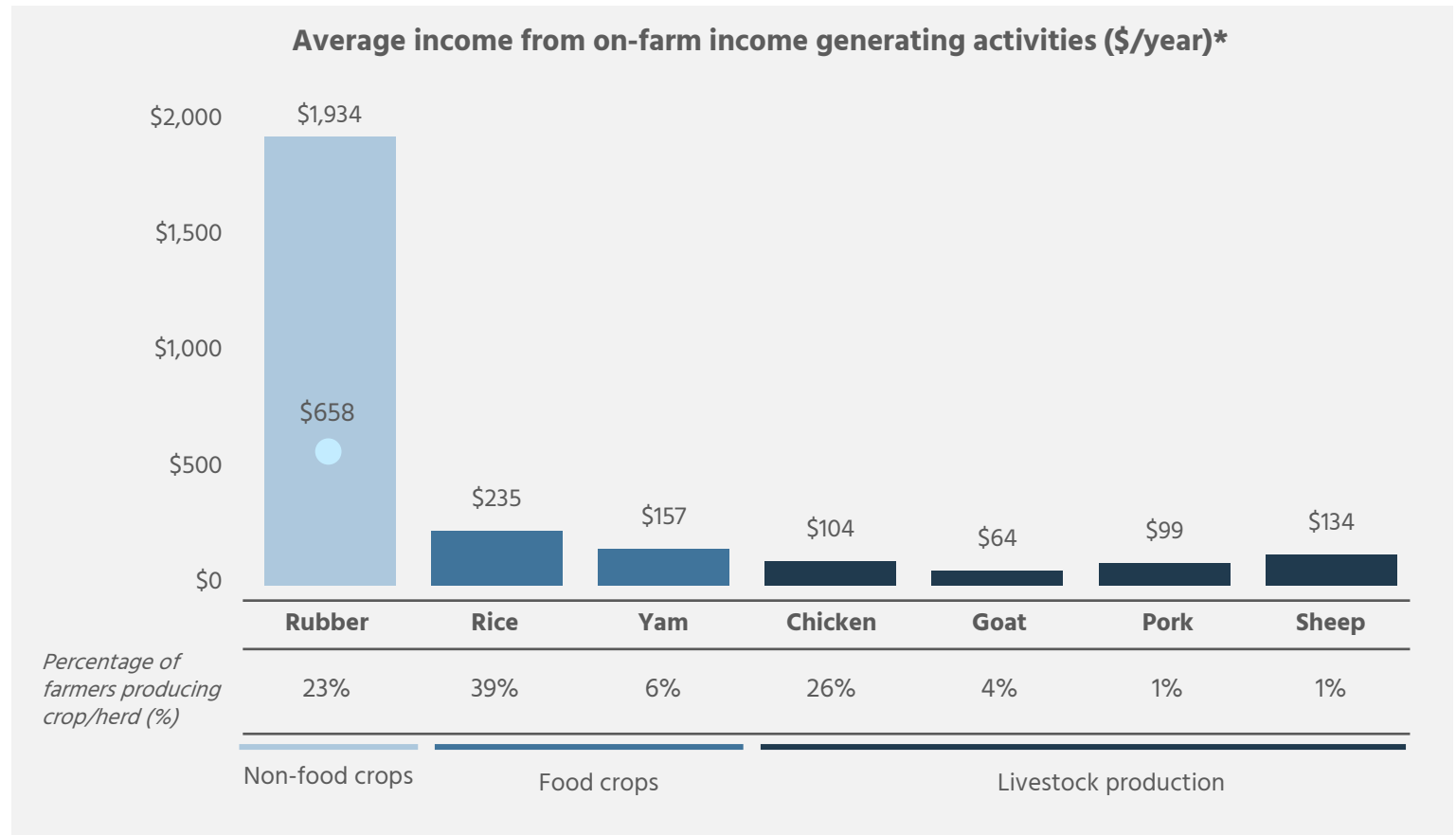


INCOME DIVERSIFICATION | ON-FARM INCOME GENERATING ACTIVITIES

Farmers recorded various income sources in the Farm Record Tool

The income generated on the farm, next to cocoa production, can be categorized as non-food crop production, food crop production and livestock production. The graph on the right shows the percentage of the 102 households that produce a specific crop or herd, and the average income for the farmers per crop or animal.

The results show that the production of the rubber has the highest contribution to farmer income with an average income of \$1,934 per year for farmers that produce this crop, with an average income of \$658 per ha in production. Rubber is produced by 23% of the farmers of the 102 households. Next to rubber production, the production of other crops has the highest income potential. The income of these food crops includes the value of products produced for home consumption, as this can be seen as in-kind income of food crop production.



● Average income per ha of production crop



INCOME DIVERSIFICATION | OFF-FARM INCOME GENERATING ACTIVITIES

Off-farm income sources contribute to farmer household income

Next to income from farm activities (cocoa production, non-food crop production and food-crop production) farmers also receive income from off-farm activities. Of the 102 farmer households, 13% reported off-farm wage income from household members. For the farmers that reported off-farm wage income from household members, the average income was \$481 per year.

Of the 102 farmer households, 11% reported other income sources such as income from selling fertilizer or coal, income from running a sewing shop, home rental income and income from the rental of sound equipment. Of the farmers that reported other income sources, the average additional income was \$226 per year.



INCOME DIVERSIFICATION | DRIVERS

Correlations provide insight into the relationship between different variables

Pearson correlations were conducted to gain insight into the relationship between the different income sources and farmer household income. This analysis shows the variables *income from cocoa*, *income from non-food crop production* and *income from food crop production* all have a positive relationship with farmer household income. This

indicates that either farmers that have non-food and food crop production have a higher income, or that farmers that have a higher income have the means to produce non-food and food crops next to their cocoa production.

Dependent variable	Independent variable	Correlation	Correlation value	P-value ¹
Farmer household income (\$/year)	Income cocoa production (\$/year)	Positive correlation	0.76	0.000*
	Income non-food crops (\$/year)	Positive correlation	0.67	0.000*
	Income other food crops (\$/year)	Positive correlation	0.29	0.004*
	Income livestock production (\$/year)	Positive correlation	0.04	0.69
	Other income	Positive correlation	0.02	0.81
	Wage income household members	Positive correlation	0.08	0.43

* Values for which the correlation is statistically significant

There is a strong significant positive relationship between income from cocoa production and farmer household income. This relationship is to be expected, as cocoa production is the main source of income for the 102 households.

These results show that there is also a strong significant positive relationship between the income from non-food crops and farmer household income. The only non-food crop that has been reported in the Farm Record Tool is the production of rubber. The results show that farmers with a high income from rubber production also report a high overall farmer income.

Income of other food crops has a significant positive relationship with farmer household income, indicating that farmers with high income from food production also have a high farmer household income.

Income from livestock production, other income and wage income all have a positive relationship with farmer household income. However, the results are not statistically significant.



¹ If the p-value is below 0.05 the variable gives a significant contribution to the dependent variable

² A correlation coefficient value greater than 0.5 or less than -0.5 can be considered a strong relation, a correlation coefficient between 0.3 and 0.5 or -0.3 and -0.5 can be considered a relationship of moderate strength and a correlation coefficient value between 0 and 0.3 and -0.3 and -0.5 is considered a weak relationship.

INCOME DIVERSIFICATION | COMMUNITY INCOME GENERATING ACTIVITIES

Various project activities promote community income generating activities

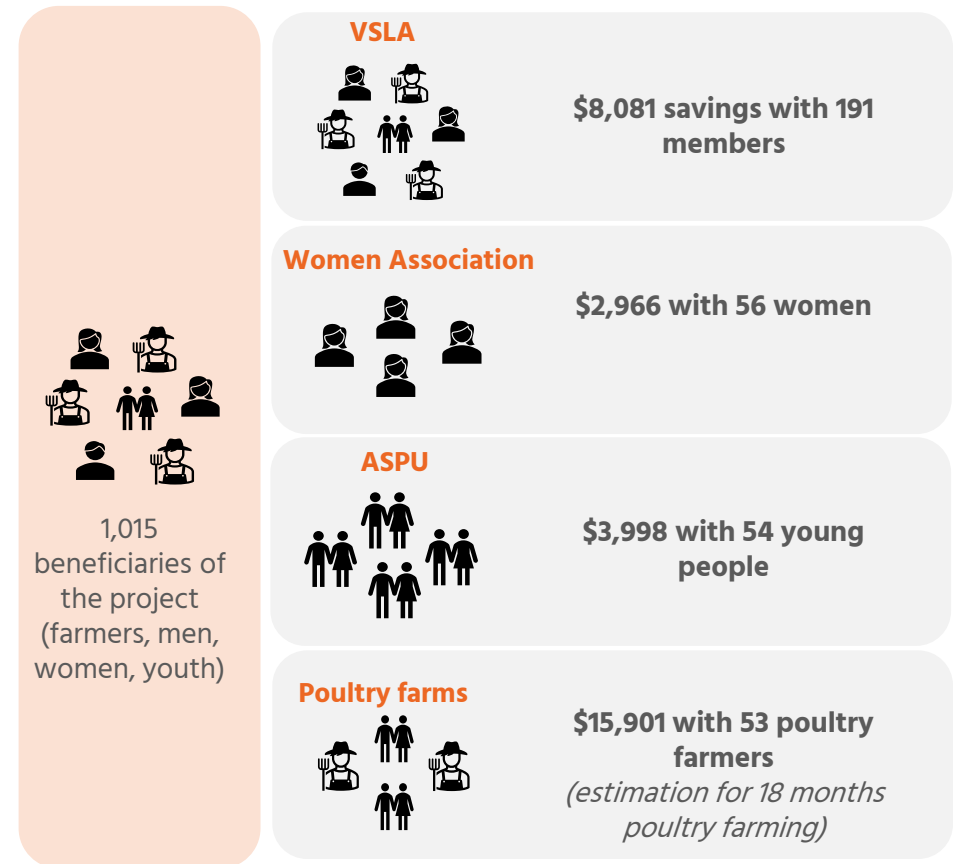
The living income assessment and driver analysis on the previous pages are based on data as reported in the Farm Record Tool for 2021-2022 and the additional questionnaire conducted in December 2022. The analysis does not include information on community initiatives that have been set up as part of the project, aimed at diversification of income sources.

Information from project partner Rikolto has been used to gain first insights into the potential income created by the community activities. These activities consist of:

- Establishment of **Village Savings and Loan Associations** where community members save money together and provide small loans to each member.
- Activities of the **women association** which includes cassava and cowpea farming and production of other food crops

- **ASPU:** these are the agricultural service provider units run by youth in the community
- **Poultry farming:** this includes the establishment of community poultry farms which enable community members to sell eggs, laying hens and chickens.

For the activities and corresponding revenues, except poultry farming, it is not indicated for which time period the income is calculated. Moreover, the community includes various members of the community beyond the 102 households that are included in the living income assessment. It is therefore currently not possible to include the income from community activities in the living income analysis. It is recommended to include the community activities as indicator in the Farm Record Tool so that farmers can report how much they earn from each activity per year.



INCOME DIVERSIFICATION | CONCLUSION AND LIMITATIONS

Income diversification provides farmers with additional income and increases resilience

Although cocoa is the main source of income for the 102 households in this study, on average 23% of the total household income comes from other income sources besides cocoa production. These other incomes sources include income from the production of non-food crops and food crops, off-farm wage income from household members and other activities that generate income such as sales of fertilizers and coal, sewing services and rental.

As the results show, specifically income from non-food crops and food crops have a positive relationship with farmer household income. This means that either the production of non-food and food crops results in a higher farmer income, or that farmers with a higher income are better able to produce non-food and food crops next to the cocoa production. Though the analysis does not show a causal relationship, it does indicate that income diversification activities are an important aspect for farmers as it provides ways to increase the overall household income. Next to the additional income, income diversification also makes households more resilient as farmers become less dependent on the

production of one single crop. This is especially important with the changing weather patterns as a result of climate change.

Currently, off-farm wage income by household members is not included in the Farm Record Tool. For the current analysis, this data has been collected through the additional questionnaire conducted in December 2022. It is recommended to include this indicator in the Farm Record Tool to gain a more holistic insight into farmer household income.

Furthermore, the project has reported various income generating activities that are undertaken within the community. These activities have the potential to increase income within the community and contribute to household income. Currently, there is limited information available on the exact revenues earned with each activity. Additional data collection on the income of these activities will help to identify which activities have the most potential to contribute to household income of farmers.





Access to finance

03.4

ACCESS TO FINANCE | INTRODUCTION

Access to finance effects farmers' ability to invest in their farms

Access to finance is crucial for cocoa farmers in Côte d'Ivoire, as it can significantly impact their ability to invest in their farms, increase their productivity, and improve their livelihoods. Many cocoa farmers in the country operate on small scales and face challenges such as limited access to credit, high-interest rates, and inadequate financial services. With adequate access to finance, cocoa farmers can purchase quality inputs, such as fertilizers and pesticides, which can increase their crop yields and quality. Additionally, they can invest in modern farming technologies and techniques, such as irrigation systems and improved seed varieties.

In order to provide households in Colonel and Daregba with access to finance, the project contributes to the establishment of Village Savings and Loans Associations (VSLAs). A VSLA consist of community members who save money together and provide small loans from those savings. The purpose of a VSLA is to provide simple

savings and loan facilities in a community that does not have easy access to formal financial services.

Next to the establishment of VSLAs, the community members are trained on financial planning, investment opportunities and the use of mobile paying systems. Community members have also been encouraged to open up personal bank accounts and mobile money accounts to ensure secure and efficient ways to manage financial transactions. The use of bank accounts and mobile payment systems can support farmers in the financial management of their farms.



ACCESS TO FINANCE | RESULTS

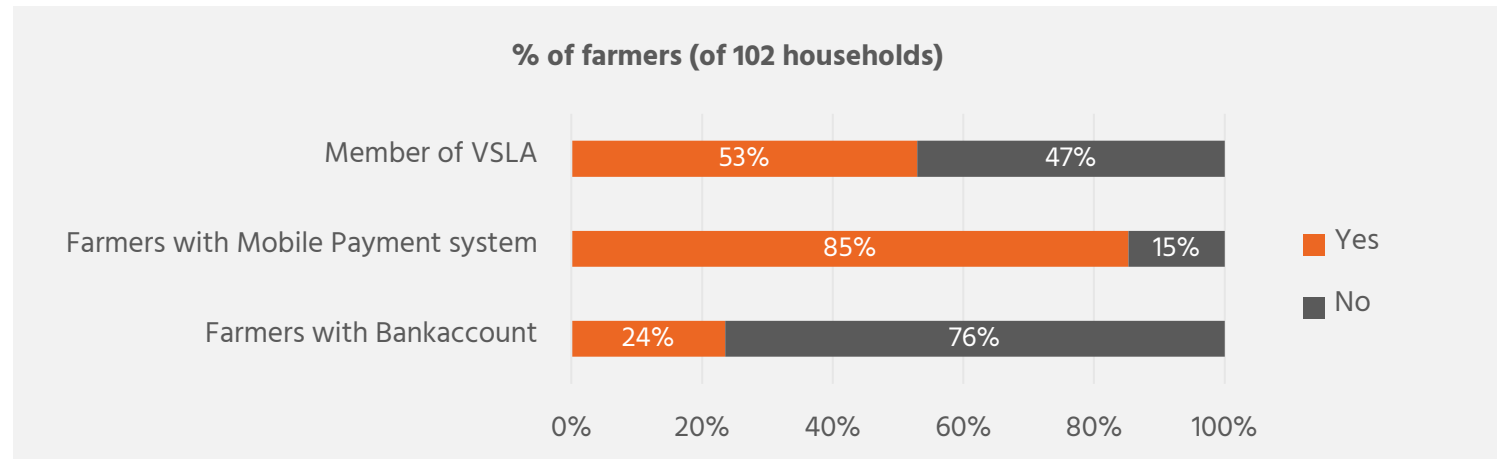
Project activities focus on the establishment of VSLAs and providing farmers with a bank account and mobile payment systems

Around half of the farmers report being a member of the VSLA. Currently there is no data available yet on the amount of loans farmers have received through the VSLA and what these loans have been used for.

Around 85% of the farmers report having a mobile payment system and 24% of the farmers report having access to a bank account.

Based on the reported data, correlations were conducted to gain insight into these variables and their relationship to farmer household income.

There is a significant positive relationship between the variables *farmer household income* and *ownership of a bank account*. Farmers that have a bank account also have a higher farmer income. This does not indicate that having a bank account results in a higher income, it only indicates that there is a relationship between the variables.



Dependent variable	Independent variable	Correlation	Correlation value	P-value ¹
Farmer household income	Members VSLA	Positive correlation	0.08	0.44
	Bank account	Positive correlation	0.26	0.01*
	Mobile payment system	Positive correlation	0.15	0.14

* Values for which the correlation is statistically significant

¹ If the p-value is below 0.05 the variable gives a significant contribution to the dependent variable

² A correlation coefficient value greater than 0.5 or less than -0.5 can be considered a strong relation, a correlation coefficient between 0.3 and 0.5 or -0.3 and -0.5 can be considered a relationship of moderate strength and a correlation coefficient value between 0 and 0.3 and -0.3 and -0.5 is considered a weak relationship.



ACCESS TO FINANCE | CONCLUSIONS AND LIMITATIONS

Access to finance can enable farmers to invest in their farm or other income diversification activities

Access to finance can have a significant impact on the household income of cocoa farmers. When farmers have access to finance, they can invest in their farms through purchasing quality inputs or investing in technologies and services. These investments can help to increase their crop yields and quality, leading to higher revenues and improved household income. Additionally, access to finance can prevent farmers from taking up informal loans that come with high interest rates and result in additional costs for households.

Access to finance can also enable cocoa farmers in undertaking income diversification activities by investing in non-food and food crop production, livestock production or other small-scale ventures. This can provide an additional source of income and reduce their dependence on cocoa as the sole source of income.

Access to finance is also important in increasing the resilience of cocoa farmers by providing finance in the case of unforeseen circumstances such as natural disasters, crop failures, or market fluctuations, which can negatively impact their household income.

Overall, access to finance can improve the livelihoods of cocoa farmers by increasing their productivity, enabling them to diversify their income streams, and providing a safety net during challenging times. Access to finance is therefore an important precondition for farmers to start investing in their on-farm and off-farm activities.

As illiteracy rates are high in both communities it is important to note that literacy among farmers is crucial to enable farmers to understand and navigate financial processes and to make informed decisions about investments.



Agroforestry & Reforestation

03.5



AGROFORESTRY AND REFORESTATION

Agroforestry systems can contribute to higher level of productivity and result in higher farmer income

To protect biodiversity and promote sustainable reforestation, the project aims to convert cocoa-growing areas from monoculture to biodiverse agroforestry systems through the planting of shade trees.

Shade trees have a positive effect on the environment in which cocoa trees grow by regulating the microclimate, reducing soil erosion, and enhancing soil fertility. The presence of shade trees also provides habitats for birds and other pollinators, which play a vital role in the pollination of cocoa flowers, ultimately leading to higher cocoa yields. Shade trees can also provide an additional source of income for farmers through the sale of fruits, and timber products.

The agroforestry and reforestation activities are carried out by Puratos in collaboration with PurProjet. Shade trees were distributed among producers and an incentive of 100 CFA (\$0.16) was paid to producers per living tree. Details on the quantity of shade trees planted and quantity of live plants from the trees planted has not

yet been documented.

In the establishment of agroforestry systems, it is important to pay attention to the selection of shade trees, the soil management techniques and pest and disease management strategies. Another target within the project is to train farmers on on-farm agroforestry practices. So far, the details of the agroforestry and reforestation activities within the project have not been communicated.

As agroforestry systems can contribute to higher productivity levels in cocoa productions by providing a favourable environment for cocoa trees, it is important to gain a better understanding of the current status of the project with regard to the planting of shade trees and support farmers in the establishment of agroforestry systems. To understand how agroforestry systems contribute to increased productivity levels and farmer household income, it is recommended to document the amount of shade trees planted on each farm.



Price

03.6

PRICE | INTRODUCTION

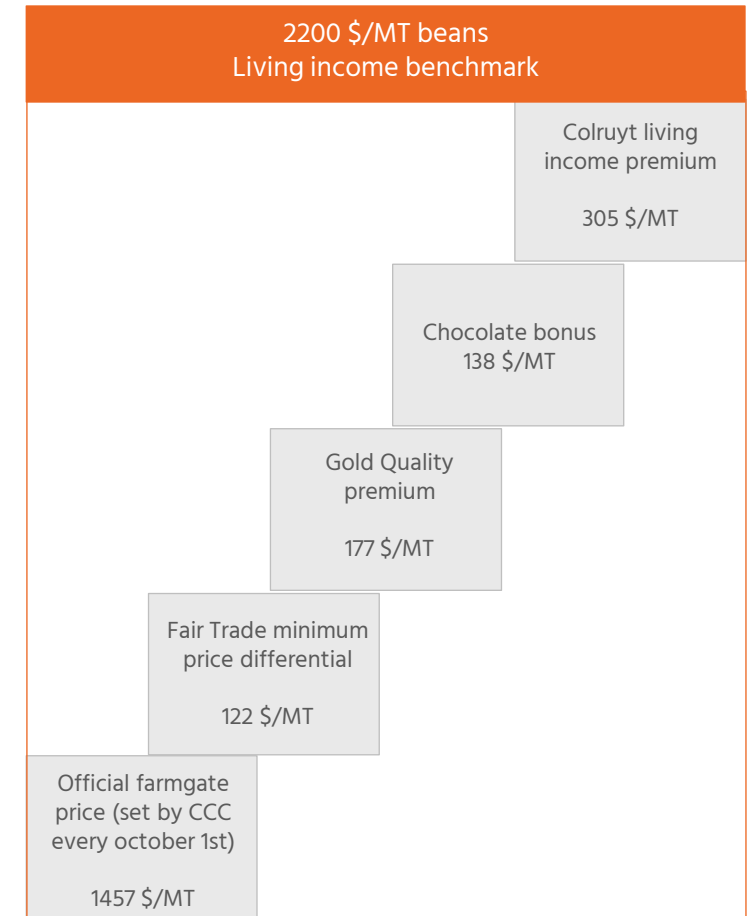
Farmers receive four premiums on top of the farmgate price

Colruyt took a commitment to buy 100 tonnes of cocoa per year from farmers in Colonel and Daregba (via Puratos) during three consecutive years (2021-2023) and ensure the farmers receive a Living Income Reference Price (LIRP). In total, farmers received four premiums during the 2021 – 2022 season. These premiums are received on top of the farm-gate price set by the government in Côte d'Ivoire:

- **Fairtrade Minimum Price differential:** this is the difference between the farmgate price and the Fairtrade Minimum Price which is paid for Fairtrade certified cocoa. This differential is paid at the end of the season. The Fairtrade Minimum Price differential for the 2021-2022 season was \$122/MT.
- **Gold Quality Premium:** this premium is paid by

Puratos for cocoa that is in line with the quality standard. This premium is paid to farmers directly upon delivery of the cocoa beans. The premium for the 2021-2022 season was \$177/MT.

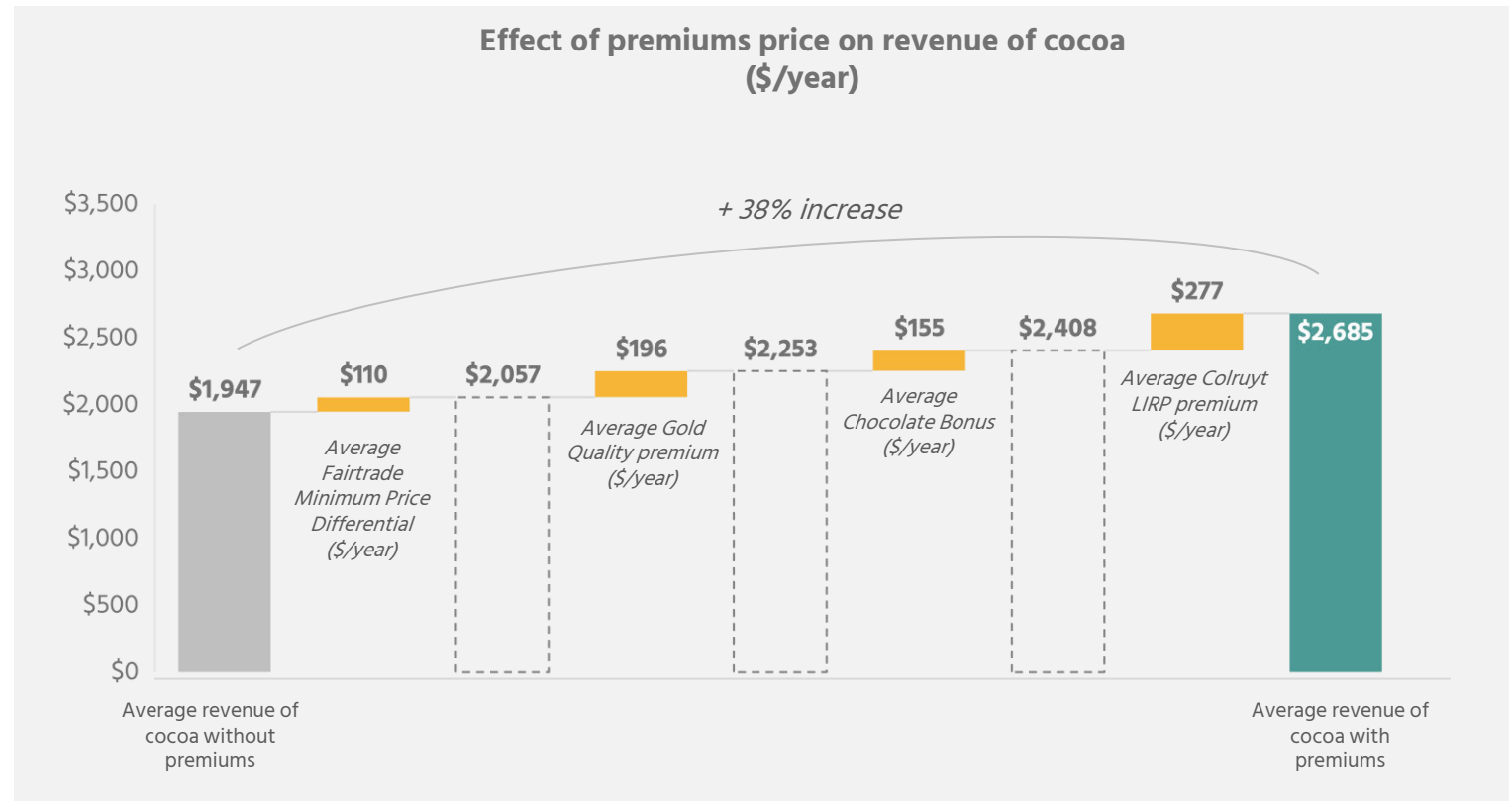
- **Chocolate Bonus:** this premium is paid by Puratos at the end of the season as part of the cacao-trace program. The chocolate bonus for the 2021-2022 season is \$138/MT.
- **Colruyt Living income premium:** This premium is paid by Colruyt to bridge the gap between the price paid to farmers and the living income reference price. The premium was \$305/MT for the 2021-2022 season.



PRICE | RESULTS COCOA REVENUE

The payment of premiums result in a 38% increase in revenue from cocoa

Farmers receive the Gold Quality premium when they deliver the cocoa to the fermentation center. Each season farmers also receive the Fairtrade Minimum Price differential, chocolate bonus and Colruyt Living income premium. The results show that due to the payment of these premiums the average farmer has an increase in revenue from cocoa from \$1,947 without premiums to a revenue of cocoa of \$2,685 with premiums. This is a significant increase of 38% in revenue from cocoa.

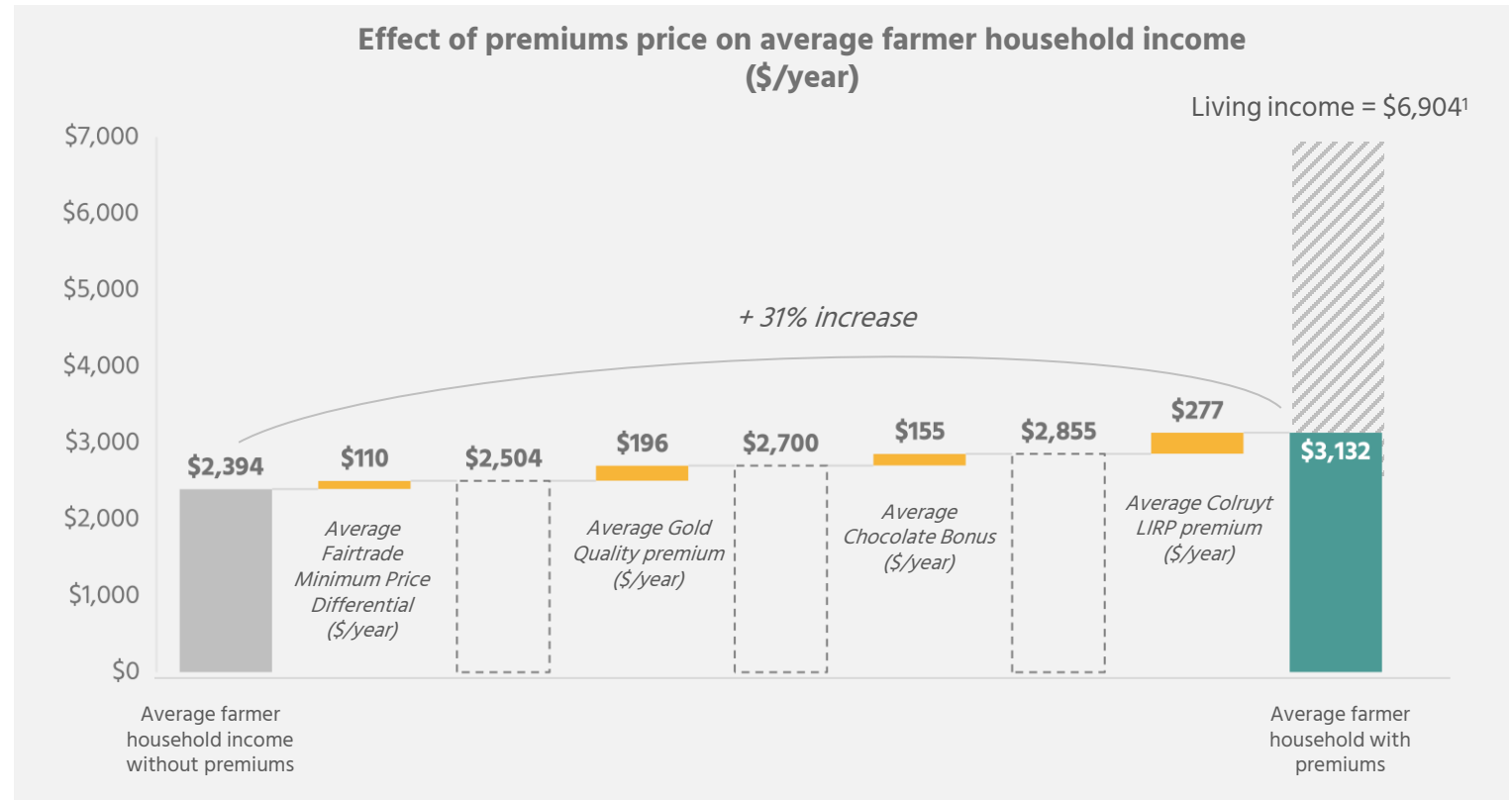


PRICE | RESULTS FARMER HOUSEHOLD INCOME

The payment of premiums result in a 31% increase in farmer household income

The increase in revenue from cocoa results in a subsequent increase of farmer household income. On average, the farmer household income without premiums is \$2,394 per year. Through the payment of premiums, the average farmer household income increases to \$3,132 per year. This is a significant increase of 31%.

These results show that the payment of premiums alone is not sufficient for farmers to reach a living income. Increasing productivity levels and income from other sources are necessary conditions for farmers to reach a living income.



PRICE | CONCLUSIONS AND LIMITATIONS

The payment of premiums is identified as a key contributor toward living income

Pricing and premiums are critical in generating income from cocoa for farmers in Côte d'Ivoire. Pricing is the most basic way to generate income from cocoa for farmers. By setting a fair price for cocoa beans, farmers can earn a decent income from their harvests. In recent years, the government of Côte d'Ivoire has worked to stabilize cocoa prices through mechanisms such as a minimum price guarantee, which helps to protect farmers from price fluctuations. However, farmers are not able to make a living income with current farm gate prices.

Within the project the payment of premiums is identified as a key contributor toward living income. As the results show, the payment of premiums result in a significant boost in revenue from cocoa, with a 38% increase, and a related increase in farmer household income of 31%.

The payment of premiums not only ensure that farmers receive a fairer price for the cocoa production, but also provide an incentive for farmers to produce high-quality cocoa beans.

The results do show that paying premiums is not enough if farmers are not able to increase their overall cocoa sales. It is therefore important to not only focus on paying a premiums but also enable farmers to increase their cocoa sales or earn additional income through other income sources.



Conclusion

04

CONCLUSION (1/3)

The living income project contributes positively to farmer household income

This study is part of the *Living income for cocoa farmer in Côte d'Ivoire* project for which farmer income for the cocoa season 2021-2022 has been calculated for the 102 households included in the project. Results show that farmers earned on average 45% of a living income, with 95% of the farmers earning an income below the living income benchmark.

Payment of premiums

The living income assessments indicate that farmers are not yet able to earn a living income based on current cocoa production, the production of other crops and other income generating activities. Results show that on average 79% of the household income comes from cocoa production. This indicates that the cocoa is the main driver of household income for farmers. The income that farmers are able to earn through cocoa sales is influenced by various drivers. Firstly, the payment of a decent price significantly affects the income that farmers earn with the sales of cocoa. A key aspect of the current project is to provide farmers with

access to premiums, including the Gold Quality premium and chocolate bonus paid by Puratos and the living income differential premium paid by Colruyt.

Currently farmers receive the Colruyt premium for the cocoa sold through Puratos in the main season. In both the main and mid season farmers receive the two premiums paid by Puratos. Overall, the payment of premiums results in a 38% increase in revenue from cocoa and a 31% increase in average farmer household income. This shows that payment of premiums successfully contributes to higher household income, making price a key driver of living income.

Based on these findings, it is recommended to increase the opportunities of farmers to sell their cocoa for a decent price. This could include gaining a better understanding of the reasons why farmers sell cocoa to pisteurs for a lower price, and supporting farmers in overcoming the obstacles they face in selling quality cocoa to Puratos. Furthermore, the quantity bought by

Colruyt is currently 100 mT per season. Scaling up the amount of quantity bought for the living income reference price will provide the 102 farmers in this study with the opportunity to sell more cocoa for a higher price or allows more farmers (beyond the 102 households) to also sell their cocoa to Puratos and Colruyt and receive the various premiums.

Productivity levels and farm size

Beside price as a key driver of household income, the results of the driver analysis show that the income generated from cocoa is highly dependent on the productivity levels and farm size that farmers have. Currently farmers have an average productivity of 649 kg/ha. An increase in productivity levels contributes to higher cocoa sales, which in turn contributes to higher farmer income. Productivity levels can potentially be increased through providing farmers with support for farm management practices and support in the renewal of cocoa trees to optimize the productivity of cocoa trees on the farm.



CONCLUSION (2/3)

The living income project contributes positively to farmer household income

It is important to note that the effect of productivity levels cannot be assessed in isolation from farm sizes. Currently, the 102 farmers have an average farm size of 2.2 hectares. The scenario analyses presented in this report indicate that productivity increase alone will not lead to a living income for farmers as current farm sizes are too small to produce enough cocoa to earn a living income, even with increased productivity levels and the additional premiums.

Although larger farm sizes could contribute to farmers' ability to earn a living income, expanding farm sizes should not be readily promoted. First of all, promoting farm expansion can potentially result in negative consequences such as deforestation of protected forest areas. Secondly, if farmers expand their farm size beyond the capacity that can be managed with household labour the expansion will require farmers to hire additional labour. Cost of hired labour is the main driver of production cost of cocoa. The cost of hiring more labour to manage the farm might offset the gains made by producing more cocoa on a larger farm plot.

Based on these insights it is recommended to take an integrated approach to increasing household income of cocoa farmers. This is already acknowledged within the project, in which various project activities aim to increase farmers' ability to generate an income outside of cocoa production.

Other project activities

During the implementation of the project, various community activities have been promoted to increase the ability of households to earn a living income. This includes poultry farming, production of other food crops, the establishment of ASPUs and VSLAs.

The community activities aimed at generating income show potential in providing households with additional income streams. Since the community activities have been implemented recently, there is limited data available on the exact income that the community will earn with these activities in the long term. The income from these activities is also not yet reported in the Farm Record Tool which makes it difficult to calculate to

what extent the community activities contribute to the individual household income.

In the potential continuation of the project, it is recommended to structurally collect data on the costs and income of the community activities per household to gain a better understanding of the effect of each activity on farmer household income.

Similarly, for project activities regarding agroforestry systems and access to finance, it is difficult to identify any direct effects on farmer income. Access to finance is likely to be an important precondition for farmers to be able to invest in their farms and setting up diverse income generating activities. Agroforestry and reforestation project activities have not yet been implemented fully and will likely show its effects only in the long term. However, these activities are of key importance for ensuring the sustainability of the farms by making farms more resilient to changing weather patterns and, in turn, limiting the farms contribution to climate change.



CONCLUSION (3/3)

The living income project contributes positively to farmer household income

The *Living income for cocoa farmer in Côte d'Ivoire* project is built on the premise that a living income for cocoa farmers cannot be achieved by focusing on one driver alone. Therefore, the project takes an integrated approach focusing on the various aspects: productivity, quality, income diversification, access to finance, agroforestry/reforestation and price.

The results of the living income assessment and driver analysis support this integrated approach, as it shows that not one driver alone will result in a living income for cocoa farmers. Achieving a living income for cocoa farmers relies on various aspects

This report aims to contribute to the understanding of how each of the drivers within the project can contribute to a living income. Furthermore, the results indicate how certain drivers influence each other. Therefore, the drivers within the project should not be

assessed in isolation, but the relationship between drivers should be considered.

Future data collection

This report also included various recommendations for future data collection, specifically for increasing the reliability of data and expanding data collection. Advancement in data collection can help to gain more detailed insight in the drivers of household income. It is recommended to continue systematic data collection that allows year-on-year comparison of how farmer income changes and which drivers are the largest contributors to any observed increase. These insights can in turn help to further develop strategies to support cocoa farmers in reaching a living income.

It is also recommended to look into ways to make data collection more efficient and inclusive to reduce the burden of data collection on the producers. This can be

done by including other value chain partners in the data collection process. Lastly, for data collected directly from producers, it is important to ensure that farmers themselves are primary owners of their data and are compensated for sharing this data.



Annex

05

ANNEX I CONCLUSIONS AND LIMITATIONS



A I	Key assumptions	Page 61
A II	Farm Record Tool	Page 62
A III	Additional questionnaire	Page 65
A IV	Living income benchmark	Page 67
A V	List of references	Page 68



ANNEX I | KEY ASSUMPTIONS

Key assumptions were made in the calculation of farmer household income

Variable	Key assumptions
Yield	Due to lack of reliable yield data, it is assumed that the reported volume of cocoa sold in the Farmer Record Tool (FRT) is equal to the yield.
Farmer household size	Farmers that did not report any household members ($N=10$) have been excluded in the calculation of median/average household size, as it is assumed that this is an error in the reporting. The farms that reported no household members do report working days for the 'mother' and 'other family' in the FRT for the variable <i>reported household labour</i> . This indicates that the household is larger than just the farmer him/herself. As a result of the exclusion of these farms the average goes from 7 to 7.7, the median stays the same (7). The median is used to determine the living income benchmark.
Living income benchmark	Living income benchmark is determined based on the median household of the sample, which is 7.
Chocolate bonus (79 CFA/kg)	Chocolate bonus was not yet included in the Farm Record Tool, it is assumed that all farmers receive the chocolate bonus individually. An additional income of 79 CFA per kg cocoa has been included in the analysis.
Household consumption (in-kind income)	<p>The value of home consumption food crops is included in the calculation of the total market value of food crops (Quantity sold + Quantity consumed X price = Market value)</p> <p>The value of home consumption of livestock production is not included in the current analysis as the reported data does not indicate the quantity used for home consumption</p>
Other costs	Insurance costs and membership cost are not applicable to the sample in this study
Cost of production	Services of ASPU are paid for by individual farmers



ANNEX II | FARM RECORD TOOL (1/3)

Farmers report their income and cost items in the farm record tool

Farm Record Tool Indicators		Description data point and calculation
Farmer	Full name	Name of farmer
	Gender	Gender of farmer
	Location	Community (Colonel/Daregba)
	Code	ID code of farmer
	Contact	Contact information farmer
Crop distribution	Cocoa area	Total area used for cocoa production (ha and age of plot)
	Farm area other crops	Total area used for production other crops (indication crop, ha and age of plot)
Household members		Overview of household members for each farmers (per household member: name, age, sex, name)



ANNEX II | FARM RECORD TOOL (2/3)

Farmers report their income and cost items in the farm record tool

Farm Record Tool Indicators		Description data point and calculation
Cocoa sales		Reporting per month of <i>total kg cocoa sold, price per kg</i> and <i>income</i> (kg sold*price). Based on the quantity of cocoa sold, the premiums (<i>Gold Quality Premium, Colruyt Quality Premium and Fairtrade Quality Premium</i>) are calculated. This results in the total cocoa income per year.
Sales other crops	Rubber	Reporting per crop of the <i>unit of measurement, quantity sold, unit price</i> . Based on these variables the total income per crop is calculated.
Food crops	Rice, Yam	Reporting per crop of the <i>unit of measurement, amount harvested for home consumption, amount harvested for sale and production per year</i> . Based on these variables the total income (including in-kind income of household consumption) per crop is calculated (Quantity sold + Quantity consumed X price = Market value).
Livestock	Chicken, Goat, Pork, Sheep	Reporting per animal <i>used for home consumption (yes/no), enough to cover household needs (yes/no), produced for sale (quantity)</i> . Based on these variables the total income per animal is calculated. Because the home consumption is only indicated with yes/no answer, it is not possible to calculate the value of livestock consumed at home.
Other income	Phyto shop, sewing shop, home rental income, commerce, sound equipment rental income, coal sale	Reporting per income source the <i>sales unit, quantity of production, sales revenue</i> . Based on these variables the total other income per farmer is calculated.
Agri inputs	Phyto	Each purchase of fertilizer is reported with the <i>date, quantity, and total cost</i> .
Tools & Equipment		Each purchase of tools & equipment is reported with the <i>date, quantity, and total cost</i> .
Other costs		Each purchase of <i>other costs</i> is reported with a <i>description, date and total cost</i> .



ANNEX II | FARM RECORD TOOL (3/3)

Farmers report their income and cost items in the farm record tool

Farm Record Tool Indicators	Description data point and calculation
Hired Labour	Hired labour is reported per month based on <i>quantity of days hired labour, daily salary</i> . Based on these variables the <i>labour cost</i> per month is calculated.
Family labour	Family labour is reported per month based on <i>quantity of days father worked, quantity of days mother worked, quantity of days other family members worked</i> . These variables are used to calculate the total amount of labour days per month.

All variables used for the analysis in this report are based on the version of the FRT received on 30/05/2023 except for one variable *food crops* which has been validated and corrected in the version of the FRT received on 20/04/2023.



ANNEX III | ADDITIONAL QUESTIONNAIRE (1/2)

A questionnaire was conducted to collect additional data

Farm Record Tool Indicators		Description data point and calculation
Cocoa trees	Quantity of trees < 5 years	Estimation of the percentage of cocoa trees planted on the farm area that are under 5 years old
	Quantity of trees between 5-25 years old	Estimation of the percentage of cocoa trees planted on the farm area that are between 5 and 25 years old
	Quantity of trees > 25 years	Estimation of the percentage of cocoa trees planted on the farm area that are above 25 years old
Shade trees		Quantity of shade trees planted on the farm area
Farm management services	Use of farm management services (yes/no)	Indication if farmer used farm management services
	Payment	Amount of money paid from October 2021 – September 2022 for farm management services
Fermentation of cocoa	Access to fermentation center (yes/no)	Indication if farmer has access to fermentation center
	Quantity of cocoa brought to fermentation center	Quantity of cocoa brought to fermentation center between October 2021 and September 2022
	Quantity of cocoa fermented at home	Quantity of cocoa fermented at home between October 2021 and September 2022



ANNEX III | ADDITIONAL QUESTIONNAIRE (2/2)

A questionnaire was conducted to collect additional data

Farm Record Tool Indicators		Description data point and calculation
Premium	Gold premium received	Amount of kg cocoa sold for Gold Quality Premium, amount of cocoa sold without Gold Quality Premium, Amount of Gold Quality Premium received.
	Chocolate bonus	Amount of Chocolate bonus received at the end of the season October 2021-September 2022
Access to finance	Bank account	Indication if farmer has a bank account
	Mobile payment system	Indication if farmer has a mobile payment system
	VSLA member	Indication if farmer is member of a VSLA
	Loans	Indication if farmer borrowed money between October 2021 – September 2022, amount of money borrowed, percentage of interest paid on this loan.
Subsidies		Amount of subsidies that farmer received between October 2021 – September 2022
Off-farm wage income	Salary earned off-farm by household members	Amount of wage income earned by household members through off-farm work between October 2021 – September 2022
	Number of house worked off-farm by household members	Number of hours spend by household members on off-farm work between October 2021 – September 2022



ANNEX IV | LIVING INCOME BENCHMARK

The living income benchmark is corrected based on the descriptives of the current sample

The Living Income Community of Practice published an update for the living income benchmark in Côte d'Ivoire of 298,983 CFA/family/month for Côte d'Ivoire for June 2022. This benchmark is based on a family of 6.

This translates to a living income benchmark of CFA 1,638.26 per person per day (based on an average of 30.4 days per month).

In the current living income analysis in this report, the living income benchmark is corrected to account for the typical household size within the sample, using the median household size of 7.

As a result, the living income benchmark for a family of 7 is **4,185,762** CFA per year or **\$6,904** USD per year (using an exchange rate of 606.32).

The living income reference price established by Fairtrade is based on the same living income benchmark published by the Living Income Community of Practice. Two important differences between the calculations is that the study by Fairtrade makes are:

- The living income is calculated for a typical household of 8 persons in Côte d'Ivoire
- The exchange rate used is 669.52 CFA/\$ based on the exchange rate on the 1st of October 2022

For the current living income analysis, these variables are corrected to reflect the reality of the sample as closely as possible. This results in a typical household size of 7 and an average exchange rate over the full season of October 2021 – September 2022 resulting in an exchange rate of 606.32 CFA/\$.

It is important to take these variables into account in the interpretation of the studies.

Variables	CFA	\$ (Exchange rate 606.32)
Living income benchmark CFA/family/month	CFA 298,983	\$ 493.11
Living income benchmark (CFA/per person per day)	CFA 1638.26	\$ 2.70
Living income benchmark for a family of 7 (CFA/year)	CFA 4,4185,762	\$6,904



ANNEX V | REFERENCES

- Bymolt, R., Laven, A., Tyszler, M. (2018). Demystifying the cocoa sector in Ghana and Côte d'Ivoire. Chapter 10, Production and yield. The Royal Tropical Institute (KIT).
- Fairtrade (2019). Fairtrade Living Income Reference Price for Cocoa, Explanatory note. [2019_RevisedExplanatoryNote_FairtradeLivingIncomeReferencePriceCocoa.pdf](#)
- Fairtrade (2022). Fairtrade Living Income Reference Prices for Cocoa. Update October 2022. [Fairtrade-Living-Income-Reference-Price-for-Cocoa-adjustment-update-1-Oct-2022.pdf](#)
- Friedel Hütz-Adams (2022). Cocoa Farmers in Poverty Trap. [2022-21 Cocoa price.pdf \(suedwind-institut.de\)](#)
- Global Living Wage Coalition (2022). Living Wage Reference Value - Update for Rural Côte D'Ivoire. <https://www.globallivingwage.org/living-wage-reference-value-rural-cote-divoire/>
- IDH (2021). New Insights on reaching living income: impact analysis.
- Living income community of practice (2022). <https://www.living-income.com/the-concept>
- Richard Anker and Martha Anker (2022). Living Income Report for Côte d'Ivoire with focus on Rural Cocoa Growing Regions, Update 2022 . Original study Cires, 2018. Living Income Report Rural Côte d'Ivoire. https://www.living-income.com/_files/ugd/0c5ab3_9aef39b2ef654ab6a8f7bc4dd2bdb026.pdf





Address: Haarlemmerplein 2, 1013 HS, Amsterdam

Site: www.impactinstitute.com

LinkedIn: [linkedin.com/company/impactinstitute](https://www.linkedin.com/company/impactinstitute)

Tel.: +31 202 403 440

Mail: info@impactinstitute.com