



USDA Food for Progress Colombia - Colombian Cacao and Complementary Crops for Development (C4D) Project

Midterm Evaluation Report

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Colombian Cacao and Complementary Crops for Development (C4D) Project Midterm Evaluation

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Cover photo: *Harvest at a farm visited by the evaluation team.*

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Table of Contents

Executive Summary	8
1. Introduction	12
2. Evaluation Objectives.....	14
3. C4D Project Description.....	14
4. Methodology	17
5. Producer Survey Respondent Profile	27
6. Relevance	34
7. Effectiveness	44
8. Efficiency	60
9. Sustainability	63
10. Impact	70
11. Conclusion.....	76
12. Recommendations.....	81
Endnotes	87

List of Figures

Figure 1. Mapping Project Activities by Value Chain Level and Actors	15
Figure 2: Sampling Design Steps.....	22
Figure 3. Data Collection Approach	24
Figure 4: Key Statistics by Cluster	27
Figure 5: Producer Age by Gender	28
Figure 6: Education Level by Cluster (n=561)	29
Figure 7: Land Occupancy by Cluster (n=561)	30
Figure 8: Comparison of Productivity with Tree Age Distribution by Cluster	33
Figure 9: Which of the Following Would You Rank as Your Main Challenge? (n=561)	35
Figure 10: Diseases and Pests Affecting Cacao Cultivation (n=561)	35
Figure 11: Issues at the Inputs Level.....	36
Figure 12: Agricultural Practices by Level	36
Figure 13: Issues at the Production Level	37
Figure 14: Issues at the Aggregation Level	38
Figure 15: Issues at the Processing Level.....	39
Figure 16: Drying at the Farm Level by Cluster	39
Figure 17: Fermentation at the Farm Level by Cluster	40
Figure 18: Issues at the Transport and Logistics Level	41
Figure 19: Issues at the Market Level	42
Figure 20: Government-Led Programs.....	43
Figure 21: Implementation of Farm Practices and Reasons for Non-Implementation (n=561).....	48
Figure 22: Productivity Kg/Ha 2023 by Frequency of Farm Visit	51
Figure 23: Barriers to Accessing Credit.....	57
Figure 24: 'As Is' and 'To Be' Focus	65
Figure 25: Percentage of Producers that Cultivate Cacao in an Agroforestry System	68
Figure 26: Do You Use Pod Litter as Organic Matter for the Soil?	69
Figure 27: Theory of Change	72
Figure 28: Producer Perception of C4D	74
Figure 29: Do you Grow Tabasco Peppers or Plantains on your Farm?	75
Figure 30: Systems Change in Colombia's Cacao and Complementary Crop Value Chains	77
Figure 31: Results Framework	81
Figure 32: Current Market Situation (Illustrative).....	85

List of Tables

Table 1: Top Ten Cacao Producing and Exporting Countries	12
Table 2: Regional Clusters	19
Table 3: Number of Eligible Producers by Cluster and Department	19
Table 4: Selection of Municipalities	20
Table 5: Selection of Veredas within the Municipality	21
Table 6: Sampling Design Steps	23
Table 7: Total Farm Size Compared to Farm Size for Cacao Production	29
Table 8: Biases Associated with Measuring Productivity by Plant	31
Table 9: Survey Results for Average Cacao Productivity per Cluster	32
Table 10: National Productivity (Kg/Ha) from 2018-2022	32
Table 11: Activity 1 Indicators: Value Chain - Special Studies	45
Table 12: Activity 2 Indicators: Producer Organization Development and Commercialization	46
Table 13: Activity 3 Indicators: Agricultural Extension and Production Support Part 1/4- Practices	47
Table 14: Activity 3 Indicators: Agricultural Extension and Production Support Part 2/4- Practices Production and Sales	49
Table 15: Activity 3 Indicators: Agricultural Extension and Production Support Part 3/4- Custom	52
Table 16: Activity 3 Indicators: Agricultural Extension and Production Support Part 4/4- Outreach	53
Table 17: Activity 4 Indicators: Postharvest Aggregation and Processing	54
Table 18: Activity 5 Indicators: Financial Services	55
Table 19: Activity 6 Indicator: Innovation Youth Indicators	58
Table 20: Activity 7 Indicator: Regional Community of Practice Indicators	59
Table 21: Decision Matrix	62
Table 22: Practice Adoption Rates in the Midterm (MTE) Compared to Baseline	73
Table 23: Midterm Evaluation (MTE) Productivity 2023 Kg/Ha Compared to Baseline	73

List of Acronyms

Acronym	Full Term
100K CLIMA	100,000 Strong in the Americas Alliance for Climate Action
AFAPUL	<i>Asociación Fondo Agropecuario de Puerto Libertador</i> Puerto Libertador Agricultural Fund Association
C4D	Colombian Cacao and Complementary Crops for Development
CNCh	<i>Compañía Nacional de Chocolates</i> National Chocolate Company
DAC	Development Assistance Committee
DCED	Donor Committee on Enterprise Development
DR	Dominican Republic
ELN	<i>Ejército de Liberación Nacional</i> National Liberation Army
EPSEA	<i>Entidad Prestadora del Servicio de Extensión Agropecuaria</i> Agricultural Extension Service Providing Entities
FARC	<i>Fuerzas Armadas Revolucionarias de Colombia</i> Revolutionary Armed Forces of Colombia
FEDECACAO	<i>Federación Nacional De Cacaoteros</i> National Federation of Cacao Producers
FFPr	Food for Progress
FGD	Focus group discussion
FINAGRO	<i>El Fondo para el Financiamiento del Sector Agropecuario</i> Fund for Financing the Agricultural Sector
FY	Fiscal Year
GoC	Government of Colombia
ha	Hectares
ISA	<i>Iniciativa de Seguros Agropecuarios</i> Agricultural Insurance Initiative
Kg	Kilograms
KII	Key informant interview
M&E	Monitoring and evaluation
MADR	<i>Ministerio de Agricultura y Desarrollo Rural</i> Ministry of Agriculture and Rural Development
MEL	Monitoring, evaluation, and learning
MT	Metric Tons
MTE	Midterm Evaluation

n	Sample Size
NCC	National Cacao Council
NGO	Non-governmental organization
OECD	Organisation for Economic Co-operation and Development
PO	Producer Organization
POA	Partners of America
RCOP	Regional Community of Practice
TA	Technical assistance
ToC	Theory of change
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USG	United States Government

Executive Summary

The USDA Food for Progress Colombia – Colombian Cacao and Complementary Crops for Development (C4D) project, implemented by Partners of America (POA), began in October 2020 and will run until March 2028 with a total budget of 44.8 million USD.¹ C4D is funded by the United States Department of Agriculture (USDA) as part of its Food for Progress (FFPr) portfolio. Focusing on 14 departments, the project aims to strengthen the cacao value chain and ensure long-term stability in cacao-based farming systems by:

- improving the living incomes of cacao farmers through its support of economically viable diversified farming systems, sustainable agricultural landscapes, and equitable commercialization models;
- increasing the production, aggregation, processing, and commercialization of complementary crops, and
- increasing equitable access to trade for cacao farmers in Colombia.

The objectives of this midterm evaluation are: (i) to assess the quality and effectiveness of C4D service delivery from inception to midpoint, (ii) present evidence of changes and lessons learned using the project level theory of change (ToC) and USDA's Results Framework, and (iii) recommend adjustments.

Methodology

The evaluation team employed a mixed-methods approach, including a statistical sampling procedure to maximize comparability between the baseline and mid-term evaluations. Producers were engaged through surveys and focus group discussions (FGDs), while other entities were explored through key informant interviews (KIIs). This allowed for a nuanced understanding of each group's role and experiences within the value chain. Given the regional complexity and the heterogeneity of the producers involved in the project, the team applied a stratified two-stage cluster sample design. The size of the sampling frame for the midterm evaluation was 4,175 producers, distributed in *veredas* (villages) located in 63 municipalities across 14 departments.

Evaluation Limitations

Certain limitations should be considered when analyzing and interpreting the results of this evaluation, including:

- **Limited Statistical Representation:** The data collection methodology was specifically designed around records of C4D participants and partners, making the conclusions most relevant to this group.
- **Treatment Effects:** The intensity of the treatment proved difficult to track, making it challenging to distinguish the treatment from the overall effect.
- **Differences Between Baseline and Midterm Evaluation Participants:** Although a significant portion of the database used for the midterm evaluation differs from that used in the baseline evaluation, the population base retained common characteristics.
- **Selection Bias:** For the survey, sample bias was minimized through randomization. For the KIIs and FGDs, the study used a purposive sampling approach, selecting participants who had the greatest interaction with the program.

¹ The project's original end date was September 30, 2025. The project was extended after the midterm evaluation research and analysis was complete, and while the document was undergoing finalization.

- **Positive Response Bias:** Some questions about project outcomes might inadvertently lead to a positive response bias, where respondents emphasize favorable results.

Findings

C4D experienced a slow start as it adapted to the impacts of Covid-19. However, since field technicians were deployed in Q4 2022, significant progress has been made. Currently, C4D employs 49 extension technicians who visit over two farms daily to assess farm conditions, provide recommendations, and verify the implementation of recommended technologies and techniques. The project has also seen the development and roll-out of the *cacaograma*: a simple, analog planning tool that presents cacao farmers with the key activities they need to do throughout the year that is coupled with a farm management calendar.

C4D is also implementing marketing and crop diversification strategies to enhance productivity and increase producers' incomes. Preparations for planting plantains are underway, and progress with chili pepper pilots has already been made with sales to *Hugo Restrepo y Cía*, a Colombian supplier for the McIlhenny Tabasco company in Louisiana. Efforts are also underway to increase access to financial services, and an agricultural insurance product has been launched in partnership with *Seguros Bolívar* and FINAGRO. Following an evaluation of 74 producer organizations (POs), 20 have been selected for assistance in the second semester, based on their potential to play a role in the commercialization of cacao.

Relevance

The project has effectively addressed the primary issues facing the cacao value chain: productivity and the lack of technical assistance. The project has engaged in dialogue with a broad range of private, civil society, and public partners; these interviewees have signaled that C4D is well-known and respected by actors working in the Colombian cacao value chain. Partnership agreements with local governments (e.g., Tolima, Caldas, Huila) show C4D's commitments to provide extension services and strengthen producer associations. Regional and local governments are contributing resources to this effort. These government actors have not always been responsive, however. Therefore, C4D often moves forward unilaterally to respect the project's targets and deadlines. If C4D is able to align the major actors around a common vision, there may be an opportunity to leverage the extensive budgetary and in-kind resources available from the Government of Colombia (GoC) and other development partners. This would necessarily include goals related to the domestic, US, and European markets. For now, C4D should consider whether it is possible to simultaneously promote access to the US market and support the development of traceability systems required for the European market.

Effectiveness

In the third year (October 2022-September 2023), overall progress towards the goals was at 46%. For the first half of the fourth year (October 2023- March 2024), progress was already at 40%, with expectations that it will exceed 90% by the year's end. Of the 36 indicators, 16 achieved 100%, one was at 80%, seven were below 25%, and 13 remained at 0% (some of these are end-of-project indicators). On average, 80% of the producers had adopted practices promoted by the project. Only one practice – irrigation – had low adoption due to stated costs.

Efficiency

In the context of a systems change project, C4D has put in place the building blocks to expand productivity at the farm level. It now plans to systematically work its way up the cacao value chain to

expand trade. However, there is an opportunity for the project to articulate its strategy more fully and align all stakeholders and resources around a common vision.

Sustainability

C4D is working on the project's sustainability strategy and forming alliances with national and international buyers. Collaborations with cocoa buyers and initiatives to promote entrepreneurship and employment for young people are also underway. These efforts are supported by funds from national and international development partners. Regarding environmental/climate sustainability, C4D practices are beginning to deliver results. In terms of increasing the likelihood that C4D activities will continue after the close of the project, there are two fundamental issues the C4D project team will want to address. One is how other stakeholders (funders and public and private implementers) can contribute to the continuation of activities. Another is how a regional cluster vision can be built and implemented so that market signals from international buyers are transmitted throughout the value chain along with the existing signals from the domestic market buyers.

Impact

There is a major opportunity for the C4D project to scale its impact by involving local stakeholders and combining initiatives. In the remaining time, C4D should focus on providing services to project stakeholders and establishing systems and avenues for collaboration. These services should be replicated and extended beyond C4D's current operations.

Recommendations

1. Revise Theory of Change

C4D's field team should meet to develop a framework that links activities to outputs and outcomes. This will allow the team to identify how approaches have shifted and why, based on field implementation realities since the development of the project's original theory of change in 2021. To effectively depict, measure, and track interventions supporting value chain strengthening, the evaluation team recommends using the framework outlined on page 79 under the 'Recommendations' section. The single most important piece for C4D to define, for monitoring, evaluation, and learning purposes but also to ensure staff and stakeholder alignment, is where private and public interests meet, and how specific activities could be tailored to support and institutionalize public-private initiatives.

2. How to Cause Significant Change

Both 'market development' and 'systems change' approaches are used in international development to guide project activities toward solving specific problems or achieving desired objectives. C4D's current and planned activities incorporate elements from both frameworks. This is evident in their efforts to increase production and meet domestic demand while planning to engage stakeholders through a regional community of practice and C4D investment vehicles. However, the evaluation team has identified opportunities for C4D to improve its efficiency and sustainability by:

- Preparing to scale its activities with value chain actors to consider international market signals (discussed below), and
- Communicating a 'common vision' to leverage broader stakeholder engagement.

Specifically, there is an opportunity for C4D to use the community of practice to collectively leverage private and public resources to strengthen both cacao and complementary crop value chains. This would consist of organizing regional community of practice workshops to develop a systems approach for each value chain (cacao, Tabasco, and plantain). Additionally, the activity could include the production of 'as is' and 'to be' value chain maps for each crop in each region. These maps would then be populated with data points along the chain, outlining costs, market requirements, and volumes at each level.

3. Communicating Demand Signals Down the Value Chain - Competitive Advantage by Region

To date, C4D through its engagement with the principal domestic buyers of cacao and extension efforts at the producer level, has successfully aligned production to the domestic buyers' demand requirements resulting in improved production standards and cacao yields to serve the domestic market. However, going forward it is projected that the domestic market is nearing its saturation point with domestic demand for cacao expected to level off over the next five years and actually decreasing with volume demand growth forecast to decrease by 5.1% in 2025.ⁱ It is recommended that the C4D team place significant focus on, and allocate resources towards, supporting the cacao value chain actors in each of the project regions to build their capacities in preparation to respond to more sophisticated and stringent international demand requirements (in addition to the requirements from domestic buyers).

4. Orienting Activities Around Current Value Chain Gaps: Infrastructure and Capital Needed for Farm and Transportation

Key informant interviews and surveys showed that producers are interested in scaling their operations through capital equipment such as drying and fermentation station equipment and irrigation systems. It is recommended that C4D provide this assistance in the form of a technical assistance package, enabling producers to acquire the necessary equipment to apply the practices taught during extension services. To ensure sustainability, C4D should consider having producers contribute a small portion of the cost, allowing them to view it as an investment in their farm operations.

1. Introduction

Cacao originated 10-15 centuries BCE in the Amazonian jungle spanning what is now Ecuador, Peru, Colombia, and northern Brazil.ⁱⁱ There, the cacao tree was cultivated and revered by indigenous communities, who used the fruit in rituals and ceremonies and as a form of currency throughout the region.ⁱⁱⁱ With the arrival of Spanish and Portuguese settlers, cultivation expanded along the Caribbean coast, eventually reaching Indonesia, Sri Lanka, and West Africa, among other regions.^{iv} Today, cacao is primarily grown in tropical climates around the equator, with Cote d'Ivoire and Ghana being the world's top producers.^v Colombia's cacao production accounts for 1% of the world's total,^{vi} placing the country tenth globally (see Table 1).

Table 1: Top Ten Cacao Producing and Exporting Countries^{vii viii}

Country	Production in Tons (2022) ^{ix}	Exports in Tons (2022) ^x
Côte d'Ivoire	2.2m	2m
Ghana	1.1m	719k
Indonesia	667k	361k
Ecuador	337k	403k
Cameroon	300k	308k
Nigeria	280k	292k
Brazil	274k	49k
Peru	171k	92k
Dominican Republic (DR)	75.9k	65k
Colombia	62k	11k

Cacao grows in the same tropical climates as coffee.² Colombia's success as a coffee producer and exporter therefore suggests that the country has the potential to become a global cacao powerhouse. Why has this not happened? One reason is the cultivation of coca – the tree whose leaves are used to make cocaine – and the cocaine trade itself, which for decades have been drivers of instability and violence in the country. The 1950s saw the emergence of the Revolutionary Armed Forces of Colombia (FARC) and the National Liberation Army (ELN). These communist guerilla groups ideologically opposed the privatization of natural resources and claimed to represent the rural poor in their struggle against Colombia's wealthy elite. Both FARC and ELN relied on the cocaine trade to fund their operations,^{xi} physically or economically forcing farmers to grow the necessary coca.^{xii} With the rise of the drug cartels in the late 1970s, the country's stability deteriorated even further.^{xiii} Millions were internally displaced or sought refugee status abroad.^{xiv}

In the 1990s the Colombian government acknowledged the severe humanitarian challenges posed by this violence and armed conflict. Eventually, repeated human rights violations led the United Nations to support the Colombian government in conducting ground operations against the cartels.^{xv} In the early 2000s, Plan Colombia was initiated with substantial funding from the United States. This military aid program combined counter-insurgency, anti-terrorist, and anti-narcotics efforts. However, this strategy

² Although they are grown in the same climates, coffee is grown at higher altitudes (>1400 meters) than cacao (<1250 meters).

has been ineffective in curbing coca production and has even provoked violence between armed groups and the military.^{xvi}

More recently, Gustavo Petro, Colombia's president since 2022, has been pursuing high level drug traffickers rather than small scale farmers. This strategy differs from Petro's predecessors by focusing on voluntary rather than forced eradication, providing incentives and subsidies to coca farmers to switch to legal crops such as cacao.^{xvii} The strategy is also developmental, investing in infrastructure and education for rural regions and improving overall living conditions in these more remote areas.^{xviii} Although neither strategy is deemed to have yet succeeded in addressing the problem at scale, the market is presenting an opportunity: International prices for cacao have been rising and many farmers that were previously growing illegal coca plants have now switched to cacao.^{xix}

There are, in addition to the historical challenges mentioned above, further practical factors hindering the expansion of the cacao sector:

- Low cacao tree density and slow growth: The average tree density on traditional farms ranges from 400 to 800 trees per hectare, falling short of the 1,100 trees per hectare (ha) recommended for optimal production. Additionally, the typical cacao tree is over 20 years old, which exacerbates productivity issues (old trees produce less and are more vulnerable to disease).^{xx xxi} Meanwhile it can take a year for a tree to produce enough raw cacao for just half a pound of chocolate.^{xxii}
- Lack of price incentives or guarantees for quality: As most buyers and traders assess crops based on preferred qualities in the domestic market, producers are not guaranteed to receive price premiums for higher quality product.^{xxiii}
- Suboptimal compliance with international market and technical requirements (e.g., certification): Only 1% of the national harvest follows standards such as Fair Trade.^{xxiv} Obstacles to certification for farmers include costs related to fertilization, additional labor, and investment in post-harvest infrastructure for fermentation, drying, and storage. Contracting the services of independent certifying bodies is also an administrative burden. Finally, financial incentives for certification are weak, since 100% of production must be certified, while the price premium is often only received for a portion of production.³
- Limited access to credit: Stemming from the absence of a clear land and property rights registries in rural areas, a lack of credit means that farmers are unlikely to invest in production infrastructure or machinery.^{xxv} According to the latest National Agriculture Survey conducted in 2014, 84% of the areas cultivated lack production infrastructure, and 83% lack machinery or technical assistance.^{xxvi}
- Inadequate transportation infrastructure in rural areas: Poor road conditions and high access costs hinder the timely and cost-effective movement of cacao from remote areas.^{xxvii} This issue stems from the armed conflict which prompted many people to relocate to urban areas. Many cacao plantations were abandoned, and rural areas forgotten, leaving subpar utilities and road access for those who remained. These areas have not received technical assistance (TA) for many years and are more dangerous for travel.^{xxviii}

A mixed blessing among these challenges is that cacao is a staple in the Colombian diet: A significant portion of the country's production is consumed domestically. This includes the cocoa (processed cacao) used in mass-market chocolate bars and in the traditional *chocolate de mesa*, a type of chocolate used

³ Depending on the standard, between 20% and 60% of cocoa that is produced as certified does not get sold as certified. <https://voicenetwork.cc/wp-content/uploads/2019/07/2018-Cocoa-Barometer.pdf>

for *chocolate de taza* (hot chocolate).^{xxxix} On average, Colombians drink 300 cups of *chocolate de taza* per person per year.^{xxx} Made from bars of bitter cacao liqueur, it is high in fat and serves as the main source of energy for farm workers.⁴ This robust domestic demand helps support prices for Colombian producers, providing a ready market for their crops even when international cacao prices are low. Consequently, producers and processors are incentivized to focus on the domestic market rather than export opportunities alone. As a result, though exports are growing, the domestic market still absorbs most of the national cacao production.^{xxxi} This sets the country apart from cacao-exporting countries that depend heavily on international markets.⁵

By tapping into international demand, there is the potential to expand cacao cultivation onto 2.8 million hectares of suitable Colombian land.^{xxxii}⁶ This would, of course, lead to a rapid growth in trade. Depending on how this expansion were to take place, the cacao product profile would change, given that buyers in different locations demand different types of processing and use cacao for different purposes. Against this backdrop, this evaluation report assesses the efforts of the USDA Food for Progress Colombia – Colombian Cacao and Complementary Crops for Development (C4D) project to increase productivity and expand trade in the cacao value chain.

2. Evaluation Objectives

The objectives of this midterm evaluation are (i) to assess the quality and effectiveness of C4D’s service delivery from inception to midpoint, (ii) present evidence of changes and lessons learned using the project level ToC and USDA’s Results Framework, and (iii) recommend adjustments.

3. C4D Project Description

The C4D project, implemented by Partners of America (POA), began in October 2020 and will run until March 2028 with a total budget of 44.8 million USD.⁷ C4D is funded by the United States Department of Agriculture (USDA) as part of its Food for Progress (FFPr) portfolio. Focusing on 14 departments, the project aims to strengthen the cacao value chain and ensure long-term stability in cacao-based farming systems by:

- improving the living incomes of cacao farmers through its support of economically viable diversified farming systems, sustainable agricultural landscapes, and equitable commercialization models;
- increasing the production, aggregation, processing, and commercialization of complementary crops, and
- increasing equitable access to trade for cacao farmers in Colombia.

⁴ This is different from cocoa powder consumed in the United States, which is low or no fat and contains sugar and vanillin.

⁵ According to USAID’s report “An analysis of the supply chain of cacao in Colombia,” Colombia’s neighbor Ecuador has low domestic demand due to low consumption of chocolate among its population. This is also supported by Ecuador’s export numbers depicted on Table 1.

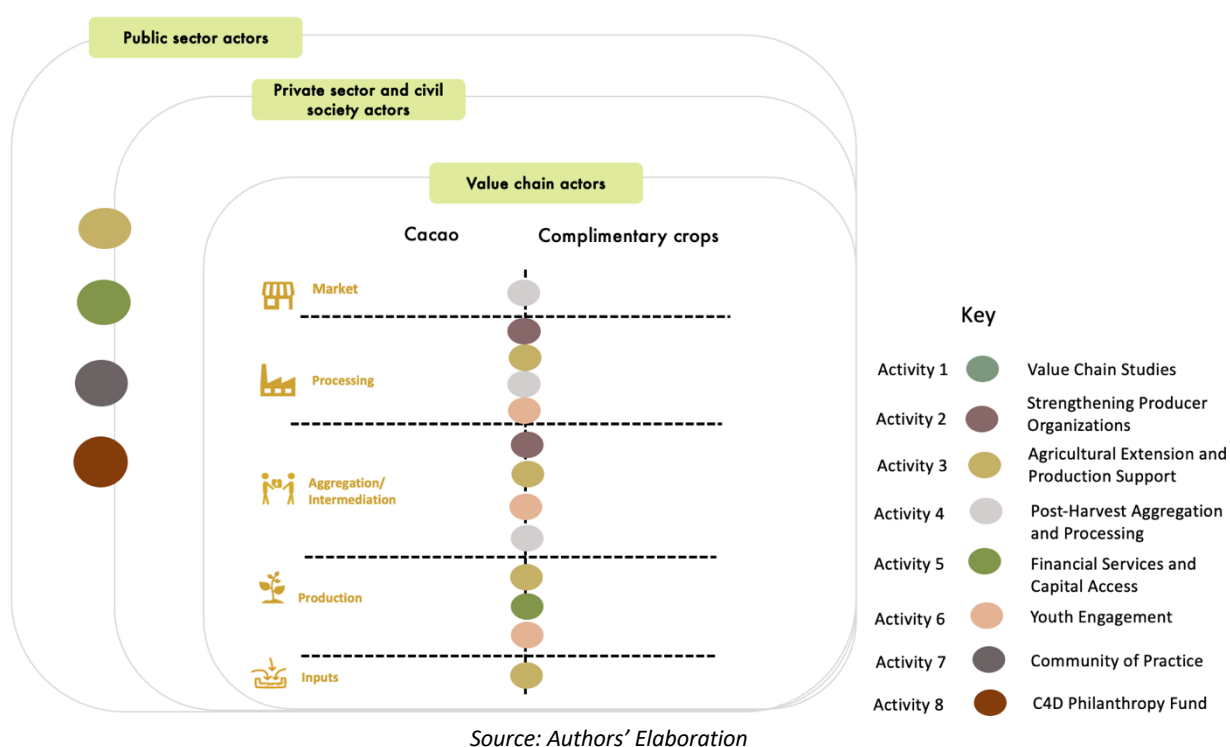
⁶ As of 2021, only 194,428 hectares were under cultivation.

⁷ The project’s original end date was September 30, 2025. The project was extended after the midterm evaluation research and analysis was complete, and while the document was undergoing finalization.

As described in the introduction, C4D project objectives are fully aligned with the Colombian context. Given the currently high international prices for cacao, producers are eager to make changes that will boost their income, such as trying new practices on their farms and better organizing their marketing process at the community level. If C4D is successful, the overall volume of cacao production in Colombia will increase. This will enhance the reliability of supply for both domestic and international buyers. Additionally, C4D aims to ensure that this increased production leads to higher incomes for all producers.

Cacao is a long-cycle crop, meaning revenues are few and far between. Under traditional pricing conditions, farmers cannot earn a living wage growing only cacao. For this reason, C4D is working to incorporate complementary crops (e.g., peppers, plantains) that can be harvested more frequently and provide cacao trees with shade.⁸ The project is targeting 5,500 cacao producers, aiming to diversify their cacao-based cropping systems with complementary crops, achieve economies of scale, and open new market opportunities. C4D's approach includes three workstreams: (1) working directly at the production level to improve yield and production; (2) working with the private sector to enhance the quality and accessibility of service provision to the targeted value chains, and (3) working with public sector actors to set up collaboration frameworks in place for technology validation and value chain-strengthening initiatives.

Figure 1. Mapping Project Activities by Value Chain Level and Actors



These workstreams are further divided into eight activities, on which C4D reports progress to USDA. Figure 1 shows the eight activities according to the type of actor C4D is partnering with to implement

⁸ This is a valid strategy even when cacao is selling at higher prices, ensuring farmers are resilient in the face of boom-and-bust commodity cycles.

them. Most activities are implemented with value chain actors including producers, associations, and service providers. These are shown in the center of the graphic by value chain level, beginning with inputs and following the product through its stages of transformation until final sale (i.e., production, aggregation, processing, and market). This simplified value chain illustration will be used throughout the report to indicate the function of the value chains where C4D is working. As can be seen, many activities are implemented with value chain actors, and several are implemented with civil society and the public sector. Following are concise descriptions of each activity including updates on completed actions and planned initiatives.

Activity 1: Value Chain Studies

This activity includes value chain and other studies in the cacao and complementary crop sectors. The research provides information necessary for coordinating value chain actors, making strategic investments in promising value chains, and ensuring producers can attain sustainable living incomes.

Activity 2: Strengthening Producer Organizations

This activity includes strengthening the management and commercial capabilities of producer associations. Seventy-four organizations have been selected in partnership with *Fundación Julio y Astrida Carriosa*, known as *IC Fundación*. This Colombian non-governmental organization (NGO) strives to strengthen associative activities and improve the well-being and livelihoods of vulnerable populations. To date, C4D and *IC Fundación* have conducted a diagnostic assessment to identify the strengths and weaknesses of target organizations and design support packages based on this information.

Activity 3: Agriculture Extension and Production Support

Extension is C4D's biggest area of focus. The project has hired 49 extensionists, four of whom have their salaries covered by *Fundación Nutresa*, a local partner. The extensionists provide one-on-one support to producers, meet with local associations, and organize demonstration plots for complementary crops. C4D tracks each visit through a data collection tool⁹ using tablets to gather detailed data. This information contributes in the short term to project reporting, and also to a longer-term effort on the part of C4D as the project builds a business intelligence database allowing for tailored extension services by region and farmer segment.

Activity 4: Post-Harvest Aggregation and Processing

C4D is supporting fermentation stations and appropriate protocols to meet the demand of cacao sensory profiles in the selected departments. The project is also supporting cacao organizations participating in the National *Cacao de Oro* (Golden Cacao) Contest to allow them the opportunity to assess their "fine" cacao samples through laboratory and flavor tests.

The project also plans to provide training and support to local cacao tasters. By improving the abilities of these tasters, the project aims to ensure that cacao produce aligns well with the preferences and standards of international buyers. Ultimately, this effort seeks to enhance the competitiveness and marketability of cacao in the global and domestic marketplace.

Activity 5: Financial Services and Capital Access

To date C4D has collaborated with *Seguros Bolívar*, a private insurance company, to launch *Cacao Seguro*. This crop insurance initiative serves as a risk-transfer mechanism to mitigate the impact of

⁹ The C4D team designed the templates to collect data using KoboToolbox.

climatic events, in this case excess or lack of rainfall, which adversely affects cacao production. *Cacao Seguro* is funded through a cost sharing mechanism between C4D and the Government of Colombia's (GoC's) Agricultural Insurance Initiative (ISA), where ISA is covering 80%-95% of the insurance premium and C4D is covering the remainder. C4D has stated that it plans to reduce its participation in this subsidy throughout the life of the project.

Activity 6: Youth Engagement

Youth engagement activities are planned at three levels in the targeted value chains: production, aggregation, and processing. POA is aiming to create opportunities for youth to engage in cacao and complementary crop value chains through international exchanges, student study trips, niche value chain research grants, and agribusiness start-up grants. To date, the project has conducted a survey of youth and organized some activities for youth to visit national conferences. C4D will fund youth opportunities for presenting business plans and research projects.

Activity 7: Community of Practice

C4D is working with private- and public-sector stakeholders to establish a Regional Community of Practice (RCOP). To date, this activity has consisted of hosting annual summits with national and regional stakeholders, and publishing opportunities, solicitations, and updates on project progress on a website. In July 2023, POA hosted the inaugural Circle of Knowledge for Cacao and Complementary Crops, marking the launch of the RCOP initiative. This one-day conference, held at the Agroexpo trade fair, brought together key stakeholders from the cacao sector and facilitated knowledge exchange.

Activity 8: C4D Philanthropy Fund (also referred in this report as C4D investment vehicles)

C4D has been working with a local consulting firm to assess the viability of setting up an impact investment vehicle. The aim is to ensure continued investment in cacao and complementary crops after the close of the project. This activity consists of building new relationships with Colombian, international, regional, and public- and private-sector donors to raise US\$4 million in seed funding. This will be in addition to the USDA's US\$3 million that has already been set aside for the vehicle. Updates on this activity are provided in the efficiency section.

4. Methodology

Research Questions

Applying the principles outlined in the USDA Monitoring and Evaluation Policy, the evaluation team answered questions organized by relevance, effectiveness, efficiency, sustainability, and impact¹⁰:

Relevance:

- To what extent is C4D aligned with GoC priorities, policies, and strategies, including the national cacao value chain strategy?
- To what extent is C4D aligned with USDA and United States Government (USG) development goals, objectives, and strategies?

¹⁰ Questions are drawn from page 15 of the USDA Monitoring and Evaluation Policy, which can be accessed at <https://www.fas.usda.gov/programs/resources/monitoring-and-evaluation-policy>. "[The Policy] draws significantly from guidance established by...the Organization for Economic Cooperation's (OECD) Development Assistance Committee (DAC)," p. 3. The original DAC 'evaluation criteria' can be found at: <https://web-archive.oecd.org/temp/2024-05-13/81829-daccriteriaforevaluatingdevelopmentassistance.htm>.

Effectiveness:

- To what extent has C4D increased the knowledge of cacao producers in improved techniques, technologies, and management for diversified production systems?
- Have C4D activities led to effective linkages between Colombian producers and processors, and Colombian, regional, and global buyers and suppliers?
- To what extent has C4D strengthened producer organizations, post-harvest aggregation and processing, and extension services?
- Is C4D on track to achieve the specific targets and results established?

Efficiency:

- To what extent have C4D investments in improving post-harvest infrastructure led to improved aggregation and processing for cacao and complementary crops?
- How have investments in establishing the regional community of practice and philanthropy fund led to increased research, technology validation, and rural extension?

Sustainability:

- To what extent has C4D helped producers sustainably diversify their cacao-based farms, using a landscape approach?
- To what extent will the C4D philanthropy fund sustain investments in advancing cacao and complementary crop value chains?
- In what ways, positive and negative, has C4D addressed biodiversity in target regions?

Impact:

- To what extent have beneficiaries increased their incomes as a result of C4D?
- To what extent has C4D boosted the market potential of complementary crops?

The full evaluation matrix is available in Annex 1.

Survey Sampling Design

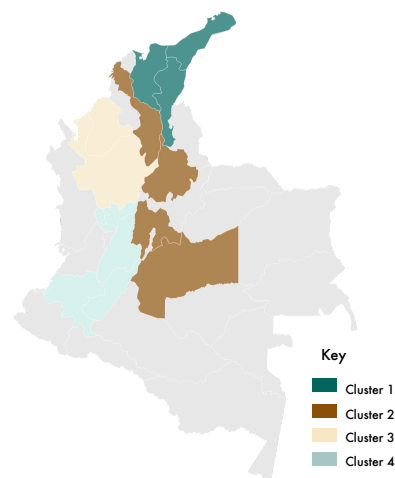
Producers were engaged through surveys and focus group discussions (FGDs), other stakeholders through key informant interviews (KIIs). This allowed for a nuanced understanding of each group's role and experiences within the value chain.

Surveys were administered to cacao producers who have directly participated in project activities. They were identified from the project's digital database records. Each producer selected from project records had to meet two conditions: (i) all should be fully identifiable (at least full and clear name, phone, and address), and (ii) all should have valid contact information. The midterm evaluation team employed a statistical sampling procedure that met the baseline robustness and universe inference to maximize comparability between the sampled producers. This allowed for a pre-post design. Given the regional complexity and the heterogeneity of the producers in the 14 departments, the team applied a stratified two-stage cluster sample design.

The evaluation team formed four clusters composed of departments in close proximity to each other. This stratification had two advantages: (i) it allowed the team to conduct analysis at the regional level, and (ii) it organized the logistical planning of fieldwork. Table 2 shows the departments that were grouped in each cluster.

Table 2: Regional Clusters

Region	Departments
Cluster 1	Cesar, Magdalena, La Guajira
Cluster 2	Bolívar, Santander, Meta, Norte de Santander, Cundinamarca
Cluster 3	Antioquia and Córdoba
Cluster 4 ¹¹	Tolima, Huila, Caldas, Risaralda



Source: Authors' Elaboration

The size of the sampling frame for this midterm evaluation was 4,175 producers, distributed in *veredas* located in 63 municipalities of the 14 departments in which C4D works. The cacao producer represented the unit of observation and the unit of analysis. The evaluation team took the following steps to conduct the stratified two-stage cluster sample design.

Stage 0: Sampling Frame Cleaning. Upon receipt of the project's database of producers from the C4D monitoring and evaluation (M&E) team, the midterm evaluation team conducted a quality control analysis to ensure all required fields (contact information, location, etc.) were properly filled in.

Table 3: Number of Eligible Producers by Cluster and Department

Cluster	Departments	Number of Eligible Producers
1	Cesar, La Guajira, Magdalena	499
2	Bolívar, Cundinamarca, Meta, Santander	679
3	Antioquia, Córdoba	1,083
4	Caldas, Huila, Risaralda, Tolima	1,914
Total		4,175

Source: Authors' Elaboration

¹¹ Cluster 4 encompasses the department of Cauca. During an initial meeting with project staff, the evaluation team was told that this department has had very few activities and is currently experiencing security concerns. Consequently, the evaluation team and C4D decided to exclude producers in this region from the sample selection for the surveys. However, it was agreed that the team could conduct FGDs with producers in the region to gather baseline data for the final evaluation.

Stage 1: Selection of Municipalities. To select the municipalities in each geographic region, the team used a sampling technique called “probability proportional to size.” This is without counting the replacement sample, which was additional. The size of each municipality was determined by the number of producers located within it, as shown in the database. This means that municipalities with more cacao producers had a higher probability of being selected. Within each cluster, the municipalities were selected using simple random sampling techniques. To draw the random sample, the team used the random value function in Excel. This sampling approach ensured that municipalities with larger cacao producer populations were more likely to be included, while still allowing for random selection within each cluster to maintain statistical validity.

Table 4: Selection of Municipalities

Cluster	Department	Municipality	Number of Producers (Universe)
1	Cesar	Valledupar	33
1	Cesar	Curumani	10
1	Cesar	La Paz	107
2	Bolivar	Santa Rosa Del Sur	212
2	Meta	Vistahermosa	103
2	Santander	Rionegro	127
3	Antioquia	San Francisco	28
3	Antioquia	Vegachi	76
3	Cordoba	Tierralta	441
3	Cordoba	Valencia	182
4	Caldas	Samana	128
4	Huila	Gigante	75
4	Huila	Rivera	106
4	Risaralda	Marsella	28
4	Tolima	Chaparral	319
4	Tolima	San Sebastian De Mariquita	36
Total			2,011

Stage 2: Selection of *Veredas* within the Municipality. Sampling of *veredas* within the municipality was also carried out with probability proportional to size without replacement. The variable that defined size was the number of producers present in each *vereda*. Within each *vereda*, a census of available cacao producers was conducted.

Table 5: Selection of Veredas within the Municipality

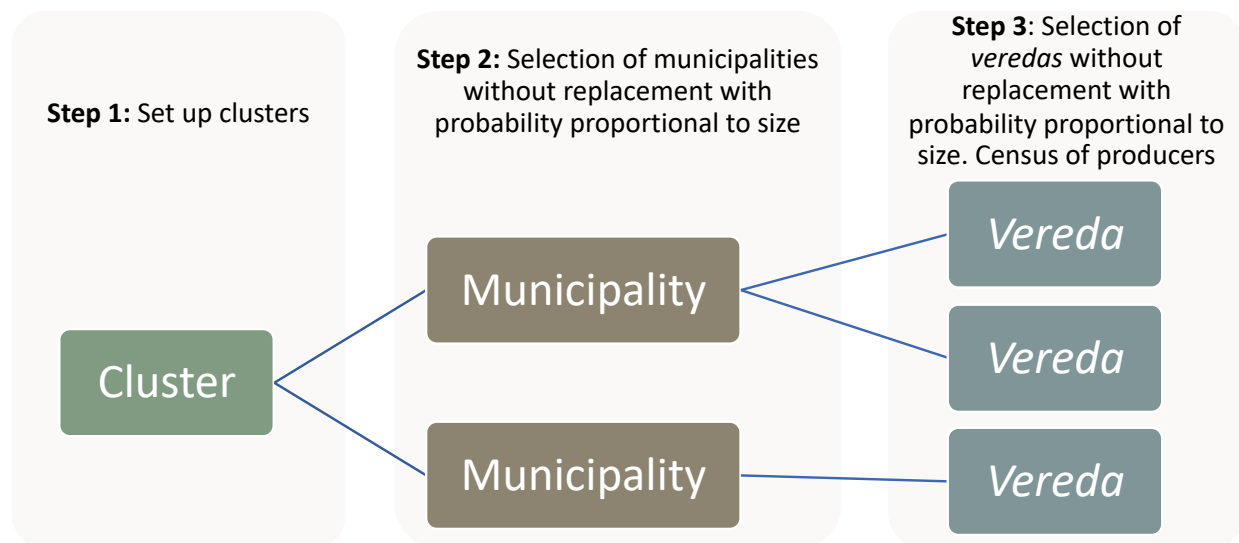
Cluster	Department	Municipality	Vereda	# of Producers	Vereda	# of Producers
1	Cesar	Curumani	Anime Grande	8	Cuatro De Enero	2
1	Cesar	La Paz	Los Encantos	68	El Milagro	13
1	Cesar	Valledupar	Cabecera Municipal	22	Azucar Buena	11
2	Bolivar	Santa Rosa Del Sur	San Alberto	24	Villa Flor	16
2	Cesar	Valledupar	La Esperanza	8	San Isidro I	6
2	Cesar	Valledupar	Sabana Alta	4	Vaiben	2
2	Meta	Vistahermosa	Alto Guapaya	30	Alto Canaguay	9
2	Bolivar	Santa Rosa Del Sur	La Reforma	5	Guayana	12
2	Santander	Rionegro	Churricas	8	La Cristalina	4
2	Bolivar	Santa Rosa Del Sur	Portachuelo	2		
3	Antioquia	San Francisco	La Maravilla	7	El Tagual	2
3	Bolivar	Vegachi	El Churu	13	La Cristalina	6
3	Meta	Vistahermosa	La Gallinera	4	Manantiales	28
3	Cordoba	Tierralta	Las Delicias	14	Murmullo	12
3	Meta	Vistahermosa	Carrisola	9	Oscurana	7
3	Santander	Rionegro	Guarumal	5	Isla De Venezuela	4
3	Santander	Rionegro	San Rafael	3	El Puerto	1
3	Santander	Valencia	Osorio	15	Camellon Callejas	10
3	Santander	Rionegro	El Brillante Piru	6	El Reposo	3
3	Antioquia	San Francisco	El Zahino	1		
4	Caldas	Samana	El Tesoro	30	Riachuelo	18
4	Antioquia	Vegachi	La Mensajeria	12	Tulia	5
4	Antioquia	Vegachi	Santamaria	1		
4	Huila	Gigante	El Tendido	9	La Guandinoso	29
4	Cordoba	Rivera	El Guadual	11	Salado	8
4	Cordoba	Tierralta	Los Medios	6	Loma Larga	1
4	Risaralda	Marsella	La Argentina	12	El Rayo	2
4	Tolima	Chaparral	Maito	35	El Paraiso	21
4	Cordoba	Tierralta	La Siberia	15	La Cimarrona Baja	13
4	Cordoba	Tierralta	Lagunilla	11	Yaguara	8
4	Cordoba	Tierralta	Filandia	5	Potrero De Lugo Parte Baja	4
4	Cordoba	Tierralta	Chontaduro	1		
4	Cordoba	San Sebastian De Mariquita	La Mesa	5		
Subtotal				409		257
Total				666		

Source: Authors' Elaboration

Survey topics included the key aspects of cacao production, sales, market conditions, and technical assistance. These topics were essential to understand both the industry's challenges and opportunities and C4D's interventions. Data was collected through structured in-person surveys conducted at the farms and/or strategically chosen locations such as training venues or municipal head offices. From the selected sample, the midterm evaluation team conducted surveys at the farms of 50 producers. These surveys included an additional module examining observed practices.

The sample selection included observations representing the sampling frame (i.e., C4D's universe). The sample was randomly selected, ensuring that all individuals had a probability greater than zero of being chosen. Therefore, the proportion of different types of individuals in the sample was likely to be similar to that in the C4D universe. This enabled the researchers to segment the data according to categorical variables (i.e., vulnerable, potential, or commercial producers).

Figure 2: Sampling Design Steps



Source: Authors' Elaboration

This statistical unit selection strategy aims to maximize statistical precision. The mathematical formula to calculate the sample size (n) within each cluster is as follows:

$$n \geq \frac{Np(1-p)def}{N(CVe * p)^2 + p(1-p)def}$$

In the formula, N is the size of the target population, p is the proportion to be estimated (it is assumed to be close to 0.8), CVe is the estimated Coefficient of Variation and def is the design effect. The design effect is assumed to be 1.5 (1.0 is the reference value) because two-stage cluster sampling increases the variance of the estimator with respect to the standard design: simple random sampling.

Table 6: Sampling Design Steps

Cluster	Department	Number of Eligible Producers	Number of Municipalities	Number of Veredas	Sample				Subsample		
					Sample Size	Number of Municipalities	Number of Veredas	Oversample for Fieldwork	Number of Municipalities	Number of Veredas	Number of Producers
1	Cesar, La Guajira, Magdalena	499	10	42	102	3	6	124	2	4	11
2	Bolívar, Cundinamarca, Meta, Santander	679	7	113	116	3	13	130	2	7	11
3	Antioquia, Córdoba	1,083	13	245	146	4	19	150	2	5	11
4	Caldas, Huila, Risaralda, Tolima	1,914	33	403	196	6	23	262	3	8	17
Total		4,175	63	803	560	16	61	666	9	24	50

Source: Authors' Elaboration

Purposive Sampling for Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs)

Purposive sampling is a non-probability method where the researchers intentionally select homogenous individuals or groups with specific characteristics relevant to the research questions. The approach enables researchers to collect qualitative data that could complement and triangulate the quantitative findings. In this case, the evaluation team utilized purposive sampling to conduct KIIs and FGDs with key project stakeholders (producer organizations, input suppliers, government counterparts, etc.) and project staff. Interview and facilitator guides were designed to elicit insights from these stakeholders on the challenges and opportunities related to improving the quality and accessibility of extension and financial services and increasing productivity in the cacao value chain.

Focus Group Discussions (FGDs)

The FGD technique is based on the concepts of social groups and group dynamics. It makes it possible to produce a large amount of qualitative information in a relatively short period of time. The objective of the FGDs was to gain insight into the impacts of C4D's interventions by encouraging the participants to share and discuss their opinions and feelings, how they have been affected, what successes there have been, and what should be changed or modified. The two target groups proposed for the FGDs were: (i) producers, and (ii) extension agents. Since it is a key principle in social science research that focus groups are homogenous, each group had no more than 12 members in each session, and the evaluation team identified homogenous characteristics to schedule the discussions with each stakeholder group. This approach allowed the researchers to gain further insights on service provision, practices, the enabling environment, and any challenges that occurred during project implementation. Some of the

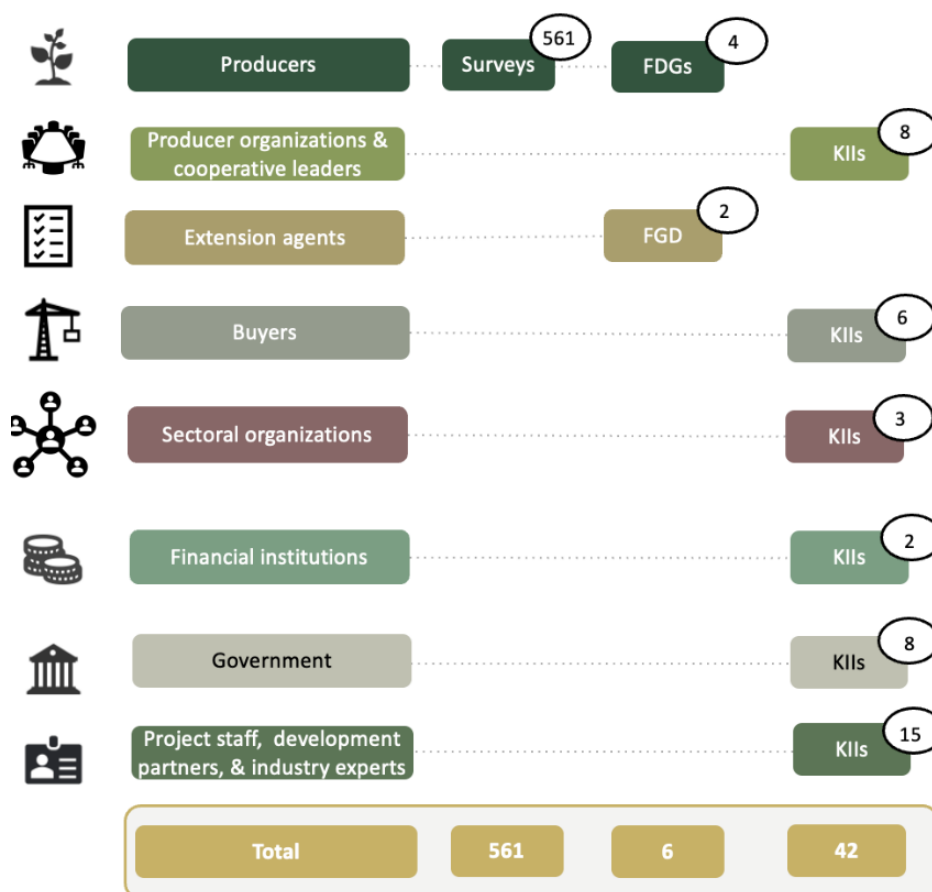
focus group participants were drawn from the randomly selected survey sample, while others were selected through purposive sampling.

Key Informant Interviews (KIIs)

The KII research technique is typically used to gain insights into key contextual issues, including stakeholder dynamics, and to better understand the challenges, successes, and best practices related to a specific sector or project. In this case, KIIs were conducted with pre-identified stakeholders selected for their expertise and relevance to the research questions. The first round of KIIs was selected from a list proposed by the evaluation team. The list was sourced from C4D's field team. Additional stakeholders were identified during the initial three-day kick-off session. Following the session, the sampling "snowballed," i.e., as the round continued, the evaluation team accepted further suggestions for interview scheduling from project staff and the interviewees themselves.

Figure 3 shows the primary data collected per relevant stakeholder group of the project. The evaluation team conducted surveys with 561 cacao producers, and held four FDGs with producers, two FDGs with extension agents, and 42 KIIs with individual stakeholders in the value chain and public sector officials.

Figure 3. Data Collection Approach



Source: Authors' Elaboration

External Factors that Assisted the Team with Data Collection

- a. POA support: C4D staff who form part of the core POA project team in Bogotá worked closely with the evaluation field team in order to: (i) socialize the study and introduce the evaluation team to the project participants by making first contact with the participants once *vereda*-selection was complete; (ii) support the team as they scheduled meetings with project participants; and (iii) assist enumerators with logistics and travel. In case any issues were experienced in the field, it was crucial that the extension agents were prepared to assist the evaluation team in finding or updating farmer contact information. To facilitate this, the evaluation team held a brief introductory meeting with extension agents prior to the fieldwork. During this meeting, the team outlined the study's objectives and sought the agents' support in building trust with the producers.
- b. The data collection company used its security team, Pilgrim, for support in the field and to provide information on safety on the ground. If there were safety issues, it was necessary to leave the area and look for a replacement. This is essential in rural studies in Colombia.

Quality Assurance

To ensure the highest quality of primary data, quality assurance processes were conducted before, during, and after data collection. This included meticulous questionnaire design and programming to mitigate and correct errors as well as verifying data on a rolling basis to minimize errors in the final database. The following describes the practices the evaluation team undertook to ensure data accuracy and quality.

Data Accuracy

- The evaluation team conducted comprehensive training sessions with data collectors and supervisors to review each tool's questions in detail and underscore the significance of data accuracy during data collection. The importance of providing truthful information for the study was highlighted, and participants were informed about the real-time monitoring of their work.
- The evaluation team used mobile devices to conduct surveys, leveraging their ability to capture location coordinates via GPS at each survey location. This enabled real-time monitoring of survey administrators' activities, allowing for detection of any inconsistent behavior or incomplete data.

Data Cleansing, Review, and Encoding

The evaluation team conducted a data cleaning exercise. This involved verifying outliers (i.e., atypical data) through re-contact with the informant, primarily via telephone. Outliers were identified by statistical software, which established maximum, minimum, and average values, and by examining charts displaying points deviating from the trend. Upon completion of fieldwork, surveys underwent a data quality review, encoding, and a data entry process following a specific protocol. Qualitative interviews were analyzed using applications such as Dedoose and Microsoft Excel. Quotes were organized by topic/theme through the use of a codebook.

Data Processing

The team conducted a data consistency check using a statistical processing program for a subset of variables. This process verified data consistency for selected questions, ensuring information comparability for subsequent result analysis.

Evaluation Limitations

From a data collection perspective, it is important to highlight the rigorous approach used in conducting the research. However, certain limitations should be considered when analyzing and interpreting the results of this evaluation, including:

Limited Statistical Representation

The analysis and conclusions derived from this survey are representative only of the sampled population and do not reflect the entire cacao sector or regions within Colombia. However, they provide a useful set of observations considering the project's context. This limitation arises because the data collection methodology was specifically designed around records of C4D participants and partners, making the conclusions most relevant to this group. To address the limited statistical representation, the team has supplemented the primary data with secondary research to provide a more robust perspective.

Treatment Effects

In many cases, the intensity of the treatment proved difficult to track, making it challenging to distinguish the treatment from the overall effect, considering structural variables as well as several other shocks. As a result, the cause-effect model remains more theoretical than empirical, with conclusions supported by qualitative description as well as quantitative measurements interpreted by a pool of experts. This limitation of the study stems from the evaluation design.

Differences Between Baseline and Midterm Evaluation Participants

A significant portion of the database used for the midterm evaluation differs from that used in the baseline evaluation due to participant turnover over time. This reduction in the population base is common in these studies of this nature and did not materially affect the overall conclusions. The population base retained common characteristics, ensuring consistency and relevance in the evaluation outcomes.

Selection Bias

For the survey, sample bias was minimized through randomization. For the KIIs and FGDs, the study used a purposive sampling approach, selecting participants who had the greatest interaction with the program. This introduces a self-selection bias, as individuals who participated in the program did so based on their own interest. The qualitative analysis was based solely on participants' perceptions and the study did not include a comparison group or any elements of experimental design.

Positive Response Bias

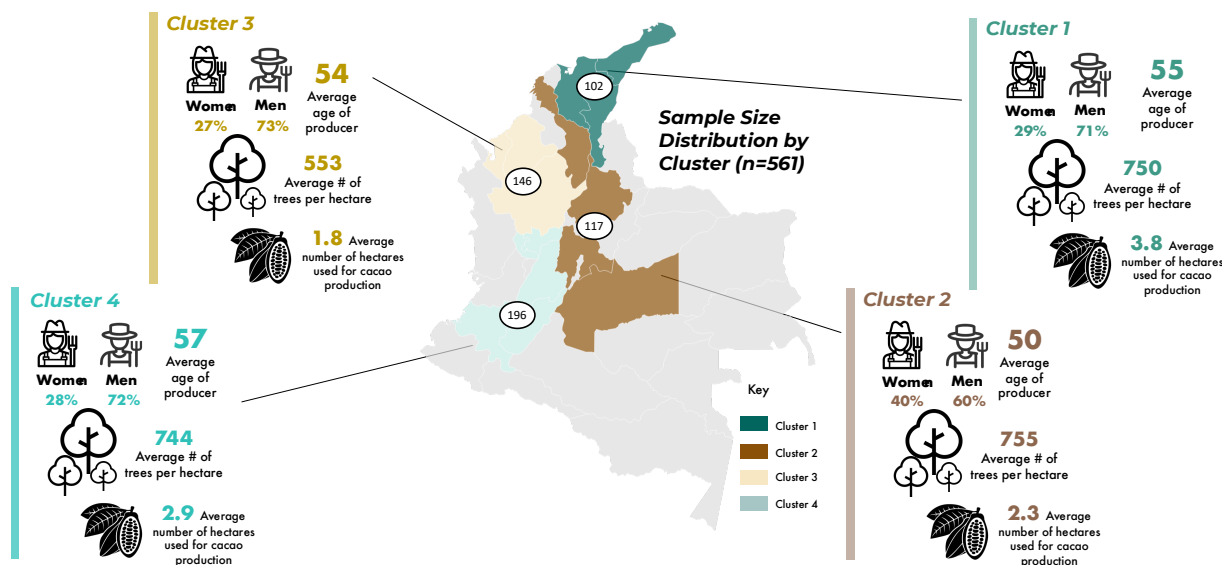
Some questions about project outcomes might inadvertently lead to a positive response bias, where respondents emphasize favorable results. This tendency could be heightened if beneficiaries believe that giving positive feedback will increase their chances of receiving future assistance. The evaluation team did its best to mitigate this by framing questions in ways which were as objective as possible, openly requesting feedback that could make the project better, and cross-referencing responses with data from other sources.

5. Producer Survey Respondent Profile

This section summarizes key information from survey responses obtained from 561 producers. It offers demographic and other information about C4D's target population of producers, detailing the average age of the producers, the typical hectare size with cacao trees planted, and their current productivity status. The subsequent sections will build on these demographic insights to explore the relationships between these factors and productivity.

As shown in the 'Methodology' section of this report, data collection with producers was conducted in four clusters, each representing a geographic region. Figure 4 shows Cluster 1 consisted of 102 producers from Cesar department; Cluster 2 consisted of 117 producers from Meta, Santander, and Bolivar departments; Cluster 3 consisted of 146 producers from Cordoba and Antioquia departments; and Cluster 4 consisted of 196 producers from Huila, Caldas, Risaralda, and Tolima departments.

Figure 4: Key Statistics by Cluster

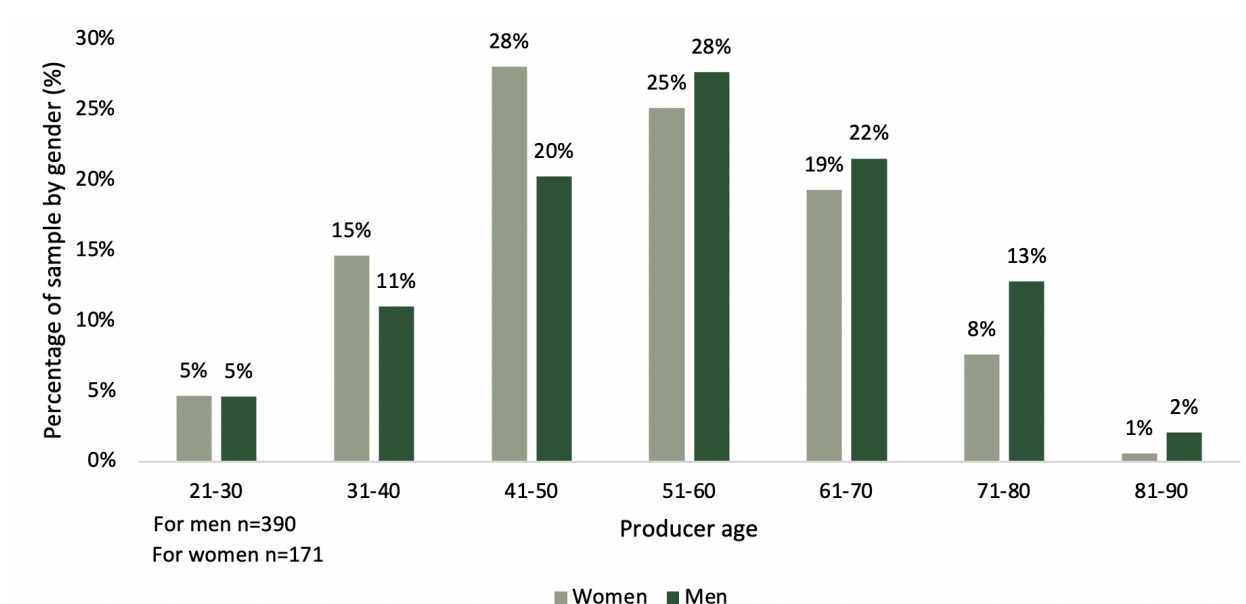


Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia - C4D project, May 2024 to June 2024

Gender: Figure 4 highlights that in every cluster, the majority of producers were male. However, Cluster 2 had the most balanced gender distribution.

Age: The average age of producers in the sample was 54 years old, with Cluster 4 having the highest average producer age at 57 years. Figure 5 provides a breakdown of producer age by gender, revealing that 67% of all producers surveyed were between 44 and 73 years old, with 61% of the population being over 50 years old. There were slightly more younger women in the sample than younger men. The distribution of producer ages indicates that a significant portion of the cacao-producing population is aging, with over 60% of producers being above 50 years old. This suggests a potential challenge for long-term sustainability and highlights the importance of C4D engaging younger generations in cacao production to ensure the continuity and growth of the industry.

Figure 5: Producer Age by Gender



Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia - C4D project, May 2024 to June 2024

Number of cacao trees per hectare: The Ministry of Agriculture of Colombia’s Fund for Financing the Agricultural Sector (Finagro) recommends planting cacao in rows spaced 3 meters apart, with a density of around 950 to 1,330 trees per hectare for optimal production. Figure 4 shows that Cluster 1 and Cluster 2 had the highest average tree densities per hectare, ranging from 750 to 755 trees per hectare, respectively. Notably, three out of the four clusters had an average density higher than Colombia’s average of 700 trees per hectare in 2021.^{xxxiii} These findings align with secondary research, which indicates significant investment from the public sector and international development partners in expanding cacao cultivation as an alternative to illicit coca production. Between 2000 and 2015, the area harvested nearly doubled, growing from 83,138 hectares to 165,006 hectares—a 98.5% increase.^{xxxiv}

Hectares used for cacao cultivation: The C4D population primarily consists of micro and small cacao farmers. Among the 561 producers, 46% had farms of less than five hectares, and 69% had less than 10 hectares. A smaller number of producers had farms ranging between 10 and 25 hectares, while 12% (70 producers) had farms exceeding 25 hectares. As shown on Figure 4, the highest average of hectares dedicated to cacao production within the sample was found in Cluster 1, with 3.8 hectares. The lowest average was in Cluster 3, with 1.8 hectares. Notably, three out of the four clusters are below the national average of three hectares for cacao production.^{xxxv}

Table 7 provides a breakdown of total farmland versus the land specifically used for cacao production by farmers. The last column highlights the average utilization rate of farmland for cacao production within each cluster. A notable disparity emerges between Clusters 4 and 2 in the area dedicated to cacao, despite having the same average farm size. Additionally, while Cluster 4 had the largest average farm size, it only ranked second in average hectares used for cacao production.

Table 7: Total Farm Size Compared to Farm Size for Cacao Production

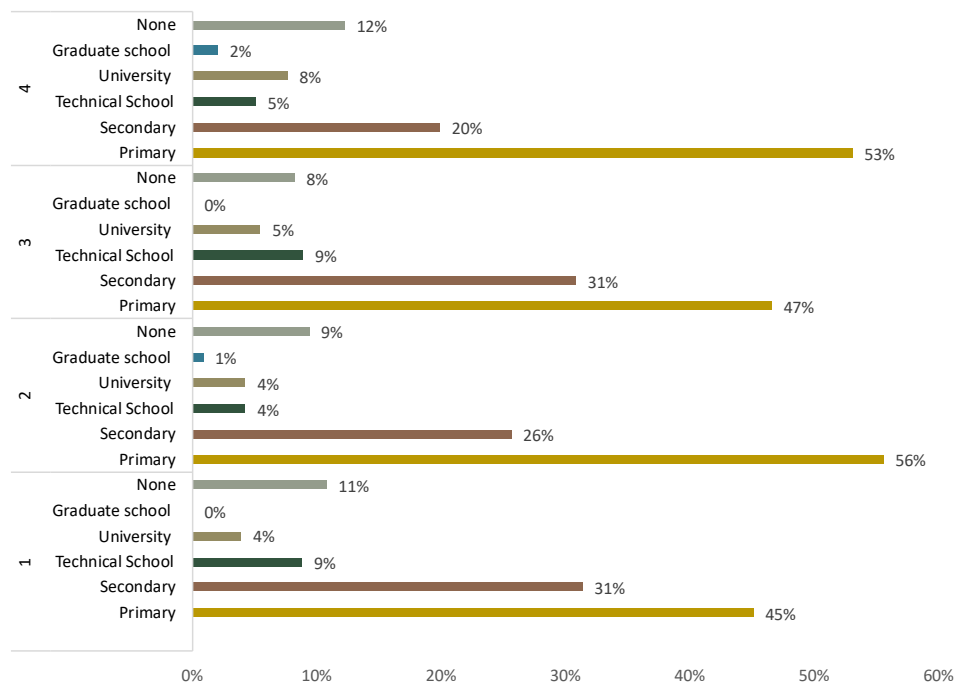
Cluster	Average Total Farm Size (ha)	Average Farm Size Used for Cacao (ha)	Average % Farm Size Used for Cacao
1	15.21	3.79	58%
2	11.80	2.29	46%
3	7.16	1.79	51%
4	11.60	2.91	49%
Grand Total	11.14	2.65	50%

Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

Further below, the team will explore the relationships between these variables (gender, farm size, and plantation density) and productivity.

Other Key Demographic Findings by Cluster

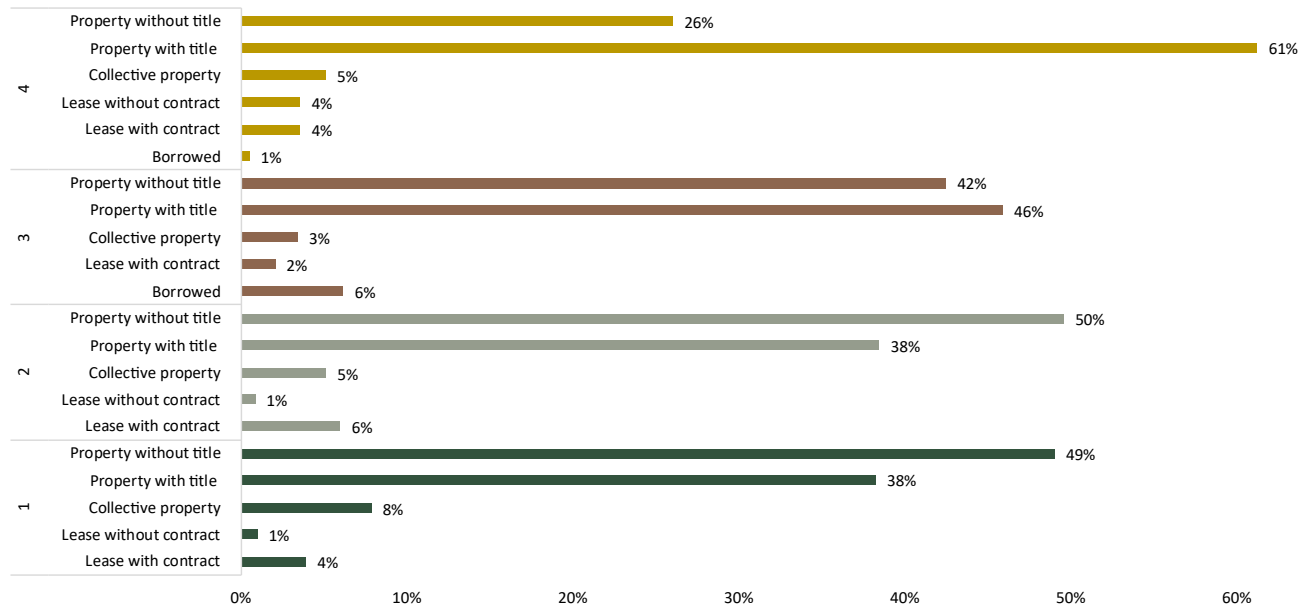
Figure 6: Education Level by Cluster (n=561)



Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

Data collected from all four clusters indicate that primary education is the most common among producers. On average, 50% of producers had basic education, followed by secondary education. Clusters 1 and 4 had the highest illiteracy rates. In all clusters, 55% to 70% of producers had a level of education between none and primary school.

Figure 7: Land Occupancy by Cluster (n=561)



Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

Clusters 1, 2, and 3 had the highest number of producers operating their farms without legal property ownership. This is significant, as 49%, 50%, and 42% of producers in Clusters 1, 2, and 3 respectively stated that they do not hold a property title. In contrast, 61% of producers operating in Cluster 4 hold a property title. Owning property without a title could impact the producer's ability to legally access credit.

Productivity Findings by Cluster

Productivity in cacao cultivation can be measured in two main ways:

- 1. Productivity by area (Kg/ha):** This is a global measure that allows for the assessment of total field or farm yield. It is useful for regional, national, or international comparisons and for large-scale resource planning and management.
- 2. Productivity per plant (Kg/tree):** This is a more specific and detailed measure that allows for the assessment of individual plant yield. It is useful for identifying high-yielding plants and evaluating agronomic practices at the micro level.

The best way to measure productivity depends on the specific objectives of the analysis and the context in which it is applied.

- 1. For global and comparative evaluations:** Measure by area (kg/ha) allows for easy comparisons between different fields, farms, or regions, and is useful for agricultural policies, production planning, and market analysis.
- 2. For agronomic improvements and plant selection:** Measure per plant (kg/plant), provides detailed information about the yield of each individual plant, it is useful for breeding programs, crop management, and specific care practices.
- 3. For a comprehensive assessment:** Use both measures. Combining productivity by area and per plant offers a more complete view of crop performance. It helps identify not only how many plants there are

and their total production but also how each plant performs within the cultivated area. Combining these practices will enable accurate evaluation and continuous improvement in cacao crop productivity, both at the area level and for individual plants.

Presenting productivity data only by plant can introduce several biases and limitations, which may affect the interpretation and comparison of the data (See Table 8).

Table 8: Biases Associated with Measuring Productivity by Plant

	Bias	Effect
1. Variation in plant density	Different regions and farms may use varying planting densities. Some may plant fewer trees per hectare, while others may plant more densely. Reporting productivity only by plant ignores these differences.	It can give an inaccurate picture of overall yield potential and efficiency. A region with high per-plant productivity but low planting density may appear more productive than it is when compared to regions with higher planting densities.
2. Ignoring area utilization	Productivity per plant does not account for how efficiently the land is being used.	It overlooks the importance of land use efficiency, which is crucial for understanding the full potential and sustainability of agricultural practices in different regions.
3. Regional agronomic practices	Different regions may have varying agronomic practices, such as irrigation, fertilization, and pest control, which can affect per-plant productivity.	These practices might skew the data, making it difficult to compare regions accurately without considering how these practices affect overall productivity per hectare.
4. Land quality and environmental conditions	Environmental factors such as soil fertility, climate, and topography vary widely between regions.	Productivity per plant might be higher in regions with optimal conditions, but this does not necessarily translate to higher productivity per hectare, as less ideal conditions might require different planting densities and management practices.
5. Economic viability and sustainability	Reporting only per-plant productivity ignores the economic aspects of land use and sustainability.	High productivity per plant in a region with high input costs or unsustainable practices might not be economically viable or sustainable in the long term. Productivity per hectare provides a better overview of the economic efficiency and sustainability of agricultural practices.
6. Comparability across regions	Different countries and regions may have varying land sizes and availability for cultivation.	Productivity per plant does not provide a standardized measure for comparing large-scale agricultural outputs, which is essential for international comparisons and policymaking.

Source: Authors' Elaboration

To avoid biases and provide a more comprehensive and accurate picture of cacao productivity, it is recommended to present data both by plant and by surface area. This dual approach enhances the viewer's understanding of: (a) land use efficiency; (b) regional agronomic practices and their impacts; (c)

environmental conditions and their effects on productivity; and (d) the economic viability and sustainability of cacao cultivation. By doing so, stakeholders, policymakers, and researchers can make more informed decisions, develop better strategies, and foster sustainable agricultural practices on a global scale. For instance, between 2000 and 2015, the harvested area nearly doubled, increasing from 83,138 hectares to 165,006 hectares—a rise of 98.5%. During this time, production in Colombia increased from 36,731 metric tons to 54,796 metric tons, a growth of 49.2%. However, the calculated yields fell by 24.9%, from 441.8 kg/ha to 332 kg/ha.^{xxxvi} This example highlights the importance of examining both plant and surface area data. The significant expansion in harvested land without a corresponding increase in kg/tree underscores that simply increasing acreage is insufficient. Effective cacao cultivation requires addressing productive capacity concurrently to ensure meaningful gains.

Productivity Reported by Respondents

C4D aims to increase yields to 750 kg per hectare, with each tree producing 1 kg of dry beans.¹² However, survey results indicate that the average yield among cacao producers is currently 228 kg per hectare, with each tree producing an average of 0.33 kg. Both figures fall significantly short of the targets. Table 9 shows productivity reported by producers surveyed in kilograms by hectares for 2023 and tree density by farmer all disaggregated by cluster.

Table 9: Survey Results for Average Cacao Productivity per Cluster

Cluster	Kg/Ha	Tree/Ha	Kg/tree
1	124	750	0.17
2	256	755	0.34
3	415	553	0.75
4	126	744	0.17
Grand Total	228	698	0.33

Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

According to FAOSTAT data, Colombian cacao productivity decreased by 68% from 2018 to 2022, falling from 926 kg/ha to 335 kg/ha of cacao yields. This severe decline started in 2020, and the sector has not yet been able to recover.

Table 10: National Productivity (Kg/Ha) from 2018-2022

Year	Ha	MT	Kg/ha
2018	105,739	97,978	926.60
2019	117,818	102,154	867.05
2020	188,371	63,416	336.65
2021	194,428	65,164	335.16
2022	185,459	62,158	335.16

Source: FAOSTAT 2018-2022^{xxxvii}

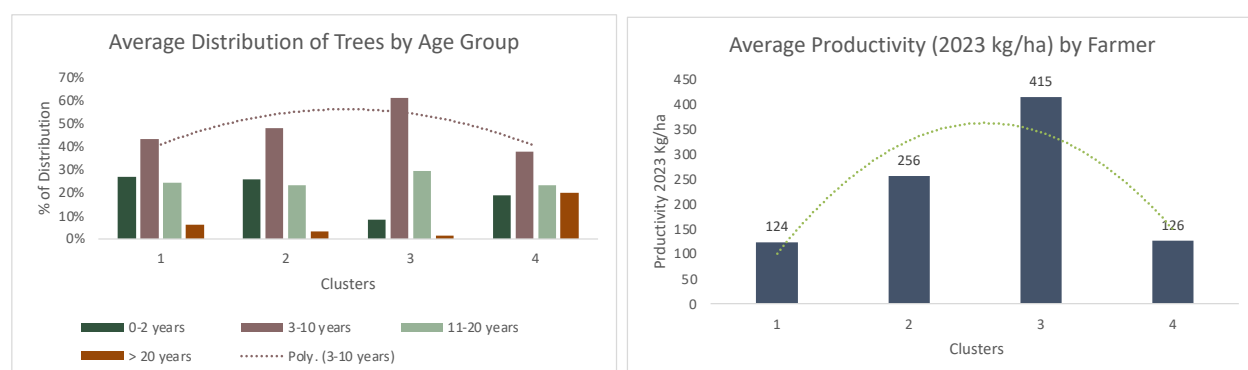
A 335 kg/ha productivity level is more in line with the data from the survey, which shows an average of 228 kg/ha, with values ranging from 124 kg/ha for Cluster 1 to 415 kg/ha for Cluster 3. It is important to

¹² In January 2024, C4D submitted a proposal to USDA to revise its indicator targets. As part of this revision, the target for kg/tree has been updated to 1.87.

note that improvements in cacao plant productivity can take more than a year to materialize, and the timeframe in which C4D has provided field assistance may not be sufficient for a substantial change in this indicator. It is anticipated that more significant improvements will be reflected in the project's next reporting period (FY2024-2025).

In addition to land and tree density, other factors affecting productivity include optimum tree age. The ideal age for cacao trees is 9-10 years.¹³ Survey results indicated that productivity levels were highest in Cluster 3, which had the most trees aged between 3 to 10 years. In contrast, Cluster 4, which recorded the lowest productivity for farmers in 2023, had the highest number of trees over 20 years old across all clusters. While other factors also contribute to productivity, this trend underscores the importance of considering tree age when evaluating cacao production. Figure 8 illustrates this relationship: the left side shows the trend line by cluster for the distribution of trees in the 3-10 year age category, while the right side displays the trend line for productivity levels disaggregated by cluster. Notably, both trend lines follow the same direction, indicating that Cluster 3 not only had the highest frequency of trees within the age range (3-10 years) but also demonstrated the highest average productivity compared to the other clusters.

Figure 8: Comparison of Productivity with Tree Age Distribution by Cluster



Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

The findings of this technical analysis signal the importance of C4D's collaboration with the National Federation of Cacao Producers (FEDECACAO) through the joint Cacao Renewal and Grafting Program, which includes rehabilitation pruning as a key strategy. This approach is aimed at stimulating new growth and encouraging older cacao trees to produce more pods, thereby enhancing productivity and ensuring the sustainability of cacao production. As part of the cacao renewal efforts, the project also coordinates with the Governor's Office of Huila and CNC to facilitate the delivery of cocoa seedlings.

Respondent characteristics indicate that C4D primarily works with an older generation of producers, with an average age of 54 years, where most have only attained primary education as their highest level of schooling. Productivity levels among respondents revealed an average of 228 kg/ha and 0.33 kg/tree. Notably, Cluster 4 had the lowest productivity in both kg/ha and kg/tree, coupled with the oldest average producer age and the cluster that had the greatest distribution of trees older than 20 years old. This suggests that the demographic and educational profiles of producers, along with tree density, may be key factors affecting productivity outcomes in C4D's target areas. Considering the demographics of C4D's key stakeholder group (producers), the remaining chapters of this report will delve into the

¹³ POA_Performance Report_2023-10.

relevance, effectiveness, efficiency, sustainability, and impact of C4D interventions aimed at increasing productivity and improving access to trade. This analysis will help to contextualize how these interventions align with the needs of an aging producer population with limited educational backgrounds and the broader objectives of increasing productivity and increasing trade.

6. Relevance

Questions for this section are:

- To what extent has C4D responded to the needs of target beneficiaries?
- To what extent is C4D aligned with Government of Colombia priorities, policies, and strategies, including the national cacao value chain strategy?
- To what extent is C4D aligned with USDA and USG development goals, objectives, and strategies?

This chapter systematically examines the relevance of C4D activities at each level of the value chain, based on primary data collected from both qualitative and quantitative sources. Qualitative interviews include focus group discussions (FDGs) and key informant interviews (KIIs), as listed in Annex 2. As described in the methodology section, notes from those interviews were coded in the software Dedoose, and quotes were sorted by topic. All excerpts quoted from qualitative interviews throughout this report are cited using the corresponding Dedoose code. Relevant quotes per value chain level are depicted along with the narrative, in Figures 11, 12, 13, 14, 15, 18, and 19. At the end of the narrative, summary responses are provided to the three evaluation questions above.

Inputs

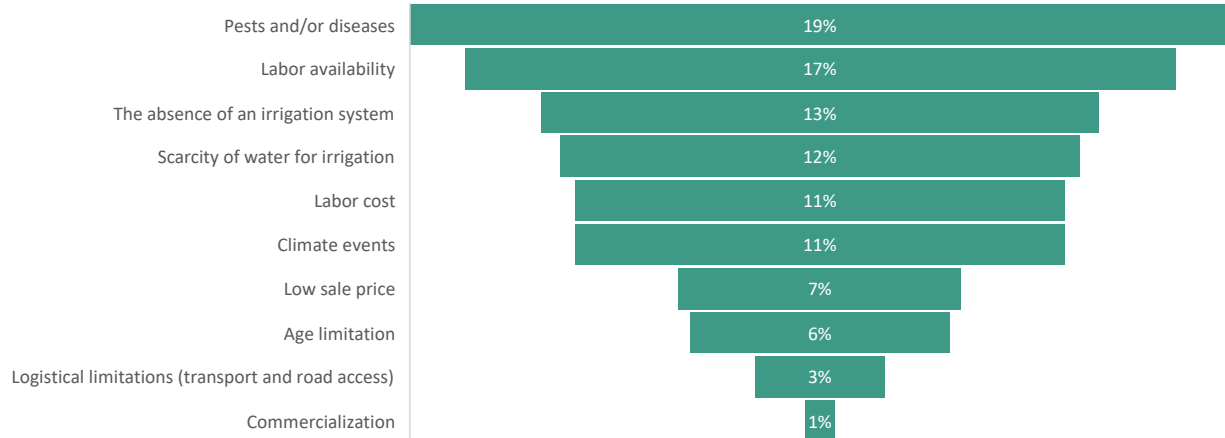
At the input level, C4D is working to expand agri-biofertilizer facilities to reduce chemical fertilizer use on farms. In 2023, POA also conducted a needs assessment identifying two key crop pests, *Carmenta theobromae* and *Monilinia*, as major issues hindering productivity in the Huila department.¹⁴ C4D designed a plan focused on controlling *Carmenta* in Huila, where producers received pest control kits, training for kit use, and technical guidance. C4D also coordinated a working group to develop a *Monilinia* control initiative. As a result, on April 20, 2023, the National Cacao Council (NCC) launched a *Monilinia* campaign in commemoration of Cacao Producer Day in Colombia.¹⁵

Of the 561 respondents, most cited pests and diseases as their main challenges in cacao cultivation, followed by labor availability and lack of an irrigation system (see Figure 9).

¹⁴ *Monilia* pod rot, also known as moniliasis, is a common disease in South America that affects cacao. The fungus targets only young pods, with early signs including small, water-soaked lesions. These lesions gradually merge into larger, dark brown necrotic spots with irregular edges, eventually covering the entire pod surface. *Carmenta* attacks cacao fruits older than 4 months, small holes with insect excrement are observed.

¹⁵ POA_C4D Work Plan Update_2023-08

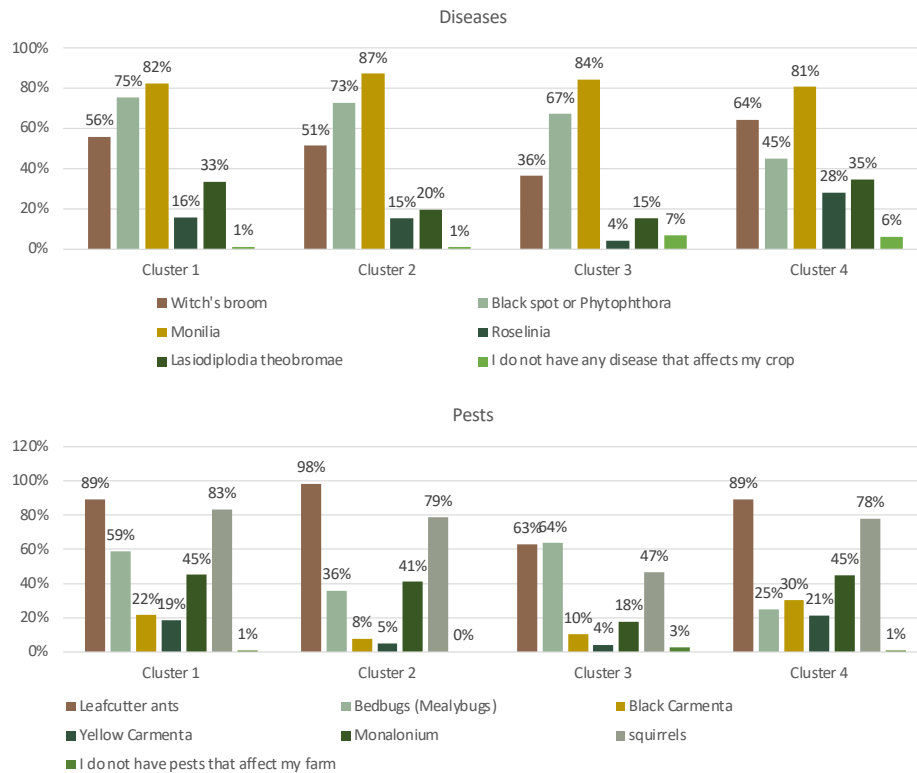
Figure 9: Which of the Following Would You Rank as Your Main Challenge? (n=561)



Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

Figure 10 shows that Monilia is the main disease, and leafcutter ants are the main pest affecting producers in all four clusters. Specifically in cluster 4, which includes the department of Huila, over 50% of producers identified the combination of black and yellow Carmenta as a significant problem.



Figure 10: Diseases and Pests Affecting Cacao Cultivation (n=561)



Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

The survey corroborated POA's findings, particularly highlighting Monilia as a top concern.

Figure 11: Issues at the Inputs Level

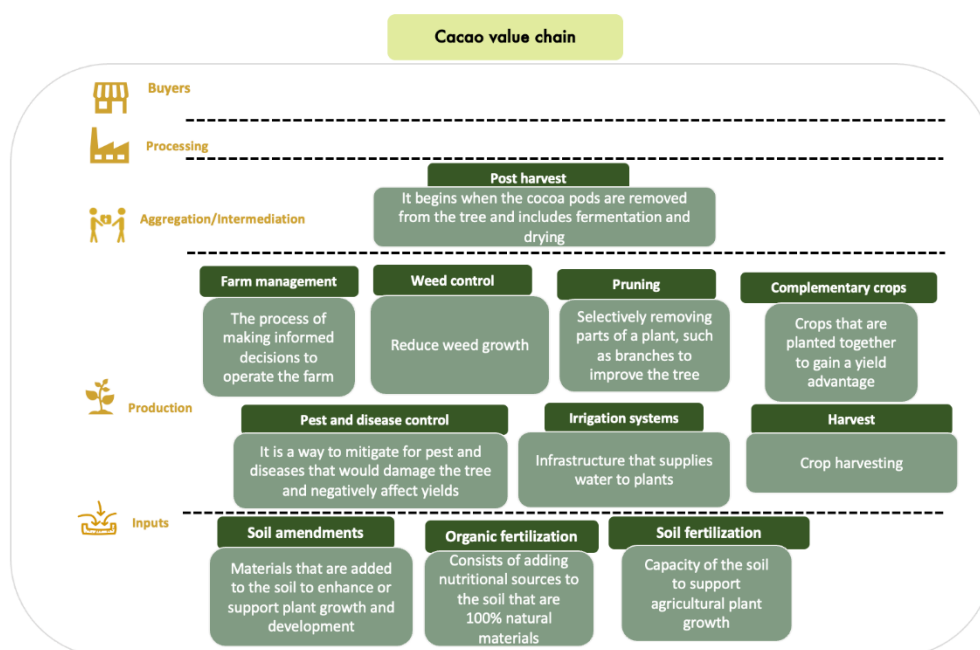
Value chain level	Stakeholders	Issues	Evidence
 Inputs	 Input suppliers	<ul style="list-style-type: none"> Resource constraints and technical support needs Lack of access to necessary equipment Lack of essential infrastructure 	<p>"The lack of resources and tools remains a challenge. Inputs are expensive, and irrigation systems are crucial."</p> <p>"Monilia affects 50% of production. It is controlled with good agricultural practices such as pruning and putting the cobs on the ground when symptoms are seen."</p> <p>"Regarding infrastructure, some producers are awaiting the delivery of units such as warehouses or [fermentation equipment]."</p>

Source: Authors' Elaboration

Production

C4D's major focus to date has been at the farm level. The project is providing extension services directly to producers on their farms, and, via this interaction, promoting a set of practices referred to by project staff as "success factors." These include pruning, fertilization, irrigation maintenance, and disease mitigation. A complete list of the practices is shown in dark green in Figure 12. Under these, in light green, the benefits are listed as they relate to each value chain level. For example, post-harvest practices include drying and fermentation, which can be done on the farm but will also affect cacao bean processing. The list of success factors was developed with input from FEDECACAO, *Compañía Nacional de Chocolates* (CNCh), and Luker Chocolate.

Figure 12: Agricultural Practices by Level






Source: Authors' Elaboration

C4D has deployed 49 extension agents across the 14 target departments. During one-on-one farm visits, extension agents introduce producers to the *Cacaograma*, a tool designed to guide the timing of each improved agricultural practice, increasing the chances of better yields. Extension agents also use the *Cacaograma* during visits that occur after trainings. The *Cacaograma* is implemented with a calendar – the Farm Management Plan – that the extensionist and farmer fill in together. In addition, C4D has shared guidelines with the agents on following up with producers, gathering data, and verifying whether and when the recommended practices have been applied.

As part of this strategy, C4D partnered with CNCh, the largest cacao buyer in Colombia and a subsidiary of *Grupo Nutresa*. Through this initiative, C4D extension agents are trained at the CNCh research farm to disseminate and standardize knowledge using demonstration plots owned by the firm. The objective is that practices learned by C4D staff will be transferred to farmers supplying the firm.

The direct, on-farm provision of technical assistance allows the C4D team to use data gathered while actively monitoring practices. This means that extensionists can focus on reinforcing behaviors that have been shown to generate results. C4D is following the same approach for complementary crops. The project is implementing an initiative with producer organizations to plant demonstration plots of tabasco and other pepper varieties. C4D front loads the costs of the project (seeds, irrigation, labor, etc.) and after the first sale, the proceeds may be reinvested in the next cycle, or, if needed, distributed among the members. The sales are made through an agriculture-by-contract plan in which C4D finds an off taker in the U.S. and makes the connection for the producer organization. The terms of the deal are negotiated between the parties with advice from C4D. This strategy takes advantage of the benefits of diversifying between long-cycle crops like cacao and short-cycle crops like peppers, providing additional revenue streams.

Figure 13: Issues at the Production Level

Value chain level	Stakeholders	Issues	Evidence
 Production	 Producer organizations	<ul style="list-style-type: none"> • Renovation of aging cacao plantations • Agronomic support • Policy development • Environmental focus • Youth engagement • Technical assistance • Access to farmland • Climate change impact on production 	<p>"There are old trees and disorganized crops. Cacao is seen as a backyard crop, meaning a wild and forest crop that bears fruit on its own; which, of course, is not the case."</p>
	 Farmers		<p>"Including complementary crops in cacao production is a viable alternative that reduces the use of synthetic chemical inputs and vulnerability to diseases and pests."</p> <p>"With C4D, production has increased by one hundred kilos. Having monthly support would allow continuous monitoring to ensure increased production."</p> <p>"Climate change is the main challenge. The harvest time used to be April, May, and June, complemented by a period in October and November, but now it is unstable and unknown."</p>



Source: Authors' Elaboration

Aggregation (Producer Organizations)

As mentioned in the project description, C4D has selected 74 producer organizations to strengthen their management and commercial capabilities in partnership with *IC Fundación*. A diagnostic assessment was conducted to assess producer organizations' readiness to expand to additional processing functions or to access credit. This assessment was based on operating performance, financial health, management and structure, development, and potential growth.

The capacity building work is just beginning, given that the diagnostic work was conducted as a prerequisite. Even so, interviews revealed that associations are appreciative of the support they receive from C4D. Even before the diagnostic was complete, C4D had already engaged with associations to support them in taking on aggregation and other functions, such as managing demonstration plots.

Figure 14: Issues at the Aggregation Level

Value chain level	Stakeholders	Issues	Evidence
 Aggregation/ intermediaries	 Producer organizations	<ul style="list-style-type: none">• Financial constraints and capital needs• Technical assistance• Export logistics• Infrastructure and commercialization challenge• Crop insurance	<p>"Start working on solutions to the diagnosed weaknesses. Especially in the issue of having capital for commercialization."</p> <p>"Having permanent technical assistance, because there is still no cacao culture. So, when there is no assistance, the producer does not give importance to care."</p> <p>"The association does not yet have infrastructure for cacao storage, nor does it have capital for direct cacao purchase."</p> <p>"The crop insurance issue was also addressed, but to date, we have no information on the status of the process."</p>

Source: Authors' Elaboration



Findings from the diagnosis conducted by *IC Fundación* showed that most producers were not deemed ready to apply for loans. To date, only the *Puerto Libertador* Agricultural Fund Association (AFAPUL) from the department of Córdoba has been deemed credit ready. They were awarded US\$10,234 to finance the purchase of dry cacao beans. The project team is aware that strengthening the associations will take time. Another issue to keep in mind is the role of intermediaries: C4D has been working with those that aggregate product for the large domestic buyers. Most smaller associations do not currently function as intermediaries. In small towns and isolated areas, there are some private *ad hoc* intermediaries, though most aggregation is done at buying centers that have established relationships with the large domestic buyers. Over time, if smaller associations are to take on aggregation functions in their communities, the question will arise whether they are intending to displace other private sector actors. As *IC Fundación* is currently developing strategies and business plans for the associations, this issue should be considered and addressed.

Processing

C4D plans to support fermentation stations and provide training for their effective use. The project also plans to organize study trips and participation in fairs for actors operating within this value chain level.

There is a need for additional cacao processing facilities in Colombia, especially for preferred qualities dictated by the market. C4D could act as a catalyst to help attract private investment in this area.

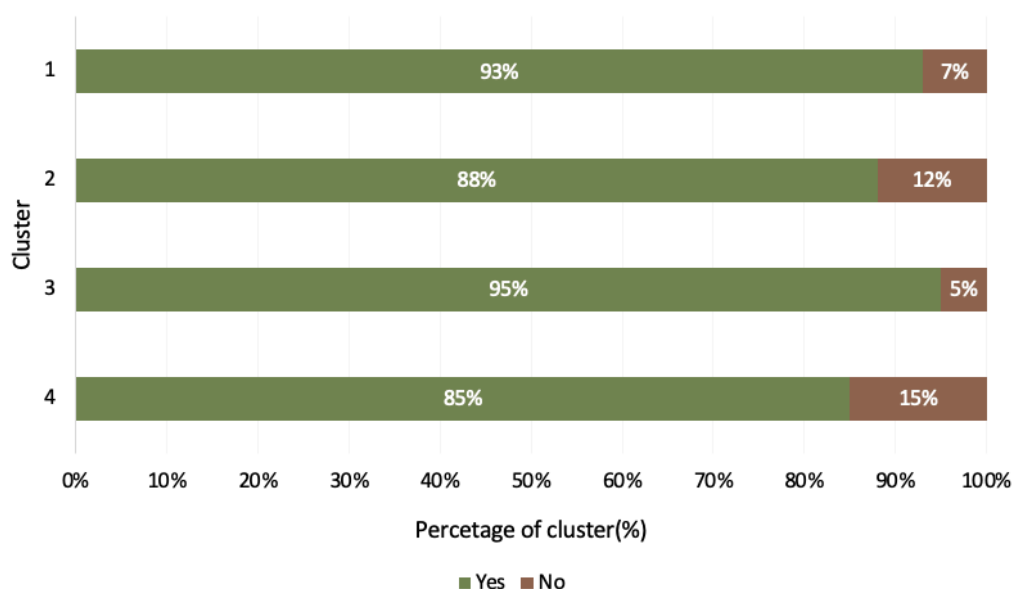
Figure 15: Issues at the Processing Level

Value chain level	Stakeholders	Issues	Evidence
 Processing	 Buyers	<ul style="list-style-type: none"> • Certification support • Quality 	<p>“Raising awareness about crop certification has been difficult due to previous negative experiences with technicians not affiliated with C4D.”</p> <p>“Producers still ferment under inadequate conditions and do not dry the cacao under controlled conditions. It is necessary to develop post-harvest infrastructure and collection centers, as well as micro fermentation and drying centers through investment and innovation.”</p>

Source: Authors' Elaboration

In Colombia, some small investments have recently been made through European Union-funded projects, but these appear to be below the scale required for financial viability.¹⁶ Not every region requires a large processing facility; size and capacity should align with local production volume and quality standards. C4D is conducting a study to identify how ideal locations for processing facilities can balance proximity to cacao-producing areas with accessibility to transportation networks, thus minimizing costs.

Figure 16: Drying at the Farm Level by Cluster

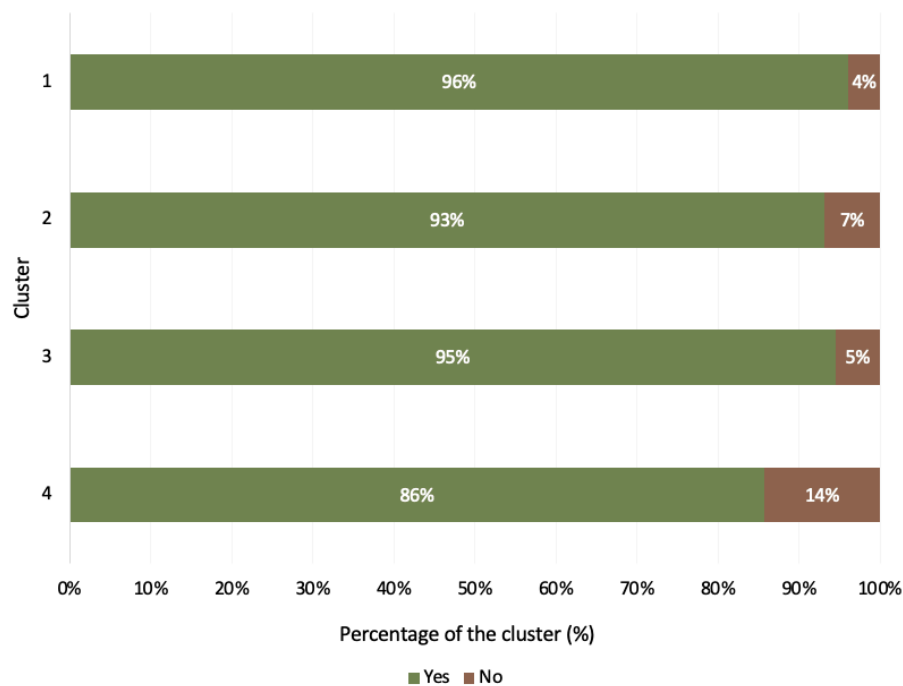


Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

¹⁶ 4. KII-C4D Staff and 14.KII- Buyer

The evaluation gathered data from producers about on-farm processing activities. Over 85% of all producers dry their cacao, with the most in Cluster 3 (95%) and the fewest in Cluster 4 (85%) as shown in Figure 16. The majority of producers in every cluster also ferment their cacao: the most in Cluster 1 (96%), the fewest in Cluster 4 at 86% as shown in Figure 17.

Figure 17: Fermentation at the Farm Level by Cluster



Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

In Colombia, it is traditional for cacao producers to dry and ferment their beans on the farm, but this practice affects quality, as infrastructure and methods vary widely. Some international clients, especially those seeking luxury cacao, require highly controlled fermentation for specific flavor profiles. However, farmers receive only modest price increases for the additional labor involved in proper fermentation and drying.^{xxxviii}



Figures 16 and 17 illustrate the current state and potential for quality improvement if C4D or Colombia's private and public sectors invest in enhancing processes for specialty markets. Based on interviews and secondary literature, there's agreement that quality and consistency could be improved by centralizing fermentation and drying at aggregation centers.

“We have contributed to the establishment and provision of benefit centers with boxes, thermometers, and all necessary tools, not only for collection and storage but also to carry out the fermentation and drying process in a controlled and standardized manner, a key aspect to achieve fine cacao quality. This process cannot be achieved on the farm as there are no conditions or adequate infrastructure to meet the established standards.”
- 34. KII People in Gov

Trade/Transit

High transportation costs may be the biggest impediment to Colombian cacao’s competitiveness in international markets. Poor road conditions lead to increased transportation costs and affect producers' profit margins. Additionally, inadequate transportation infrastructure can result in long transit times, which can affect the quality of beans. This is particularly true when post-harvest techniques are not properly applied.^{xxxix} Therefore, selecting locations that offer lower transportation and investment-related costs will be critical when setting up processing facilities. C4D is currently supporting a study to address this issue nationally.

Figure 18: Issues at the Transport and Logistics Level

Value chain level	Stakeholders	Issues	Evidence
 Trade	 Transport firms	<ul style="list-style-type: none">• Logistics• Accessing remote areas	“Another challenge is the collection of cacao and logistics in general for producers because there are very remote rural areas that still do not have market access.”



Source: Authors’ Elaboration

Market

C4D is actively building buyer linkages. While the project has reached out to a variety of buyers, it mainly focuses on the two largest domestic buyers, CNCh and Luker Chocolate, given the weight they represent in Colombia’s cacao market.¹⁷ These two buyers are focused on responding to the national demand. Consequently, their challenges concern reliability of supply, not quality. Other buyers, especially those in international markets, tend to have a greater focus on quality. Currently, these demand signals are not systematically transmitted to value chain actors across regions of Colombia.

¹⁷ CNCh and Luker Chocolate absorb 80 to 90% of the national cacao production.

Figure 19: Issues at the Market Level

Value chain level	Stakeholders	Issues	Evidence
 Markets	 Buyers	<ul style="list-style-type: none"> Exporting quality cacao Market access/entry Market regulations Handling of perishable goods Export logistics Market stability (price fluctuations) 	<p>Luker: "buys and pays for quality cocoa per fine, exports 40%."</p> <p>"The challenge for cacao in Colombia is to take advantage of the current high prices of cacao. These prices are an incentive to focus on quality that did not exist before; now there is a reason to make an additional effort to improve the cacao produced."</p> <p>"The transformation of the market towards quality does not occur spontaneously. A "push" is needed for it to happen, meaning that everyone gains something from the change."</p> <p>"The challenge for marketing their product, especially if it's perishable, is distance."</p> <p>"They export with the help of USAID international cooperation; a part is invested in the producers and another part in the USA... They focus on the U.S. market."</p> <p>"The goal is to export high-quality cacao, selecting laboratories to implement the established standards."</p> <p>"Currently, we are unable to meet the national demand for cacao. However, there are new buyers, and through fine cacaos, we are beginning to enter the international market."</p> <p>"Involve young people so they learn to manage tools and implement social media in marketing."</p> <p>"However, they also face difficulties with fluctuating cacao prices, which can occasionally compromise cacao sales."</p>

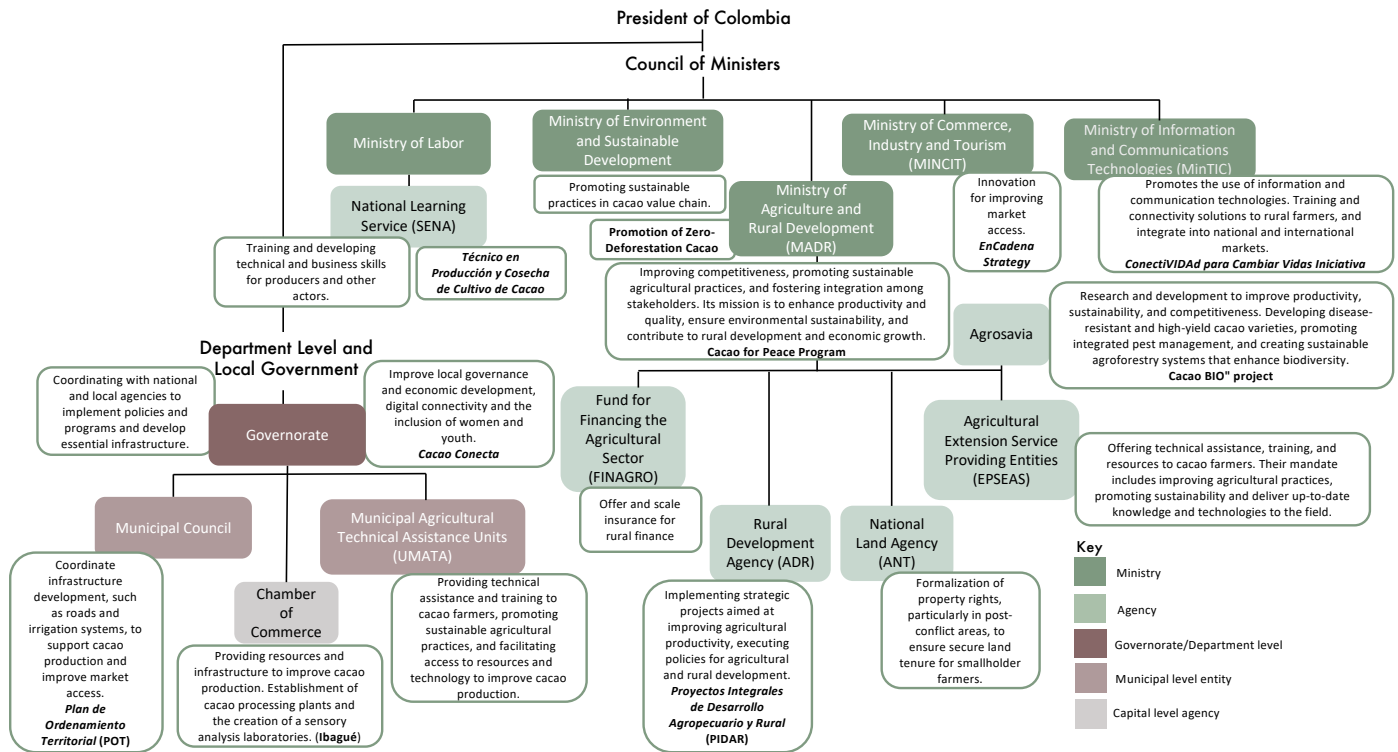
Source: Authors' Elaboration

Information gathered through KIIs has shown that supply reliability is a recurrent challenge for buyers. Buyers often find that agreements with small producers fall through because the producers sell their harvests to someone else. This issue is frequently due to the volatility of cacao prices, which can influence producers' decisions to accept better offers from traders or intermediaries.^{xl} Additionally, interviews revealed that the stability of a producer's household can affect their selling decisions. Producers who have unstable family situations might spend their earnings irresponsibly on non-essential activities. This creates financial vulnerability and urgency, which leads producers to sell their harvests quickly, breaking existing agreements in the process.

Public Sector

C4D has been actively collaborating with key public sector entities to enhance the country's cacao sector. This includes working closely with the Ministry of Agriculture and Rural Development (MADR) and its related agencies, such as FINAGRO and *Agrosavia*. Figure 20 is an inventory of initiatives led by public sector institutions, particularly those affecting the cacao sector.

Figure 20: Government-Led Programs



Source: Authors' Elaboration

C4D aims to improve coordination between public and private sectors regarding the quality of financial and extension service provision. Notably, in partnership with *Seguros Bolívar*, C4D has launched the *Cacao Seguro* initiative, which provides crop insurance to mitigate climate-related risks for cacao producers. This initiative, supported by FINAGRO's Agricultural Insurance Incentive Program, has enrolled more than 4,200 farmers and provided indemnities to over 646 smallholder producers that are participating in C4D activities, giving them financial protection against weather-related crop losses.¹⁸ Additionally, C4D has engaged *Agrosavia* to conduct feasibility studies and establish fermentation protocols in key cacao-producing regions, aiming to improve processing techniques and align cacao quality with international standards. At the municipal level, C4D regularly coordinates to request and inform municipalities of their entry to communities. The project also occasionally assists municipal government officials in the distribution of inputs, such as cacao trees. C4D has the opportunity to maintain its collaboration with the public sector and potentially harness their resources and support by uniting all stakeholders - public and private - around a shared vision for enhancing the cacao value chain.

Responses to Questions:

Under this evaluation topic there are three questions:

- **To what extent has C4D responded to the needs of target beneficiaries?**

Considering cacao producers as the target beneficiaries, C4D has responded fully to the need for technical assistance at the farm level. Preliminary results show increases in productivity and incomes.

¹⁸ Reported as of February 2024. The information comes from the records that *Seguros Bolívar* shares with C4D.

Considering other value chain stakeholders as beneficiaries, activities are still at the early implementation or planning stages.

- **To what extent is C4D aligned with Government of Colombia priorities, policies, and strategies, including the national cacao value chain strategy?**

C4D is fully aligned with Government of Colombia (GoC) priorities and has partnered with several agencies to deliver benefits to producers. Partnership agreements with local governments (e.g., Tolima, Caldas, Huila) show C4D's commitments to provide extension services and strengthen producer associations. Regional and local governments are contributing resources to this effort. These government actors have not always been responsive. There is an opportunity for C4D to continue its engagement with the public sector and potentially leverage their resources and buy-in by aligning all stakeholders around a common vision for strengthening the cacao value chain.

- **To what extent is C4D aligned with USDA and USG development goals, objectives, and strategies?**

C4D's approach and results align well with USDA and USG development goals. However, while C4D's work at the farm level is contributing to the reliability of the cacao supply, issues related to quality and international market demand have not yet been addressed. One strategic question for C4D is whether to support the development of the traceability systems required by the European market, or to focus on providing access to the US market for the Colombian cacao industry. If the project takes a truly systems-based approach, fully leveraging all the assets and goodwill of value chain stakeholders, it may be possible to do both ("and-and" rather than "either-or"). This approach is outlined in the recommendations section.

7. Effectiveness

C4D has established 36 progress indicators, of which 24 are standard USDA Food for Progress (FFPr) indicators and 12 are custom indicators specific to the project. C4D has associated all the indicators with the eight activities the project is implementing. Only one activity, Activity 8: C4D Philanthropy Fund, does not have any indicators associated with it. The narrative below provides an overview of each indicator, presenting the results of the data collected by the project.

Under each activity, the reader is provided with the definitions of the associated indicators, the project's achievement trends, and the project's database audit findings. This contextualizes the data collected from the project's M&E team. The indicators are presented in a table comparing yearly progress to-date with yearly targets. Progress rates lower than 33% are shaded in red, those between 34%-67% are shaded in yellow, and those higher than 68% are shaded in green. The midterm evaluation reviews reported indicator values from October 1, 2020 - March 30, 2024. This covers full periods for Y1 through Y3, but only a partial period (one of two semesters) of Y4. Reported values and progress are likely to be higher by the end of Y4. Yearly results presented for Y1, Y2, and Y3 are values that have been reported to USDA, whereas values for Y4, S1 are those that have been collected semiannually and will be reported to USDA in the next reporting period (Y4, S2).

Note that in January 2024, POA requested that USDA update and revise the indicator targets. This is because the indicator targets were established in 2021, prior to the finalization of the baseline. Since POA's request is still under review, the midterm evaluation team used the original, USDA-approved, 2021 targets. Not all indicators had Y4, S1 data available for the midterm evaluation: Per the USDA

handbook, there are indicators that only require annual, rather than semi-annual, reporting. This section concludes by summarizing the data and answering the sub-questions under effectiveness.

Activity 1 Indicators: Value Chain - Special Studies

Table 11: Activity 1 Indicators: Value Chain - Special Studies

Indicator Number	Indicator Name	Baseline	FY2021 Target	Progress Y1	Y1 Progress to Target %	FY2022 Target	Progress Y2	Y2 Progress to Target %	FY2023 Target	Progress Y3	Y3 Progress to Target %	FY2024 Target	Progress Y4 - S1	Y4, S1 Progress to Target %
Standard #9	Number of technologies, practices, and approaches under various phases of research, development, and uptake as a result of USDA assistance (Phases 1-3)	0	5	0	0%	13	0	0%	11	27	245%	5	13	260%
Standard #9	Number of technologies, practices, and approaches under various phases of research, development, and uptake as a result of USDA assistance (Phase 4)	0	-	-	n/a	-	-	n/a	3	27	900%	1	2	200%

Source: C4D MEL Documents

Findings for FFP Standard Indicator #9 - Number of technologies, practices, and approaches under various phases of research, development, and uptake as a result of USDA assistance.

Target achievement rates for Y3 and Y4, S1 have been significantly positive, reaching over 100%. These values represent the studies C4D has led with other partners. These include value chain studies for complementary crops, as well as the research initiative the project is undertaking with *Agrosavia* to establish fermentation protocols that meet sensory profile demands in particular regions. The majority of practices and technologies considered in Phase 4 include the adoption of the extension tool used for cacao and complementary crops, its iterations for each region, and the dissemination of value chain studies.

To qualify for Phase 4, as opposed to Phase 3, there needs to be an uptake by private and public stakeholders. However, the main entity using the tool is C4D itself, primarily to provide and inform the extension services C4D is offering. There is an opportunity to revise this indicator to remain USDA-compliant while clearly defining protocols and proxies for what constitutes local private and public stakeholder adoption. It is important to note that organizations like *Fundación Mundo Mujer*, *Luker Chocolate*, and *CNCh* have adopted the *Cacaograma* for their own extension services. On the other hand, there is no clear evidence on how the value chain studies are being adopted to inform private and public stakeholder activities beyond just being available for their use.

Activity 2 Indicators: Producer Organization Development and Commercialization

Table 12: Activity 2 Indicators: Producer Organization Development and Commercialization

Indicator Number	Indicator Name	Unit	Baseline	FY2021 Target	Progress Y1	Y1 Progress to Target %	FY2022 Target	Progress Y2	Y2 Progress to Target %	FY2023 Target	Progress Y3	Y3 Progress to Target %	FY2024 Target	Progress Y4 - S1	Y4,S1 Progress to Target %
Standard #12	Number of organizations with increased performance with USDA assistance	Organizations	0	1	0	0%	8	0	0%	29	0	0%	48	0	0%
Standard #13	Number of public-private partnerships formed as a result of USDA assistance	PPP	0	-	-	n/a	20	0	0%	20	5	25%	15	2	13%

Source: C4D MEL Documents

Findings for FFPr Standard Indicator #12 - Number of organizations with increased performance with USDA assistance and FFPr Standard #13 - Number of public-private partnerships formed as a result of USDA assistance.

Yearly progress to date for these indicators has been particularly low, with achievement rates under 30%. One explanation for this is that work under this activity did not commence until July-August 2023. FFPr Standard Indicator #12 will report performance improvements for the 74 producer organizations selected by C4D that are undergoing training with *IC Fundación*, the implementing partners for this activity. It will specifically indicate the number of producer organizations with observed performance changes compared to their initial diagnostic assessment. The diagnostic assessments rate producer organizations based on capital and investment capabilities, financial performance, operational structure, employee size, and business management, as well as their ability and infrastructure available to commercialize products. Currently, *IC Fundación* is helping producer organizations develop business plans to help them improve and track these metrics.

As for FFPr Standard #13, per USDA's Indicator Handbook, this indicator counts the number of public-private partnerships related to agriculture formed during the reporting year of the USDA project's intervention. For C4D, seven public-private cumulative partnerships were recorded between Y3 and Y4, S1. These represent the agreements C4D has with seven local private sector organizations that are helping implement project activities. This indicates a lack of public sector partners. One public sector partnership that could be added under this indicator includes the work C4D is doing with FINAGRO to provide subsidized crop insurance to small- and medium-sized cacao producers.

As discussed in the relevance section, there is an opportunity to boost this indicator's achievement rates by aligning project activities and stakeholders around a common vision. This is especially important at the municipal level, where there has already been coordination with municipal governments for tree

distribution and extension work. Additionally, the project should consider specific activities and workflow agreements arising from POA's participation in the NCC, which includes both public and private stakeholders focused on strengthening the cacao value chain.

Activity 3 Indicators: Agricultural Extension and Production Support

There are 20 indicators under Activity 3. The evaluation team has divided these indicators into four thematic groups: Practices, Production and Sales, Project Outreach, and Custom Indicators.

Table 13: Activity 3 Indicators: Agricultural Extension and Production Support Part 1/4- Practices

Indicator Number	Indicator Name	Unit	Baseline	FY2021 Target	Progress Y1	Y1 Progress to Target %	FY2022 Target	Progress Y2	Y2 Progress to Target %	FY2023 Target	Progress Y3	Y3 Progress to Target %	FY2024 Target	Progress Y4 - S1	Y4, S1 Progress to Target %
Standard #2	Number of hectares under improved management practices or technologies that promote improved climate risk reduction and/or natural resources management with USDA assistance	Hectares	0	68	0	0%	436	0	0%	1,364	4,710	345%	2,291	4,134	180%
Standard #3	Number of hectares under improved management practices or technologies with USDA assistance	Hectares	0	136	0	0%	873	0	0%	2,727	7,498	275%	4,582	6,407	140%
Standard #4	Number of individuals in the agriculture system who have applied improved management practices or technologies with USDA assistance	Producers	0	78	0	0%	501	0	0%	1,566	3,858	246%	2,632	3,688	140%

Source: C4D MEL Documents

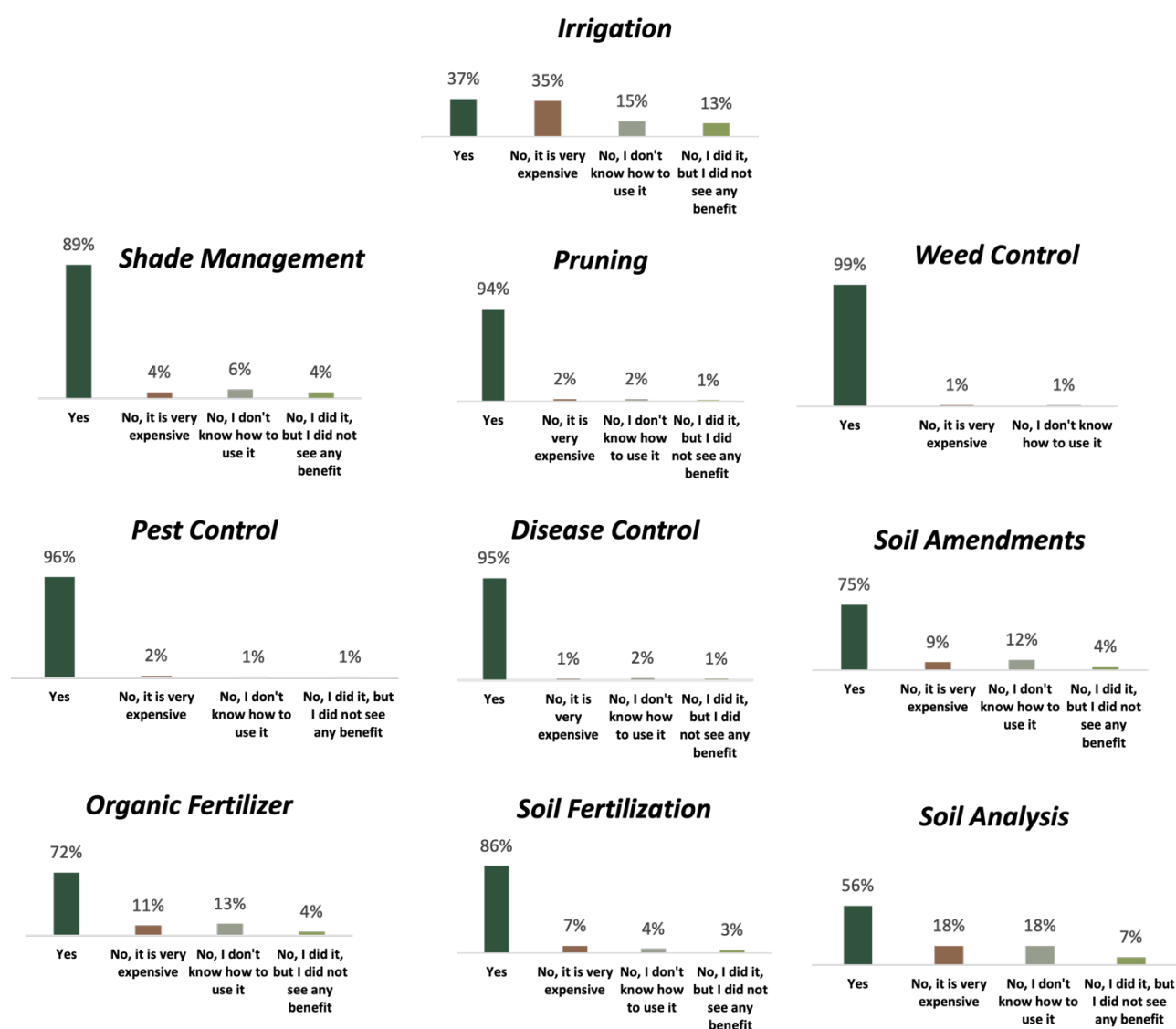
Findings for FFPr Standard Indicator #2 - Number of hectares under improved management practices or technologies that promote improved climate risk reduction and/or natural resources management with USDA assistance; FFPr Standard Indicator #3 - Number of hectares under improved management practices or technologies with USDA assistance; and FFPr Standard Indicator #4 - Number of individuals in the agriculture system who have applied improved management practices or technologies with USDA assistance.

C4D is promoting 12 success factors, of which 10 are specific practices implemented at the farm level, as detailed in the relevance section. Target achievement rates for the associated output-based indicators

are over 100% for Y3 and Y4, S1. This reflects the substantial effort C4D is making with extension services at the farm level. The low target achievement rates in Y2 can be explained by the fact that extension did not start until after September 2022. Data for this indicator was collected by extension agents during their visits. They measured how many hectares are applying the success factors they are teaching. FFPr Standard #2 includes only a subset of producers counted under FFPr Standard #3, specifically those implementing climate risk reduction success factors. Out of C4D's 10 farm-level practices, three are counted under Indicator #2: Organic Fertilization, Irrigation, and Soil Amendment.

Among the surveyed producers, the midterm evaluation team found a relatively high adoption rate for most of the practices being taught by the extension agents. Only one practice – irrigation – stood out with a low adoption rate (see Figure 21). Producers reported that irrigation systems are particularly expensive to implement. C4D might consider intervening to help producers access this equipment.

Figure 21: Implementation of Farm Practices and Reasons for Non-Implementation (n=561)



Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

Table 14: Activity 3 Indicators: Agricultural Extension and Production Support Part 2/4- Practices Production and Sales

Indicator Number	Indicator Name	Unit	Baseline	FY2021 Target	Progress Y1	Y1 Progress to Target %	FY2022 Target	Progress Y2	Y2 Progress to Target %	FY2023 Target	Progress Y3	Y3 Progress to Target %	FY2024 Target	Progress Y4 - S1	Y4, S1 Progress to Target %
Standard #1	Yield of targeted agricultural commodities among project participants with USDA assistance (complementary crops, plátano)	Kg/Tree	0.80	-	-	n/a	-	-	n/a	-	0	n/a	-	-	n/a
Standard #1	Yield of targeted agricultural commodities among project participants with USDA assistance (complementary crops, ají)	Kg/ 1/4Ha	20	-	-	n/a	-	-	n/a	-	0	n/a	-	-	n/a
Standard #1	Yield of targeted agricultural commodities among project participants with USDA assistance (cacao)	Kg/Tree	0.46	1	0	0%	1	0	0%	1	0.33	33%	1	0	0%
Standard #18	Value of annual sales of farms and firms receiving USDA assistance (complementary crop, plantain)	US\$	150,776	-	-	n/a	-	-	n/a	-	0	n/a	-	0	n/a
Standard #18	Value of annual sales of farms and firms receiving USDA assistance (complementary crop, ají)	US\$	150,776	-	-	n/a	-	-	n/a	-	0	n/a	-	0	n/a

Indicator Number	Indicator Name	Unit	Baseline	FY2021 Target	Progress Y1	Y1 Progress to Target %	FY2022 Target	Progress Y2	Y2 Progress to Target %	FY2023 Target	Progress Y3	Y3 Progress to Target %	FY2024 Target	Progress Y4 - S1	Y4, S1 Progress to Target %
Standard #18	Value of annual sales of farms and firms receiving USDA assistance (cacao)	US\$	1,530,128	1,530,128	0	0%	4,054,581	0	0%	6,831,423	1,628,304	24%	7,849,411	2,409,752	31%
Standard #19	Volume of commodities sold by farms and firms receiving USDA assistance (complementary crops, plantain)	Metric Tons	603	-	-	n/a	-	-	n/a	-	0	n/a	-	0	n/a
Standard #19	Volume of commodities sold by farms and firms receiving USDA assistance (complementary crops, aji)	Metric Tons	603	-	-	n/a	-	-	n/a	-	0	n/a	-	0	n/a
Standard #19	Volume of commodities sold by farms and firms receiving USDA assistance (cacao)	Metric Tons	818	818	0	0%	2,168	0	0%	3,653	711	19%	4,198	701	17%

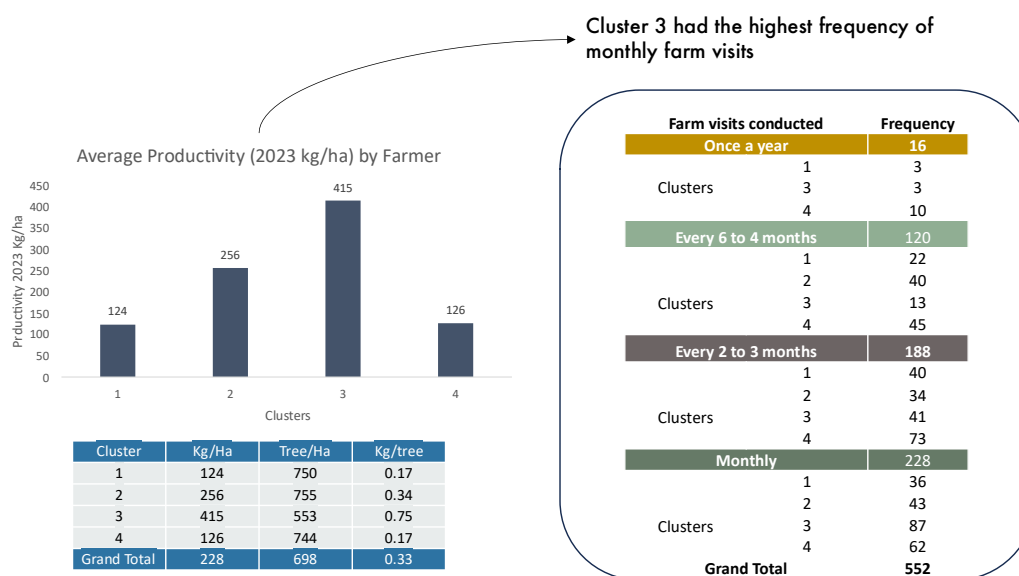
Source: C4D MEL Documents

Findings for FFPr Standard Indicator #1 - Yield of targeted agricultural commodities among project participants with USDA assistance (cacao, aji, and plantains); FFPr Standard #18 - Value of annual sales of farms and firms receiving USDA assistance (cacao, aji, and plantains); and FFPr Standard #19 - Volume of commodities sold by farms and firms receiving USDA assistance (cacao, aji, and plantains).

Indicator #18 measures the value in US dollars of the total sales of products and services by USDA-project participating farms and firms during the reporting year within USDA-supported agricultural commodity value chains or markets. For C4D, these commodities and markets include cacao and the two complementary crops of Tabasco peppers and plantains. Indicator #19 measures the same output in terms of volume, capturing all sales (not just farm-gate sales) for farms and firms in gross metric tons (MT).

Target achievement rates for this set of outcome-oriented indicators are low, averaging less than 25% for the three indicators with targets in Y3. These low levels may reflect the delayed start after September 2022 of extension work at the farm level. As the project continues its extension efforts and implements continuous follow-up for both cacao and the complementary crops, it is anticipated that achievement rates for all three indicators will improve in Y4, S1. It is projected that both Tabasco peppers and plantains will begin seeing results in 2025, especially with the demonstration plots set up for Tabasco peppers at four producer organizations' sites. Survey evidence indicates a relationship between farm visits and productivity, with higher visit frequencies (i.e., monthly) correlating with higher productivity levels measured in both Kg/ha and Kg/tree (see Figure 22).

Figure 22: Productivity Kg/Ha 2023 by Frequency of Farm Visit



Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

For FFPr Standard Indicator #1, C4D is only measuring the cacao production yield of those producers that received six or more visits, while for FFPr Standard Indicator #18 and #19, they are measuring the value and volume of annual cacao sales for producers that received more than two farm visits. Currently, FFPr Standard Indicator #19 only reflects volumes sold by farms. In the future, C4D might also

count volumes sold by the 74 producer organizations they are working with. If this approach is adopted, it would be crucial to disaggregate volumes sold by farms and firm.

Table 15: Activity 3 Indicators: Agricultural Extension and Production Support Part 3/4- Custom

Indicator Number	Indicator Name	Unit	Baseline	FY2021 Target	Progress Y1	Y1 Progress to Target %	FY2022 Target	Progress Y2	Y2 Progress to Target %	FY2023 Target	Progress Y3	Y3 Progress to Target %	FY2024 Target	Progress Y4 - S1	Y4, S1 Progress to Target %
Custom #1	Number of farms with productivity gains	Farms	0	78	0	0%	368	0	0%	927	288	31%	927	0	0%
Custom #2	Number of organizations establishing improved seedstock as a result of USDA assistance	Organizations	0	-	-	n/a	20	0	0%	12	0	0%	-	0	n/a
Custom #3	Number of farms demonstrating improved landscape management	Farms	0	68	0	0%	368	0	0%	927	2,214	239%	927	0	0%
Custom #4	Estimated tonnage of carbon sequestered	Tons	0	-	-	n/a	-	-	n/a	-	0	n/a	0	2,334	100%+
Custom #5	Number of households with improved living income outcomes as a result of USDA assistance	Households	0	-	-	n/a	-	-	n/a	-	0	n/a	-	0	n/a

Source: C4D MEL Documents

Findings for Custom Indicator #1 - Number of farms with productivity gains; Custom Indicator #2 - Number of organizations establishing improved seedstock as a result of USDA assistance; Custom Indicator #3 - Number of farms demonstrating improved landscape management; Custom Indicator #4 - Estimated tonnage of carbon sequestered; and Custom Indicator #5 - Number of households with improved living income outcomes as a result of USDA assistance.

Most of these indicators reflect progress achieved through niche interventions with producers at the farm level. These interventions include improving seed stock through producer organizations and engaging with select producers to increase their participation in the carbon credit market – an efficient strategy.

Per monitoring, evaluation, and learning (MEL) documents, the local implementing partner (*Fundación Cataruben*) conducted a carbon sequestration baseline study from 2022 to 2023. The study reviewed 297 plots to establish the baseline for carbon sequestration between 2017 and 2019, using the methodology developed by *Cataruben*. Out of these 297 plots, 18 producers met the requirements to enter the carbon credit market. If C4D can support these 18 farmers enter the carbon credit market, it would provide them with an additional source of income that could contribute to progress reported for

Custom Indicator #5. However, currently high cacao prices are likely to significantly reduce the impact of carbon credit income as a proportion of the farmer's total income.

Table 16: Activity 3 Indicators: Agricultural Extension and Production Support Part 4/4- Outreach

Indicator Number	Indicator Name	Unit	Baseline	FY2021 Target	Progress Y1	Y1 Progress to Target %	FY2022 Target	Progress Y2	Y2 Progress to Target %	FY2023 Target	Progress Y3	Y3 Progress to Target %	FY2024 Target	Progress Y4 - S1	Y4, S1 Progress to Target %
Standard #21	Number of individuals who have received short-term agricultural sector productivity or food security training as a result of USDA assistance	Participants	0	1,091	0	0%	2,727	0	0%	3,273	1,671	51%	2,727	2,907	107%
Standard #22	Number of individuals participating in USDA food security programs	Producers	0	1,253	0	0%	3,133	0	0%	3,759	3,869	103%	3,133	3,688	118%
Standard #23	Number of individuals benefiting indirectly as a result of USDA assistance	Individuals	0	3,624	0	0%	9,085	0	0%	10,902	7,181	66%	9,085	6,860	76%

Source: C4D MEL Documents

Findings for FFPr Standard Indicator #21 - Number of individuals who have received short-term agricultural sector productivity or food security training as a result of USDA assistance; FFPr Standard Indicator #22 - Number of individuals participating in USDA food security programs; and FFPr Standard Indicator #23 - Number of individuals benefiting indirectly from USDA-funded interventions.

Per their definitions in the USDA Indicator Handbook, these three indicators are interconnected. FFPr Standard Indicator #23 tracks indirect beneficiaries based on the direct participants tracked in FFPr Standard Indicator #22. The value of Indicator #23 is calculated using a formula where producer participants tracked under Indicator #22 are multiplied by 1.86. This ratio is derived from the average household size of 3.9, subtracting the head of the family (1 person/main producer), and further adjusting for the 36% attributed to minors, as indicated in the baseline study. Standard Indicator #22 counts all producers who have received at least one farm visit during the reporting period. Standard Indicator #21 is a subset of Indicator #22, counting the number of individuals who have received more than three farm visits.

These indicators show a positive trend with target achievement rates over 70% for all three indicators in Y4, S1. Currently, the values for all three indicators only include interventions with producers. As demonstrated throughout this report, C4D is also working with other stakeholders, especially at the firm level (i.e., producer organization and external extension agents working in the cacao sector). There is an opportunity to reflect this work through these indicators by counting individuals and firms, as distinct from producers, who are receiving training and interventions from the project.

Activity 4 Indicators: Postharvest Aggregation and Processing

Table 17: Activity 4 Indicators: Postharvest Aggregation and Processing

Indicator Number	Indicator Name	Unit	Baseline	FY2021 Target	Progress Y1	Y1 Progress to Target %	FY2022 Target	Progress Y2	Y2 Progress to Target %	FY2023 Target	Progress Y3	Y3 Progress to Target %	FY2024 Target	Progress Y4 - S1	Y4, S1 Progress to Target %
Standard #16	Total increase in installed storage capacity (dry or cold storage) because of USDA assistance	M3	0	-	-	n/a	200	0	0%	600	0	0%	700	25.20	4%
Custom #6	Number of processors and aggregators displaying improved quality of post-production products as a result of USDA assistance	Organizations	0	-	-	n/a	2	0	0%	8	0	0%	14	0	0%
Custom #7	Number of new agreements signed between buyers and sellers as a result of USDA assistance (outcome)	Agreements	0	-	-	n/a	-	-	n/a	12	0	0%	20	0	0%

Source: C4D MEL Documents

Findings for FFP Standard Indicator #16 - Total increase in installed storage capacity (dry or cold storage) because of USDA assistance; Custom #6 - Number of processors and aggregators displaying improved quality of post-production products as a result of USDA assistance; and Custom #7 - Number of new agreements signed between buyers and sellers as a result of USDA assistance.

Target achievement rates for these indicators are currently at 0%. This is likely because most of the grants intended for processing functions in producer organizations have not yet been fully implemented due to delays. Progress under Standard Indicator #16 includes the installation of a mill at the profit center of the Association of Young Entrepreneurs of Rivera – *Corcacao*, aimed at increasing dry storage capacity for tabasco peppers (a complementary crop). For Custom Indicator #6, C4D may report progress in Y4, S2, as they are currently collaborating with two producer organizations to strengthen plans with *IC Fundación* and enhance post-harvest processes.

Regarding Custom Indicator #7, there is an expectation that results will be seen in Y4. This indicator will count agreements with Luker Chocolate and CNCh, who will commit to purchasing harvests from producers or producer organizations. It will also include the agreement between *Hugo Restrepo y Cía*, a buyer for tabasco peppers, and the producer organization from whose demonstration plot *Hugo Restrepo y Cía* will purchase the harvest. The evaluation team suggest that Custom Indicator #7 might be more appropriately tracked under Activity 2, which considers commercialization

Activity 5 Indicators: Financial Services

Table 18: Activity 5 Indicators: Financial Services

Indicator Number	Indicator Name	Unit	Baseline	FY2021 Target	Progress Y1	Y1 Progress to Target %	FY2022 Target	Progress Y2	Y2 Progress to Target %	FY2023 Target	Progress Y3	Y3 Progress to Target %	FY2024 Target	Progress Y4 - S1	Y4, S1 Progress to Target %
Standard #5	Number of individuals accessing agriculture-related financing as a result of USDA assistance	Producers	0	78	0	0%	423	0	0%	1,065	1,743	164%	1,065	360	34%
Standard #7	Number of loans disbursed as a result of USDA assistance	Loans	0	68	0	0%	368	0	0%	927	0	0%	927	1	0%
Standard #8	Value of agriculture-related financing accessed as a result of USDA assistance	US\$	0	92,525	0	0%	599,634	0	0%	1,358,337	0	0%	1,258,337	10,234	1%
Standard #14	Value of new USG commitments and new public and private sector investment leveraged by USDA to support food security and nutrition	Leverage	0	-	-	n/a	100,000	0	0%	100,000	1,980,850	1981%	2,000,000	366,910	18%
Custom #9	Number of grants disbursed to beneficiaries as a result of USDA assistance	Grants	0	1	0	0%	30	0	0%	45	0	0%	1	0	0%
Custom #10	Value of grants disbursed to beneficiaries as a result of USDA assistance	US\$	0	15,000	0	0%	355,000	0	0%	505,000	0	0%	40,000	0	0%

Source: C4D MEL Documents

Findings for FFPr Standard Indicator #5 - Number of individuals accessing agriculture-related financing as a result of USDA assistance; FFPr Standard Indicator #7 - Number of loans disbursed as a result of USDA assistance; FFPr Standard Indicator #8 - Value of agriculture-related financing accessed as a result of USDA assistance; FFPr Standard Indicator #14 - Value of new USG commitments and new public and private sector investment leveraged by USDA to support food security and nutrition; Custom #9 - Number of grants disbursed to beneficiaries as a result of USDA assistance; Custom #10 - Value of grants disbursed to beneficiaries as a result of USDA assistance.

Indicators under this activity measure outputs and outcomes related to C4D activities aimed at increasing access to agricultural financing. FFPr Standard Indicator #5 counts all producers who have an active cacao crop insurance policy due to C4D's joint initiative with *Seguros Bolivar* and FINAGRO. From September 2023 to January 2024, 14% of the 2,103 producers with cacao insurance received compensation due to droughts experienced in the departments of Antioquia, Bolivar, Cesar, Cordoba, and Huila. These departments span Clusters 1-4. In FDGs and KIIs, interviewees indicated that cacao insurance is valued among producers and other stakeholders in the cacao value chain, since it safeguards against climate-related risks such as droughts and excessive rainfall, which can significantly diminish yields. One participant emphasized the benefits, stating:

"Cacao insurance is very beneficial. There's nothing better than having the crop insured, both for drought and rain."

– 26. KII- Producer Organization Representative

This recognition underlines the importance of cacao insurance in managing the unpredictable effects of climate change where high humidity and fluctuating rainfall patterns pose significant challenges to crop health.

Participants highlighted how climate variability can lead to increased disease susceptibility and pest outbreaks, impacting production stability. In response, collaborative efforts with commercial partners focus on enhancing pest and disease control strategies to mitigate these climate-related risks and sustainably support cacao farming communities.

"The main challenge is climate change. Huila is an area with high humidity, and the rains affect crops by causing diseases. When it's hot, production increases, but when it rains a lot, it becomes a problem. In response to the climate change challenge, we work with commercial partners to train on pest and disease control."

– 31. KII- Producer Organization Representative

Despite the clear benefits, implementing insurance programs is not without its hurdles. There is a need for better financial education among producers to understand the benefits and processes of insurance, as noted by a respondent:

"There is a lack of financial education. Finagro is evaluating 10% of the sample to verify that the producers know that they are insured and what benefit they are subject to receive. Parametric insurance is triggered by excess or deficit of rainfall (not flood, not drought, not natural phenomena. This is covered by the traditional ones)."

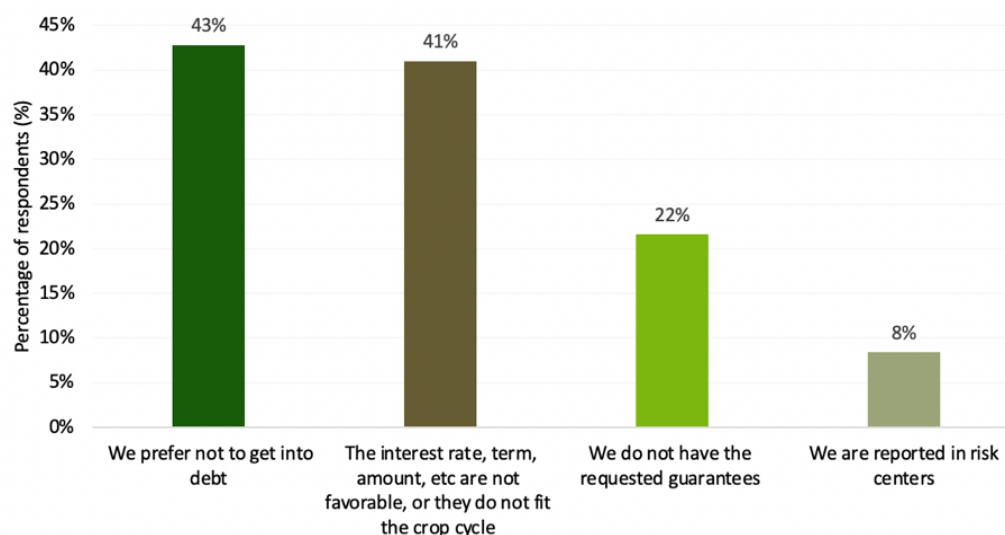
– 12. KII- Government Stakeholder

Parametric insurance compensates farmers based on excess or deficit rainfall. While traditional indemnity insurance is more comprehensive, it is also more costly. Thus, striking a balance between insurance types and financial products and making them accessible to all producers remains a key long-term goal. One concern is that producers are either not aware that they have cacao insurance or are not sure how it works. This was highlighted in the midterm evaluation's survey, where the majority (66%) responded that they did not know if they had cacao insurance or how to use it.

FFPr Standard Indicators #7 and #8 count the number and value of loans disbursed to producer organizations. This is expected to increase as activities with *IC Fundación* intensify. Although *IC Fundación* began training producer organizations in August 2023, only one producer organization has been deemed creditworthy. They were able to secure a loan for US\$10,324. C4D's strategy has since shifted to focus on supporting producer organizations to become credit-ready, as it was found during implementation that most farmers were not. The evaluation team suggests that targets for this indicator should be lowered, taking into account that the output (i.e., number of loans disbursed) will likely be lower due to the project's focus on 74 organizations rather than 5,000 individual producers. The target for the value of loans disbursed may also need to be lowered.

Figure 23 shows the top barriers preventing producers from accessing credit. The majority of the producers (43%) stated they prefer not to go into debt, while 41% indicated that the interest rates and terms were not favorable to them or their operations. C4D may therefore want to consider financial packages other than credit, such as those promoting savings.

Figure 23: Barriers to Accessing Credit



Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

Progress under FFPr Standard Indicator #14 considers the value of agreements C4D has with private stakeholders, such as CNCh, Luker Chocolate, and *Hugo Restrepo y Cía*. It is projected that for Custom Indicators #9 and #10, this will involve selecting 5-10 business plans for youth C4D grants in partnership with SocialLab, a firm which conducts Open Innovation challenges to incentivize Latin American youth to remain in the value chain.

Activity 6 Indicator: Innovation Youth Indicator

Table 19: Activity 6 Indicator: Innovation Youth Indicators

Indicator Number	Indicator Name	Unit	Baseline	FY2021 Target	Progress Y1	Y1 Progress to Target %	FY2022 Target	Progress Y2	Y2 Progress to Target %	FY2023 Target	Progress Y3	Y3 Progress to Target %	FY2024 Target	Progress Y4 - S1	Y4, S1 Progress to Target %
Custom #8	Number of youth with increased capacity in agribusiness	Youth	0	230	0	0%	575	0	0%	690	84	12%	575	88	15%

Source: C4D MEL Documents

Findings for FFPr Custom Indicator #8 – Number of youth with increased capacity in agribusiness.

This indicator measures the number of youth (aged 16 to 29) who have benefited from the following C4D activities:

1. Farm visits and extension services;
2. Training for youth entrepreneurs through the Open Innovation Process;
3. Training for youth producers and farmer organization staff through exchange trips to successful farms and organizations in Colombia and Latin America;
4. Participation in the 100K CLIMA Grants, which support student exchange and climate action projects between U.S. and Colombian universities.

Indicator achievement rates have been low since Y1, partly because activities with youth have not yet started. To this end, C4D is collaborating with the U.S. Department of State through the 100,000 Strong in the Americas Alliance for Climate Action (100K CLIMA) Program. In addition, following an open, competitive process in February 2024, C4D selected SocialLab to identify youth business ideas that address key bottlenecks in the harvest and post-harvest stages of the cacao value chain. KIIs revealed that a significant issue in keeping youth in the value chain is their tendency to move to urban areas in search of better opportunities, explaining why youth represent just 2% of C4D's total producer population. C4D therefore also plans to collaborate with private sector organizations to create marketable employment opportunities for youth to pursue their agribusiness ventures. For example, four companies have so far confirmed their commitment to host or provide internships for youth C4D producers and youth staff from C4D producer organizations in 2024.

“It is crucial to address the challenge of retaining young people in the field. A project aimed at benefiting young people would be key, as they lack resources and need support to start cultivation.”

– 2. KII- Producer Organization Representative

Activity 7 Indicator: Regional Community of Practice Indicators

Table 20: Activity 7 Indicator: Regional Community of Practice Indicators

Indicator Number	Indicator Name	Unit	Baseline	FY2021 Target	Progress Y1	Y1 Progress to Target %	FY2022 Target	Progress Y2	Y2 Progress to Target %	FY2023 Target	Progress Y3	Y3 Progress to Target %	FY2024 Target	Progress Y4 - S1	Y4, S1 Progress to Target %
Custom #11	Number of logins to online Regional Community of Practice knowledge sharing platform	Logins	0	-	-	n/a	1,000	0	0%	1,500	0	0%	2,000	0	0%
Custom #12	Number of participating Regional Community of Practice members	Organizations	0	-	-	n/a	40	0	0%	80	49	61%	100	473	473%

Source: C4D MEL Documents

Findings for FFPr Custom Indicator #11 - Number of logins to online Regional Community of Practice knowledge sharing platform; Custom Indicator #12 - Number of participating Regional Community of Practice members.

Custom Indicator #11 measures the Community of Practice website's exposure by tracking the number of users interacting with the site, while Custom Indicator #12 tracks the number of individuals signing up to participate in the annual summits hosted by C4D under this activity. The indicators under the Community of Practice have mixed results, partly because the targets are ambitious. The website version of the platform was only launched in March 2024, so it is expected that by the end of Y4, S2 the results will be more significant. While recognizing that the Community of Practice has real potential to align stakeholders as they leverage the competitive advantages particular to each region, the evaluation team recommends revising indicators #11 and #12 to track more outcome-related activities rather than just the number of logins or event sign-ups.

Responses to Questions

- **To what extent has C4D increased the knowledge of cacao producers in improved techniques, technologies, and management for diversified production systems?**

On average, results from the midterm evaluation show that a majority (80%) of the producers were adopting practices promoted by the project. Only one practice – irrigation – had low adoption due to stated high costs.

- **Have C4D activities led to effective linkages between Colombian producers and processors, and Colombian, regional, and global buyers and suppliers?**

Key informant interviews with producer organization representatives and C4D project staff highlight that C4D has helped promote buyer-supplier linkages between producer organizations and domestic buyers, as well as between Colombian exporters and US buyers. However, these activities are limited in comparison to the intensity of the on-farm assistance efforts. Suggestions for how to support buyer-

supplier linkages and better information flow about international demand preferences are made in the recommendations section.

- **To what extent has C4D strengthened producer organizations, post-harvest aggregation and processing, and extension services?**

As discussed above, grants to help expand producer organization processing functions are planned to commence in 2024/2025. This is expected to help strengthen producer organizations, as well as their post-harvest aggregation and processing capabilities. Regarding extension services, C4D has built a strong reputation for providing systematic technical assistance to farmers through regular farm visits and follow-ups.

“It is already evident that [C4D] has improved aspects of productivity and rural extension. There are advances in technical support and environmental management. Producers are improving their environmental conditions.”

– 23. KII- Government Stakeholder

Quality and accessible extension service provision was a significant gap before C4D's intervention. The project is providing services directly, departing from what is typically considered good practice in market systems approaches to value chain development. Under globally accepted norms, a project would be expected to employ a “light-touch” facilitation approach, supporting private sector actors or building the capacity of public actors. C4D staff stated that the particularly challenging and unique context for cacao in Colombia (as described in the introduction to this report) make such an approach impractical. They have instead articulated a draft strategy that considers the continuation of these activities through the creation of a local government-funded Agricultural Extension Service Providing Entity (EPSEA) and through the strengthening of existing EPSEAS. This is a strategy that could involve POA directly inserting themselves into the cacao value chain. This approach is further discussed in the sustainability chapter.

- **Is C4D on track to achieve the specific targets and results established?**

In the third year (October 2022-September 2023), overall progress towards the planned goals was at 46%. For the first semester of the fourth year (October 2023- March 2024), progress had already reached 40%. It is expected to exceed 90% by the year's end. Of the 36 indicators, 16 have achieved 100%, one is at 80%, seven are below 25%, and 13 remain at 0% (some of these are end-of-project indicators).

8. Efficiency

The Efficiency section of the evaluation responds to two research questions:

- To what extent have C4D investments in improving post-harvest infrastructure led to improved aggregation and processing for cacao and complementary crops?
- How have investments in establishing the regional community of practice and philanthropy fund (referred hereafter as C4D investment vehicles) led to increased research, technology validation, and rural extension?

C4D is best known in Colombia for working at the production level, specifically providing extension services where previously there were none. This has been a huge contribution, which is recognized and appreciated. It was without a doubt the appropriate first step for such a project given the challenges at

hand: aging trees, limited incentives for producers to grow cacao, conflict in the most fertile growing areas, and the dominance of domestic buyers who in many cases are satisfied with a lower quality product. To date, C4D has not made any significant investments in improving post-harvest infrastructure, as these activities have not yet been rolled out. Post-harvest infrastructure includes drying and fermentation stations.

As discussed in the project description section of the report, C4D is working with public, private, and civil society actors related to the Colombian cacao value chain. C4D is also beginning to work in complementary crop value chains (as in peppers). Through the RCOP and through its work to establish C4D investment vehicles, C4D has engaged with private Colombian foundations, international development partners, buyers and potential investors in the sector, and of course local public entities at the regional and national level. Many partnerships are in the early stages (i.e., developing requests for proposals for a joint grant fund, a study to determine the structure of the investment vehicles, etc.) The RCOP is established as an online platform and C4D uses the platform to issue solicitations and organize events. What an observer might expect to see by this stage (at the midpoint of the project) is a clear articulation of how key stakeholders fit into a common vision for the cacao sector's development.

One element missing from the interviewee statements was a clear national strategy for cacao sector development, such as a common vision for market development. This absence directly impacts how local stakeholders and C4D can align research, technology validation, and rural extension efforts to benefit a shared vision.

Current activities with local stakeholders are bilateral. During the qualitative research, several public and private partners (about 41% of the interviewees) were unable to articulate the activities that C4D was conducting outside their specific area of collaboration.

The evaluation team recognizes that C4D is operating in a challenging context where the organizing body for the sector (Fedecacao) and the other public actors involved in agricultural development, are not naturally aligned with each other – given political and economic realities. This very context is the reason that C4D has chosen to intervene directly in the market – hiring extension agents through the project – in a departure from traditional value chain strengthening and market systems approaches. The extension “push” comes after a period of decline in the sector's productivity, and the work on cacao cultivation is benefiting from efforts to plant complementary crops and address one of the root causes of low productivity – low producer incomes, especially smallholders.

However, there is an opportunity to leverage the RCOP to bring together all relevant actors—those directly and indirectly involved in the cacao sector, as well as those working with complementary crops. This collective engagement through participatory activities, such as studies and sector visioning workshops, can align incentives and foster collaboration toward a shared vision for the cacao sector. Most stakeholders share common incentives, such as increasing productivity and exploring international market opportunities. C4D can play a pivotal role in facilitating these discussions and providing evidence-based insights that help stakeholders make informed decisions on trade, value-added processing, productivity metrics, and more. The goal is not for C4D to conduct all the evidence gathering or to address every gap, but rather to use the RCOP to create a platform where all stakeholders can actively engage and contribute to a common vision—one that naturally aligns with C4D's objectives of enhancing productivity and expanding trade.

This collective approach can help inform C4D activities on how the project can support local stakeholders in fulfilling their mandates for the benefit of the cacao sector, and vice versa. The following provides a 'decision matrix' to help define the common vision and orient stakeholders in making evidence-based decisions.

Table 21: Decision Matrix

	Enabling Environment	Market Dynamics	Cultural Factors
Key Stakeholders	Policy, Lawmakers, and Service Providers	Value Chain Actors	Household
Buyers/Markets	Public financing and investment needs for the sector (i.e. roads)? Policies and regulations for the sector (i.e., pesticide use limitations) Availability of public and private services? (i.e., rural extension, subsidies, etc.)	Target markets and required volume, quality, etc.? Key products for market: cacao beans, cacao liquor, cacao butter, cocoa powder, chocolate bars?	Key demographics of producers (average age of producer, typical farm size) History (i.e., post-conflict zones) Environmental factors
Processing		Can processing capacity meet market needs? Value-add processing?	
Aggregation / Intermediation		Location of collection centers? Transport capability? Traceability?	
Production		Practices compliant with market requirements?	
Inputs		Varieties needed for target markets?	

Source: Authors' Elaboration

Table 21 outlines three dimensions to consider, taking a systems approach: enabling environment, market dynamics, and cultural factors. Questions are organized by these dimensions, with the value chain levels listed vertically on the left. Each question is tailored to its respective dimension and addresses different aspects to strategize on a national strategy for cacao sector development. For example, questions under the 'market dynamics' dimension focus on market requirements and defining what the needs are at each level.

Responses to questions

- **To what extent have C4D investments in improving post-harvest infrastructure led to improved aggregation and processing for cacao and complementary crops?**

As mentioned above, C4D is highly regarded in Colombia for its efforts at the production level, especially for introducing extension services where they were previously unavailable. These services have been seen as adding significant value to the cacao and complementary crop value chains in the country. While C4D has focused on identifying local producer organizations for organizational strengthening, as well as begun developing domestic and international buyer linkages for future investments in post-harvest infrastructure, the project has not yet made significant investments in this realm.

- **How have investments in establishing the regional community of practice and philanthropy fund led to increased research, technology validation, and rural extension?**

The RCOP represents an opportunity to align stakeholders around a common vision but has not to date been effectively used in this way. This is further discussed in the sustainability and recommendations sections.

9. Sustainability

Sustainability contains three research questions:

- To what extent has C4D helped producers sustainably diversify their cacao-based farms, using a landscape approach?
- To what extent will the C4D philanthropy fund sustain investments in advancing cacao and complementary crop value chains?
- In what ways, positive and negative, has C4D addressed biodiversity in target regions?

This chapter will examine sustainability from two angles: (i) the implementing partner's approach and the likelihood that implementation will be adopted by local private and public stakeholders, and (ii) how climate sustainability is being considered in the practices they are promoting.

Likelihood and Challenges of Technical Assistance Continuing from Private and Public Actors

C4D's approach to teaching and following up on practices at the farm level is a valuable asset for the entire sector. The extension tool, *Cacaograma*, has been adopted by partners and has the potential to be embraced beyond the boundaries of the C4D project.¹⁹ This tool, developed with inputs from Fedecacao, CNCh, Luker, and *Red Cacaotera*, is used by extension agents to provide direct technical assistance to farmers by showing the 10 practices/success factors promoted by the project at the farm level that need to be implemented prior to harvest for productivity gains. It offers clear definitions and guidelines for follow-up and it is tailored to each specific region and harvesting season. This tool is used hand in hand with the farm management plan calendar.

Most (91%) of the 49 extension agents currently providing services under the project have been hired directly by C4D, with four of the 49 agents hired through a partnership agreement among C4D, CNCh and *Fundación Nutresa*. C4D has made the *Cacaograma* available on the RCOP website for any member to download but there is no greater dissemination plan in place. C4D is actively working on a sustainability strategy to ensure the continuation of its activities after the project's conclusion. A draft of this strategy has been shared with the evaluation team, with particular emphasis on the continuity of extension services highlighted in point number 1:

1. Create an *Entidad Prestadora de Servicios de Extensión Agropecuaria* (EPSEA) that will bid for government technical assistance contracts. One EPSEA will be housed under the POA Foundation (the POA Foundation is already created) and other pre-established EPSEAS in Colombia will be strengthened. EPSEAS will be selected for organizational strengthening after an EPSEA landscape analysis is conducted.

¹⁹ Per project staff and interviews with partners, *Cacaogramas* have already been embraced by CNCh, Luker Chocolate, and Cacao Hunters. C4D has printed more than 4,000 *Cacaogramas* and some buyers have contributed their own resources to disseminate this tool.

2. Provide technical assistance and investment control services to investment funds and local financial institutions (C4D investment vehicles)
3. Provide technical assistance services to international cooperation projects (extension agents)
4. Extension data monetization (software that provides extension performance data)
5. Provide subcontracted services to institutions capturing parafiscal resources

There is a vision for the C4D implementing staff to create an *Entidad Prestadora de Servicios de Extensión Agropecuaria* (EPSEA), an entity certified by the Ministry of Agriculture to provide agricultural extension services in Colombia. EPSEAs are tasked with delivering technical assistance and extension services to farmers, enhancing agricultural productivity and sustainability.²⁰

As outlined earlier in the report, due to the complex environment in which C4D operates, the project chose to provide direct extension services to address a significant productivity gap. Consequently, the strategy considers creating a local entity to continue these services after C4D concludes. The strategy envisions that these services could become part of POA's future activities in Colombia and potentially generate additional income streams.²¹ There are two fundamental issues the C4D project team must address to fully develop the sustainability vision they have begun to develop. The first is determining how other stakeholders—funders, as well as public and private implementers—can contribute to the continuation of activities. The second is building and implementing a regional cluster vision with stakeholders, considering the enabling environment, market dynamics, and cultural aspects (please see Table 21 in the Efficiency section).

For example, the project already plans to invest in large fermentation stations or nucleus farms to enhance post-harvest infrastructure capacity. The goal is to socialize this work with local stakeholders and gather expert input to ensure that it contributes to C4D's mandate in achieving Strategic Objectives 1 and 2 of the USDA Results Frameworks, as well as encourage local players to contribute at the systems level, leading to the strengthening of the cacao value chain.

To enhance local ownership, C4D's current vision could be broadened to include leveraging local stakeholder capabilities by region, enabling them to provide extension services that, at a minimum, continue farm visits and adopt C4D's extension tools.

C4D's farm-level activities are focused on increasing productivity, specifically measured as kilograms per tree. As production rises, the opportunity to target international markets becomes more viable, especially as Colombia's domestic market approaches saturation. For instance, Colombia's chocolate consumption is estimated at 1 kg per capita, and with a 2024 population of approximately 52.3 million, total domestic consumption is around 52,340 metric tons (MT).^{xlix} Given recent production levels have reached 65,164 MT in 2021 and 62,158 MT in 2022, it is clear the domestic market is nearing its capacity. Supporting this, trends from 2011-2020 show a 97% decrease in cacao bean imports to meet

²⁰ To become an EPSEA, entities must:

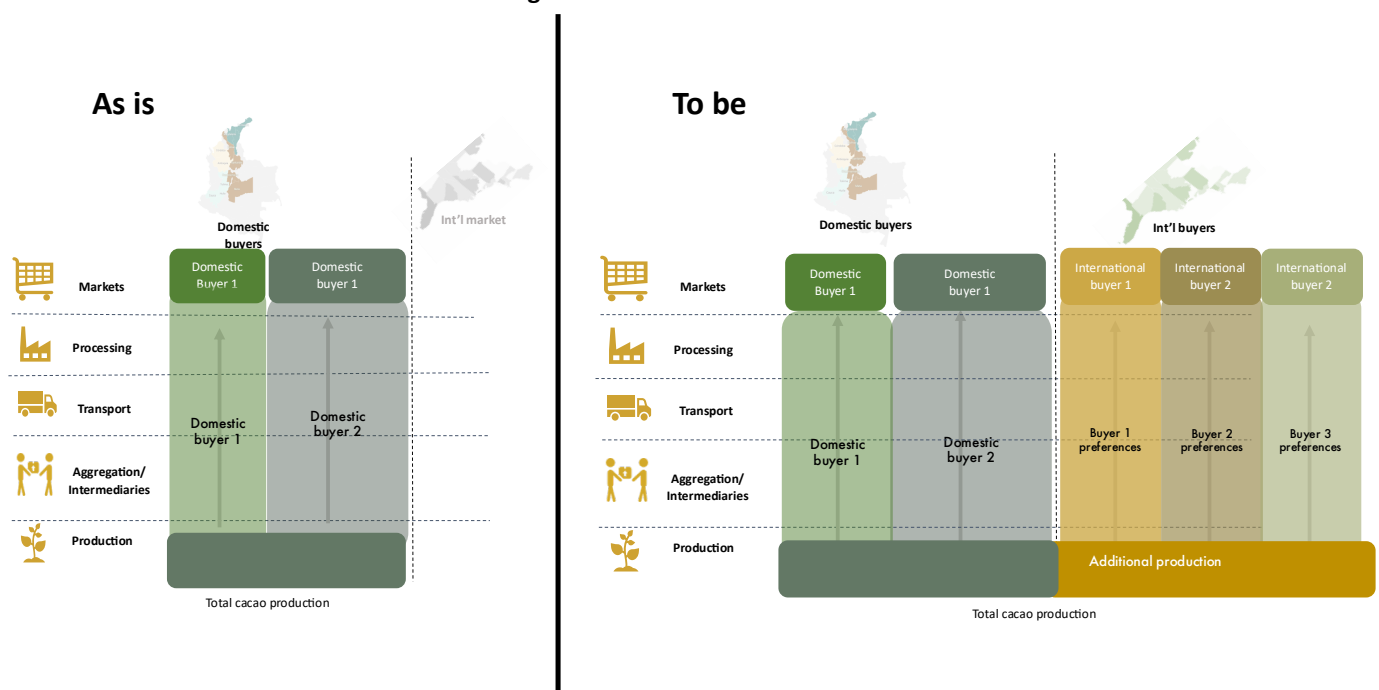
- Meet eligibility requirements, which typically includes having qualified personnel, relevant experience in agricultural extension, and the necessary infrastructure and resources.
- Submit an application for a certification request along with proof of legal registration in Colombia and resumes of personnel that will provide extension services.
- Once registered and certified, comply with MADR standards and provide regular reporting on activities.

²¹ There is discussion among the C4D staff team to monetize the data collected by C4D extension agents as it is seen as an asset for a sector given the lack of reliable sector specific statistics.

local demand and a 384% increase in exports. C4D plans to focus on international markets once Colombia's production reaches 70,000 to 80,000 MT.

Moving forward, C4D should integrate market signals across all value chain activities, ensuring that production aligns with international market requirements. This would be similar to how C4D has aligned production with the primary concern of domestic buyers, which is reliability of supply rather than quality. This process will involve mapping out specific market requirements in Year 5, Semester 1, with a focus on regional competitiveness in terms of quality and volume at each value chain level. Figure 24 shows the "as is" and "to be" in terms of C4D's focus. The "as is" illustrates that C4D is currently focused on expanding productivity with domestic buyers in mind. However, the "to be" demonstrates how preferences and market signals could change if the international market is activated, once there is enough productivity surplus that cannot be absorbed by the domestic market

Figure 24: 'As Is' and 'To Be' Focus



Source: Authors' Elaboration

For example, the following represents an illustrative list of European export requirements that C4D would need to consider to ensure production can flow to EU markets:

- The General Food Law (Regulation (EC) 178/2002) and general rules on Food Hygiene (Regulation (EU) 2017/625).
- Contaminant regulations (Regulation EC 1881/2006), as non-compliance will result in rejection.
- Pesticide residue controls (Regulation EC 396/2005).
- The ability to provide accredited laboratory analysis of cadmium levels in cocoa beans upon request.

It should be noted that the project has already initiated a study at the processing level to identify optimal locations for processing plants given the anticipated increase in production, taking into consideration factors such as transportation access and scalability.

Another challenge to sustainability is the lack of clarity regarding which public partners will continue C4D's cacao value chain strengthening activities after the project's conclusion at the national level. While C4D is collaborating with public sector actors on specific initiatives—such as with *Agrosavia's* research to mitigate cadmium levels, or partnering with FINAGRO to subsidize crop insurance—there is no coordinated effort in which a public sector actor, or a group of actors, is assuming or planning to assume ownership of C4D's activities. C4D recognizes its significant financial role in the cacao sector. A rough calculation of the Colombian government's annual spending on the cacao sector reveals that it nearly matches the budget of the C4D project. To promote sustainability, C4D could facilitate a sector visioning workshop through the RCOP or the NCC. Since POA, the implementing partner, has recently become an active member of the NCC, this could encourage public sector actors to allocate funds toward a shared market development vision, such as expanded trade or increased productivity.

Likelihood and Challenges of the C4D Investment Vehicles

The concept behind the C4D investment vehicles has evolved since the beginning of the project. It started as an endowment, now moving towards becoming multiple investment vehicles with the goal of raising additional capital as leverage (not cost share) for investment in the cacao sector and continuing project activities into the future. The “pitch deck” for the fund positions C4D as an anchor investor that can also be a source of business intelligence to identify investment opportunities. Currently the fund offers matching opportunities, with debt, grants, and equity options. The allocation from C4D through USDA is USD \$3 million. The goal is to leverage another USD \$4 million at the beginning, with the fund growing over time. Potential investors include philanthropic foundations, impact investing funds, and multilaterals like the Inter-American Development Bank.

The plans to leverage funding from other sources make sense and C4D is already leading by example by coordinating with other funders in the agricultural development and environmental sustainability space to issue joint grants, or work to structure financing vehicles.

Setting up a new fund from scratch is expensive, so C4D is exploring alternative options to manage its financial resources more effectively:

- Option A – Build on an existing fund
 - o C4D would create a specific focus area within the existing fund dedicated to the cacao sector
- Options B- Diversifying investments
 - o Instead of putting all \$3 million into the fund, C4D would invest only part of it and the remaining funds would be distributed across other investment options: 1. providing loans or credit lines through local banks to support cacao-related projects; 2. investing in ownership stakes in a facility that processes cacao, enhancing post-harvest capabilities; and 3. offering grants to kick-start or accelerate a high-potential project in the cacao sector.

Overall, it is highly likely that the investment vehicles will exist and that some additional resources will be leveraged. Whether it can be a successful impact investing vehicle is another story. Organizations such as Acumen Fund and the Inter-American Development Bank which have experience creating and

managing impact investing funds in the sector could offer valuable advice. Some of the most difficult work for impact investment funds is in generating a pipeline of viable projects. C4D today is well-positioned to identify such projects. That is why the project should not wait until it ends to begin making impact investments. It would also be harder to offer reimbursable funding if grants are given out now. C4D and USDA may want to consider converting the project's grant fund into a loan and equity fund so that the project can begin learning about the minimum size, transactions costs, type of project, and other details needed to constitute a dynamic portfolio in the cacao sector in Colombia. For example, if there are producer associations that today are ready to invest in processing facilities, the C4D impact investment fund should work to test what financing terms are appropriate for such an initiative, so that they can be paid back but do not burden too much the local community.

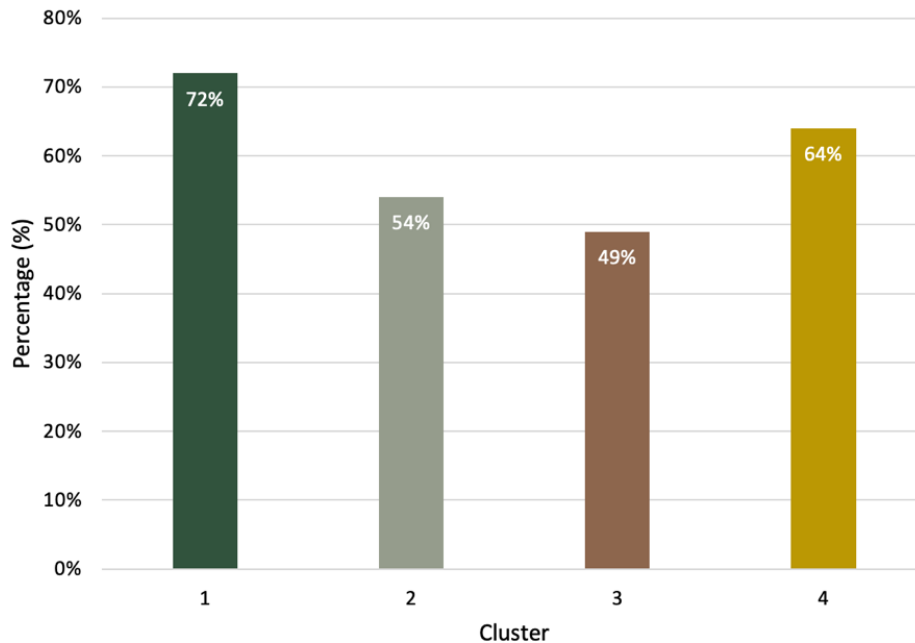
Sustainability of Practices

Cacao cultivation can be established in an agroforestry system, in association with another crop, and/or individually planted (i.e., monoculture).²² In Colombia, almost 90% of cacao plantations are carried out under agroforestry systems, which is an environmentally friendly practice offering environmental and livelihood benefits for cacao producers.^{xliii xliv} Nascent cacao trees require more shade than trees that are 3-5 years old. Cacao agroforestry systems are considered to help maintain biodiversity in landscapes where forest habitats have declined due to human land-use pressure.^{xlv} Carbon storage of 136 Mg C ha⁻¹ has been found where cacao has been planted in agroforestry systems, which is higher than when cacao is solely implemented with complementary crops (77 Mg C ha⁻¹).^{xlvi}

Per the evaluation team's survey with producers, 59% of the respondents stated that their cacao is planted within an agroforestry system. Figure 25 below shows the results by cluster, where Cluster 1 had highest frequency of producers cultivating cacao within an agroforestry system.

²² Agroforestry systems are those that have cacao crops grown in areas with high-stature forest trees that provide shade to the cacao. Cacao cultivation that is established with a complementary crop, refers to using the same area for cacao production along with crops like banana, citrus, cassava, etc., which have a similar stature to cacao and are either commercially sold and/or for self-consumption.

Figure 25: Percentage of Producers that Cultivate Cacao in an Agroforestry System



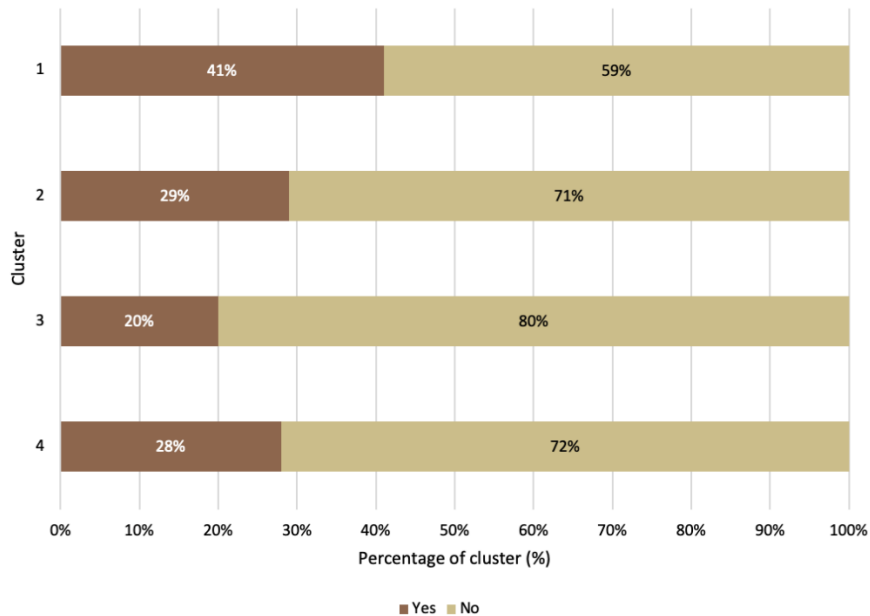
Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

C4D extension agents are providing shade management and complementary crop assistance and guidance to producers. One of the complementary crops promoted by the project, plantains, is a fruit tree that can provide significant shade to new cacao trees. Of the 560 survey respondents, 48% of producers are planting plantains as a complementary crop to their cacao production. In addition, C4D is collaborating with *Fundación Cataruben*, a local non-profit organization focused on the conservation of biodiversity and the promotion of sustainable development to help producers enter the carbon credit market.

Of the 10 practices being promoted at the farm level through extension services, four are linked to climate risk reduction and/or natural resources management. These practices consist of promoting organic fertilizer use, soil amendments, pruning and irrigation systems. Sixty-three percent of respondents to the evaluation team's survey indicate they are implementing at least one of these practices on their farm.

C4D extension agents are providing guidance on how leaf litter from shade trees and cacao itself can contribute to soil organic matter, enhancing soil fertility and structure. Figure 26 shows the evaluation team's survey results by cluster and illustrates that the majority (71%) of the respondents are not using pod litter as an input to enrich the soil.

Figure 26: Do You Use Pod Litter as Organic Matter for the Soil?



Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

Responses to questions

- **To what extent has C4D helped producers sustainably diversify their cacao-based farms, using a landscape approach?**

C4D has helped producers sustainably diversify their cacao-based farms using a landscape approach by promoting complementary crops like plantains, collaborating on carbon sequestration studies for additional income through carbon credits, and encouraging climate risk reduction practices such as organic fertilizer use, pruning, soil amendments, and irrigation systems. This comprehensive approach enhances biodiversity and soil health and provides economic benefits.

- **To what extent will the C4D philanthropy fund sustain investments in advancing cacao and complementary crop value chains?**

The C4D philanthropy fund offers the potential to leverage funds for cacao and complementary value chains. To ensure that it is successful, C4D will need to begin making impact investments during the life of the project.

- **In what ways, positive and negative, has C4D addressed biodiversity in target regions?**

C4D has addressed biodiversity by promoting pruning, soil amendments and organic fertilizers, which help foster diverse microbial communities and other organisms. By encouraging the cultivation of cacao within agroforestry systems and the planting of complementary crops like plantains, the project supports natural habitat conservation. This approach enables small to medium-sized farms to mimic natural forest ecosystems and maintain biodiversity.

10. Impact

The impact section has two main research questions:

- To what extent have beneficiaries increased their incomes as a result of C4D?
- To what extent has C4D boosted the market potential of complementary crops?

The first question is linked to observed changes at the outcome level (evidence of change in income as a result of extension services), while the second question is targeted at the impact level (changes in trade activity, and productivity). It is important to highlight that the research design for this evaluation does not allow for a “difference in differences” approach (see box). Instead, the discussion explores how and to what extent C4D activities are contributing to change, and at what level. Attribution is not established. The evaluation team reviewed: (i) USDA’s Notice of Funding; (ii) C4D’s project level theory of change; and (iii) USDA’s Standard Results Frameworks to assess what C4D staff and USDA are defining as activities, outputs, outcomes, and impact. Like other USDA projects, C4D was given latitude to develop its own customized, project-level ToC. Currently, C4D’s ToC states:

Impact as a “difference in differences.”

Technically, “impact” refers to the changes that can be fully attributed to an intervention, based on rigorous cause-and-effect analysis and the use of a counterfactual via control or comparison groups. The term “difference in differences” refers to the amount of change (in any direction, positive or negative) in comparison to what would have occurred without the intervention, at two points in time.

“If (1) market potential for targeted, fair return crops is strengthened; AND (2) cacao producers have increased access to finance and market information; AND (3) key national and regional research and industry partners collaborate to build a framework to conduct technology validation and rural extension for cacao and complementary crops; AND (4) a self-sustaining fund is created to continue local and regional collaboration efforts; THEN producers will be able to sustainably diversify their cacao-based farms using a landscape approach; LEADING to diversified income sources, increased resilience, and improved livelihoods.”

While the English version of the ToC is not explicit, the Spanish version is clear and refers to **complementary crops** in the first sentence. As discussed elsewhere in this report, C4D has adopted a strategy of supporting the introduction of complementary crops and this is expected to provide increased incentives for producers to invest in cacao cultivation. The incentive comes from the fact that complementary crops’ shorter cash flow cycles offset the longer cacao, and the two combined make for a smoother income stream. It is surprising that C4D’s ToC does not mention producer income, given how much importance the project team places on this issue. Indeed, it would appear to the evaluation team that by focusing on income C4D has identified an important mediating variable – i.e., one that strongly influences the project’s ability to achieve the USDA-mandated results of increased trade and productivity. In such a case, it is useful to include the mediating variable explicitly in the ToC to clearly identify causality (refer to text box for example).

Mediating variables and why they are important for C4D

A mediating variable transmits the effect of an independent variable on a dependent variable. For example:

“Buying burgers for a work party leads to positive team spirit and work being done in half the time.” Burgers are the independent variable, the work rate is the dependent variable, and the referee, the mediator that explains the relationship, is the positive team spirit.

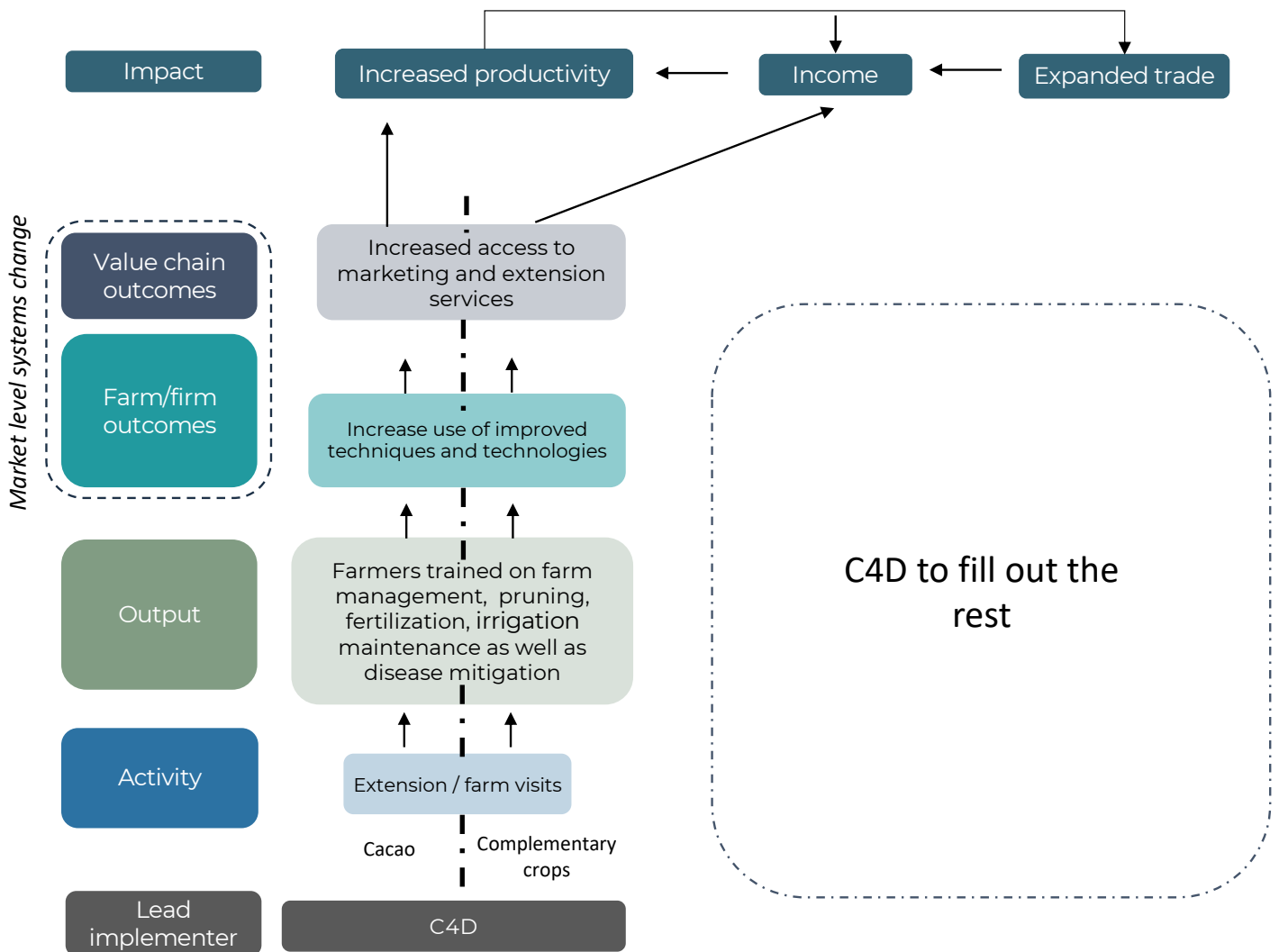
In addition to income (whether from complementary crops or in general) C4D may want to consider whether there are other mediating variables or “levers for change” that influence the shift from domestic sales to exports. As discussed elsewhere in the report, even with an increase in production, there are microeconomic variables likely to determine producer and intermediary behavior, i.e., incentives or costs that come with switching from one value chain channel to another. To ensure the project team can articulate and track how their project contributes to change, C4D should explicitly identify and include mediating variables in an updated project-level ToC.

Finally, C4D’s current project-level ToC does not refer to USDA’s overarching objectives. Like all Food for Progress projects funded by USDA, C4D aligns its activities and indicators to standardized results frameworks. These, referred to as Food for Progress Strategic Objective 1 (FFPr SO1) and FFPr SO2, are respectively: Increased Agricultural Productivity; and Expanded Trade of Agricultural Products (domestic, regional, and international). In the USDA FFPr Frameworks shown in Annex 3, activities are featured in a redundant manner and there is an incomplete set of partners that have been added to the graphic, so this will also need to be updated. The USDA FFPr Frameworks do have some inherent problems which should be noted. For example, outcomes such as improved government capacity and policy are not fully integrated into the logic model; they are positioned at the base of the framework and labelled as “foundational results.” In this way, the USDA Results Frameworks do not offer much guidance for thinking about what causes policy change and what policy change then leads to, and the same for increased government capacity. On the private sector side, the USDA Results Framework does not distinguish what practices are foundational for trade and productivity. Specifically, it does not articulate what markets are desired for trade and competition and how practices will lead to these high-level changes. Given these issues the USDA Frameworks can be used primarily as guidance to ensure alignment with the highest-level results.

It is helpful to periodically review and update the project-level ToC during implementation. Figure 27 presents a partial suggestion for a revised C4D theory of change, focused on the extension activities which are directly implemented by C4D, and shows income as a mediating variable. The illustration uses the Donor Committee on Enterprise Development’s (DCED) ToC framework levels: activities, outputs, outcomes (firm/farm level and market level), and impact. The first level relates to changes implemented by firms and farms, where the second level of outcomes represent value chain level changes such as increased adoption of standards, increased access to extension/financial access for value chain actors, and/or improved access to market information.

The idea is that an activity should clearly lead to outputs, which should clearly lead to outcomes, and impact corresponds to the highest-level results from the USDA FFPr Frameworks. Arrows are drawn to indicate a causal link. The project team will need to review, validate or revise this, and then develop the additional visuals for other activity groups. Once this is done a new ToC would be written which clearly describes causal linkages and identifies mediating variables. The ToC should be reviewed and updated at least once per year.

Figure 27: Theory of Change



Source: Authors' Elaboration

Practice Adoption Compared to Baseline

To identify evidence of changes at the farm level, the midterm evaluation created Table 22 to show differences in adoption rates compared to the baseline. For this illustration, the team only selected practices that had baseline data. To ensure a valid comparison between the baseline data and the current beneficiary database used as the sample frame for the midterm evaluation's analysis, the team applied an expansion factor. This adjustment allows the team to accurately compare the two populations, providing a more precise understanding of the changes observed at the farm level. Findings in Table 22 corroborate the majority of key informant interviews, which referred to C4D's extension services as a major asset for the sector. Table 22 shows that there were only two instances where there was a negative directional change: weed control in Cluster 1 and shade control, in Cluster 2.

Table 22: Practice Adoption Rates in the Midterm (MTE) Compared to Baseline

Practice Name	Cluster 1 Baseline	Cluster 1 MTE	Cluster 1 direction	Cluster 2 Baseline	Cluster 2 MTE	Cluster 2 direction	Cluster 3 Baseline	Cluster 3 MTE	Cluster 3 direction	Cluster 4 Baseline	Cluster 4 MTE	Cluster 4 direction
Soil analysis	28%	43%	+	39%	60%	+	50%	64%	+	48%	50%	+
Irrigation	28%	75%	+	1%	10%	+	3%	28%	+	43%	48%	+
Shade Control	75%	90%	+	53%	89%	+	96%	92%	-	75%	79%	+
Weed Control	98%	97%	-	98%	100%	+	98%	100%	+	100%	100%	n/a
Organic Material Use	19%	66%	+	63%	76%	+	18%	85%	+	28%	75%	+
Fertilization Use	48%	84%	+	78%	98%	+	83%	93%	+	75%	82%	+
Pruning	88%	96%	+	84%	99%	+	91%	96%	+	94%	93%	+
Application of amendments	24%	59%	+	70%	91%	+	58%	82%	+	38%	65%	+

Source: Quantitative data collected by the midterm evaluation team for the USDA C4D Program, May 2024 to June 2024 compared to Baseline Data

Changes In Productivity Compared to Baseline

To observe changes in productivity compared to the baseline, the evaluation team followed the same approach of incorporating an expansion factor to allow for comparability. Table 23 shows that productivity is lower in the midterm than it was in the baseline.

Table 23: Midterm Evaluation (MTE) Productivity 2023 Kg/Ha Compared to Baseline

Cluster 1		Cluster 2		Cluster 3		Cluster 4	
Baseline Productivity	MTE Productivity	Baseline Productivity	MTE Productivity	Baseline Productivity	MTE Productivity	Baseline Productivity	MTE Productivity
396	124	435	256	436	415	321	126

Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024 compared to Baseline Data

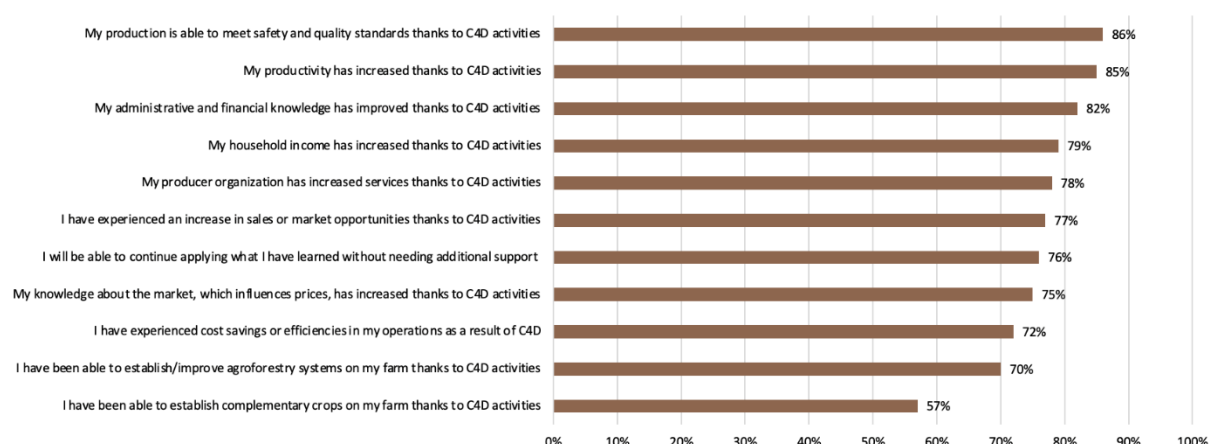
There are external factors that could explain this variation in productivity. One is the consistency and length of the producer's participation in the project at the time of the survey, and another is climate impact. During survey data collection, the evaluation team used 100% of its replacement sample as some producers were no longer participating in the project. The baseline was conducted in 2021, and when looking at national cacao production from 2010-2022, 2021 had the greatest production at 69k MT.²³ Cacao is sensitive to rainfall deficiency or surplus, and 2022 saw a national reduction of 10% due to heavy rainfalls. KIs reveal that 2023 harvests were both affected by drought and heavy rainfalls.

“Recently, a drought left the region [of Huila] without water. The arrival of rain improved the situation, but [producers] almost lost everything.”

- 26. KII – Producer Org Representative

Overall, producers participating in the project had positive perceptions of C4D project activities and assistance. Figure 28 shows that the majority of producers surveyed observed changes in their organizational management capacity, productivity, and income. More than 70% of producers attributed the increase in their household income to project activities, underscoring the project's intense work with farmers. Additionally, more than 80% attributed positive changes in their productivity to project activities.

Figure 28: Producer Perception of C4D



Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D Project, May 2024 to June 2024

Responses to questions

• To what extent have beneficiaries increased their incomes as a result of C4D?

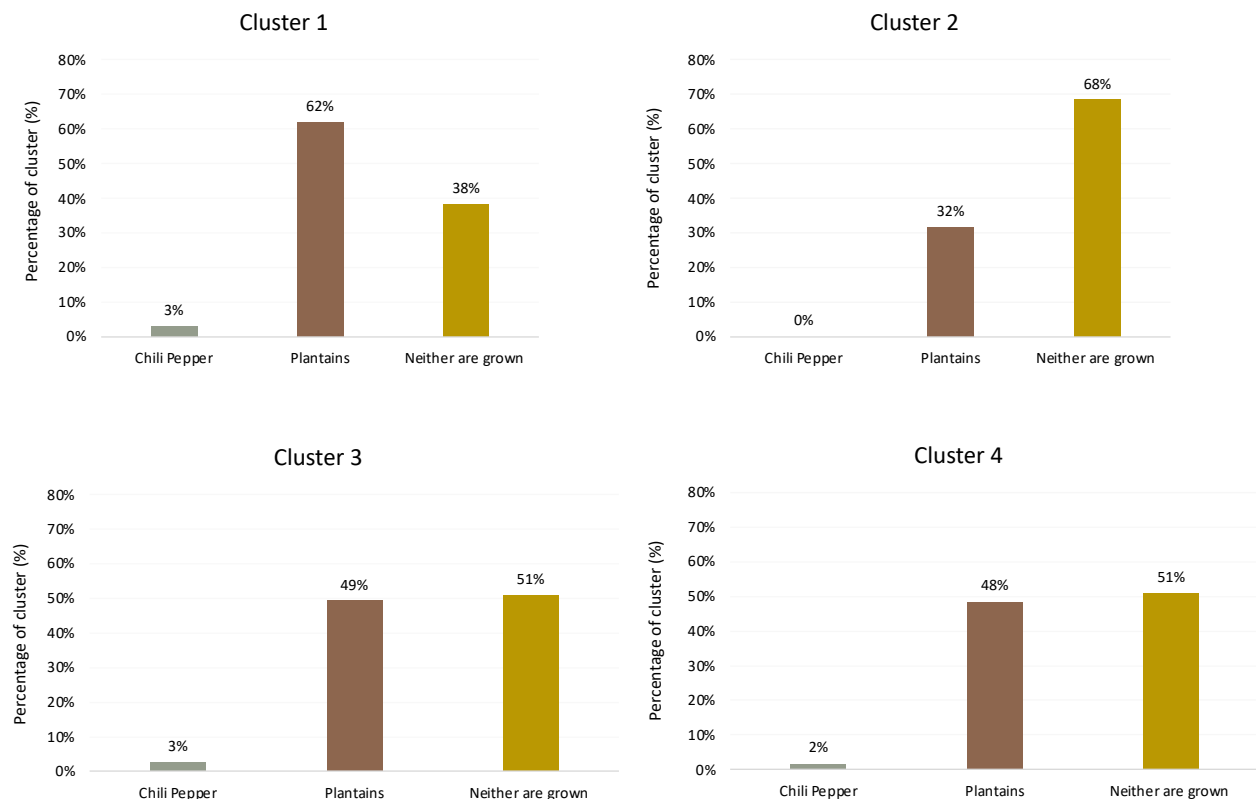
Seventy-nine percent of producers who responded to the midterm evaluation reported that they had seen an increase in their income thanks to project activities. This increase is attributed to the improved quality and production volume resulting from C4D activities. However, other external factors, such as the recent price surge in cacao, may also be contributing to the observed change in income.

²³ *Oficina de Comunicaciones.* “Producción cacaotera presentó una reducción del 10% en 2022 por lluvias,” FEDECACAO, February 7, 2023. <https://www.fedecacao.com.co/post/producci%C3%B3n-cacaotera-present%C3%B3-una-reducci%C3%B3n-del-10-en-2022-por-lluvias>.

- **To what extent has C4D boosted the market potential of complementary crops?**

At the time of the midterm evaluation, C4D has leveraged private sector resources and facilitated an agreement with *Hugo Restrepo y Cía* to buy 100% of the harvests from a producer organization's demonstration plot for the tabasco pepper value chain. The producer organization is expected to gain profits from this agreement, which are anticipated to be reinvested in the business and benefit producers. As for plantains, project activities will be initiated in the 2024/2025 reporting period, with measurement starting in 2025. Results from the midterm evaluation survey show that the majority of producers (52%) are neither growing tabasco nor plantains on their farms, whereas 48% are growing only plantains (see Figure 29).

Figure 29: Do you Grow Tabasco Peppers or Plantains on your Farm?



Source: Quantitative data collected by the midterm evaluation team for the USDA Food for Progress Colombia – C4D project, May 2024 to June 2024

11. Conclusion

The findings of the midterm evaluation of the C4D project make clear that despite a slow start, the project has made some significant accomplishments. These include most prominently:

1. The development of extension tools like the *Cacaograma* and the farm management calendar that help promote agronomic practices to enhance productivity and income
2. The climate risk management initiative named *Cacao Seguro*, a parametric insurance for low-income cacao smallholders
3. Cacao plantation renewal
4. Complementary crop integration to provide a more consistent revenue stream throughout the year

Relevance

The project has effectively addressed the primary issues facing the cacao value chain: productivity and the lack of technical assistance. The project has engaged in dialogue with a broad range of private, civil society, and public partners. The interviewees representing these stakeholders have signaled that C4D is well-known and respected by actors working in the Colombian cacao value chain. Partnership agreements with local governments (e.g., Tolima, Caldas, Huila) show C4D's commitments to provide extension services and strengthen producer associations. Regional and local governments are contributing resources to this effort. Although these government actors have not always been responsive. Therefore, C4D often moves forward unilaterally to respect the project's targets and deadlines.

Effectiveness

In the third year (October 2022-September 2023), overall progress towards the planned goals was at 46%. For the first semester of the fourth year (October 2023- March 2024), progress had already reached 40%, with expectations to exceed 90% by the year's end. Of the 36 indicators, 16 have achieved 100%, one is at 80%, seven are below 25%, and 13 remain at 0% (some of these are end-of-project indicators). On average, a majority (80%) of the producers were adopting practices promoted by the project. Only one practice – irrigation – had low adoption due to stated high costs.

Efficiency

In the context of a systems change project, C4D has put in place the building blocks to expand productivity at the farm-level. It now plans to systematically work its way up the cacao value chain to expand trade. However, there is an opportunity for the project to articulate its strategy more fully and align all stakeholders and resources around a common vision.

Sustainability

C4D is working on the project's sustainability strategy and forming alliances with national and international buyers. Collaborations with cacao buyers and initiatives to promote entrepreneurship and employment for young people are also underway. These efforts are supported by funds from national and international development partners.

Regarding environmental/climate sustainability, C4D practices are beginning to deliver results. In terms of increasing the likelihood that C4D activities will continue after the close of the project, there are two fundamental issues the C4D project team will want to address. One is how other stakeholders (funders

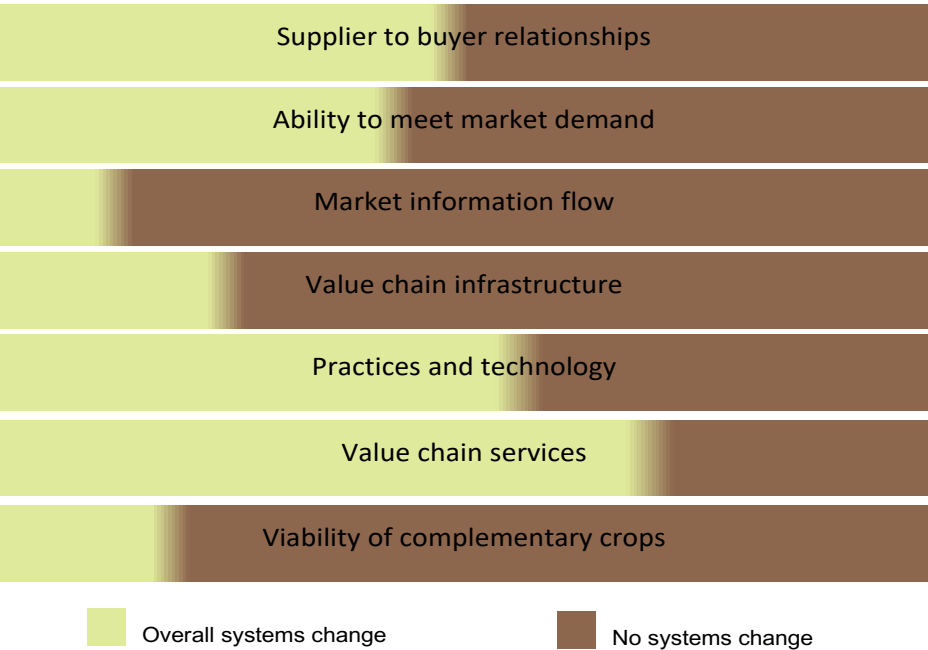
and public and private implementers) can contribute to the continuation of activities. Another is how a regional cluster vision can be built and implemented so that market signals from international buyers are transmitted throughout the value chain along with the existing signals from the domestic market buyers.

Impact

There is a major opportunity for the project to scale its impact beyond C4D. By involving local stakeholders and combining initiatives, the project can achieve a synergistic effect. In the remaining time, C4D can focus on not only providing services to project stakeholders but also establishing systems and avenues for collaboration, allowing these services to be replicated and extended beyond C4D’s current operations.

Figure 30 summarizes the findings. It presents dimensions of systems change that could lead to enhanced productivity, expanded trade, and income growth for producers. The dimensions, or types of system change, include: supplier to buyer relationship; ability to meet market demand; market information flow; value chain infrastructure; practices and technology; value chain services; viability of complementary crops. For each type of change, the horizontal bars visualize interviewees’ collective assessment, supplemented with quantitative insights, of the extent to which there has been market-level change since the start of the project due to project activity (in gold), and the extent to which there is still progress to be made (in brown).

Figure 30: Systems Change in Colombia’s Cacao and Complementary Crop Value Chains



Source: Authors’ Elaboration

The analysis aims to show how C4D has facilitated systems change in cacao and complementary crop value chains at the midterm stage with a focus on the project's targeted value chain and farm/firm outcomes, as is outlined in the theory of change. The dimensions were selected out of 15 that are commonly applied to assess value chain strengthening efforts for market-level systems change.²⁴ They were then adapted to the project context. Each dimension below corresponds to project outcomes as they are stated in the theory of change:

Systems change graphic level	Corresponding ToC outcomes
Supplier to buyer relationships	Improved linkages between buyers and sellers; Improved professionalization of POs
Ability to meet market demand	Evidence of improved incomes
Market information flow	Improved access to market information
Value chain infrastructure ²⁵	Evidence of improved processing facilities, transportation, and/or drying/fermentation station
Practices and technology	Increased use of improved techniques and technologies; Improved resilience
Value chain services	Increased access to marketing and extension services; Increased use of financial services
Viability of complementary crops	Improved access to market information

Source: Authors' Elaboration

Supplier to Buyer Relationships:

This dimension concerns progress made by C4D toward empowering producers to achieve optimal transactions with buyers. Change has been made but more must be achieved for a complete systems change. Progress on this level has come from improved relationships between producers and producer organizations, the latter who have observed greater trust and interest in technical services offered coming from producers since the project's launch. Limited storage options from producer organizations remains a problem for producers in the move toward greater independence. As one producer expressed:

"The biggest obstacle is not having a vehicle for cacao purchase and not having a robust storage center."

– 27.KII Producer Organization

Ability to Meet Market Demand:

C4D conducted a number of activities to facilitate increased capacity of the cacao and complementary crop value chains to meet market demand, from extension services that optimized farm management for productivity, to improvement of coordination between producer organizations and producers to facilitate market access. This activity made an important contribution to helping producers meet market demand, for instance by implementing the practices taught by extension agents. However, the cacao value chain is still unable to satisfy international (and national) demand. This is supported by secondary data that shows Colombia still imports cacao products after exporting to meet local demand. Persisting roadblocks include insufficient production levels even with progress made, and issues meeting standards by Colombian producers—as one producer organization representative expressed:

²⁴ "Feed the Future Cambodia HARVEST II Activity Final Evaluation Report." USAID. July 31, 2023.

https://pdf.usaid.gov/pdf_docs/PA0216GV.pdf.

²⁵ Value chain infrastructure refers to equipment or facilities that allow for efficiency in operations between value chain levels.

"It is very hard to find a good price, and when a client is found, they require certain fermentation and moisture conditions that are not yet met."

– 35.KII Producer Organization.

Increased urbanization in Colombia is one long-term ceiling to increased production, in part due to its tourist industry which takes up land, as well as lack of access to extension services in remote farmlands, which also impacts value chain capacity.

Market Information Flow:

The third dimension concerns market information flow to producers, which is still on track to be addressed in the project. While hands-on extension services have been implemented for farm and crop management, the digital tool for market information set out in Activity 2 of C4D has not yet been rolled out. Therefore, while other C4D activities such as extension services and improved management and commercial capabilities from producer organizations have indirectly increased producers' exposure to market information, the initiative within the C4D project to contribute to market information flow is yet to come.

Value Chain Infrastructure:

Value chain infrastructure was assessed as having room to improve due to key bottlenecks hindering its progress. One example is lack of reliable transportation infrastructure, a persistent issue affecting multiple levels of the value chain. There is need for greater maintenance and upkeep of vehicles, a lack of tertiary roads, lost trucks carrying cacao due to security failures, and limited availability of transportation for the movement of producers and inputs, which limits business opportunities. Cacao storage within producer organizations and more widespread construction of irrigation systems would also greatly improve the productivity and capacity of the value chain. C4D will work on expanding post-harvest infrastructure to help producers improve their aggregating capabilities as well as access to drying and fermentation stations that meet market demands.

Practices and Technology:

The practices and technology dimension refers to producer applications of services and innovations or tools introduced through the project. C4D has made significant contributions to market-level systems change thus far regarding this dimension, with more room to advance before the project's close. Extension services have led producers to implement proper crop management, pest control, and skills strengthening. One extension agent noted that:

"...initially, crops affected by diseases were identified up to 70%. With the project, there has been an improvement in technical crop management and a reduction in disease rates. This has changed the perspective of producers regarding crop management."

- 28. KII C4D Partner

The section of this dimension in brown refers to producers in the value chain unreachable by C4D's extension services, whether due to their living in remote areas or a lack of desire or ability to adopt best practices. C4D will continue to roll out technology that supports producers as the project continues.

Value Chain Services:

This dimension addresses systems change from marketing and extension services as well as financial services. As discussed above, extension services implemented throughout the first half of the project have significantly strengthened the capacity of the producers they have touched. Producers asked if they would recommend extension services said they would, due to the extension strategy's success in instilling better practices and providing reliable and regular technical assistance. There are still roadblocks to undisturbed implementation of extension services, such as issues reaching remote areas, lack of connectivity which can make it harder to problem solve in real time, and adverse weather conditions. Interviewees expressed the value of a way to cement extension services in the value chain, so they do not disappear at the project's end. C4D's joint initiative with *Seguros Bolivar* to deliver cacao insurance has also made progress since the project's commencement and it has been seen as a success. There is room to continue promoting its rollout and adoption.

Viability of Complementary Crops:

This dimension, which assesses C4D's efforts to advance the adoption of complementary crops in the value chain for greater producer income stability, has yet to make a significant impact. In part, this is due to the fact that the project's plan for demonstration plots has yet to be fully implemented and integrated into the value chain.

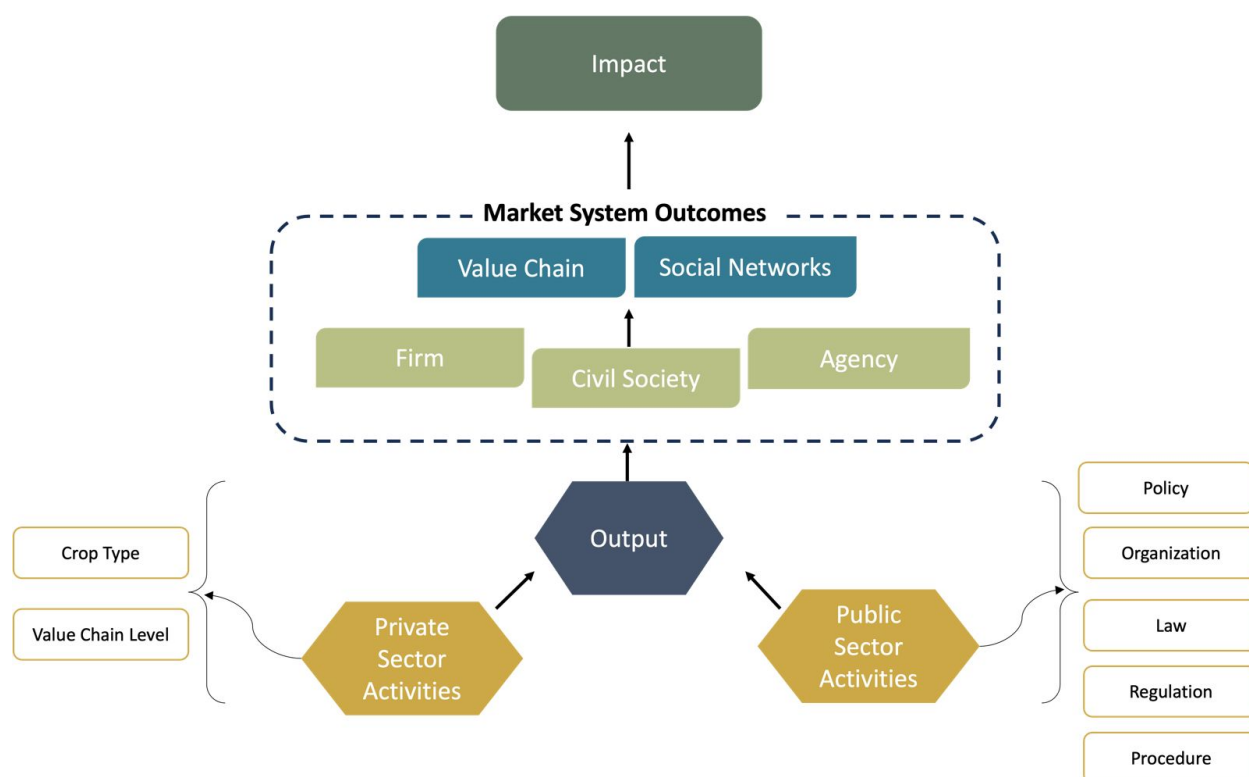
12. Recommendations

The following recommendations aim to build on the current momentum C4D has generated through the comprehensive work at the farm-level via extension services. The goal is to scale C4D's long-term impact beyond the project's boundaries while continuing to implement activities within the project's scope.

1. Revise Theory of Change

The project is at a natural implementation point where revisiting the ToC is beneficial. This exercise should identify how approaches have shifted and why, based on field implementation realities since the development of the project's original ToC in 2021. The purpose is to outline clear impact pathways, detailing how activities lead to outputs, outcomes, and desired USDA high level results outlined in the USDA's Results Frameworks (please see Annex 1). This is necessary because the current USDA Results Frameworks do not provide causal pathways that can be populated with evidence (i.e., "improved capacity of key organizations in trade sector" is placed at the bottom the framework at the "foundational" level). To clearly depict, measure, and track interventions in support of value chain strengthening, the framework shown in Figure 31 is recommended.

Figure 31: Results Framework



Source: Authors' Elaboration

The ToC framework in Figure 31 shows private sector activities on the left and public sector reform activities on the right. For the private sector, a distinction is made between activities that support change at different levels of the value chain by crop type, whereas for public sector reform it recommends to disaggregate activities by the levels of policies, laws, regulations, procedures, or organizations. Outcomes are divided into two levels, the first showing changes in firm/farm practices,

for example, individual producers applying improved practices for productivity and quality increase. The second outcome level tracks aggregate change at the overarching value chain level; for example, increased access to marketing and extension services. The combination of these two outcome levels would lead to market-level systems changes which could include increased investment all along the value chain, new buyer linkages, and increased services.

For C4D, evidence of private sector changes at the higher level of the system would include competitiveness indicators, as one of the FFPr high-level objectives is increased productivity. Competitiveness is defined as a sustained increase in productivity. For the public sector, this would include value chain financing and investment, especially for infrastructure, as well as an increased level of compliance enforcement by the Government of Colombia (GoC).

The single most important piece for C4D to define, for monitoring, evaluation, and learning purposes but also to ensure staff and stakeholder alignment, is where private and public interests meet, and how specific activities could be tailored to support and institutionalize public-private initiatives. This includes identifying which local stakeholders can take ownership of activities post-C4D and/or how stakeholders can transfer knowledge to other areas beyond C4D's current focus, thereby creating a "spillover" effect. Additionally, when conducting this exercise, it would be beneficial to map out how project activities are contributing to project indicators. This was done originally with the USDA Frameworks but revisions have been made to activities and indicators since then, and as mentioned above, the USDA Frameworks does not allow for causal logic for all activities, so the exercise needs to be done with the project-specific theory of change. Once this exercise is complete, the team should ensure that the meaning aligns consistently in both Spanish and English.

Going forward, C4D will want to consider the advantages and disadvantages of providing direct services versus facilitating market development more broadly. While C4D has successfully addressed a major gap by directly providing extension services in partnership with major domestic buyers, the focus for the remaining project year should shift towards sustainability and facilitating conversation where stakeholders can identify synergies and develop action plans to achieve a common goal: i.e., the opportunity for the sector to expand productivity and capture new international markets.

Additionally, exploring sustainable business models for these services is crucial. For example, a subsidized amount could be charged to producers, or producer organizations could hire the extension services with the cost included in the membership fee for all producers. Similarly, work in the access to finance area should be reviewed to see how it fits with a broad market development vision (such as that of FINAGRO), going beyond the entrepreneurial aspirations of one partner, *Seguros Bolivar*. The evaluators encountered qualitative and quantitative evidence that farmers are hesitant to access loans due to unfavorable terms and fear of debt. This could be addressed by working with local partners to provide financial literacy information.

2. How to Cause Significant Change

Both 'market development' and 'systems change' approaches are used in international development to guide project activities toward solving specific problems or achieving desired objectives. In the case of C4D, these frameworks are applied within the context of the USDA FFPr Result Frameworks, specifically aiming to increase productivity and expand trade.

A market development approach means that the project facilitates linkages between market actors (producers, consumers, suppliers) and supports the provision of services (but does not offer those

services directly.) As discussed earlier in the report, C4D is providing extension services directly; this appears justified due to the challenges present in the Colombian context: competing illicit crops and related conflict; unaligned public and private sectors, huge recent decreases in productivity.

Meanwhile, a systems change approach goes beyond market actors and addresses issues beyond economic transactions. It is a broader framework that is often applied to social issues like health or education, environmental problems like pollution, and crime. A systems change approach acknowledges the broadest range of stakeholders possible and considers patterns like negative and positive reinforcing loops. For example, in finance, compound interest is a positive reinforcing loop. In crime, violence is a negative reinforcing loop. In the Colombian cacao value chain, recent history has generated negative loops but the current high market price, combined with C4D's extension services and the complementary crop revenues, could tilt the balance to generate a positive cycle. If successful, however, there will be many more loops to address – at every level of the value chain, in government, and in local communities and households.

C4D's current and planned activities incorporate elements from both frameworks. This is evident in their efforts to increase production and meet domestic demand while planning to engage stakeholders through a regional community of practice and C4D investment vehicles. However, the evaluation team has identified opportunities for C4D to improve its efficiency and sustainability by:

- Preparing to scale its activities with value chain actors to consider international market signals (discussed below)
- Communicating a 'common vision' to leverage broader stakeholder engagement

There is an opportunity for C4D to use the community of practice to collectively leverage private and public resources to strengthen both cacao and complementary crop value chains. This includes organizing regional community of practice workshops to develop a systems approach for each value chain (cacao, tabasco, and plantain). These workshops should include all relevant stakeholders: producers, processors, producer organizations, private-sector service providers (finance, extension, etc.), government, and development partners (USDA, United States Agency for International Development (USAID), etc.). Activities could include identifying the vision for stakeholder contributions to a common goal, developing/updating value chain maps per product defined by target markets, etc.

The first sector vision workshop should aim to quickly create 'as is' and 'to be' value chain maps for each crop in each region. The 'as is' maps should outline details such as domestic and international buyers in the region, sensory profiles, transportation methods, processing locations, and major production areas. This should be an interactive session, where a value chain map is produced on a whiteboard, showing the flow of goods from production to market. Conducting this exercise for each region (the four clusters C4D is working in) and each crop (cacao, tabasco, plantain) would result in the creation of 12 value chain maps.

These maps should be complemented with data points along the chain, outlining costs, market requirements, and volumes at each level of the value chain. Using this data, stakeholders in the workshop could then map out the 'to be' scenarios, collectively identifying how local stakeholder will contribute to a common vision for the sector, target markets (such as specific international buyers based on sensory profile production potential), scaling needs (such as the number and locations of processing plants), and investment needs to improve value chain efficiency (such as infrastructure improvements to reduce transportation costs).

Key informant interviews mentioned the importance of including initiatives that transform supply to meet market standards such as the creation of a sensory map for a region, species determination, ensuring good harvesting practices, and standardizing fermentation and drying processes. This approach aims to align production with market demands, thereby enhancing the quality of cacao beans and securing better prices. As one participant stated:

“After knowing the demand, create the sensory map of the farm, determine the species present and those needed, ensure good harvesting, and standardize fermentation and drying.”

– 34.KII-Government stakeholder

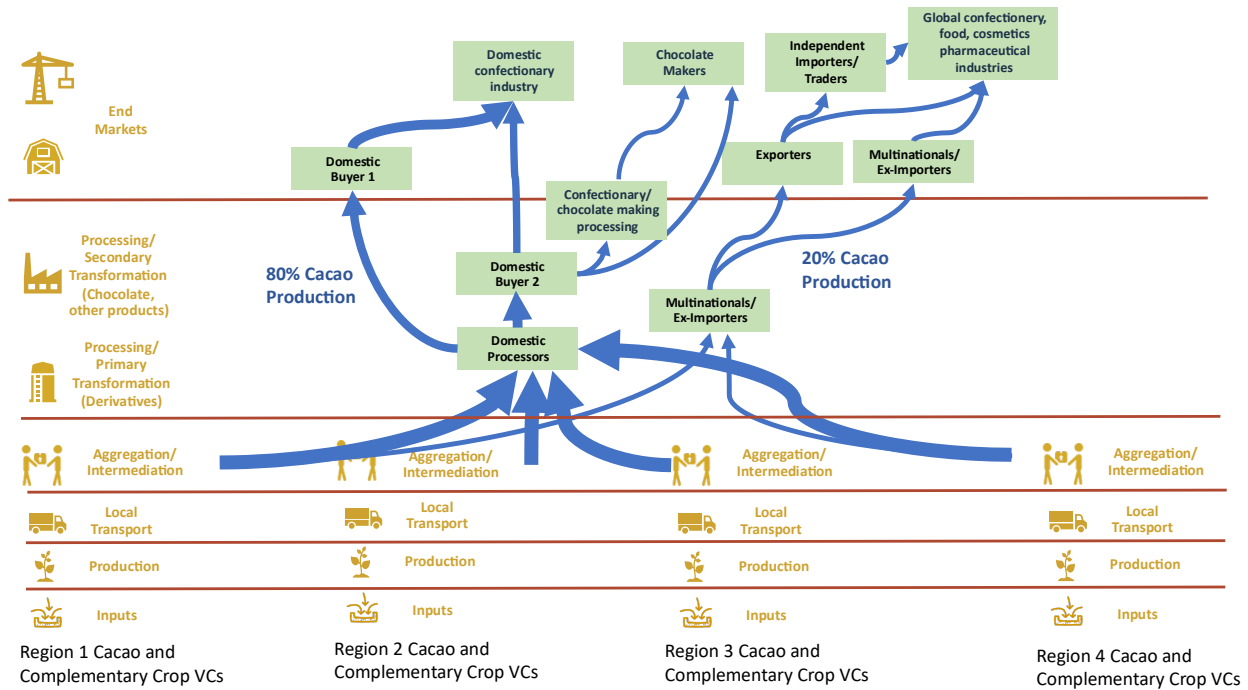
Subsequent vision workshops could use these value chain maps to define long-term commitments from each stakeholder, especially local ones, to work towards the common vision of strengthening the value chains in question. These maps could be updated each year to track progress and address newly emerging challenges for the value chains.

By facilitating a whole system workshop, C4D would engage all relevant actors to achieve this vision, aligning with the project’s main goals of increased productivity, expanded trade, and equitable market access. The key is facilitating conversations that allow actors to take ownership of the market development strategy, enabling them to orient their activities toward the jointly defined end goal. For example, if the end goal is to capitalize on emerging opportunities in international markets, actors will agree on the need to increase production, enhance service provision for technical assistance and financing, and bolster producer organizations’ capacity to aggregate purchasing and processing. Ultimately, this collaboration will enable buyers to access higher quality products in greater quantities, while all actors work together toward a common goal.

3. Communicating Demand Signals Down the Value Chain - Competitive Advantage by Region

Currently, 80% of cacao production in Colombia is produced for two primary domestic buyers that serve the domestic confectionary market. The remaining 20% of production is purchased by a variety of different buyers that serve multiple international food, confectionary, and cosmetics markets. The demand requirements for cacao destined for the domestic market are very different than international market demand requirements, particularly at the processing and transformation stage of the cacao value chains. In general, international market demand requirements are more sophisticated and stringent than domestic ones and production and processing must be tailored to each end geographic market (US vs. EU import requirements for example) and the intended end market segment within that geographic market. Figure 32 shows an illustrative example of the cacao value chain disaggregated by region, where the thickness of the area indicates trends in volume. The figure shows how some buyers play multiple functions in the value chain: purchasing, processing and selling (domestically and internationally).

Figure 32: Current Market Situation (Illustrative)



Source: Authors' Elaboration

To date, C4D through its engagement with the principal domestic buyers of cacao and extension efforts at the producer level, has successfully aligned production to the domestic buyers' demand requirements resulting in improved production standards and cacao yields to serve the domestic market. However, going forward it is projected that the domestic market is nearing its saturation point with domestic demand for cacao expected to level off over the next five years and actually decreasing with volume demand growth forecast to decrease by 5.1% in 2025.^{xlvii} At the same time, as a result of chronic underinvestment in cacao farms globally, the existing global supply-demand gap is significant, with a current global cacao deficit estimate of 300,000-500,000 tons.^{xlviii}

With total Colombian cacao production volume in 2022 only 62.16MT,^{xlix} and as production yields continue to improve through C4D's interventions, there is significant potential for the Colombian cacao industry to capture a sizeable share of this 300,000-500,000 ton global supply deficit. Consequently, as this excess Colombian production will most likely be destined for international markets, it is important to consider that these international markets have quite different demand requirements depending on the geographic end market and market segment.

Going forward into the second half of the C4D project it is recommended that the C4D team place significant focus on, and allocate resources towards, supporting the cacao value chain actors in each of the project regions to build their capacities in preparation to respond to more sophisticated and stringent international demand requirements (in addition to the requirements from domestic buyers). Doing so would allow cacao producers and other value chain actors to materially benefit from the projected increase in production capacity. Fortunately, within the C4D project portfolio, there is already a functioning value chain that is responsive to sophisticated international demand requirements that can serve as a model for future programming. Colombian company *Hugo Restrepo y Cía* focuses on the

production and international and domestic commercialization of capsicum varieties; is the only Colombian supplier for Tabasco USA, and can purchase 100% of the C4D tabasco pepper harvest. With support from C4D, *Hugo Restrepo y Cía* has been working with the tabasco pepper value chain(s) in Huila to ensure that the entire value chain is responsive to and compliant with Tabasco USA's stringent demand requirements. Elements of this successful collaboration can be replicated in cacao value chains that are expected to witness significant production growth and will need to build their capacities to be able to sell into international markets. Orienting activities around current value chain gaps: infrastructure, capital needed for the farm and transportation.

4. Orienting Activities Around Current Value Chain Gaps: Infrastructure and Capital Needed for Farm and Transportation

Comprehensive policies for better farm conditions, social security, agricultural education, and financial management are necessary. Investing in tools, irrigation systems, and producer inputs is recommended, as well as developing information systems for price trends and maintaining potential buyer directories. One participant noted:

"To sustain the sale of carbon credits, good decisions and allies are needed, which do not depend on a project or permanent external investment."

– 28.KII- Implementing Partner

Key informant interviews and surveys showed that producers are interested in scaling their operations through capital equipment such as drying and fermentation station equipment and irrigation systems. It is recommended that C4D provide this assistance in the form of a technical assistance package, enabling producers to acquire the necessary equipment to apply the practices taught during extension services. To ensure sustainability, C4D should consider having producers contribute a small portion of the cost, allowing them to view it as an investment in their farm operations. Similarly, financial services including insurance should be rolled out always with a producer contribution, however small, even if deducted as a fee so not seen as an up-front payment.

Endnotes

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