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La Razón, 2022

Transforming the Valley of the Apurimac, Ene, and Mantaro Rivers – VRAEM: The Land of Fine Flavor Cacao

- Impact Evaluation Design
- Baseline Results

MARCH 2024

This publication was produced at the request of the United States Agency for International Development (USAID). It was prepared independently by MACROCONSULT SA. A subcontractor of EnCompass LLC for the Monitoring, Evaluation, Learning and Sustainability (MELS) (Contract 72052719D00001). The views expressed in this publication do not necessarily reflect the views of USAID or the United States Government.

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ACRONYMS AND ABBREVIATIONS

ATT	Average treatment effects on the treated
ICC	Intraclass Correlation Coefficient
CENAGRO	National Agricultural and Livestock Census
DEVIDA	National Commission for Development and Drug-Free Life
GOP	Government of Peru
INEI	National Institute of Statistics and Information
IP	Implementing Partners
MELS	Monitoring, Evaluation, and Learning for Sustainability
LWR	Lutheran World Relief
UBIGEO	Geographical Location Code
USAID	United States Agency for International Development
GVP	Gross Value of Production
VRAEM	Valley of the Apurimac, Ene and Mantaro Rivers

EXECUTIVE SUMMARY

Background

The Valley of the Apurimac, Ene, and Mantaro Rivers (VRAEM), located between the regions of Ayacucho, Cusco, and Junín, has been the site of the highest level of illicit coca leaf cultivation in Peru for more than 30 years. This valley is characterized for being an area with limited government presence. Thus, efforts to eradicate coca leaf production have been unsuccessful. Moreover, coca leaf production has continued to grow steadily since 2015. In 2023, USAID/Peru signed an agreement with the non-governmental organization Lutheran World Relief (LWR) for the execution of the project **"*Transforming the VRAEM: The Land of Fine Flavor Cacao*"** (hereinafter called The Activity).

The Activity seeks to transform the VRAEM by emphasizing the cultivation of fine flavor cacao, as well as other licit crops, rather than coca leaves. The overall objective of the Activity is to increase the importance of cacao cultivation and other legal economic activities in the family economy and livelihoods of fine flavor cacao farmers in the VRAEM. Specifically, the project aims to: (i) Increase the production and commercialization of fine flavor cacao in the VRAEM. (ii) Improve the perception of the environment in favor of fine flavor cacao cultivation in the VRAEM. (iii) Diversify the economic activities of farmers and related service companies in the production of fine flavor cacao in the VRAEM. The VRAEM Activity will have an implementation period of three years, from 2023 to 2026.

The Activity aims to benefit 1,200 cacao-farming families located in the territorial action area of the following three cacao organizations: Cacao VRAE, Qori Warmi, and El Quinacho. The Activity will work with active members of those farmer associations, which cover operations in districts of the departments of Cusco, Ayacucho, and Junín, promoting the expansion of their intervention area and the number of associates.

In addition, the Activity will incorporate independent farmers and indigenous communities located in the intervention area of the three associations, especially with young farmers and women, through the women-led association of the Qori Warmi Cooperative. The Project will work with farmers who are not involved in illegal activities (non-coca growers) as a priority condition.

Study Objective

The purpose of the study is to develop the methodological design for the impact evaluation of the Activity, as well as to conduct a baseline that allows for the implementation of the proposed impact evaluation design.

The specific objectives of the study are as follows:

a) Develop a methodological design for the impact evaluation of the Activity.

b) Collect, process, and analyze information to construct the baseline of the Activity, enabling the design of the proposed impact evaluation.

Methodological Design of the Impact Evaluation

Purpose: The impact evaluation is expected to measure the change in the result indicators of the Activity's logical framework that can be attributed to the intervention. To this end, it is essential to recreate a counterfactual state of the beneficiaries using a comparison (or control) that is similar in all respects to the beneficiary group minus the intervention.

Evaluation Strategy: For the Activity, a quasi-experimental impact evaluation strategy was proposed through a difference-in-differences design, which conceptually relies on comparing the evolution of outcome indicators of beneficiaries and those of a control group, between a baseline period and a post-intervention period. This is a feasible design as it does not require modifying operational processes that Lutheran World Relief has planned to implement in the field.

Control group: The study has selected localities close to those in the intervention area, located at similar altitudinal levels and with the same agricultural vocation, but sufficiently distant to prevent spillover effects of the Activity. In addition, the control group is composed entirely of cacao farmers, and efforts have been made to ensure that they have a socioeconomic profile similar to that of the beneficiaries.

Cross-sectional data: Due to the complexity of the territory and to avoid the risk of the field team, the decision was made to conduct the surveys under complete anonymity, so it will not be possible to develop a panel data sample. Instead, an evaluation exercise using repeated cross-sectional data (i.e., independent baseline and end line samples) will have to be implemented. This implies to implement a new sampling process without necessarily corresponding to the same respondents. This does not represent a methodological limitation since the estimator of differences in differences does not require panel data as long as the baseline and endline information correspond to the same reference population.

Instruments: To make the proposed impact assessment design feasible, the 10 indicators of the VRAEM Activity were operationalized. Two types of instruments were developed: for the quantitative design, a survey for farmers that was addressed to the sample of beneficiary and control groups; and for the qualitative design, two semi-structured interview guides aimed at key project stakeholders and public officials.

Sample

- **Quantitative**: After processing of the information and consolidation of three data sources, the evaluation team identified the universe of localities (population centers) of the Activity, 111 population centers from Ayacucho, Cusco and Junin. These population centers constitute the universe of intervention, on which the sample selection will be based. Then, utilizing three selection criteria[1] the sampling frame was limited to 50 localities which concentrate 86% of the project beneficiaries. Once the sampling frame was established, beneficiary localities were randomly selected and stratified by region. As a result, 40 intervened localities were selected: 30 primary localities and 10 replacement localities.

  Selecting control localities involved identifying non-beneficiary localities as similar as possible to the intervened ones. A two-stage selection strategy was carried out. First, of the total number of non-

[1] (i)Localities that have a household size of 20 or more residences, according to 2017 Census data. (ii) Localities that are located at least 10 km from the closest point of Río Ene or Río Apurímac. (iii) Localities with at least five beneficiary farmers.

beneficiary localities in the VRAEM were selected those that met two criteria[2] Then, a matching procedure, the Mahalanobis algorithm, was implemented among the 40 localities selected as potential control localities in the first stage. As a result, 2 control localities were selected per each selected beneficiary locality in the sample.

For the baseline, it was planned quantitative sample of 400 farmers in 30 beneficiary localities and 400 farmers in 30 control localities. In practice, information was collected in 66 localities (29 beneficiary and 36 control) and surveys were applied to 836 farmers (432 beneficiaries and 404 control).

- **Qualitative:** 20 in-depth interviews were conducted: 16 with public officials and 4 with cacao organization managers. By region, 7 interviews were conducted for informants from Ayacucho, 9 informants for Cusco, and 4 for Junín.

Baseline Results

- **Farmer characteristics:** The average project beneficiary is about 50 years old, equally distributed between men and women, and mostly in Union (married or domestic partner), 73.4%. They have about 8 years of education, on average. Half of them are migrants (51%) and have Quechua as their main mother tongue. Two-thirds of households are headed by men.
- **Housing characteristics**: Beneficiary farmers own their housing (93.1%), with an average of 2.2 rooms. 35% of beneficiary farmers do not have access to public water inside the house and 24% do not access public sewage at home. Almost 9 out of 10 have access to public electricity; however, only 4 out of 10 use gas for cooking. Regarding electronics, 90% of farmers have a cell phone and almost 40% have internet access.
- **Agricultural production**: Survey results indicate that 51% of cacao farmers also carry out livestock activities. 4.17 ha corresponds to the average area exploited by the farmers, the largest part of the land they own (3.95 ha). Of the total area, farmers use about 3.19 Ha on average for crops and, of this, 2.71 Ha of harvested area corresponds to cacao. In other words, 87% of the total cultivated area is used for cacao, making it the main crop. Furthermore, there is a significant presence of fruit trees, especially citrus (36%), banana (31%) and mango (11%).
- **Cacao production:** Farmers have an average of 1,025 plantations per hectare of cacao, producing approximately 1,700 kg of cacao with a 600 kg/ha yield. According to the verbal report of the respondents, 25.2% of the beneficiaries grow certified organic cacao and **48.8% grow fine flavor cacao.** The most important cacao varieties are the Castro Naranjal 51 Collection - CCN 51 (produced by 67% of the beneficiary farmers), VRAE 99 (42%) and Cacao Criollo (29%).

  In addition, 60.9% use organic fertilizers, and only about 8% use fertilizers. Those farmers who do not use organic fertilizer are mainly because of high prices (42.6%) and lack of knowledge (24.9%), while those who do not use fertilizer are mainly because the majority (52.1%) consider that it pollutes the soil or because of high prices (28.6%).

[2] (i) Populated centers with at least 20 houses located less than 10 km from the Ene and/or Apurímac Rivers. (ii) Populated centers located between 1.5 km and 15 km from the nearest beneficiary locality.

- **The total gross value of the production** of each agricultural farmer, which values all the products in the production basket at market prices, is around S/1,912 soles (USD 511). Of this total, about **81% corresponds to cacao**. Likewise, farmers report around S/1,396 soles (USD 373) of monthly income from agricultural sales. Approximately, **85% of these sales correspond to cacao**. Discounting the value of the expenses incurred in the development of the activity, households would register about S/1,115 soles (USD 298) of average monthly gross profit.
- **Cacao commercialization process:** Regarding sales, 46.8% sell their produce on their farms, and 41% sell to cooperatives/associations. In addition, 78% of farmers consider that they have recurring customers and have a good relationship with them (70%). For this reason, 81% find it easy to sell cacao, which corresponds to the high price of this product.
- **Cacao best practices:** Of eight practices considered in the survey, 53.5% of the beneficiary farmers reported having received training, However, only a little more than 11% implement all eight practices. The most common practices were pruning management (49%), selective harvesting and cutting/breaking of pods (43.5%), and shade management (42.0%).
- **Traceability system:** understood as the information reporting at critical moments in production. It was found that 39.1% of farmers report information on cacao production, 36.1% on cacao marketing, and 36.6% on cacao sales.
- **Farmers perceptions:** more than 80% consider cacao a profitable alternative, a high-quality product, a certified crop that enhances the product value, etc. Thus, 86.1% of beneficiaries consider it important in the family economy. This finding is strongly related to the perception of public officials and managers of cacao organizations, as they mention the great importance of cacao in the VRAEM area during the last 10 to 15 years.
- **Financial inclusion:** Farmers have little connection with the financial system. Only 21.8% have a savings account and only 4.6% use debit/credit cards. Another 46.3% reported needing a loan in the last 12 months, and 30% accessed this loan, mainly from banks (14.6%) and municipal savings banks (8.1%). Among those who have accessed a loan, close to 40% say that they have difficulties repaying it.
- **Perceptions regarding women's participation in cacao production process:** During the pre-harvest stage, women's participation is predominantly perceived as low or non-existent. During planting harvest activities, women's participation is considered medium or high. During post-harvest stage, fermentation and drying activities, women's participation is considered relevant with medium and high participation rates, as well as in the marketing of the product.
- **Gender differences:** In the beneficiaries' group, male farmers have better initial social and economic conditions than female farmers, which translates into better productive opportunities and higher economic returns. Male farmers have a higher level of education, higher levels of access to basic services (water, sewage), larger land extensions for agricultural work, higher levels of production, and consequently higher income levels. In addition, their higher income levels are not only explained by larger landholdings but also by the fact that male farmers have better tools in training and learning opportunities on good agricultural practices, as well as better quality products, as is the case of certified organic and fine flavor cacao. These better opportunities are related to a closer relationship between the male farmers and the associations, making them have a better marketing reach for their cacao crop, reaching the national market to a greater extent.

Final reflections

- At the level of results, the data suggest that before the implementation of the project, cacao cultivation had a significant importance in the family economy of the farmers of the beneficiary localities and this would be slightly higher than in the control group.
- At the level of component: the beneficiary group has higher levels of production and marketing of cacao, as well as profits and yields per hectare. A greater proportion even diversifies their sources of income by cacao by-product production.
- At the level of products: the beneficiary group applies good practices on larger tracts of land, there is greater participation in traceability systems, and there are better levels of access to credit.
- The previous results suggest that the project would have focused its intervention among larger-scale farmers with higher yields, probably those who have more options to take advantage of the intervention. If the described profile of the beneficiaries reveals the necessary conditions to be part of the project, then it is possible that it faces limitations when seeking to scale up if farmers with the same profile were not found in other locations.
- The baseline collected reasonably outlines the potential beneficiary population and is a valid tool for the post-intervention follow-up work.
- The sample of controls constitutes a valid comparison group for project evaluation that is subsequently carried out under the proposed difference-in-differences design.
- Notwithstanding, the control group farmers have small scale operations than beneficiaries. Therefore, we recommend that during the impact evaluation, and depending on the actual beneficiary population available at that time, treatment probability modeling processes should be implemented to reweight observations, based on the probability of selection in the Activity, so that those farmers in the control group who are more different from the beneficiaries are given a lower weighting and those who are more similar are given a higher weighting.

ACTIVITY DESCRIPTION

The Valley of the Apurimac, Ene, and Mantaro Rivers (VRAEM), located between the regions of Ayacucho, Cusco, and Junín, has been the site of the highest level of illicit coca leaf cultivation in Peru for more than 30 years. This valley is characterized for being an area with limited government presence. Thus, efforts to eradicate coca leaf production have been unsuccessful. Moreover, coca leaf production has continued to grow steadily since 2015. The National Commission for Development and Life without Drugs (*Comisión Nacional para el Desarrollo y Vida sin Drogas* – DEVIDA) estimates that the area in which coca leaf is grown in VRAEM in 2022 represents 62% of the total national cultivation area[3].

In this context, since 2022, with the signing of a grant agreement between the United States and Peru, the aim has been to reduce levels of illicit coca leaf cultivation through alternative development programs, which are focused on the voluntary eradication of illegal coca crops. In 2023, USAID/Peru signed an agreement with the non-governmental organization Lutheran World Relief (LWR) to implement the "***Transforming the VRAEM: The Land of Fine Flavor Cacao,***" hereinafter referred to as ***The Activity.***

The Activity seeks to transform the VRAEM by emphasizing the cultivation of fine flavor cacao[4], as well as other licit crops, rather than coca leaves. To this end, the Activity will support expansion and the quality improvement of high-quality cacao production in the VRAEM, thereby increasing farmers' income. The Activity will promote the introduction of smart context- and climate-based agricultural practices, improving the farming organizations' social and business management capacity, diversifying the economic activities of farms and of the service companies involved in growing fine flavor cacao. Furthermore, it will integrate traceability technology with a robust tracking system to closely monitor crop intensification activities to prevent deforestation.

The Activity will work with active members of farmer associations such as Qori Warmi, El Quinacho, and Cacao VRAE, which operate in different districts in the departments of Cusco, Ayacucho, and Junín, by promoting the increase of their intervention scope and number of members. In turn, the Activity will continue to incorporate independent farmers and those from indigenous communities in the intervention area from the three above mentioned organizations into the Program. Likewise, young and female farmers will be included, above all, in the women-led association, Cooperative Qori Warmi. The Activity will only work with farmers who are not involved in illegal activities (not coca growers).

The overall goal of the Transforming the VRAEM Activity is that **growing cacao and other licit economic activities acquire greater importance in the family economy and livelihoods of farmers who grow high-quality cacao in the VRAEM.** The following are its specific goals:

- Increase the production and sale of fine flavor cacao in the VRAEM.
- Improve farmers' perceptions in favor of growing fine flavor cacao in the VRAEM.

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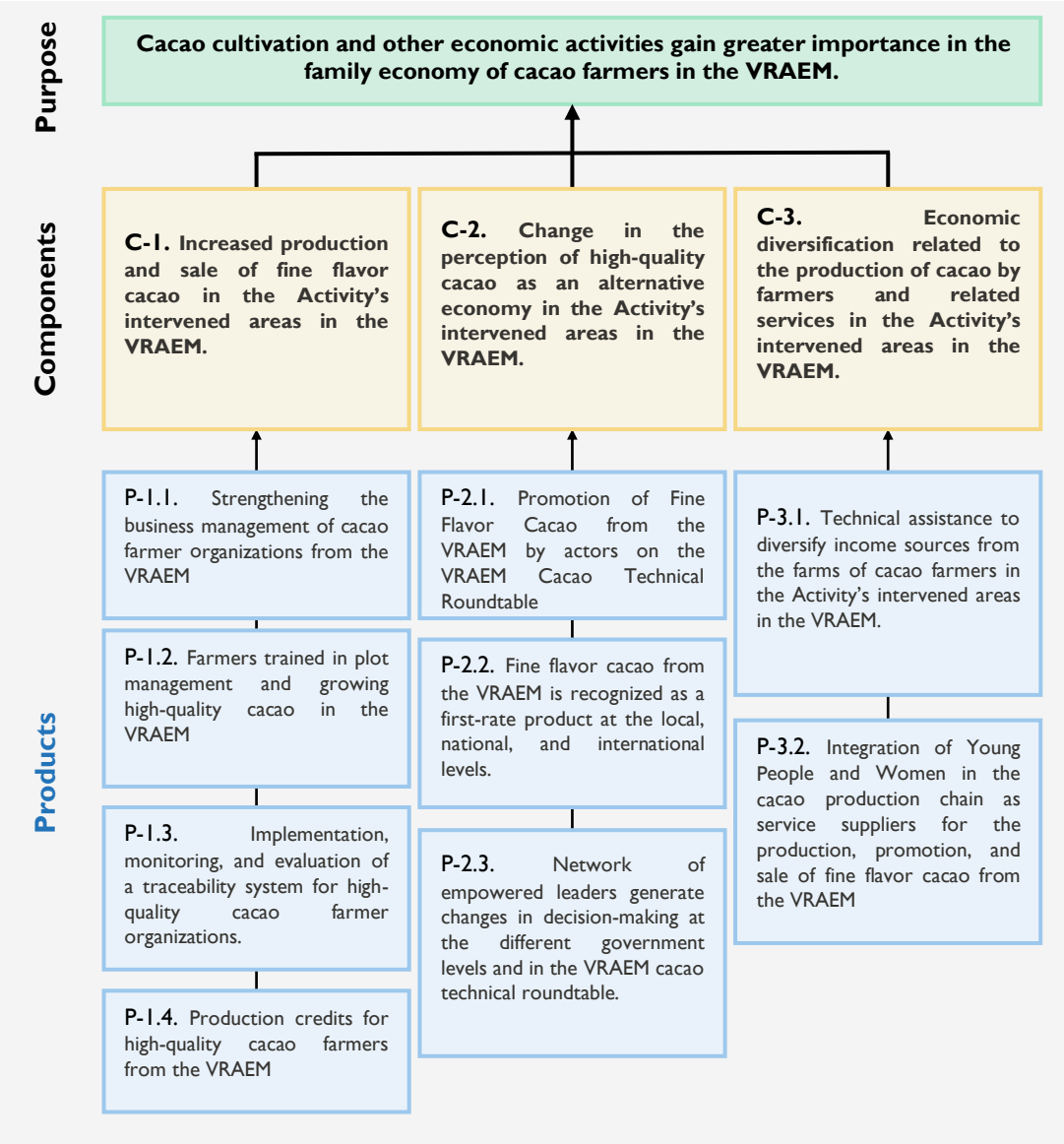
[3] Retrieved from indicator "Area cultivated with coca leaf bushes in production." Source: Peruvian Observatory on Drugs (DEVIDA)

[4] Fine flavor cacao is a category assigned to a cacao with an aromatic profile and a specific flavor (low bitterness and high acidity). Fine flavor cacao is the result of a genetic combination and specific agricultural techniques and practices of plantation, harvest, and post-harvest management, among other aspects. There is no correspondence between cacao varieties and the fine flavor cacao category. Therefore, for evaluation purposes, the farmer survey asks farmers if their cacao has the high-quality aroma category and inquiries about all the varieties of cacao grown on their plots.

- Diversify the economic activities of farmers and of service companies related to the production of aroma cacao in the VRAEM.

Illustration 1: Logical Model of the VRAEM Activity



Source: Lutheran World Relief - Monitoring, Evaluation, and Learning Plan.

To achieve the objectives of the Activity, the intervention has laid out three lines of action (Illustration I). The first line is related to increasing the production and sale of fine flavor cacao (C1). This first component is achieved by strengthening the three organizations' business management, instructing farmers on plot management, implementing, and monitoring a traceability system for organizations, and providing access to the financial system through productive credits. The second component refers to changing the perception of high-quality cacao as an economic alternative for the sustainability of farming families. These will be achieved as follows: First, the VRAEM Cacao & Chocolate Technical Group will be strengthened and consolidated to coordinate the participation of essential stakeholders. Second, the value of high-quality cacao will be increased by expanding windows of opportunity for sales to domestic and international markets. Last, the third element includes achieving greater economic diversification of

the families through cacao farming. This entails training and advice on issues such as the sustainable use of farm products, market promotion, providing support to certify by-products, and identifying agro-ecotourism farms for their value enhancement through family enterprises.

The theory of change of the Activity consists of the following:

a) If VRAEM cacao farmers and processors gain skills and confidence to grow high-quality cacao and other legal crops,

b) If purchasers acquire high-quality cacao from the VRAEM at higher prices,

c) If the stakeholders/members of the Technical Group reinforce the prestige of growing cacao,

then:

a) More farmers from the VRAEM grow more high-quality cacao and other legal crops; and

b) Farmers' income will increase due to the sale of high-quality cacao and other legal crops.

The project implements the following strategies to achieve its objectives:

a) **Increase of at least 20% in kg/ha of cacao produced by each farmer in comparison to baseline.** LWR has been working on the cacao value chain for the last 10 years in the VRAEM, increasing productivity and quality, training cacao farmers to improve the adoption of crop management techniques with an organic focus adapted to the Synchronized Fertilization and Pruning Technique. LWR hopes to increase productivity by 20% (prioritizing fine flavor cacao and standard cacao) by implementing a training and technical assistance plan with a focus on renewal and rehabilitation of agroforestry systems to strengthen skills and capacity of 1200 farmers, training of 40 promoters, in areas of intervention where three VRAEM producer organizations (Qori Warmi, El Quinacho, y Cacao VRAE) work.

b) **The amount of fine flavor cacao with special profiles produced in VRAEM, also measured by the number of certified producers, will increase by 30%.** The project will improve the supply of fine flavor cacao from the three producer organizations through the standardization of harvest and post-harvest processes (fermentation, drying and storage) and the identification of quality profiles in a map of cacao flavors and training of certified tasters. There will also be a traceability system that will provide more information on the initial situation, quality control monitoring and marketing of fine aroma cacao in dry beans, primary derivatives, and derivatives for the end consumer.

   At the same time, the differentiated local price of cacao obtained by producers who switch from standard cacao to fine cacao cultivation (organic and special profiles) will increase by 30%[5] this through the aggregate increase in productivity and bonuses for organic certifications and fair-trade award.

[5] Value updated from the proposal to the implementation phase of the activity.

c) **Change in the perception of the VRAEM, from the image of the valley as an area of conflict and illegal crop production to a territory characterized by the high production of fine cacao recognized locally, regionally, nationally, and internationally for its special flavor and aroma profiles.** This is supported by the positioning and visualization work that the VRAEM project is implementing through the organizational strengthening of the cacao Technical Group and the formation of networks of women leaders, a network of young entrepreneurs, a network of tasters, and a network of agricultural promoters in the VRAEM.

   Productive diversification is the basis of the Valley's economy, and the project seeks to make other licit products that function as a value chain and complement cacao visible. There is also a rich cultural fusion with landscapes typical of high jungle ecosystems where there is the presence of native communities such as the Ashaninkas and Matshiguengas who are protectors of the Amazonian territory and add value to generate environmental and experiential tourism, all of which will allow diversified income for young people and women.

The scope of the VRAEM Activity aims to benefit 1,200 cacao-farming families located in the territorial action area of the following three cacao organizations: Cacao VRAE, Qori Warmi, and El Quinacho.

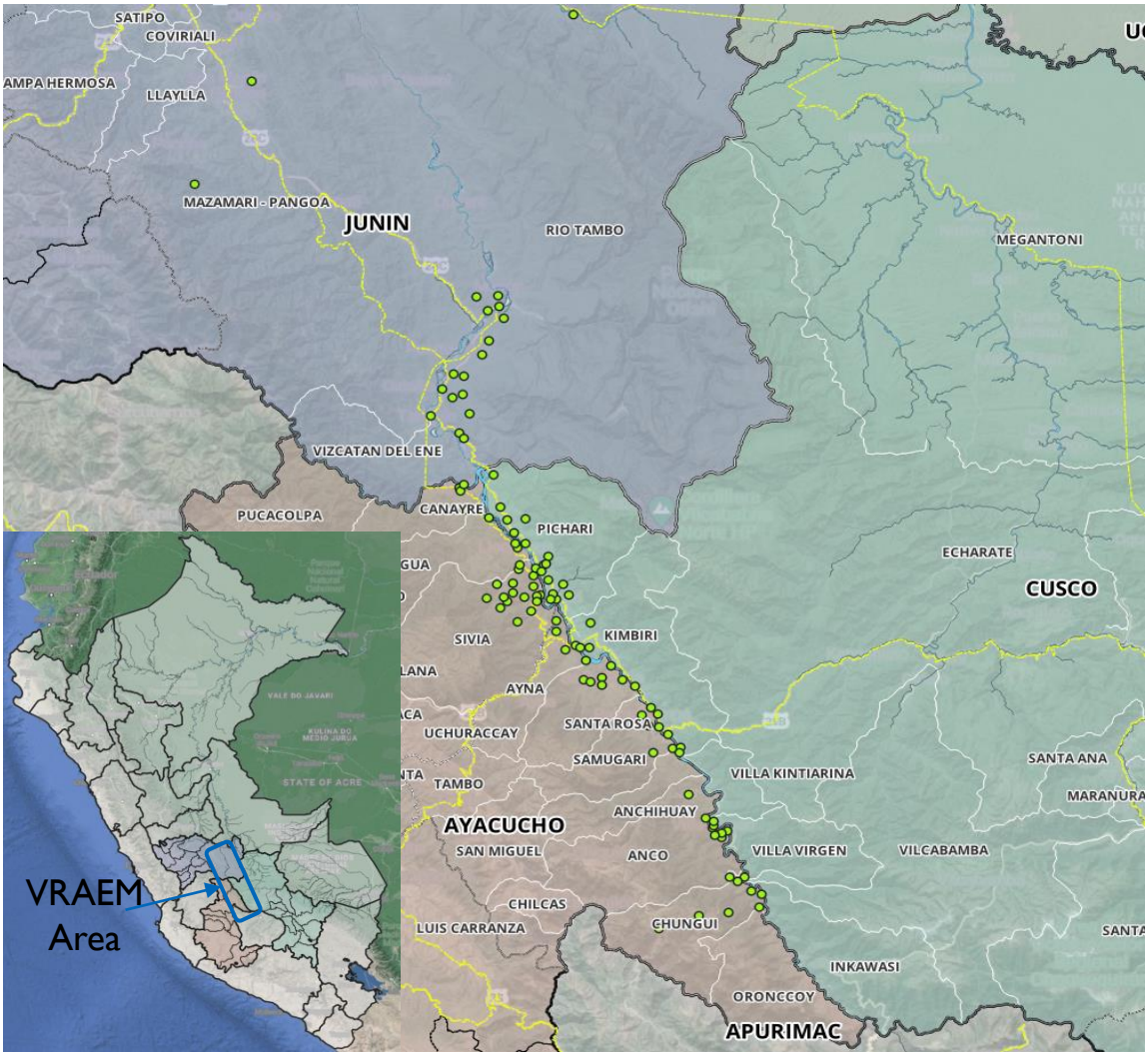
As seen in Illustration 2, the intervention area is in the three regions of the VRAEM (Ayacucho, Cusco, and Junín). Moreover, Table 1 outlines the scope of the intervention of the VRAEM Activity at the district and provincial levels of the three regions involved. Based on the scope of the intervention of the Activity presented herein, a methodological design proposal was made to collect baseline information and design the Activity's impact assessment.

Table 1. Intervention Scope of the VRAEM Activity

Region	Province	District	LOCALIZATION CODE (UBIGEO)
Ayacucho	Huanta	Sivia	050407
		Llochegua	050408
		Canayre	050409
	La Mar	Anco	050502
		Ayna	050503
		Chungui	050505
		Santa Rosa	050507
		Samugari	050509
		Anchihuay	050510
Cusco	La Convención	Kimbiri	080907
		Pichari	080910
		Villa Virgen	080912
		Villa Kintiarina	080913
Junín	Satipo	Mazamari	120604
		Pangoa	120606
		Río Negro	120607
		Río Tambo	120608
		Vizcatán del Ene	120609

Source: Lutheran World Relief - Monitoring, Evaluation and Learning Plan, Database.

Illustration 2: Map of Beneficiary Localities in the VRAEM Area



The VRAEM Activity will have an implementation period of three years, from 2023 to 2026. The evaluation design considers the above timeframe, with the baseline being the starting point (2023), with a second data collection period set for the final stage of the Activity.

PURPOSE AND EVALUATION QUESTIONS

PURPOSE

The purpose of the study is to develop a methodological design for the impact evaluation of the VRAEM Activity and establish a baseline enabling the design of the proposed impact evaluation.

The impact evaluation is expected to measure the change in the result indicators of the Activity's logical framework that can be attributed to the intervention.

Evaluation Objectives

a) Design a methodology for the impact evaluation.

b) Collect, process, and analyze information to establish the baseline enabling the impact evaluation.

EVALUATION QUESTIONS

The evaluation will answer the following questions:

Table 2. Evaluation questions and sub-questions

Questions	Sub-questions
1. What are the changes in production and income of high-quality cacao and other legal activities for farmers participating in the VRAEM Activity that can be attributed to the intervention?	1.1 How much has the importance of fine flavor cacao increased in terms of cultivated area (hectares), crop density (number of plants/hectare), gross production value (S/), and sales (S/) for farmers in the intervened areas? 1.2 What were the strategies that worked best to increase the production, sales, and income of farmers in the intervened areas? 1.3 What are the success factors for increasing the sale of fine flavor cacao? 1.4 How has the work by associations enabled the improvement in production and income of the high-quality cacao beneficiary farmers? 1.5 To what extent has the traceability system improved the sale of high-quality cacao? 1.6 What is the level of inclusion of farmers in the financial system (need, application, access, and use)?
2. What are the changes regarding the perception of cacao farming as a licit activity among the VRAEM population that can be attributed to the intervention?	2.1 How important (assessment) is cacao farming in the family economy of the farmers in the intervened areas? 2.2 How has the Activity impacted and improved the farming of high-quality cacao for families' incomes? 2.3 How has the Activity affected the farmers' profits and margins? 2.4 What are the economic, social, cultural, and demographic factors that motivate farmers to stop growing illicit crops and start producing fine flavor cacao?[6]

[6] In-depth interviews explore this question with key stakeholders and public officials who have an overview of the current socio-economic and productive situation in the intervention areas. For example, association managers, members of the cacao technical committee, and public officials involved in the topic.

Questions	Sub-questions
	2.5 What has been the importance of the Technical Group on fine flavor cacao farming in the area?[7] 2.6 Has financial inclusion been favorable to the household economies of farmers in the intervened areas?
3. What changes in the diversification of income sources of high-quality cacao farmers can be attributed to the intervention?	3.1 What other forms of entrepreneurship did the farmers in the intervened areas adopt to generate income? (value-added businesses and/or other legal crops) 3.2 What types of enterprises have become more relevant among cacao farmers in the intervened areas?

However, considering that the current phase of the study is an evaluation design and baseline survey, during the initial operations phase, the above questions will be asked but not answered. The questions of the evaluation will be answered during the impact evaluation phase, when the Activity enters the closing phase and when the initial and final measurements of the evaluation indicators are available.

[7] The Cacao and Chocolate Technical Group of the VRAEM is a space for coordination and interinstitutional cooperation comprised of various cacao-related organizations, leading farmers, entrepreneurs, private companies, and authorities from the three levels of government (national government, regional government, and local governments) within the VRAEM region.

I: METHODOLOGICAL DESIGN OF THE IMPACT EVALUATION

METHODOLOGICAL APPROACH

This study has been structured with a fundamentally quantitative approach, based on collecting primary information through an ad-hoc survey of farmers that was conducted in the intervention area and neighboring localities. Furthermore, it was complemented with a qualitative strategy that was implemented through interviews with qualified respondents in the intervention area. This means that the methodological approach for the evaluation process was based on quantitative methods (collection of quantitative baseline data and impact evaluation), which were complemented by conducting interviews with essential project stakeholders.

IMPACT EVALUATION DESIGN

An impact evaluation is understood as an exercise seeking to identify changes in a set of outcome variables (i.e., crop yields, farmers' income, etc.), attributable to the intervention, to determine what would have happened to participants if the Activity had never taken place. To this end, it is essential to recreate a counterfactual state of the beneficiaries using a comparison (or control) that is similar in all respects to the beneficiary group minus the intervention. With this information, a properly executed impact evaluation makes it possible to estimate the casual effect of the Activity, both in direction and magnitude, isolating the influence of other potentially explanatory factors (Khandker et al., 2010).

From the point of view of the results chain, the impact evaluation focuses on discovering the changes attributable to the intervention in variables in the high end of the results, related to purposes and goals. It does not focus on downstream indicators, such as output, activity, or input, because they are fully attributable to the intervention.

For the Transforming VRAEM Activity, a quasi-experimental impact evaluation strategy was proposed using a difference-in-difference (DiD) design, which conceptually relies on the exercise of comparing the evolution of the outcome indicators of the beneficiary farmers (those participating in the Activity) and those in the control group between a baseline period (usually prior to the start of the intervention) and a post-intervention period. This is a feasible design in that it does not require modifying operational processes that the LWR has planned to implement in the field.

To search for the control group, the study chose localities near the intervention area, located at similar heights and with the same agricultural vocation, but sufficiently far away to prevent the impacts of the intervention from having an effect on them. This was done to avoid having biased impacts in the evaluation exercise. Furthermore, the control group comprises entirely cacao farmers, with a socio-economic profile like that of the beneficiaries[8].

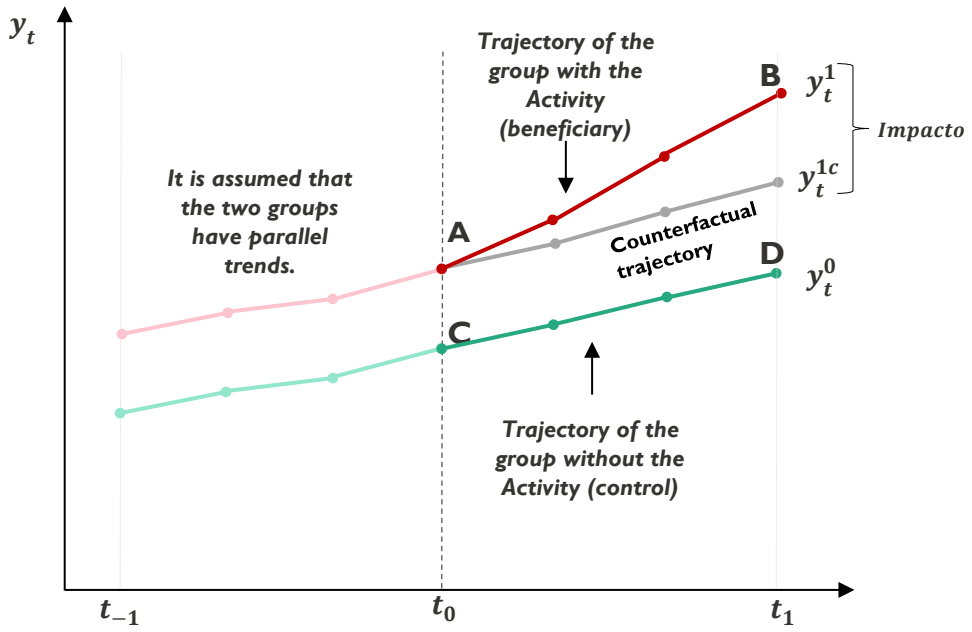
The following graph outlines the DiD methodology. The trajectory of the intervention group (or beneficiaries) is shown in red and that of the control group in green. The assumption of this methodology is that in the absence of the intervention, the beneficiary group would follow the same trajectory as the control group. Thus, the plumb line is the counterfactual trajectory, i.e., the unobservable trajectory that the beneficiary group would have followed in the absence of the intervention. Moreover, as past information on both groups (prior to the baseline period t_0) is

[8] Control and intervention plots are in the production phase, they are not newly installed crops.

unavailable, it is assumed that the localities have behaved similarly with respect to the outcome indicators analyzed by this study. Operationally speaking, the impact is found as a double difference. First, the time difference of each group is calculated, i.e., (B-A) for the beneficiary group and (C-D) for the control group, to then obtain the difference between the results of each group, that is, the double different would be ((B-A) - (D-C)).

It is important to note that it is not necessary for the control group to have equal baseline values as those of the beneficiary group. Rather, they are expected to reflect the trajectory that the beneficiary group would follow if the Activity were never implemented. This is known as the parallel trend assumption.

Illustration 3: Graphic description of the impact assessment with a difference-in-difference design



To formally present the DiD methodology, the first step is to reproduce the impact estimator (Khandker et al., 2010)[9]:

$$\tau^{DD} = E\left[y_{i1}^1 - y_{i1}^0 \middle| D = 1\right] - E\left[y_{i0}^1 - y_{i0}^0 \middle| D = 0\right] \qquad (i)$$

In the equation above, the outcome variables of participating individuals in the pre- and post-intervention periods (the Activity) are defined as y_0^1 e y_1^1, and the outcome variables of the control individuals in the pre- and post-intervention periods are defined as y_0^0 e y_1^0. The expression can be reformulated parametrically through the following basic specification:

$$y_{ict} = a + \gamma T_t + \theta D_{ic} + \tau^{DD}(D_{ic} \times T_t) + u_{ict} \qquad (ii)$$

[9] Khandker, S.; Gayatri, K. y H. Samad (2010), *Handbook on impact evaluation: quantitative methods and practices.* Washington, D.C.: The World Bank.

Where y_{ict} is the observed outcome variable (income for example) of individual i in domain c in period t. D_{ic} is a binary variable that takes the value of 1 for individual i in beneficiary domain c and 0 otherwise. T is a variable that takes the value of 1 for the post-intervention period and 0 for the baseline period. u_{ict} is the error, and α, γ, τ and λ are parameters that must be estimated. Of the above, τ is the one of interest because it retrieves the effect of the intervention. The parametric expression (ii) is more useful and usual for estimating impacts because it facilitates control for other intervening variables X_{ict} and enables the use of the Hubert–White estimator of the variance and covariance matrix for inference purposes. It also considers the correlation of errors at the level of, for example, an individual.

A better estimator introduces fixed effects as the level of individuals (ω_i), for which it is necessary to construct a panel of individuals (i.e., a longitudinal sample). However, this is not necessary to maintain consistency and thus, we do not propose it in this study.

To ensure the consistency of the estimator and when adding individual-level fixed effects (ω_i), the following assumptions must be made:

a. $E(u_{ict}|T_t, X_{ict}, \omega_i) = E(u_{ict}|D_{ic}, X_{ict}, \omega_i) = E(u_{ict}|D_{ic} \times T_t, X_{ict}, \omega_i) = 0$. Once T_t, D_{ic}, X_{ict} and ω_i are controlled for, there are no unobservable characteristics (collected in u_{ict}) that vary over time with treatment status. This assumption is known as the *common trend assumption* (Khandker *et al.* 2010).

b. *Treatment unit stability (SUTVA[10]).* The benefits of the treatment cannot spillover the control units.

Compliance with both assumptions has operational implications during the design of the baseline. The first implies the similarity of beneficiaries and controls (it sometimes makes it possible for the comparability of the control group to be assessed), thereby indicating that it is necessary to make a correct selection of individuals from the control group. The process for selecting the controls to be followed to develop the baseline is described below. The second assumption, SUTVA, implies that the controls cannot, for any reason, directly or indirectly benefit from the advantages of the Activity. Otherwise, the comparison between the intervention and control groups during the impact evaluation would lead to downward biased parameters. To maintain this assumption, the evaluation design will derive recommendations for the Activity not to intervene on people in the control sample.

An expected complication in the impact exercise that can potentially generate biases in the estimates is the existence of remaining differences between individuals in the control group and beneficiaries in characteristics that correlate with the outcome variables. To avoid this risk, we propose implementing the *re-weighting strategy*, following the procedure described by Khandker et al. (2010). Firstly, a probability *logit* model must be estimated, wherein the dependent binary variable takes the value of 1 if the observation comes from a locality participating in the Activity and 0 if it comes from a control one (subject to a set of characteristics). Then, the forecasted values of each model will be obtained, and those that are part of the common support will be identified. The subsample that is comparable in terms of its probability of selection conditional on the selected characteristics will be identified. Then, among these observations, the DiD model (ii) will be estimated, but weighted by the following factor:

[10]SUTVA: Stable Unit Treatment Value Assumption.

$$w_i = \begin{cases} 1 \; if \; the \; observation \; comes \; from \; the \; treatment \; group \\ \frac{P(X_i)}{1-P(X_i)} \; si \; the \; observation \; comes \; from \; the \; control \; group \end{cases} \qquad (iii)$$

In this manner, latent differences between the intervention and control groups are controlled, which could have affected participation in the Activity, as well as observed outcomes. Greater weight is assigned to the observation in the control group that has a higher probability of participation subject to their observable characteristics (Khandker et al. 2010). The formula (iii) that defines the weighting makes it possible to estimate the average treatment effects on the treated (ATT) and yields a consistent and efficient parameter, under the assumption of selection on observables (see Hirano et al. 2003)[11].

Lastly, given the proposed DiD design, it would have been advisable to collect information from the same cacao farmers from the baseline, so that a panel data sample (same individuals with information at different times of the Activity) would be available for the impact evaluation. However, due to the complexity of the territory and to avoid the risk of the field team inquiring about individuals' personal data (specifically the control group), the decision was made to conduct the surveys under complete anonymity[12], so it will not be possible to develop a panel data sample. Instead, an evaluation exercise using repeated cross-sectional data (i.e., independent baseline and end line samples) will have to be implemented. In other words, the endline survey should be collected in the same intervention and control localities as the baseline, but within each locality, a new sampling process will be conducted without necessarily corresponding to the same respondents. This is not a problem from a methodological perspective since the estimator of differences in differences does not require panel data as long as the baseline and endline information correspond to the same reference population, even if they are not the same people. Furthermore, all surveys have been geo-referenced so that endline surveyors will be able to search for the residences that were visited in the baseline or adjacent residences.

An element in favor of collecting repeated cross-sectional data relative to a panel data sample is that it makes it possible to better manage the risks of sample attrition that can occur with respondents during the baseline survey (i.e., the risk of not finding respondents for the end line survey who participated in baseline survey). If a panel data sample had been planned, there would have been a great risk of out-of-sample due to the VRAEM area being characterized by high levels of migration among the population. Moreover, as will be indicated below, the sample of beneficiaries should be understood as a sample of potential beneficiaries because at the time of the survey, only less than 40% of cacao farmers were identified as VRAEM Activity beneficiaries (members of the Qori Warmi, El Quinacho, and Cacao VRAE organizations). For the remainder, the study only named the localities where the LWR expects to intervene. Cacao farmers were surveyed in these areas, but it is possible that many of the respondents may not be actual beneficiaries during the Activity. As such, the endline sample could be significantly reduced if a panel data sample were chosen. A repeated cross-sectional sample mitigates this risk.

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[11] The estimated parameter is the ATT and not the average treatment effect (ATE), due to the nature of the estimator used, which takes, for calculation purposes, only the observations that are within the common support space. Thus, it is a local parameter that reflects the impact only among the beneficiary population. Under this framework, the observations of the control group are only incidental and useful insofar as they enable to reconstruct the counterfactual scenario of the intervention group.

[12] This decision was made because during the pilot test for the baseline, the cacao farmers expressed discomfort and unease and questioned the interviewers while inquiring about their personal information and that of their family members (names, surnames, and telephone numbers). Therefore, to avoid potential risks to field staff and biases in the information provided by the interviewees, the questions to collect contact information were removed.

INDICATORS AND DATA COLLECTION INSTRUMENTS

To make the proposed impact assessment design feasible, the 10 indicators of the VRAEM Activity were operationalized. This exercise was carried out to adapt the indicators to the scope of the baseline data collection and future impact evaluation. In Table 3, the adaptation of the indicators based on those proposed in the Activity's indicator matrix is outlined.

Table 3. Matrix of operationalized indicators for the Baseline and Impact Evaluation (IE)

Results	Conceptual indicators	Indicators operationalized for IE[13]
Purpose		
Cacao farming and other licit economies gain greater importance in the household economies of cacao farmers in the VRAEM	0.1a. Revenues from fine flavor cacao, alternative crops, and other enterprises.	*0.1a. Farmer's monthly revenues from cacao sales, alternative crops, and other enterprises (disaggregated by cacao sales and gender of the farmer).*
		0.1b. Farmer's monthly net income (profit) generated by cacao and other products over total household income (measured in S/ and in %).
	0.1b. Number of farmers who switched from illicit crop production to crowing fine flavor cacao and other licit crops.	*0.1c. Hectares under cacao and other associated crops over total cultivated hectares (measured in No. of Ha and in %).*
		0.1d. Number of cacao plantations by cultivated hectare (production density).
Components		
C-1. Increased production and sale of fine flavor cacao in the Activity's intervened areas in the VRAEM	1.0a. Percentage of fine flavor cacao production in the VRAEM.	*1.0a. Monthly gross value of cacao production in the intervention area over the total gross value of production (measured in S/ and %).*
	1.0b. Number of farmers who sell certified fine flavor cacao.	*1.0b. Percentage of farmers who sell certified organic cacao in the intervention area.*
		1.0.c Percentage of sales of cacao over the total sales of the farmer (%)
C-2. Change in the perception of high-quality cacao as an alternative economy in the Activity's intervened areas in the VRAEM	2.0. Perception of the population of the Activity intervened areas regarding fine flavor cacao as a profitable alternative in the VRAEM.	*2.0a. Percentage of farmers in the intervention area who consider cacao as a profitable alternative in their locality.*
		2.0b. Farmers' perception regarding cacao farming within the family economy.
		2.0c. Gross profit per hectare (soles/Ha)[14]
C-3. Economic diversification related to the production of cacao by farmers and related services in the Activity's intervened areas in the VRAEM	3.0. Number of farmers who have other income sources related to cacao production.	*3.0a. Percentage of farmers who have other income sources associated with cacao production.*
Products		
P-1.2. Farmers trained in plot management and growing high-quality cacao in the VRAEM	1.2a. Percentage of farmers who adopt practices to manage high-quality cacao in the VRAEM.	*1.2a. Percentage of farmers in the intervened areas who adopt practices to manage cacao.*

[13] For evaluation purposes, it has been decided to report aggregated cacao production indicators because it allows for more accurate estimations. During the fieldwork planning prior to the baseline, information on the estimated production of fine flavor cacao were not available, so it was decided to conduct a comprehensive characterization of cacao production. However, after measurement and knowing the magnitudes of high-quality cacao production in the intervened areas, it is possible to make estimations regarding the production categorized as fine flavor cacao in the evaluation exercise.

[14] This indicator is measured over the total hectares cultivated by the farmer and not specifically over cacao hectares because agricultural expenditures cannot be accurately estimated for cacao production. Farmers engage in multiple crops and report expenditures associated with the entire farm production, making it impossible to allocate the proportion of expenses solely to cacao production.

Results	Conceptual indicators	Indicators operationalized for IE[13]
	1.2b. Number of hectares of fine flavor cacao crops in the VRAEM.	*1.2b. Percentage of hectares on which the proper practices to grow cacao are employed.*
P-1.3. Implementation, monitoring, and evaluation of a traceability system for high-quality cacao farmer organizations.	1.3. Number of farmers who use the traceability system for the high-quality cacao production chain.	*1.3a. Percentage of farmers in the intervened areas that participate in the traceability systems by providing information on their cacao crops.*
P-1.4. Production credits for high-quality cacao farmers from the VRAEM	1.4. Percentage of farmers who use credits from the financial sector.	*1.4a. Percentage of farmers from the intervened areas that use credits from the financial sectors.*

Source: Lutheran World Relief - Monitoring, Evaluation, and Learning Plan.

The data collection instruments were built with the indicators already operationalized. As mentioned above, to achieve the goals and purpose of the study, two types of instruments were developed: for the quantitative design, a survey for farmers that was addressed to the sample of beneficiary and control groups; and for the qualitative design, a semi-structured interview guide aimed at key project stakeholders and public officials (see details in Annex D).

In the case of the quantitative instrument, it was digitized to be used in KoboToolbox, a computer tool used by Macroconsult in similar field operations. A positive aspect of this software is that it mitigates typing errors and inconsistencies that occur when paper surveys are entered into databases. The survey included questions that enabled collecting the necessary information to quantify the indicators adapted in the table above. Additionally, this instrument has been useful for collecting information to create other complementary indicators necessary to produce a functional baseline for the proposed impact assessment. These include indicators such as age, sex, education, access to social programs, household equipment, and housing characters, among other data points.

Regarding the qualitative instrument, two semi-structured interview guides were developed. The first guide was aimed at public and civil society officials. The guide seeks to inquire about the current socio-economic situation and primary needs of the VRAEM populations, as well as highlights the actions of public entities to eradicate coca production, alternative production development programs, information on the production, and perception and diversification of cacao farming.

The second guide was designed for members of the cacao associations. Information on the same topics as in the survey for staff was collected for this instrument, but additional inquiries were made about the implementation process of the VRAEM Activity. The interviews were collected in digital audio records for downloading and processed as per the methodological matrix (Annex B).

SAMPLE

This section explains in detail the sampling procedure carried out prior to the field work, which includes selecting the beneficiary localities and their respective control centers. Similarly, sample sizes and the post-data collection sample analysis process were established.

The sample collected in the baseline survey is probabilistic, two-state, and stratified proportionally according to region. In the first stage, the identification and selection of the intervention and control localities was carried out. This was followed by the second stage, in which the respondents of each interest group within the selected localities were identified and selected. The sample selection process is outlined below.

SAMPLING FRAME

As an initial step in the sample selection process, it is important to have clarity regarding the universe of localities (population centers) where the VRAEM Activity will be active. To this end, the study used the following three information sources obtained by the LWR:

- Activity design and formulation documentation (only information on the population centers is available).
- Database on associate farmers of any of the three associations mentioned above (with individual contact data of the farmers).
- Database of localities where independent farms and native communities are expected to participate (only information on population centers is available).

The processing of the information and consolidation of these three data sources made it possible to identify the localities in the intervention area. However, given that the localities were not geo-referenced, it was necessary to carry out additional cross-referencing work with the localities registered in the 2017 Population and Housing Census (INEI). The information was then cross-checked using the names of the localities and not the standardized geographic location codes (Ubigeo) used by the INEI. Based on the above, it was possible to geo-reference 111 population centers, which corresponds to the universe of intervention localities, on which the sample selection will be based.

These 111 localities were located on a map of the VRAEM (Illustration 4) to understand the extension of the intervention area in the territory. It is evident that almost all the localities within the Activity's intervention area are located along the Ene and Apurimac Rivers. However, four localities were identified that were isolated from the others (between 60 and 70-km away)[15]. Furthermore, the coca leaf crop density layer was added. With this information, localities with different levels of coca leaf production intensity were identified.

Table 4. Intervention Scope of the VRAEM Activity

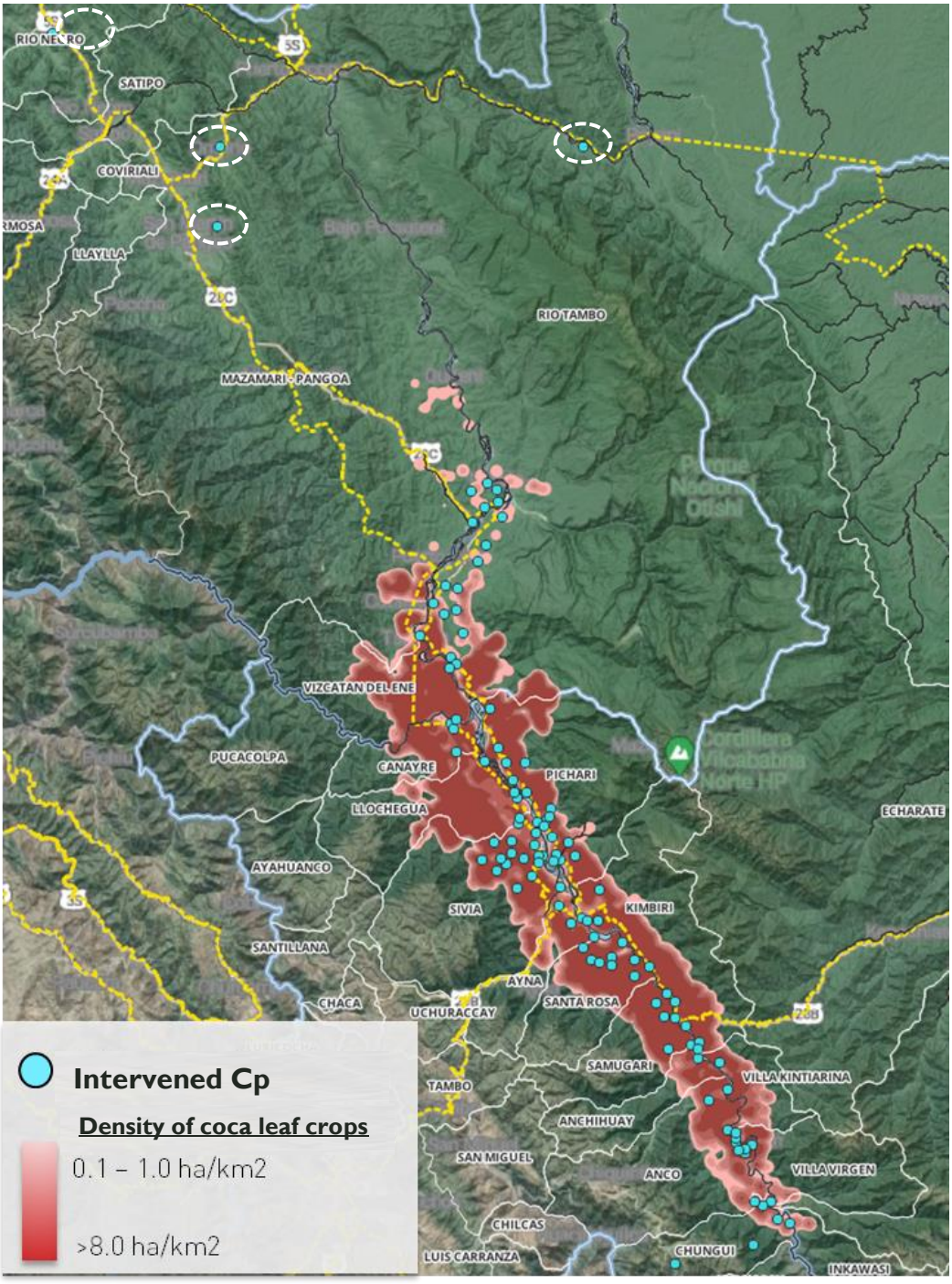
Region	Province	District	No. Intervention localities
Ayacucho	Huanta	Sivia	16
		Llochegua	3
		Canayre	3
	La Mar	Anco	7
		Ayna	4
		Chungui	8
		Santa Rosa	8
		Samugari	3
		Anchihuay	2
Cusco	La Convención	Kimbiri	11
		Pichari	18
		Villa Virgen	1
		Villa Kintiarina	3
Junín	Satipo	Mazamari	1
		Pangoa	7
		Río Negro	1

[15] These are the localities of San Juan de Cheni (Río Negro district), Anapate (Río Tambo district), and La Florida y Yungor Pampa (Pangoa district).

Region	Province	District	No. Intervention localities
		Río Tambo	13
		Vizcatán del Ene	2
Total			**111**

Source: LWR.

Illustration 4: Map of the Intervened Localities



The baseline team identified the localities of the intervention area and simultaneously collected information on the number of farmers. There were no problems in the case of associate farmers as we had individual data by locality. However, there was no individualized data available for independent farmers and indigenous communities but rather district-level goals. This meant that some rules for distributing district goals had to be applied in proportion to the population size of each locality. This allowed us to assume a reference number of farmers that will be benefited from the Activity's intervention for each locality in the area identified. To this end, these estimated figures are a mere reference for the sole purpose of establishing quotas by locality in the sampling exercise described below. The actual number of beneficiaries per location will be known when the Activity is implemented.

Moreover, based on future intervention communities of the VRAEM Activity (111), socio-economic data at the locality was gathered from the 2017 Population and Housing Census and the 2012 Agrarian Census (CENAGRO). With this calculation, the sampling frame of beneficiary localities was established only for localities meeting the following three criteria:

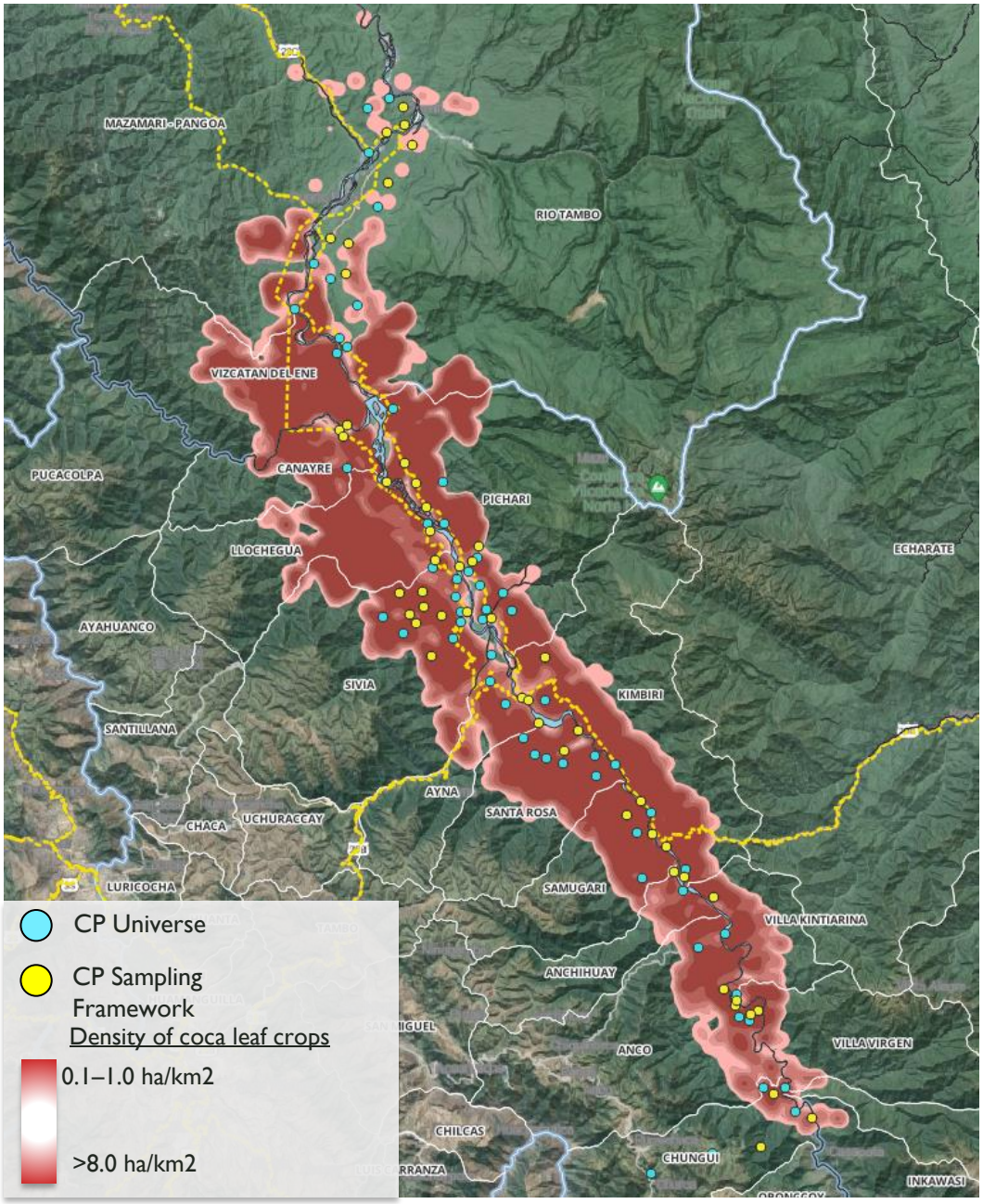
- Localities that have at least 20 households, according to 2017 Census data.
- Localities that are located less than 10 km away from the closest point either to Río Ene or Río Apurímac.
- Localities with at least five beneficiary farmers.

These criteria made it possible to limit the sampling frame of the intervention area to 50 localities. The criteria aimed to make the field work feasible. Potential risks of selecting areas that are not very accessible or that have a small target population (cacao farmers) are mitigated, which would hinder the expected sample sizes from being reached. This definition does not alter or invalidate the rigor of the randomized selection, given that 76% of the total number of houses in the localities are located within the 50 selected localities (approximately 12,600 houses out of a total of 16,500). Additionally, 85% of beneficiary farmers are in this area (1013 out of 1200 farmers), as per previous estimations. **Table 5** shows the number of localities in the sampling frame by district, province, and region. Ayacucho accounts for 42% of the total number of beneficiary farmers in the sampling frame, whereas Cusco and Junín have 38% and 20%, respectively.

Table 5. Sample Frame of Intervened Localities of the VRAEM Activity

Region	Province	District	Intervened Cp	Total houses	Total farmers
Ayacucho	Huanta	Sivia	8	1,386	160
		Llochegua	2	844	58
		Canayre	2	415	103
	La Mar	Anco	4	280	30
		Ayna	1	23	13
		Chungui	3	200	33
		Santa Rosa	2	1,430	15
		Samugari	1	1,015	6
		Anchihuay	1	30	5
Cusco	La Convención	Kimbiri	7	2,319	124
		Pichari	8	3,856	215
		Villa Virgen	1	261	43
		Villa Kintiarina	1	34	10
Junín	Satipo	Pangoa	3	96	37
		Río Tambo	5	330	118
		Vizcatán del Ene	1	93	43
	Total		**50**	**12,612**	**1,013**

Illustration 5: Map of the Sampling Frame of Beneficiary Localities



SAMPLE SELECTION OF BENEFICIARY LOCALITIES

Once the sampling frame was established, beneficiary localities were randomly selected and stratified by region according to proportionality with regards to the number of localities and in accordance with each region of the sampling frame. As a result, 40 intervened localities were selected: 18 in Ayacucho, 14 in Cusco, and 8 in Junín. This number includes a sample of 30 primary localities and 10 replacement localities.

Table 6. Proportionality of intervened localities by region in the sampling frame and selected sample

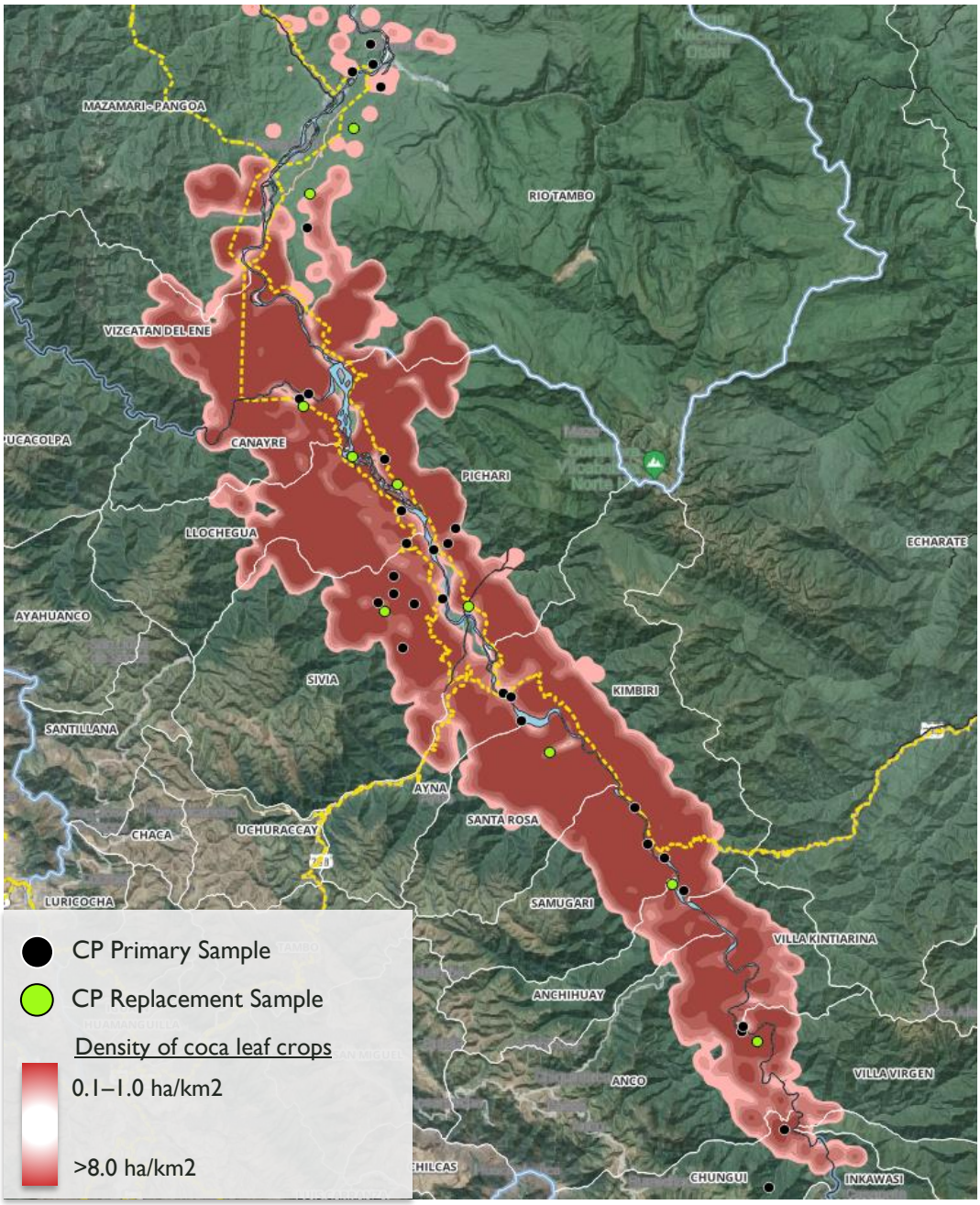
District	Sampling frame		Sample localities	
	No. Localities	Percentage	No. Localities	Percentage
Ayacucho	24	48%	18	45%
Cusco	17	34%	14	35%
Junín	9	18%	8	20%
Total	**50**	**100%**	**40**	**100%**

The selected localities are distributed in the territory just as shown in **Table 6** and in Illustration 6. Furthermore, as mentioned, 10 replacement localities were considered, which are distributed among the three regions to reduce the risk of non-response or non-compliance with the number of farmers per selected location.

Table 6. Selected sample of intervened localities of the VRAEM Activity

Region	Province	District	Effective sample	Replacement sample	Total sample
Ayacucho	Huanta	Sivia	5	2	7
		Llochegua	2	0	2
		Canayre	1	1	2
	La Mar	Anco	1	1	2
		Ayna	1	0	1
		Chungui	1	1	2
		Santa Rosa	1	0	1
		Anchihuay	1	0	1
Cusco	La Convención	Kimbiri	6	0	6
		Pichari	4	3	7
		Villa Virgen	1	0	1
Junín	Satipo	Pangoa	3	0	3
		Río Tambo	2	2	4
		Vizcatán del Ene	1	0	1
Total			**30**	**10**	**40**

Illustration 6: Map of the Sample of Selected Beneficiary Localities



SELECTION OF CONTROL LOCALITIES

Given that the intention was to select control localities as similar as possible to the intervened localities, a two-stage selection strategy was carried out. First, of the total number of non-beneficiary localities in the VRAEM, those that met the following criteria were identified:

- Populated centers with at least 20 houses located less than 10 km from the Ene and/or Apurímac Rivers.
- Populated centers located between 1.5 km and 15 km from the nearest beneficiary locality.

As a result, a group of non-beneficiary localities potentially eligible for the control group were identified. Then, as a second step, a matching procedure was implemented between the 40 beneficiary localities selected as part of the sample and the rest of potential control localities established in the first stage. For this matching exercise, the Mahalanobis algorithm was applied, using the following formula:

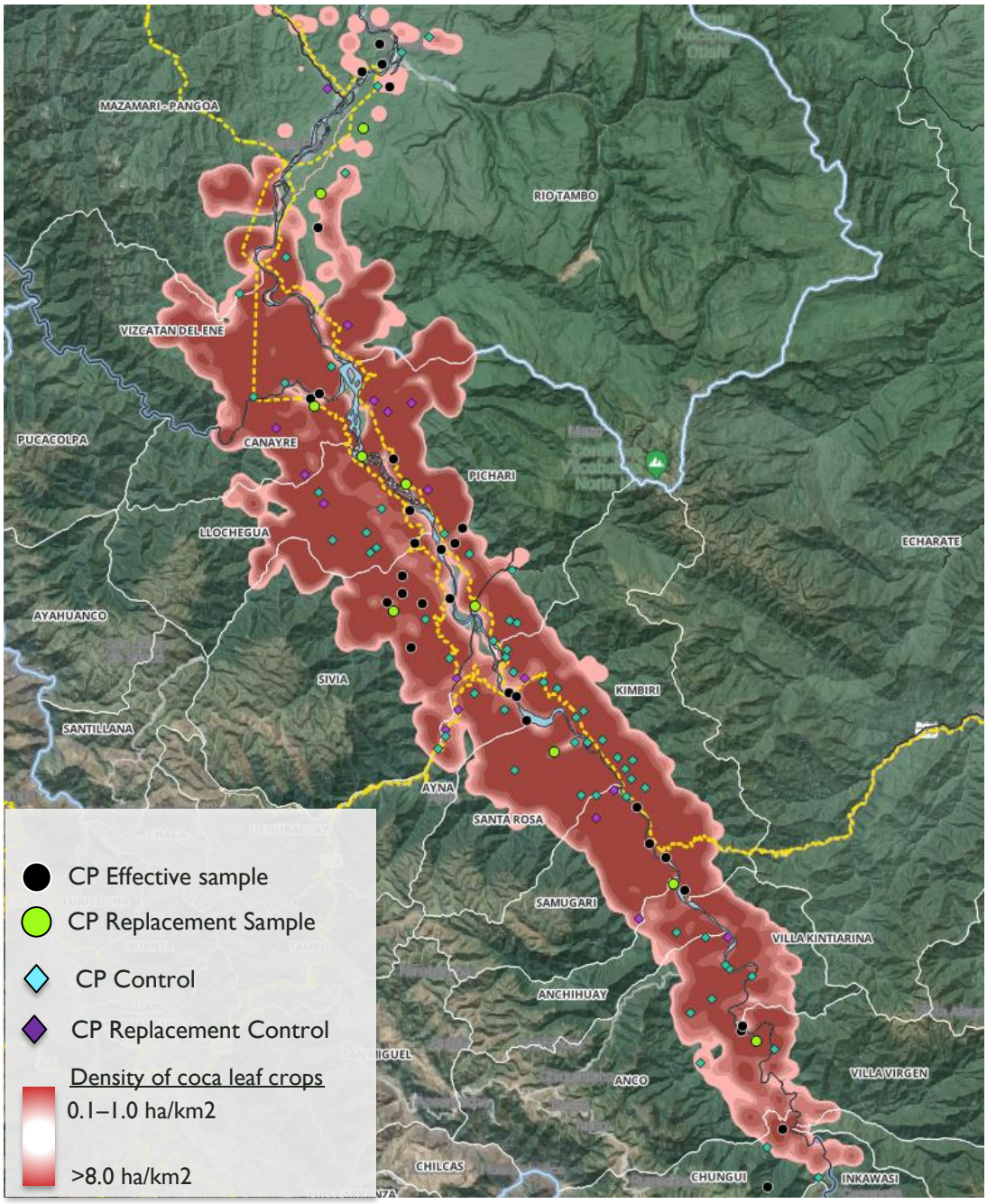
$$d_{ij} = \sqrt{\sum_{k=1}^{P} \left(x_{ik} - x_{jk}\right)^2}$$

where d_{ij} is the distance between each intervention locality i and each control locality j; further, x_{ik} is a comparison criterion k of the intervention locality i, whereas x_{jk} is the same variable but measured in the group of potential control localities. P is the maximum number of incorporated comparison criteria. With this criterion, comparisons were made of all the intervention localities with potential control localities for each region. As a result, the control locality with the minimum distance was chosen. The characteristics x used for the matching exercise were based on the following data from the 2017 Census, 2012 CENAGRO, and DEVIDA:

- Altitude of localities
- Geographic area (urban/rural)
- Total number of residences in the locality
- Percentage of residences with electrical lighting
- Percentage of population whose native language is native or indigenous
- Percentage of population older than 18 years who have completed secondary school
- Percentage of population working in the agriculture sector
- 2022 coca leaf crop density (hectare/km2)

For each intervened locality, two control localities were chosen, in a manner wherein one could be selected in the field. This was done because of the difficulties that could arise in the field work with respect to access difficulties, complications due to the dangerous nature of some areas in the VRAEM, and the potential inexistence of cacao farmers in some of the selected localities. As a result, 60 control localities were selected for the effective sample (30 effective intervened localities) and 20 control localities were selected for the replacement intervention sample (10 intervened localities), totaling 80 potential control localities. The goal was to reach 30 localities from which information would be collected. **Illustration 7** shows the localities that were selected prior to the study's trip to the field.

Illustration 7: Map of the Sample of Beneficiary and Control Localities



EXPECTED SAMPLE SIZE OF FARMERS

For the operationalization of the field work, minimum quotas of surveys per locality were established as per the number of beneficiary farmers that the Activity expects to intervene at the locality level. The rule is as follows:

- 5 farmers are interviewed in localities with 6–10 beneficiaries
- 10 farmers in localities with 11–20 beneficiaries
- 15 farmers in localities with 21–30 beneficiaries
- 20 farmers in localities with more than 30 identified beneficiaries

In the case of the control localities, given that valid records with known numbers of farmers do not exist, it was planned to collect information from an average of 10 cacao farmers per locality. In any case, both in the intervened and control localities, the proposed quotas were only referential. If these could not be met in the field, they were expected to be recovered at larger localities. Therefore, given the selection of 40 intervened and 80 control localities, the information collection was planned for a corresponding maximum sample of up to 800 farmers (400 control and 400 intervened).

Table 7. Expected sample sizes

	Beneficiaries	Controls	Total
Ayacucho	160	160	320
Cusco	160	160	320
Junín	80	80	160
Total	400	400	800

RESULTS OF THE FIELD OPERATIONS AND EFFECTIVE SAMPLE SIZE

The baseline fieldwork resulted in visiting 29 beneficiary localities and 36 control localities, as shown in **Table 8**. Data collection was characterized by difficulties in the localities of Ayacucho due to its territorial complexity and insecurity of the areas; as a result, two planned beneficiary localities in Ayacucho were not visited. Nonetheless, there were fewer difficulties in reaching Cusco and Junín. The number of planned localities was met for the rest of the localities - the number of planned localities was exceeded in Cusco to compensate for the sample deficit in Ayacucho.

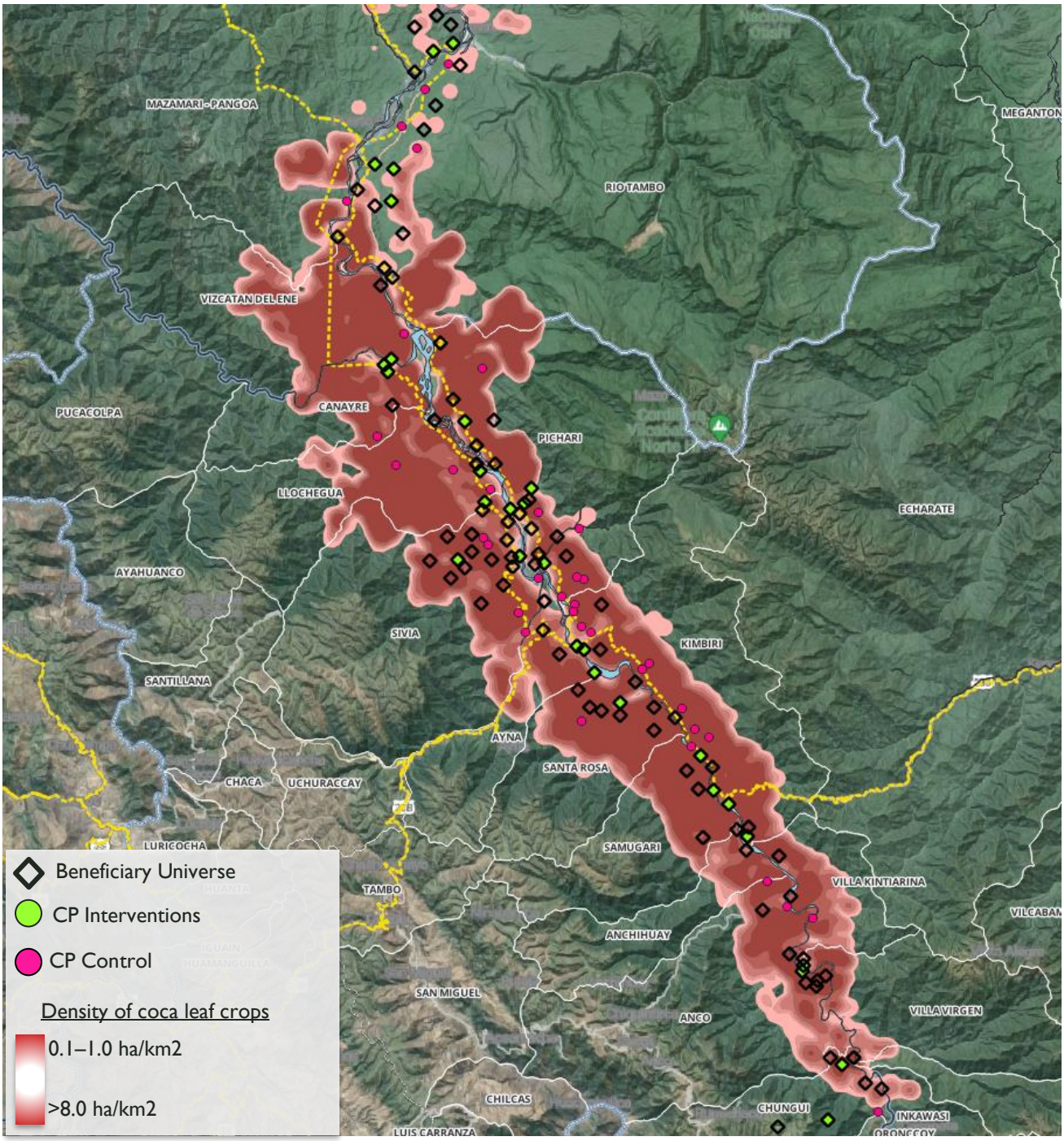
Table 8. Number of planned and visited localities from the intervened and control groups.

Region	Interventions		Controls	
	Planned	Visited	Planned	Visited
Ayacucho	13	11	13	14
Cusco	11	12	11	16
Junín	6	6	6	6
Total	30	29	30	36

Illustration 8 shows the localities in the VRAEM territory that were visited in the field, which constitute the effective baseline sample of the VRAEM Activity, as well as the distribution of the beneficiary

localities in the area. Annex G presents the list of localities from both from the beneficiary and control groups.

Illustration 8: Map of localities that make up the universe and effective sample of the baseline



The sample of farmers collected in the previous localities totals 836 cases. Of these, 432 correspond to the sample of participant beneficiaries (or treated) and 404 to the control group. These numbers are higher than those expected.

The planned distribution of the observations (number of farmers) as per type of respondent and region for the intervention group was as follows: as per respondents, 50% are associate farmers[16], 30% are independent[17], and 20% of farmers are from indigenous communities[18]. With respect to territory, the plan was to obtain 40% of respondents from Ayacucho, 40% from Cusco, and 20% from Junín. However, while collecting the information, the actual sample for the intervention group presented some differences with respect to what was planned, which are highlighted in **Table 9**.

- Nine surveys fewer were collected in Ayacucho, specifically from associate farmers, due to the specific complexity and hostility in the localities of the region.
- In the case of Cusco, the planned quotas were exceeded by 41 surveys to compensate for the loss of information from Ayacucho. The increase in the sample from Cusco is explained by the increase in the number of independent (non-associated) farmers.
- In Junín, information was collected from 24 more indigenous community farmers than planned, and 20 fewer associate farmers than expected.

Consequently, the treatment group comprised 39% associate farmers, 35% independent farmers, and 26% indigenous farmers; with respect to region, 35% were from Ayacucho, 47% from Cusco, and 19% from Junín.

Table 9. Differences between the effective sample and the planned sample for the intervention group

Interventions	Region	Associate		Independent		Indigenous		Intervention Total	
		N°	%	N°	%	N°	%	N°	%
Planned	Ayacucho	108	68%	45	28%	7	4%	**160**	100%
	Cusco	48	30%	53	33%	59	37%	**160**	100%
	Junín	45	56%	21	26%	14	18%	**80**	100%
	Total	**201**	**50%**	**119**	**30%**	**80**	**20%**	**400**	**100%**
Effective	Ayacucho	98	65%	42	28%	11	7%	**151**	100%
	Cusco	45	22%	91	45%	65	32%	**201**	100%
	Junín	25	31%	17	21%	38	48%	**80**	100%
	Total	**168**	**39%**	**150**	**35%**	**114**	**26%**	**432**	**100%**

However, in the case of the control sample (**Table 10**), we planned to collect 80% of the surveys conducted with independent or associate farmers and 20% with farmers from indigenous communities. Moreover, a distribution of 40% was expected for Ayacucho, 40% for Cusco, and 20% for Junín. The following are the differences between the planned and effective samples for the control group:

[16]Cacao farmers who are associated with a cacao organization (Qori Warmi, Cacao VRAE, and El Quinacho, among others).
[17]Cacao farmers who do not belong to a cacao organization and are not from indigenous communities.
[18]Cacao farmers residing in a locality that is part of the register of communities and indigenous peoples prepared by INEI, according to the 2017 Census of Population and Housing.

- In Ayacucho, the number of participants was 17 less than the planned number.
- This was compensated by an increased sample in Cusco of 16 farmers more than expected.
- In Junín, although the target was achieved. There was an internal reorganization process based on the type of respondent, with 42 more indigenous farmers participating than expected, whereas there was a deficit of 37 independent and associate farmers due to the complexity of accessing certain localities.

Consequently, the control group comprised 69% associate and independent farmers and 31% indigenous farmers. Of these, 35% were from Ayacucho, 44% from Cusco, and 21% from Junín.

In sum (intervention and control), a greater number of farmers from indigenous communities participated than expected, both in the intervention and control groups. As such, participation was lower from associate farmers.

Table 10. Differences between the effective sample and the planned sample for the control group

Interventions	Region	Associate/Ind		Indigenous		Total Control Farmers	
		N°	%	N°	%	N°	%
Planned	Ayacucho	154	96%	6	4%	**160**	100%
	Cusco	101	63%	59	37%	**160**	100%
	Junín	64	80%	16	20%	**80**	100%
	Total	**319**	**80%**	**81**	**20%**	**400**	**100%**
Effective	Ayacucho	137	96%	6	4%	**143**	100%
	Cusco	115	65%	61	35%	**176**	100%
	Junín	27	32%	58	68%	**85**	100%
	Total	**279**	**69%**	**125**	**31%**	**404**	**100%**

The differences between the planned and actual samples are minor and do not require post-survey adjustments for the baseline via expansion factors. Strictly speaking, the control sample does not have an established sampling frame as it only seeks to be functional for the evaluation exercise to be carried out at the endline and is not expected to be representative of any population. Therefore, it is not necessary to create expansion factors.

In contrast, the beneficiary sample does have an established sampling frame, but currently, only the sample of associate farmers and the overall goals of the other segments are known with certainty. The population of independent farmers and those indigenous communities are not known, and the data used are referential based on estimates with the population data, as indicated above. The effective sampling frame will be in place when the evaluation exercise is performed and when the identity of the intervened population is finally known. As such, expansion factors have not been prepared for this report. Rather, they should be created for the final period, when the information for the impact assessment is collected. Then, the estimates will have to be recalculated using these new projections.

SAMPLE ERROR AND MINIMUM DETECTABLE EFFECT CALCULATIONS

The sample is expected to adequately characterize the population of beneficiaries with low levels of sampling error. As such, it is possible to obtain more accurate estimates of the indicators to be evaluated. To limit the sampling errors of the baseline sample, the following formula was used, which

contemplates an adjustment for considering a complex two-stage sample selection process (localities and population).

$$e = Z\sqrt{\frac{S}{n}\left(1-\frac{n}{N}\right)deff}$$

where $deff = 1 + \rho(nclus - 1)$ is the design effect (where ρ is the intraclass correlation coefficient [19] and $nclus$ is the number of localities) and S is the standard deviation of each variable. When the variable is dichotomous, the standard deviation takes the form of $P(1-P)$, where P is the estimated prevalence.

The calculations are presented in **Table 11**. The parameters considered were at a confidence level of 95%, a Z value of 1.95, a sample size n of 432 out of a total population *N* of 1200 beneficiary farmers. Furthermore, when the variable is continuous, the estimated standard deviation (Column C) has been used, whereas when it is a percentage, the prevalence (Column A) was used to calculate the standard deviations. Given that 29 localities were visited with a sample of 432 farmers obtained, an average cluster size of 15 farmers per locality (*nclus*) was calculated. Additionally, to calculate the design effect, the intraclass correlation coefficient with each variable was estimated (Column D).

Estimates of the sampling errors associated with each variable are presented in Column E. The type of variable is indicated in Column A with the letter "C" when it is continuous and with "%" when it is a percentage. Sampling errors are expressed in the same unit as the variable. Thus, for example, income has an estimated sampling error of approximately 5.5 soles. With an average value of S/1,395 (USD 373[20]), the implied relative sampling error is 0.4% (=5.48/1395.9). In other cases, such as the area of cacao harvested, the sampling error is 0.20, but in relative terms, it represents approximately 7%. Greater inaccuracy is seen here. Among the percentage variables, the estimated sampling errors are mostly around 5% or less.

The importance of the sampling error is that it makes it possible to identify the range of values where the true values of the population can be found with higher probability. For example, total monthly sales revenue would be in the range of S/1,390 and S/1,401 (USD 372 y 374, respectively). Similarly, the harvested cacao area would be between 2.51 and 2.89 Has. The high accuracy of the estimates comes from having a sample that is significant in relation to the universe of beneficiaries (about 36%) and provides high reliability to the estimates of beneficiary population characterization.

[19] The *intraclass* correlation coefficient measures the degree of similarity of the observations in each *cluster*. A higher (lower) *intraclass* correlation coefficient means that the observations are more similar (different) to each other. In such a scenario, it is more convenient to increase (decrease) the number of *clusters* in the sample and reduce the number of observations per *cluster*.
[20] The Average Interbank Exchange Rate (soles per USD) for January 2024 is used: S/3,741 per USD. Source: BCRP.

Table 11. Sampling errors from the beneficiary sample and minimum detectable effect of the total sample.

	Type	Avg.	Stnd. Dev.	ICC	Sampling error of beneficiaries	Minimum detectable effect	
						Level	Relative
	[A]	[B]	[C]	[D]	[E]	[F]	[G]
Total monthly sales revenue from cacao, alternative crops and other entrepreneurships[21]	C	1395.9	1929.69	0.119	5.48	105.740	7.6%
Monthly revenue from cacao sales	C	1140.3	1634.00	0.128	5.16	91.567	8.0%
Designated crop area (Ha)	C	3.2	3.03	0.087	0.20	0.152	4.8%
Area of harvested cacao (Ha)	C	2.7	2.77	0.090	0.19	0.141	5.2%
Cacao Plantations per Ha	C	1025.5	287.83	0.056	1.73	13.103	1.3%
GPV of cacao and its by-products	C	1314.8	2409.87	0.065	5.18	113.140	8.6%
Contribution of Cacao on the total GPV (%)	%	81%	0.26	0.025	3.5%	1%	1.3%
Grows organic cacao	%	25%	0.43	0.055	4.4%	2%	7.8%
Monthly revenue from cacao sales	%	85%	0.25	0.014	3.0%	1%	1.1%
Considers cacao a profitable alternative	%	85%	0.36	0.000%	2.7%	1%	1.5%
Subjective importance of cacao in the family economy	%	86%	0.35	0.022	3.0%	1%	1.6%
Profit per hectare	C	347.2	393.67	0.039	1.89	16.823%	4.8%
Produces by-products derived from cacao	%	16.2%	0.37	0.038	3.5%	1.6%	9.7%
% of farmers who have adopted adequate practices	%	11.3%	0.32	0.014	2.7%	1.2%	10.7%
% of hectares farmed with good practices	%	47.7%	0.48	0.057	5.1%	2.2%	4.6%
Provided information on cacao production	%	39.1%	0.49	0.046	4.8%	2.1%	5.5%
Provided information on cacao marketing	%	36.1%	0.48	0.017	4.1%	1.9%	5.2%
Provided information on cacao sales	%	36.6%	0.48	0.040	4.6%	2.1%	5.6%
Received a loan in the past 12 months	%	30.1%	0.46	0.029	4.2%	1.9%	6.2%

Furthermore, the study also estimated the minimum detectable effect (MDE), which refers to the smallest magnitude of impact on a variable that can be detected by the sample, given a power level[22]. The ideal scenario is to obtain an MDE as small as possible so that the study and the sample collected can have a high capacity to detect them if they exist. To estimate the MDE, a formula underlying a cluster-level random assignment was used, with a treatment variable at the *cluster* level and outcome variables at the farmer level (see Duflo, E.; R. Glennerster and M. Kremer 2008[23] and Dong and Maynard 2013[24]). The formula to calculate the MDE is as follows:

[21] The farmer survey inquiries about the income received from sales of agricultural and livestock products in the last 12 months. Based on this information, monthly income is calculated to facilitate comparison with national benchmarks, such as the average household income reported by the National Institute of Statistics and the country's minimum wage.

[22]Power is understood as the probability of identifying an impact that has a given sample size if the impact actually exists. In general, the practice is to set the power to at least 80%.

[23] Duflo, E.; R. Glennerster and M. Kremer (2008), "Using randomization in development economics research: A toolkit". En Schultz, T. y P. Strauss (Ed.) Handbook of Development Economics, vol. 4, cap. 61

[24] Dong, N. y R. Maynard (2013): PowerUp!: A Tool for Calculating Minimum Detectable Effect Sizes and Minimum Required Sample Sizes for Experimental and Quasi-Experimental Design Studies, Journal of Research on Educational Effectiveness, 6:1, 24-67

$$\beta_{EMD} = (t_{\alpha} + t_{1-\beta})\sqrt{\frac{\rho}{P(1-P)J} + \frac{(1-\rho)}{P(1-P)Jn}}$$

where β_{EMD} is the Standardized Minimum Effect of the intervention, P is the proportion of intervention *clusters*, n is the number of observations per cluster, and ρ is the intraclass correlation. The total sample N is obtained from the result of $J \times n$. Furthermore, $t_{(\alpha/2)}$ and $t_{(1-\beta)}$ are distribution parameters of $t - student$, where α is the probability of making a Type I error (1-α is the confidence level) and $1 - \beta$ is the statistical power (or power) that corresponds to the probability of making a Type 2 error. The results of the analysis are presented in Column F of **Table 11**, where the MDE has been presented in the units of each variable. Thus, for example, the MDE of total monthly income is 105 soles, which in relative terms represents a magnitude of 7.6%. That is, starting from an average income value of S/1,395 (USD 373), the sample will only be able to detect impacts of S/105 (USD 28) or higher.

The MDE values associated with the sample are important because in general, as they are small, they seem to suggest that they will facilitate the detection of impacts of smaller magnitude than those that the Activity should consider as a target[25].

IN-DEPTH INTERVIEWS

The interviews were conducted based on the questions in the methodological matrix, which were expected to be answered with the qualitative instrument. The following were the evaluative questions:

- What were the strategies that worked best to increase the production, sales, and income of farmers in the intervened areas?
- What are the success factors for increasing the sale of fine flavor cacao?
- How has the work by associations enabled the improvement in production and income of the high-quality cacao beneficiary farmers?
- To what extent has the traceability system improved the sale of high-quality cacao?
- What are the socio-economic, cultural, and demographic factors that motivate farmers to stop growing illicit crops and start producing fine flavor cacao?
- What has been the importance of the Technical Group on fine flavor cacao farming in the area?
- What types of enterprises have become more relevant among cacao farmers in the intervened areas?

Based on these questions, the topics to be addressed in the interviews were organized recognizing that they should be considered part of the baseline and therefore exploratory in nature. Evaluation questions, effectively, should be asked at the end. Therefore, for this study, the information was processed following the thematic structure below:

[25]The Activity documents provided to the consulting team does not show the targets for all indicators. The targets shown indicate magnitudes that are generally calculated as MDE of the sample. For example, "at least a 20% increase in the production of fine flavor cacao in comparison with the baseline" or "30% more farmers are marketing certified fine flavor cacao in comparison with the baseline."

- Problems faced by the population of the VRAEM and associated initiatives
- Perceptions regarding growing cacao
- Factors that facilitate or limit factors from growing cacao
- New income opportunities
- Traceability system
- Knowledge of the VRAEM Activity

Two semi-structured interview guides were prepared. One type of guide was aimed at public and civil society officials, which sought to inquire about the current socio-economic situation and primary needs of the VRAEM populations, as well as the actions of public entities to eradicate coca leaf production and alternative production development programs. Information on the production factors that facilitate or inhibit cacao production, as well as the perception and diversification of cacao farming were also highlighted. The other guide was designed for respondents of cacao associations. Information on the same topics as in the survey for staff was collected for this instrument, but additional inquiries were made about the implementation process of the VRAEM Activity.

The inclusion criteria were as follows: 1) Respondents who had general knowledge of the current socio-economic and production situation of the localities in the intervened area, in particular, and of the VRAEM in general. This profile is covered by officials from municipalities, chambers of commerce, and regional governments. 2.) The study also sought to gain an inside perspective of the cacao production chain in the intervened area, which was provided by the managers of the associations participating in the Activity.

As a result of the field work, a total of 20 interviews were conducted with 16 public officials and 4 cacao association managers. By region, 7 interviews were conducted with respondents from Ayacucho, 9 from Cusco, and 4 from Junín. Annex H contains a list of the stakeholders interviewed.

The following were the participating institutions:

- Regional Governments of Ayacucho, Cusco, and Junín
- The Chambers of Commerce from the VRAEM, La Convención, Ayacucho, and Cusco
- The provincial municipalities of La Mar and Huanta in Ayacucho, La Convención in Cusco, and Satipo in Junín
- The district municipalities of Sivia and Santa Rosa (Ayacucho), Kimbiri (Cusco), and Río Tambo and Pangoa (Junín)
- The VRAEM Technical Group for Cacao and Chocolate
- The three farmer associations (Cacao VRAE, El Quinacho, and Qori Warmi)

LIMITATIONS

Although the proposed impact evaluation design is a reliable evaluation method that will ensure credible results, there are some risks that may limit the scope of the evaluation's goals and purpose. One of the most relevant is related to the potential cross-contamination that could occur in localities that are now understood to be non-beneficiary or vice versa. Specifically, given that part of the beneficiary group has not yet been identified by the Activity (in reference to independent cacao farmers and native communities), the Activity, modifying the list of intervened localities at some point after the baseline

collection, generates a certain degree of probability of intervening in localities that are now considered as control. This type of scenario would bias the evaluation results, so it is key to ensure that the scope of intervention that has been established in the baseline study is respected during project implementation when collecting evaluation endline data.

Moreover, not having accurate information on the farmers who will be beneficiaries and relying only on potential beneficiaries for the construction of the baseline may limit the intertemporal comparability of the information if, within each selected locality, the actual beneficiaries were different from those who are part of the sample. Now, it is not possible to know if this will occur but to limit its influence, it will be necessary to model the probability of being a beneficiary of the Activity and re-weigh the observations by these factors.

II: BASELINE RESULTS

This section presents the baseline results of the VRAEM Project. Although the information has been organized by thematic areas and the statistics of the beneficiary and control groups are reported, the analysis of the indicators is mainly carried out on the beneficiary population. The purpose of adding the statistics of the control group is to provide reference to the beneficiary group and identify the variables in which there are statistically significant differences between the two groups of interest. For the latter, all tables have a "Diff" column that shows the statistical significance of the differences between beneficiaries and controls represented by stars under the following classification:

*** Significant difference at 1%.

** Significant difference at 5%

* Significant difference at 10%.

The information is also disaggregated by male and female farmers within the sample of beneficiaries to highlight relevant gender differences that may be considered by the project.

QUANTITATIVE ANALYSIS

BASIC FARMER CHARACTERISTICS

Table 12 Error! Not a valid bookmark self-reference.shows basic information on the farmers under study. A total of 83.1% of farmers are between the ages of 25 and 64, with an average age of 50. In addition, the sample is almost balanced according to gender, with 50.9% of men and 49.1% of women. A total of 79.4% of farmers are married with a smaller proportion being single (12.5%). Within the beneficiary sample, men are slightly older than women and there is a higher probability of finding unmarried men (77%) than women (69%).

Table 12. Farmer characteristics

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Average age	45.9	**49.7**	**	52.2	47.1
Percentage distribution by age group					
18 to 24	8.2%	**1.6%**	***	1.8%	1.4%
25 to 64	80.7%	**83.1%**		78.2%	88.2%
65 years or more	11.1%	**15.3%**		20.0%	10.4%
Gender					
Men	57.4%	**50.9%**		-	-
Women	42.6%	**49.1%**		-	-
Marital Status					
Union (Married, Domestic Partner)	79.5%	**73.4%**	**	77.3%	69.3%
Unmarried (Single, Separated, Divorced)	20.5%	**26.6%**	**	22.7%	30.7%

Prepared by: Macroconsult

As shown in **Table 13**, beneficiary farmers have an average education of 7.8 years, equivalent to just over the first year of high school. In addition, about 70% have incomplete high school, and just under

30% have completed high school or some higher level of education. 32.6% of the 18-year-old population and older has completed at least a high school education (including those with some higher education. See also (**Illustration 9**). It is important to highlight that by differentiating the sample according to gender, a higher educational level is identified in men compared to women, since the male beneficiaries have one more year of studies on average (8.4 years) and, consequently, a higher percentage that has at least completed high school (39%).

Likewise, the migrant population, defined as those born in a province other than the province of residence, amounts to about 51%, with slightly more among women than men. The predominant mother tongue among beneficiaries is Quechua (76.2%), followed by Spanish (18.5%). The Amazonian native languages, represented by Ashaninka, only reach a little more than 5% in the treatment group and 20% in the case of the control group[26]. This last fact is important, as it reveals a difference in ethnic composition that may believably be correlated with the results. This calls to explore matching and reweighting strategies that will be implemented during the impact evaluation exercise. In the case of migration, there is a higher incidence of Spanish mother tongue among women compared to men.

Regarding the social participation of the group of beneficiaries, approximately 4 out of every 10 farmers have at least one member in their household who is a beneficiary of a social program or is a member of a social organization. Common social programs are Juntos, Pensión 65, and Qali Warma. Likewise, the most recurrent social organizations are the Organización Agraria de Productores, Club de Madres/Vaso de leche, Neighborhood Council, or Political Grouping. It is also observed that female beneficiaries have higher participation rates in these types of organizations than men.

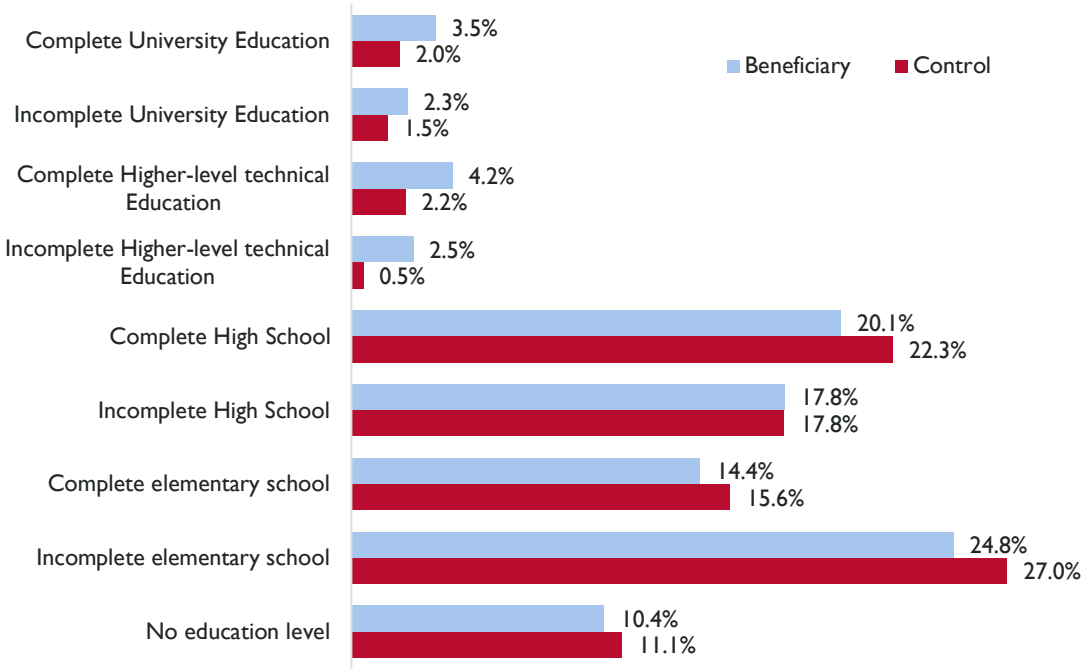
Table 13. Farmer characteristics

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Average years of education	7.3	**7.8**		8.4	7.2
Level of education					
No education level	11.1%	**10.4%**		6.8%	14.2%
Incomplete elementary school	27.0%	**24.8%**		24.1%	25.5%
Complete elementary school	15.6%	**14.4%**		12.3%	16.5%
Incomplete High School	17.8%	**17.8%**		17.7%	17.9%
Complete High School	22.3%	**20.1%**		23.6%	16.5%
Incomplete Higher-level technical Education	0.5%	**2.5%**	**	2.3%	2.8%
Complete Higher-level technical Education	2.2%	**4.2%**		4.5%	3.8%
Incomplete University Education	1.5%	**2.3%**		3.6%	0.9%
Complete University Education	2.0%	**3.5%**		5.0%	1.9%
Population 18+ years old with at least a high school education	28.5%	**32.6%**		39.1%	25.9%
Migrant population	36.4%	**50.5%**	*	49.5%	51.4%
Mother tongue					
Spanish	10.4%	**18.5%**	**	17.7%	19.3%

[26] Within the localities classified as native population by INEI, in the sample of beneficiaries it was found that only 1% spoke Ashaninka and 76% spoke Quechua. In contrast, in the control sample (within the localities classified as native population by INEI), 49% speak Ashaninka and 47% speak Quechua. These differences must mean that the loss of the native Amazonian mother tongue occurs more rapidly in the localities of the intervention area and the population is being rapidly displaced by Quechua speakers.

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
Quechua	69.6%	**76.2%**		75.5%	76.9%
Asháninka	20.0%	**5.3%**	*	6.8%	3.8%
Household social participation					
Beneficiary of a Social Program	40.8%	**42.6%**		40.0%	45.3%
Member of a Social Organization	30.9%	**37.3%**		36.4%	38.2%

Illustration 9: Informants' educational levels



Concerning the household characteristics of the beneficiary or participating farmers, in principle, two-thirds are headed by men. In the control group, the percentage is even higher. On average, each beneficiary household has 5 members, half are men and the remaining half, are women. Also, 1.6 members are in educational training (24 years old), but only 1.1 are studying. In the case of the beneficiary sample98.2% of male beneficiary farmer households are headed by a man, while only 67.5% of beneficiary female households are headed by a woman. In addition, the gap in educational training and effective education is sustained among female farmers.

Table 14. Household characteristics

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Head of Household					
% of Men	78.2%	**66.0%**	***	98.2%	32.5%
% of Women	21.8%	**34.0%**	***	1.8%	67.5%
Average number of household members (number)					
Men	2.7	**2.6**		3.2	1.9
Women	2.5	**2.5**		2.3	2.7
Average number of members in educational training (< 24 years old)					
Men	1.1	**0.9**	**	0.8	0.9
Women	1.1	**0.7**	***	0.6	0.7
Average number of students in the household (< 24 years old)					
Men	0.7	**0.6**		0.6	0.7
Women	0.7	**0.5**	**	0.4	0.5

HOUSING CHARACTERISTICS

Most beneficiaries own a house (93.1%), and renting is the least frequent modality (5.3%). The average housing has 2.2 rooms, however, a significant 14.8% of them are overcrowded[27]. In the control group, overcrowding is slightly higher.

Likewise, in the treatment group, most of the houses have wooden walls (53.9%), although there is a moderate use of brick or cement walls (37.7%). Furthermore, 53.9% of the households in the beneficiary group in the complete sample have cement floors and 42.1% have dirt floors. In the control group, the differences between the two categories are inverse. Concerning the roof, in the beneficiary group, the use of calamine roofing sheets is about 80%, the same as in the control group. Finally, a higher percentage of women living in buildings with better quality construction materials (such as cement floors and calamine roofs) can be observed when analyzing the beneficiary group by gender.

Table 15. Housing characteristics

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Type of housing					
Owned Housing	93.6%	**93.1%**		93.6%	92.5%
Rented Housing	5.7%	**5.3%**		5.0%	5.7%
Other	0.7%	**1.6%**		1.4%	1.9%
Number of rooms	2.1	**2.2**		2.3	2.0
Overcrowding Housing	24.3%	**14.8%**	***	14.5%	15.1%
Wall Material					

[27] The INEI defines overcrowding as more than 3.4 members per room for household sleeping.

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Brick or Cement	31.7%	**37.7%**		38.2%	37.3%
Adobe and tapial technique	9.4%	**7.4%**		9.5%	5.2%
Quincha	0.2%	**0.0%**		0.0%	0.0%
Stone with Mud	0.2%	**0.5%**		0.9%	0.0%
Wood	57.7%	**53.9%**		50.9%	57.1%
Rush Mat	0.7%	**0.2%**		0.0%	0.5%
Other	0.0%	**0.2%**		0.5%	0.0%
Floor Material					
Parquet o polished wood	0.0%	**0.2%**		0.0%	0.5%
Asphalt laminates, vinyl, or similar	0.5%	**0.2%**		0.5%	0.0%
Tiles, terrazzo, or similar	0.7%	**0.0%**	*	0.0%	0.0%
Wood (pona, screw, etc.)	5.4%	**3.5%**		3.6%	3.3%
Cement	38.1%	**53.9%**	**	50.9%	57.1%
Dirt	55.2%	**42.1%**	**	45.0%	39.2%
Roofing Material					
Reinforced concrete	11.6%	**15.5%**		15.9%	15.1%
Wood	1.2%	**2.3%**		3.2%	1.4%
Calamine, fiber or similar sheets	78.2%	**79.4%**		77.7%	81.1%
Cane or mat with mud tiles	0.2%	**0.2%**		0.0%	0.5%
Plywood/ matting/ reed	0.0%	**0.2%**		0.5%	0.0%
Straw, palm leaves, etc.	8.7%	**2.1%**	*	2.7%	1.4%
Other	0.0%	**0.2%**		0.0%	0.5%

The following table shows that 65% of beneficiaries have access to public water inside their houses, 61% have access to public sewage at home, and almost 89% have access to public electricity. In general, these figures suggest that the provision of these services is high in the area, even though there are gaps typical of rural areas, such as the high proportion of households supplied with piped water. The gender disaggregation of the beneficiary group shows that male beneficiaries have better access to water and sewage services inside their houses than female beneficiaries.

In addition, it is observed that most of the households of the beneficiary farmers use firewood for cooking (59.7%), followed by LPG tanks (38.9%). Compared to the control group, the proportion of farmers in this group who use firewood is much higher (72.8%) and the incidence of LPG tank use is lower (25.5%). Again, this is a noteworthy difference that reveals the greater precariousness of the controls compared to the beneficiaries. Additionally, a higher percentage of male beneficiaries use gas by LPG tanks compared to female beneficiaries when comparing by gender.

Regarding connectivity, 88.7% of beneficiaries have a cell phone and 38% have internet access at home. In the control group, the figures are slightly lower. Meanwhile, differences were not observed between men and women owning a cell phone when disaggregating access to connectivity (cell phone) by gender. Concerning differences in internet access almost 41% of men have internet in their houses, while only 35% of women beneficiaries have this type of utility.

Table 16. Home Utilities

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Water					
Public network, inside the house	65.1%	**65.0%**		70.0%	59.9%
Public network, outside the house, inside the building	3.5%	**7.6%**	*	7.7%	7.5%
Drinking Water	1.7%	**0.7%**		0.0%	1.4%
Artesian well	1.0%	**1.9%**		1.8%	1.9%
Untreated piped water	20.3%	**17.1%**		14.1%	20.3%
River, ditch, spring	6.7%	**5.8%**		5.0%	6.6%
Other	1.7%	**1.9%**		1.4%	2.4%
Sewage					
Public sewer, inside the house	63.1%	**61.6%**		67.7%	55.2%
Public sewer, outside the house, inside the building	2.2%	**6.0%**	**	4.5%	7.5%
Letrine	8.7%	**13.4%**		12.3%	14.6%
Septic tank	14.1%	**10.6%**		8.2%	13.2%
Blind or cesspool	8.4%	**6.7%**		5.9%	7.5%
On ditch or canal	0.0%	**0.7%**		0.5%	0.9%
No sanitary service	2.5%	**0.7%**		0.9%	0.5%
Other	1.0%	**0.2%**		0.0%	0.5%
Electricity					
Public electrical network	87.9%	**88.9%**		89.1%	88.7%
Electric generator	0.0%	**0.5%**		0.0%	0.9%
Lighter, Candle	5.4%	**3.7%**		2.7%	4.7%
Other	4.5%	**6.3%**		7.3%	5.2%
Not used	2.2%	**0.7%**		0.9%	0.5%
Fuel for cooking					
Electricity	1.0%	**0.7%**		1.4%	0.0%
Gas (LPG tank)	25.5%	**38.9%**	***	41.8%	35.8%
Natural Gas	0.2%	**0.2%**		0.5%	0.0%
Coal	0.2%	**0.2%**		0.0%	0.5%
Firewood	72.8%	**59.7%**	**	55.9%	63.7%
Wood/manure	0.2%	**0.0%**		0.0%	0.0%
Have cell phone					
Men	76.7%	**89.1%**	***	-	-
Women	70.9%	**88.2%**	***	-	-
Have internet					
Men	32.3%	**40.9%**	*	-	-
Women	22.1%	**34.9%**	**	-	-

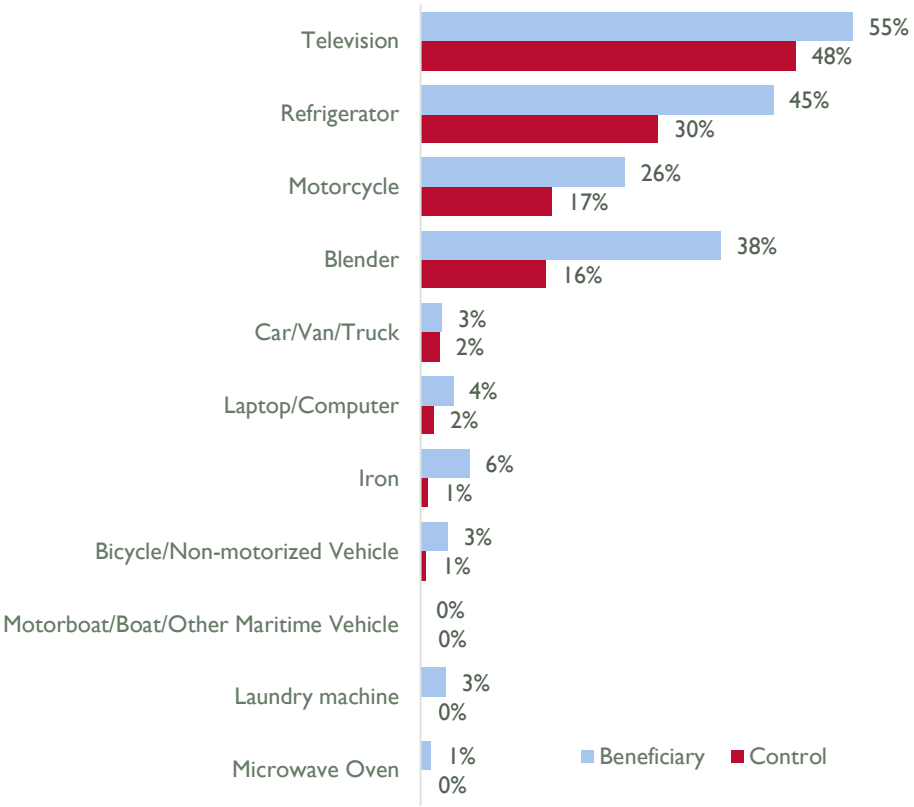
The survey inquired about beneficiaries' household equipment like household appliances and vehicles. **Table 17** shows the results (see also **Illustration 10**). Most beneficiaries have televisions (55.3%), refrigerators (45.1%), blenders (38.6%), and motorcycles (26.4%). Technological items, such as laptops or computers, have a much lower prevalence, as well as owning cars or pickup trucks. Access to this equipment is lower in the control group. By gender, in the beneficiary group women have higher percentages of refrigerators and blenders while men have higher percentages of irons, washing machines, and motorcycles.

Table 17. Farmers' household equipment

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Household equipment					
Television	48.0%	**55.3%**		54.5%	56.1%
Refrigerator	30.4%	**45.1%**	***	42.3%	48.1%
Blender	16.1%	**38.4%**	***	35.9%	41.0%
Microwave Oven	0.2%	**1.4%**	*	1.8%	0.9%
Laundry machine	0.2%	**3.2%**	***	4.1%	2.4%
Iron	1.0%	**6.3%**	***	7.7%	4.7%
Car/Van/Truck	2.5%	**2.8%**		3.6%	1.9%
Motorcycle	16.8%	**26.2%**	***	30.0%	22.2%
Bicycle/Non-motorized Vehicle	0.7%	**3.5%**	***	5.5%	1.4%
Motorboat/Boat/Other Maritime Vehicle	0.2%	**0.0%**		0.0%	0.0%
Laptop/Computer	1.7%	**4.2%**	*	5.0%	3.3%

Created by: Macroconsult.

Illustration 10: Farmers' Household Equipment



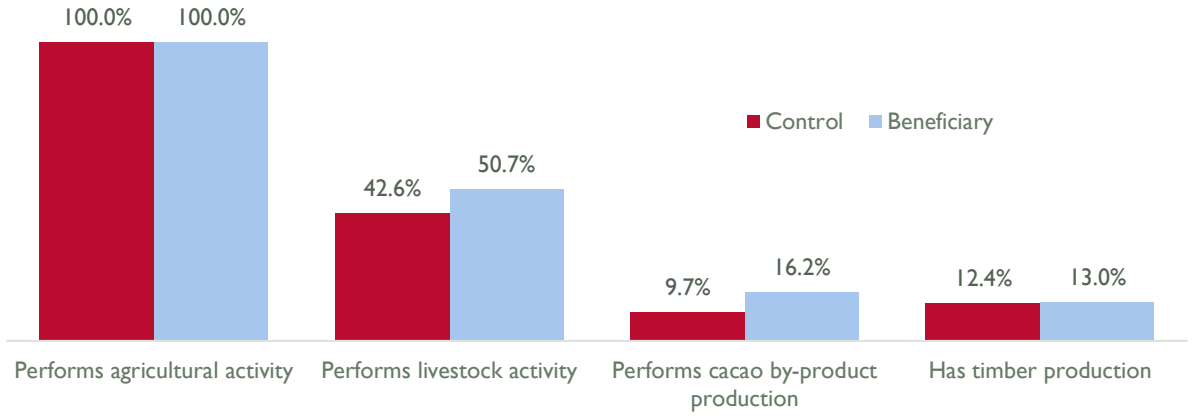
AGRICULTURAL ACTIVITY

The survey addressed the diversity of economic activities in which the surveyed households are engaged. **Table 18** and **Illustrations 11** show that 100% of the respondents are engaged in agricultural activities. This is to be expected, given that all the informants are agricultural farmers. The participation in livestock activities, for its part, reaches 50% of the beneficiaries who produce cacao by-products for 16%. Finally, 13.0% are involved in timber production. The table also shows differences between the beneficiary group and the control group in the proportion who carry out livestock activities and those who produce cacao by-products. In both cases, the figures are lower and significant in the control group. Women beneficiaries are more involved in livestock activities than men in the control beneficiary group. There are not any notable gender differences in the rest of the activities.

Table 18. Agricultural and Livestock Activity

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Economic Activity					
Performs agricultural activity	100.0%	**100.0%**	***	100.0%	100.0%
Performs livestock activity	42.6%	**50.7%**	*	45.9%	55.7%
Performs cacao by-product production	9.7%	**16.2%**	**	16.8%	15.6%
Has timber production	12.4%	**13.0%**		12.7%	13.2%

Illustrations 11: Agricultural and livestock activity



CHARACTERISTICS OF THE AGRICULTURAL UNIT

Regarding the characteristics of the agricultural area, **Table 19** shows that, on average, the beneficiary farmers have an area of 4.17 hectares. The land is mainly owned (3.95 hectares), followed by rented land (0.14 hectares) and a small portion of communal land (0.04 hectares). The area under control of the informants in the control group is smaller, with 3.07 Ha, and an area under their property of 2.75 Ha.

In land use, the beneficiary farmers use 3.19 ha for crop production, much larger than the control group (2.2 ha). In terms of land ownership, most of the plots have certificates of possession (37.5%), followed

by those with title deeds (33.1%). Most land tenure is held by men, representing 55.3% in the treated group and 62.2% in the control group.

In addition, there are important gender differences, as male beneficiaries have an average of 1.2 Ha more land than female beneficiaries, specifically in the area used for crops and non-timber forest.

Table 19. Characteristics of the Agricultural Unit

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Total area (Ha)	3.07	**4.17**		4.75	3.56
Distribution of surface area by ownership condition					
Owned area (Ha)	2.75	**3.95**	***	4.43	3.45
Rented area (Ha)	0.03	**0.14**		0.23	0.04
Ceded area (Ha)	0.04	**0.04**		0.03	0.06
Communal area (Ha)	0.25	**0.04**		0.06	0.02
Distribution of surface area by condition of use					
Area under cultivation (Ha)	2.20	**3.19**	***	3.51	2.86
Area used for timber (Ha)	0.08	**0.07**		0.09	0.05
Area destined to rest (Ha)	0.24	**0.27**		0.39	0.13
Area for pasture (Ha)	0.04	**0.06**		0.05	0.07
Area destined to non-timber forest (Ha)	0.50	**0.55**		0.67	0.42
Legal status of plots					
Ownership of plots with title in registry	28.0%	**33.1%**		35.5%	30.7%
Ownership of plots without title, but in the process of being registered	5.2%	**7.4%**		9.1%	5.7%
Ownership of plots with no title and no paperwork in process	9.2%	**7.4%**		6.4%	8.5%
Ownership of plots with possession certificate	43.1%	**37.5%**		36.4%	38.7%
Property ownership					
Male	62.2%	**55.3%**		97.9%	6.0%
Female	37.8%	**44.7%**		2.1%	94.0%

PRODUCTION CHARACTERISTICS

Table 20 reveals significant aspects of the agricultural production of the surveyed population. In the harvested area, the beneficiary group would have allocated on average 2.7 hectares to cacao, followed by 0.32 hectares to fruit trees and 0.13 hectares to other crops. At this point, there is a significant difference in the area of cacao harvested in the treated group compared to the control group and fruit trees. In contrast, the area of other crops remains relatively constant.

Regarding the area harvested of different cacao varieties, in relative terms, it is observed that cacao represents a substantial proportion of the total crop area (86.7%) and of the total area in general (76%). This finding highlights the economic and agricultural relevance of cacao in the area. In the control group, the area devoted to cacao is relatively smaller but equally important.

In terms of plantings per hectare, the figures show about 1000 plantings per hectare in the beneficiary group and a similar figure in the control group. However, the amount produced by the beneficiary

farmers is about 1700 kilograms, more than double that of the control group (with almost 800 kilograms). Consequently, the yield per hectare of cacao among beneficiaries is 601 kg/ha and only 434 kg/ha in the control group. It appears that the beneficiaries are not only larger but also slightly more productive.

In the analysis of cacao varieties produced, the table (**and Illustration 12**) shows that the most important is CCN 51, produced by 67% of the beneficiaries, VRAE 99 (42%), Criollo (29%), and VRAE 15 (20%). The other varieties are much less prevalent. In addition, there are differences in the cultivation of these varieties in the control group.

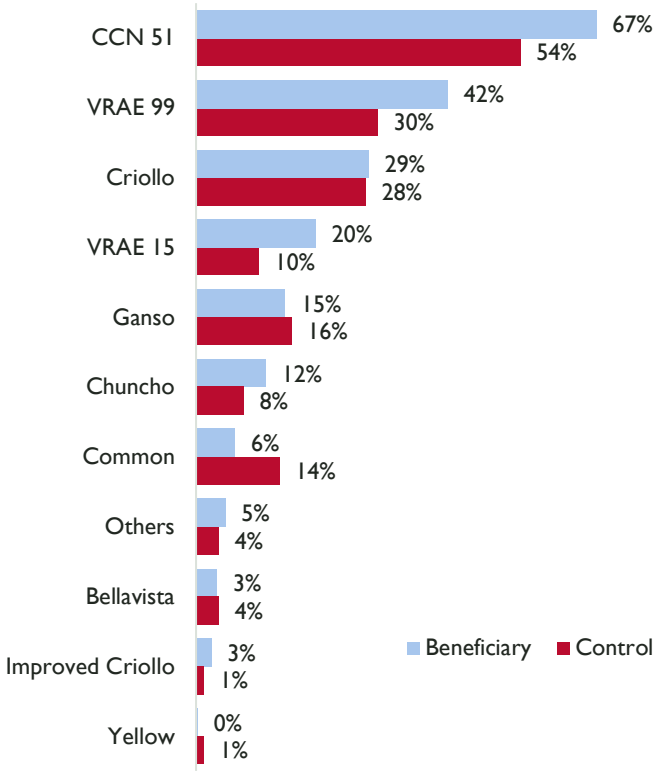
When disaggregating the beneficiary sample, it was found that male farmers have a larger extension of land, thus registering higher levels of harvested cacao area and in turn higher levels of cacao production (kg) and reporting slightly higher agricultural yields measured in kg/ha. Regarding fruit trees, there is a higher prevalence of citrus (36%), banana (31%), and mango (11%) production, reinforcing the idea of a successful diversification of agricultural production among beneficiaries.

Table 20. Production Characteristics

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Area harvested					
Harvested area of cacao (Ha)	1.81	**2.71**	***	2.94	2.48
Harvested area of fruit trees (Ha)	0.17	**0.32**	**	0.38	0.25
Area of other crops (Ha)	0.20	**0.13**		0.16	0.10
Area of cacao in relative terms (%)					
% Cacao area as a percentage of total cultivated area (%)	82.9%	**86.7%**	*	86.1%	87.3%
% Cacao area to total cultivated area (Ha)	70.1%	**75.8%**	*	73.8%	78.0%
Cacao plantations per hectare (#)	997	**1022**		1044	1000
Quantity of cacao produced (Kilos)	781	**1,696**	***	1,814	1,573
Efficiency per hectare of cacao (Kilos/Ha)	434	**601**	***	610	592
Varieties of cacao produced					
CCN 51	54%	**67%**	**	67%	67%
VRAE 99	30%	**42%**	**	45%	39%
VRAE 15	10%	**20%**	**	22%	18%
Criollo	28%	**29%**		34%	24%
Improved Criollo	1%	**3%**		4%	1%
Ganso	16%	**15%**		12%	17%
Common	14%	**6%**	**	6%	7%
Chuncho	8%	**12%**		11%	12%
Bellavista	4%	**3%**		3%	4%
Yellow	1%	**0%**	*	0%	0%
Others	4%	**5%**		5%	4%
Fruit trees					
Citrus	25%	**36%**	***	36%	35%
Banana	24%	**31%**	**	32%	31%
Mango	9%	**11%**		10%	11%
Papaya	3%	**4%**		4%	3%
Avocado	2%	**4%**		5%	3%
Pineapple	2%	**2%**		2%	1%
Pacay	2%	**3%**		3%	2%

Others	2%	**3%**		2%	3%
Other crops	25%	**15%**	**	25%	15%

Illustration 12: Varieties of cacao produced by farmers



As detailed in **Table 179**, and replicated in **Table 21**, approximately 16% of the beneficiary farmers are engaged in cacao by-production (with no major differences between men and women), and about 10% of the controls. Of this group, 91% of the beneficiaries produce chocolate bars, this being the most common by-product, followed by 24% that produce cacao paste and 7% of others. In the control group, the same order of importance is observed, but with a lower proportion producing chocolate bars (54%) and a slightly higher proportion producing cacao paste (33%).

Table 21. Types of cacao by-products

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Cacao by-product production	9.7%	**16.2%**	**	16.8%	15.6%
Cacao by-products (only among those who produce by-products)					
Chocolate bar	53.8%	**91.4%**	***	91.9%	90.9%
Cacao paste	33.3%	**24.3%**		24.3%	24.2%
Other	23.1%	**7.1%**	*	2.7%	12.1%

DETAILS OF CACAO PRODUCTION

Of the total farmers surveyed, **Table 22** shows that 25.2% of the beneficiaries reported growing certified organic cacao and 48.8% would grow fine flavor cacao. These figures are higher compared to 4.7% and 30.9% of the controls, respectively. This could be associated with the fact that the intervention areas are made up of localities where Lutheran World Relief has had previous work experience and has probably had an impact on the production of fine flavor cacao beforehand. Finally, male farmers have higher levels of cacao cultivation with organic certification and fine high-quality aroma certification than their female counterparts.

Table 22. Fine flavor cacao farmers

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Type of cacao grown					
Grows certified organic cacao	4.7%	**25.2%**	***	32.7%	17.5%
Grows fine flavor cacao	30.9%	**48.8%**	***	55.0%	42.5%

In the cacao production process, according to **Table 23**, 60.9% of the beneficiaries surveyed opt for organic fertilizer, while 39.1% do not use fertilizer due to high prices (42.6%), lack of knowledge (22.5%), and other reasons (24.9%). The use of organic fertilizer is slightly higher among men compared to women, with the limiting factors being similarly distributed among both genders, though more women lack knowledge about its use in comparison to men.

Regarding fertilizer use, on average, 92.4% of the beneficiaries choose not to use it. The reasons for abstaining from fertilizer use include environmental considerations, with soil contamination being a major concern (52.1%), and also, economic factors, which account for 28.6%. On this point, there is a difference with the control group, which reported using fertilizers in 16% of the cases. In this case, there are no significant differences between men and women in the beneficiary group.

Regarding irrigation, all both groups (99.8% of controls and 99.1% of treated) rely mainly on natural methods, such as rain or rainfed systems, and only 2.3% of treated farmers use technified irrigation. This finding is closely related to what was stated by the informants in the qualitative analysis about the low level of technification of agricultural farmers. In addition, 78.5% of the beneficiaries use motor mowers, grass choppers (5.6%), and motor/manual sprayers (2.3%). In this case, there are no significant differences between men and women in the beneficiary group.

Table 23. Cacao farmers

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Use of organic fertilizer					
Uses organic fertilizer	59.9%	**60.9%**		64.1%	57.5%
Do not use organic fertilizer	40.1%	**39.1%**		35.9%	42.5%
Reasons for not using organic fertilizer					
High prices	39.5%	**42.6%**		45.6%	40.0%
Lack of knowledge	40.1%	**22.5%**	***	19.0%	25.6%
No sales in the area	10.5%	**10.1%**		10.1%	10.0%
Other	9.9%	**24.9%**	**	25.3%	24.4%
Fertilizer use					
Uses fertilizer	16.3%	**7.6%**	***	7.7%	7.5%
Do not use fertilizer	83.7%	**92.4%**	***	92.3%	92.5%
Reasons for not using fertilizer					
High prices	32.0%	**28.6%**		27.6%	29.6%
Contaminate the soil	55.3%	**52.1%**		52.2%	52.0%
Not sold in the area	5.0%	**2.5%**		2.5%	2.6%
Other	7.7%	**16.8%**	***	17.7%	15.8%
Irrigation system used					
Rain-fed irrigation	99.8%	**99.1%**		99.1%	99.1%
Technified irrigation	0.7%	**2.3%**	*	3.2%	1.4%
Other type of irrigation	1.0%	**1.9%**		1.8%	1.9%
Use of machinery			***		
Iron plow/animal traction	0.2%	**0.0%**		0.0%	0.0%
Combine harvester	0.0%	**1.2%**	**	1.4%	0.9%
Motor/manual sprayer	1.0%	**2.3%**		3.2%	1.4%
Grass chopper	2.5%	**5.6%**	*	6.8%	4.2%
Water pumping motor	0.0%	**0.5%**		0.9%	0.0%
Brushcutter	79.2%	**78.5%**		74.1%	83.8%
Other	16.3%	**28.2%**	***	28.6%	27.8%
Ease access to inputs					
Easy to obtain inputs	24.8%	**32.9%**	**	34.5%	31.1%
Moderate to obtain inputs	26.5%	**21.3%**		22.3%	20.3%
Difficult to obtain inputs	48.8%	**45.8%**		43.2%	48.6%
Cost of inputs					
Cheap agricultural inputs	5.7%	**5.8%**		6.8%	4.7%
Expensive agricultural inputs	65.8%	**69.9%**		70.5%	69.3%
Very expensive agricultural inputs	28.5%	**24.3%**		22.7%	25.9%
Relationship with suppliers					
Positive relationship with suppliers	42.1%	**49.1%**		47.7%	50.5%
Fair relationship with suppliers	4.7%	**5.3%**		5.9%	4.7%
Poor relationship with suppliers	1.0%	**0.5%**		0.9%	0.0%

Respondents also reported challenges in the acquisition of inputs, where 45.8% of beneficiaries (48.8% of controls) find it difficult to obtain them. These figures contrast with the 32.9% of farmers who consider them readily available. These difficulties in the beneficiary group are more prevalent in women compared to men.

This perception is supported by the generalized consideration that agricultural inputs are expensive, with more than 94% in the beneficiary and control group (the sum of expensive and very expensive), while only a small percentage rate them as accessible in economic terms, thus complementing the reason for the challenges in acquiring inputs.

Regarding providers, the connection is mostly positive, with 49.1% (full sample) and 42.1% (treated) indicating a favorable relationship, in contrast to 4.7% and 5.3% who perceive it as regular, respectively. In this regard, it is important to highlight the higher incidence of positive relationships between female beneficiaries and providers in comparison to men.

DETAILS OF THE CACAO MARKETING PROCESS

The survey also inquired about the marketing process, i.e. the destination of cacao production. **Table 24** shows that 46.8% of the beneficiaries sell their production on the farm and a remarkable 32.9% choose the domestic market. Among the controls, the proportion selling on the farm is slightly higher, but still not significant.

In terms of buyers, among the beneficiaries, 41.0% opt for associations or cooperatives, while 23.8%, 16.7%, and 11.8% choose stockpilers, wholesalers, and retailers, respectively. This is a notable difference from the control group, which sells 36.6% to stockpilers, 25.7% to wholesalers, 23.8% to retailers, and only 6.7% to associations or cooperatives. The degree of associativity is higher in the group of beneficiaries and allows them to access more consolidated markets.

Table 24 shows additional important data. Nearly 80% of the beneficiaries claim to have recurrent clients and 70.1% perceive they have a good relationship with them. These data suggest that most farmers enjoy the loyalty of recurrent clients because it indicates their satisfaction with the products and services. Because of this, 81% say it is easy to sell cacao. These figures are higher than the corresponding ones for the control group, which would have established less loyal ties with their customers.

Finally, concerning the price, 55.6% of the beneficiary farmers are informed about the price of cacao, of which 1.3% of the farmers say they are informed about it, through cooperatives or associations, collectors, and by "Other farmers". Slightly over 1% are informed through the "Cacao Móvil App". In the control group, the figures are not very different, although there is less information from associations.

Data reveals that men may have greater access to larger-scale markets when comparing the most important differences by gender in the beneficiary group. Men have greater access to the national market, with the main buyers being associations or cooperatives. This is corroborated by a lower proportion of male farmers facing difficulties selling their cacao than female farmers, despite the latter's better relations with their clients.

Table 24. Cacao commercialization process

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Sales Destination					
Sales destination: Farm	52.7%	**46.8%**		45.0%	48.6%
Sales destination: Local market or fair	25.7%	**9.7%**	***	6.8%	12.7%
Sales destination: Market or district fair	11.6%	**6.7%**		6.4%	7.1%
Sales destination: National market	4.2%	**32.9%**	***	38.2%	27.4%
Buyer					
Sale to: Stockpiler	36.6%	**23.8%**	***	23.6%	24.1%
Sale to: Wholesaler	25.7%	**16.7%**	**	14.5%	18.9%
Sale to: Retailer	23.8%	**11.8%**	***	9.5%	14.2%
Sale to: Association/Cooperative	6.7%	**41.0%**	***	45.9%	35.8%
Recurring customers					
Has recurring customers	64.9%	**77.8%**	***	77.7%	77.8%
Relationship with customers					
Good customer relationship	62.6%	**70.1%**	*	67.3%	73.1%
Moderate customer relationship	36.1%	**28.7%**	**	31.8%	25.5%
Poor customer relationship	1.2%	**1.2%**		0.9%	1.4%
Difficulty in selling					
Easy to sell cacao	73.0%	**81.0%**	**	80.5%	81.6%
Not easy to sell cacao	17.6%	**10.0%**	***	12.3%	7.5%
Difficult to sell cacao	9.4%	**9.0%**		7.3%	10.8%
Has information on price					
Informed about cacao price	41.3%	**55.6%**	***	55.0%	56.1%
Price information channel					
Informed about price: Mobile Cacao App	1.2%	**1.3%**		1.7%	0.8%
Informed about price: Buyer	31.7%	**24.2%**		21.5%	26.9%
Informed about price: Radio	0.6%	**2.1%**		2.5%	1.7%
Informed about price: Association	12.0%	**37.1%**	***	42.1%	31.9%
Informed about price: Other farmers	64.7%	**58.3%**		57.9%	58.8%
Informed about price: Other	8.4%	**11.2%**		12.4%	10.1%
Price					
Last sale price cacao (S/)	9.53	**9.97**	*	9.98	9.95

FINANCIAL BALANCE OF AGRICULTURAL PRODUCTION

Table 25 shows the financial balance of agricultural production. For this purpose, we have estimated the gross value of production measured in current soles which appears in the upper panel. This is estimated as the total amount produced by the farmer (in all products) valued at market prices. Market prices were obtained from sales reports. Only in the case of other crops, timber, and livestock products, the value of production is equal to the value of sales. For these, the questionnaire did not ask for the quantities produced, but only for the values sold. This was done because these items represent a very small proportion of the farmers' trade basket, since their main product is cacao, and it was expected that this product would be well measured, avoiding significant distractions with exhaustive inquiries on the other products that are of marginal importance. However, this implies that the Gross Value of Production, hereafter GVP, could be slightly underestimated. In addition, it is important to clarify that the monthly income generated by agricultural production will be below the GVP, since the GVP is

calculated on everything produced, while the income is calculated on the production sold, so in Table 26 we will always observe income lower than the GVP.

The results indicate that, in the beneficiary group, the GVP would be close to S/1,912 soles per month (USD 511)[28], of which cacao would represent 81.2%. Fruit trees also have an important contribution, close to S/420 soles (USD 112). In the control group, the estimated GVP is lower, but the relative contribution of cacao remains similar.

Regarding monthly income, the total average value found for the beneficiary group is S/1,396 soles (USD 373), where cacao cultivation plays a crucial role, contributing 85%, equivalent to S/1,140. Sales of agricultural by-products (S/102 soles, equivalent to USD 27) and fruit (S/79 soles, equivalent to USD 21) also occupy important positions in the income structure. Cacao sales account for about 90% of its corresponding GVP (=1,164/1,315), while fruit sales only reach 19% (=79/421). This suggests that cacao is a highly market-oriented product, while fruit trees are more likely to have non-commercial uses, such as those linked to self-consumption.

The table also shows production expenditures, which aggregate the agricultural and livestock categories. No disaggregated estimates were linked only to cacao production because the questions were asked for the aggregate of agricultural and livestock expenditures. However, since the bulk of production is related to cacao, the cost is likely linked to that product. The monthly expenses of the group of beneficiaries is S/281 soles **(USD 75),** resulting in a monthly profit of S/1,115 soles (**USD 298**). The latter is equivalent to S/347 soles per hectare (**USD 93**).

The figures in **Table 25** show important differences between the beneficiary group and the control group, which reveals different scales of production. However, when the figures are measured per hectare, the differences attenuated, significantly. This implies that, even though the beneficiary group may be larger in scale, it would not have significant differences in productivity.

Comparing by gender, the data consistently reveal a higher GVP for men compared to female farmers as well as higher income from sales. Therefore, higher average earnings are observed in men with a favorable difference of more than approximately S/500 (USD 134).

[28] The average interbank exchange rate (soles per USD) for January 2024 - S/3741 per USD is used. Source: BCRP.

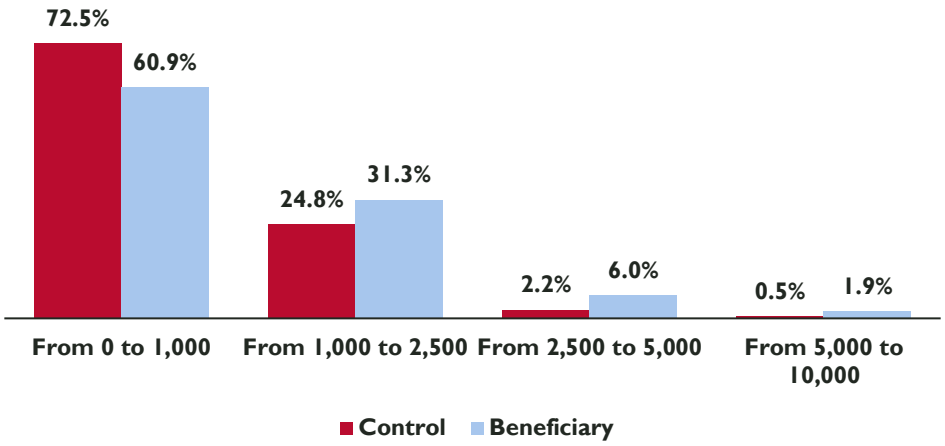
Table 25. Monthly Agricultural GVP

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Gross Value of Production (S/)					
Total GVP [g = a+b+c+d+e+f].	**923**	**1,912**	***	**2,231**	**1,581**
GVP of cacao and cacao by-products [a].	677	1,315	***	1,413	1,213
GVP of cacao	594	1,287	***	1,373	1,197
GVP of cacao by-products	84	28		39	16
GVP of Fruit Crops [b]	58	421	**	591	246
GVP of Other Crops [c]	144	63	*	91	34
GVP of Timber [d]	1	0		0	0
Other agricultural by-products GVP [e]	42	102	**	119	84
GVP of Livestock [f]	1	11	**	17	4
Contribution of cacao to total GVP (%) [a/g].	*79.7%*	*81.2%*		*80.2%*	*82.2%*
Income from sales of the agricultural unit (S/)					
Total monthly income [g = a+b+c+d+e+f].	**786**	**1396**	***	**1631**	**1152**
Income from cacao and its by-products [a]	661	1164	***	1326	996
Income from cacao sales	592	1140	***	1292	983
Income from the sale of cacao by-products [a]	68	24		34	13
Income from the sale of fruit trees [b]	14	79	*	117	40
Income from the sale of other crops [c]	67	40		52	27
Income from the sale of timber [d]	1	0		0	0
Income from the sale of other agricultural by-products [e]	42	102	**	119	84
Income from the sale of livestock products and by-products [f]	1	11	**	17	4
% Income from sale of cacao [a/g]	*84.7%*	*84.7%*		*84.1%*	*85.4%*
Expenses of the agricultural unit (S/)					
Total monthly expenditure	161	281	***	294	268
Agricultural monthly expenditure	158	272	***	284	258
Livestock monthly expenditure	3	9	***	9	9
Profit of the agricultural unit (S/)					
Gross profit	626	1,115	***	1,337	885
Profit per hectare	271	347	**	408	284

HOUSEHOLD INCOME AND CACAO CONTRIBUTION

Finally, the survey introduced a question that asks about household income, considering all sources of income. Due to the complexity of the territory and the confidentiality of the question itself, it was decided to formulate it categorically. That is, the person was asked to reveal the monthly household income in ranges: a) less than 1000 soles, b) from 1000 to 2500 soles, c) from 2500 to 5000 soles, d) from 5000 to 10 000 soles, and e) more than 10 000 soles. The answers are shown in the following graph. As can be seen, household incomes appear to be more skewed to the right, revealing larger average magnitudes.

Illustrations 13: Household Income Ranges (in Peruvian Soles)



Based on the above data, the average income of the beneficiary and control households was estimated in the averages of the class intervals. As shown in **Table 26**, the beneficiary group would have an average income of about S/1,200 (USD 321), and the control group, S/900 (USD 241). According to the above figures, the contribution of cacao production to household income was calculated. The first measure was the contribution of cacao sales to household income. This corresponds to the quotient between the value of cacao and cacao derivatives sales and the monthly household income. The corresponding ratio is 96% for beneficiaries and 66% for controls. This ratio, however, may be inaccurate because the expenses incurred in the activity are not deducted. Therefore, an alternative ratio was calculated as the contribution of agricultural earnings to household income. Again, the magnitude is not very different, reaching 92% in the case of beneficiaries and 68% in the case of controls. Due to the nature of the question asked about monthly household income, it was not possible to implement a statistical test to evaluate the differences, however, given the magnitudes, it seems reasonable to conclude that they exist.

Regarding gender differences among beneficiaries, importance of cacao in household income for men is greater than in women. This could be revealing a higher incidence of supplementary income, but even with them, the household income of these households would be lower.

Table 26. Household income

Variables	Total – Control Sample	Total – Beneficiary Sample	Beneficiary Sample	
			Male	Female
	[A]	[B]	[C]	[D]
Monthly household income (S/)	916	**1,216**	1,334	1,093
Contribution of cacao sales on household income	66%	**96%**	100%	92%
Contribution of profits from agricultural sales to household income	68%	**92%**	100%	81%

TRAINING AND PRACTICES ADOPTED

Training was another key topic consulted. **Table 27** shows that 53.5% of the beneficiary farmers reported having received training, mainly through on-farm demonstration sessions (60.2%), with the participation of promoters of the Association (47.2%) and other means (21.2%). This contrasts with the control group and would reveal a history of participation in interventions aimed at improving cacao production in past periods. In addition, male farmers receive more training than women, especially through association promoters.

Table 27. Training

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Training					
Received training	41.1%	**53.5%**	**	56.4%	50.5%
Ways of training					
Receives training: Promoter Association	22.9%	**47.2%**	***	50.8%	43.0%
Receives training: Virtual workshops	3.6%	**4.3%**		5.6%	2.8%
Receives training: Demonstrative sessions on the plot	57.8%	**60.2%**		59.7%	60.7%
Receives training: Other means	32.5%	**21.2%**	*	20.2%	22.4%

Table 28. Good practices

(only among farmers who received training)

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Practice Training					
Production of cacao plants in nurseries	14.6%	**21.1%**	*	26.8%	15.1%
Fertilization	31.4%	**37.5%**		41.4%	33.5%
Pruning management	38.6%	**49.5%**	**	52.7%	46.2%
Integrated pest management	33.2%	**40.3%**		45.0%	35.4%
Mulching or weed control	34.9%	**38.9%**		42.3%	35.4%
Shade management	32.4%	**41.7%**	**	46.4%	36.8%
Soil and water conservation	28.0%	**33.3%**		37.7%	28.8%
Selective harvesting and ear-cutting/breaking	33.9%	**44.4%**	**	47.7%	41.0%
Practices adopted					
Production of cacao plants in nurseries	13.9%	**19.7%**	*	25.5%	13.7%
Fertilization	30.2%	**36.8%**		40.9%	32.5%
Pruning management	37.6%	**49.1%**	**	52.3%	45.8%
Integrated pest management	32.2%	**39.4%**		44.5%	34.0%
Mulching or weed control	34.2%	**37.7%**		40.5%	34.9%
Shade management	30.9%	**41.0%**	***	45.9%	35.8%
Soil and water conservation	27.0%	**32.6%**		37.7%	27.4%
Selective harvesting and cob cutting/breaking	33.7%	**43.5%**	**	46.8%	40.1%
% of farmers with good practices adopted	9.7%	**11.3%**		15.5%	7.1%
Hectares where good practices are applied	0.90	**0.90**		0.91	0.90
% of hectares with good practices	36.8%	**47.7%**	**	50.7%	44.6%

Furthermore, **Table 28** provides a detailed overview of the practices adopted and those that resulted from training. First, in the group of beneficiaries, training on the production of cacao plants in nurseries (21.1%), pruning management (49.5%), shade management (41.7%), selective harvesting and cutting/breaking of cacao pods (44.4%) are highlighted as those in which there are differences with the control group. Below, these same categories are revealed as practices adopted from the training in which there are also differences with the control group. However, only 11.3% of the beneficiary farmers implement all practices.

It is important to note that, despite the variety of good practices implemented, the average area on which farmers apply these practices is approximately 0.90 hectares, representing an average of 48% of the total hectares worked. This area is similar to that implemented by the control group.

Finally, it is generally observed in almost all types of practices that male farmers receive higher levels of training and adopt practices to a greater extent than female farmers.

TRACEABILITY SYSTEM

Concerning the traceability system, essential to ensure the quality and safety of cacao, and improve prices for farmers, it is observed that not all beneficiaries adopt the practices universally, so in all cases, the prevalence is higher than in the control group. Thus, the beneficiary group presents percentages of just over 35% of information delivery in the three critical stages, highlighting with a slightly higher figure the delivery of information on cacao production, with 39.1%. In the control group, the figures are much lower and in no case exceed 15%.

Table 29. Traceability system

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Delivery information in Cacao production	14.4%	**39.1%**	***	40.0%	38.2%
Delivery information in Cacao marketing	12.1%	**36.1%**	***	37.3%	34.9%
Delivery information in Sale cacao	13.4%	**36.6%**	***	36.8%	36.3%

FARMER PERCEPTIONS

Table 30 indicates the farmers' perceptions of cacao. Most beneficiaries consider cacao as a profitable alternative (85.0%), and a high-quality product (88.9%), and recognize the value of crop certification (85.0%). In addition, they see continuous cacao production as a means to progress economically (79.8%) and stabilize their income (73.4%). Membership in farmer organizations is seen as important by the control group (79.0%) and the treated (81.7%).

However, there is a marked difference in the perception of the contribution of the VRAEM Project, where only 28% of the beneficiaries consider that it has helped them to improve production and productivity. This is reasonable, given that this is a baseline study, and many farmers are unaware of the intervention. In the control group, knowledge of the VRAEM project is minimal and validates its inclusion as a relevant comparison group. Finally, beneficiaries and controls attributed high importance to cacao in the family economy (86.1%).

As for gender differences between beneficiaries, there is a greater incidence in the perception of women regarding product profitability, the positive impact of cacao production on income, the importance of

belonging to an association, and having a certified crop that increases the value of the product. Differences between men and women are small vis-à-vis the remaining perceptions.

Table 30. Farmer perceptions

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Farmer perceptions					
We consider cacao as a profitable alternative	74.8%	**85.0%**	***	81.8%	88.2%
We consider cacao as a high-quality product.	76.7%	**88.9%**	***	89.1%	88.7%
We consider that having a certified cacao crop enhances the value of the product	81.9%	**85.0%**		83.6%	86.3%
Continuing to produce cacao will allow me to make economic progress	71.8%	**79.9%**	**	79.5%	80.2%
Thanks to cacao production my income is higher	63.9%	**73.4%**	**	71.8%	75.0%
Thanks to cacao production, my income is more stable.	63.9%	**75.0%**	***	75.0%	75.0%
We consider it important to belong to a farmers' organization.	79.0%	**81.7%**		80.5%	83.0%
We believe that the VRAEM Project has helped us improve production and productivity.	3.2%	**28.0%**	***	28.2%	27.8%
Subjective importance of cacao in the family economy	86.1%	**86.1%**		85.9%	86.3%

FINANCIAL INCLUSION

Another aspect analyzed was the financial inclusion of cacao farmers. **Table 31** provides this information. Regarding financial accounts, beneficiaries show a higher propensity to have savings accounts (21.8%) over the control group (14.4%). While term deposit and checking accounts are uncommon in both groups, the CTS account is barely registered. Despite this, about 75% of the beneficiaries do not have accounts, with a high incidence in the case of women.

Concerning the means of payment, cash prevails in an extremely high proportion, with close to 100% (with no major differences between men and women). However, those treated exhibit a slightly higher percentage of debit/credit card use (4.6%) over the control group (2.2%). In addition, there is a slight preference for Yape/Plin. Other means of payment are practically nonexistent.

In the last 12 months, 46.3% of the beneficiaries needed a loan, but only 35% applied for it and 30% obtained a loan (with a higher incidence in men). The entities most frequently sought to apply for credit were formal financial institutions, such as banks, savings banks, and Small and Microenterprise Development Entities (EDPYMES). Informal loans from family or friends or informal moneylenders were not observed. In all cases, both the figures for need and access, as well as the source of the loan are higher among beneficiaries compared to controls.

Among those who have accessed a loan, close to 40% say that they have difficulties repaying it and more than half say that their standard of living has improved. In this case, the gender contrast is important: women show greater repayment difficulties and a lower incidence when answering questions about loans improving their living conditions. Among those who did not apply for a loan, the reasons are they did not need it, lack of knowledge, or distrust of these financing instruments.

Table 31. Financial inclusion

Variables	Total – Control Sample	Total – Beneficiary Sample	Diff	Beneficiary Sample	
				Male	Female
	[A]	[B]	[B-A]	[C]	[D]
Financial Accounts					
Have a savings account	14.4%	**21.8%**	**	25.9%	17.5%
Have a time-deposit account	0.2%	**0.2%**		0.0%	0.5%
Have checking account	1.0%	**2.8%**	*	3.6%	1.9%
Have CTS	0.2%	**0.0%**		0.0%	0.0%
No financial savings products	84.4%	**75.5%**	**	70.9%	80.2%
Payment method					
Payment method: Cash	99.5%	**99.1%**		98.6%	99.5%
Payment method: Debit/Credit Card	2.2%	**4.6%**	*	5.5%	3.8%
Payment method: Yape/Plin	1.7%	**2.3%**		2.7%	1.9%
Payment method: Other	0.0%	**0.2%**		0.0%	0.5%
Loan or credit					
Needed a loan in the last 12 months	37.4%	**46.3%**	**	47.7%	44.8%
Applied for a loan in the last 12 months	27.7%	**35.2%**	*	35.9%	34.4%
Accessed a loan in the last 12 months	23.0%	**30.1%**	*	32.3%	27.8%
Source of loan					
Requested a loan from a bank	7.4%	**14.6%**	***	14.1%	15.1%
Requested loan from Caja municipal/rural	8.7%	**8.1%**		9.5%	6.6%
Requested loan from Edpyme/Cooperative	6.2%	**7.6%**		7.3%	8.0%
Requested loan from Friends/Relatives	1.5%	**0.9%**		0.5%	1.4%
Requested loan from Informal moneylenders	0.5%	**0.2%**		0.5%	0.0%
Borrowed from Others	4.0%	**5.6%**		6.4%	4.7%
Has difficulty repaying loan (among those who accessed)	41.9%	**39.2%**		38.0%	40.7%
Impact of Loan on Standard of Living (among those who accessed)					
With loan: Standard of living has improved	44.1%	**53.1%**		60.6%	44.1%
With loan: Standard of living has stayed the same	44.1%	**41.5%**		35.2%	49.2%
With loan: Standard of living has worsened	11.8%	**5.4%**		4.2%	6.8%
Reasons for not borrowing					
Reason: Did not need loan	52.4%	**54.6%**		57.7%	51.6%
Reason: Lack of knowledge or distrust of credit	19.3%	**12.6%**	**	12.8%	12.4%
Reason: High interest rates	21.5%	**21.5%**		23.5%	19.6%
Reason: Other reasons	9.6%	**16.9%**	***	14.8%	19.0%

ROLE OF WOMEN IN THE CACAO PRODUCTION PROCESS

The following illustrations show the perceptions of the beneficiaries surveyed regarding the participation of women in their community throughout the different stages of the cacao production chain. This representation provides a detailed perspective of gender dynamics in the cacao sector. The information presented in this section corresponds to the total sample of beneficiaries and controls.

Pre-harvest stage

During the pre-harvest stage (**Illustration 14**), women's participation is predominantly perceived as low or non-existent in the three activities. Specifically, in the purchase of inputs, 62.2% consider that there is low or no participation by women in the beneficiary group. This percentage increases slightly in the

purchase or rental of machinery, reaching 63.4%, while in the installation of nurseries, there is a significant 54.6% of women with no or low participation. In the control group, the figures show lower participation.

Productive stage

Illustration 15 indicates that, during planting activities, women's participation is considered medium or high, reaching 74.6% of the group of beneficiaries. In contrast, harvesting activities show a more balanced distribution, with medium and high participation of women. In addition, in crop management, women have a relevant participation, standing out in the medium participation category, with a percentage of 39.6%. At this stage, the figures for the control group are relatively similar.

Post-harvest stage

During fermentation and drying activities (**Illustration 16**), there is a significant participation of women, with medium and high participation rates, as well as in the marketing of the product. However, it is interesting to note that the participation of women in the production of chocolate and other derivatives is notably null, reaching 44% in the treated and 63% in the control group. Here again, the null participation of women in the control group is higher than in the beneficiary one, particularly in the production of chocolate and other derivatives.

Associations, cooperatives, and committees

Regarding women's participation in associations, cooperatives, and/or farmer committees (**Illustration 17**), women in the beneficiary group show a reduced presence, with a percentage of 31.7% according to the results. In addition, in the leadership role within these organizations, women also play a relevant role, with average participation being the most outstanding, with percentages of 22.7%. In the control group, female participation seems to be lower.

Illustration 14: Female participation in the pre-harvest stage

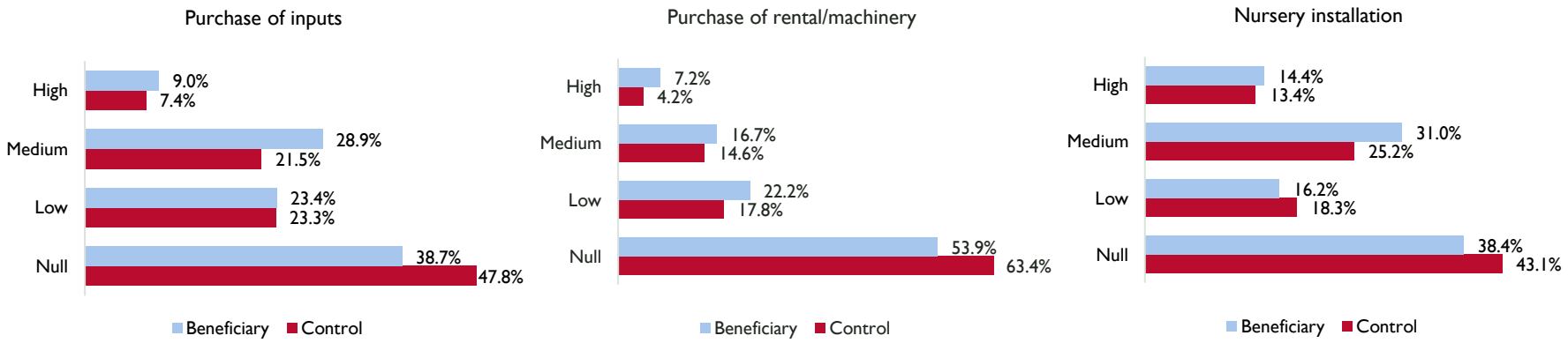


Illustration 15: Female participation in the productive stage

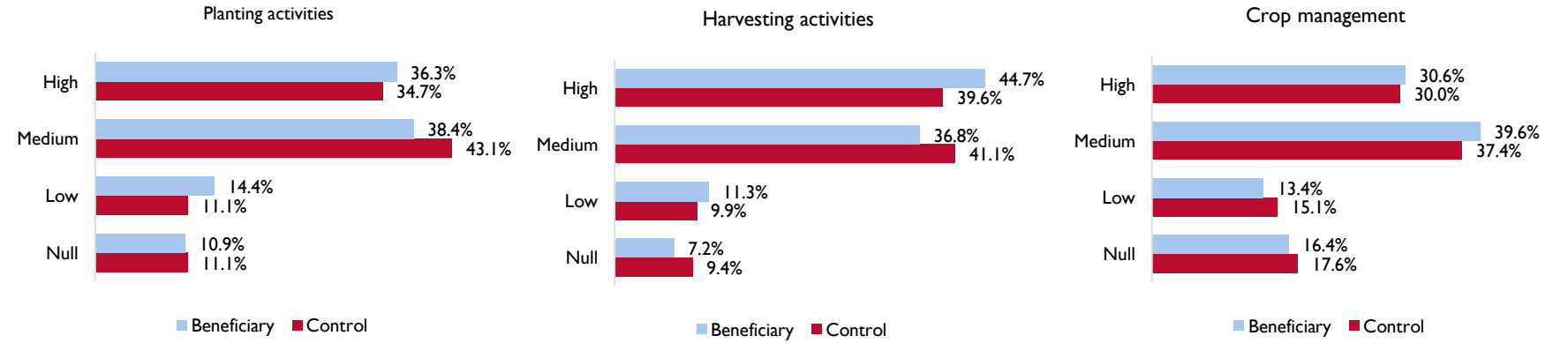


Illustration 16: Female participation in the post-harvest stage

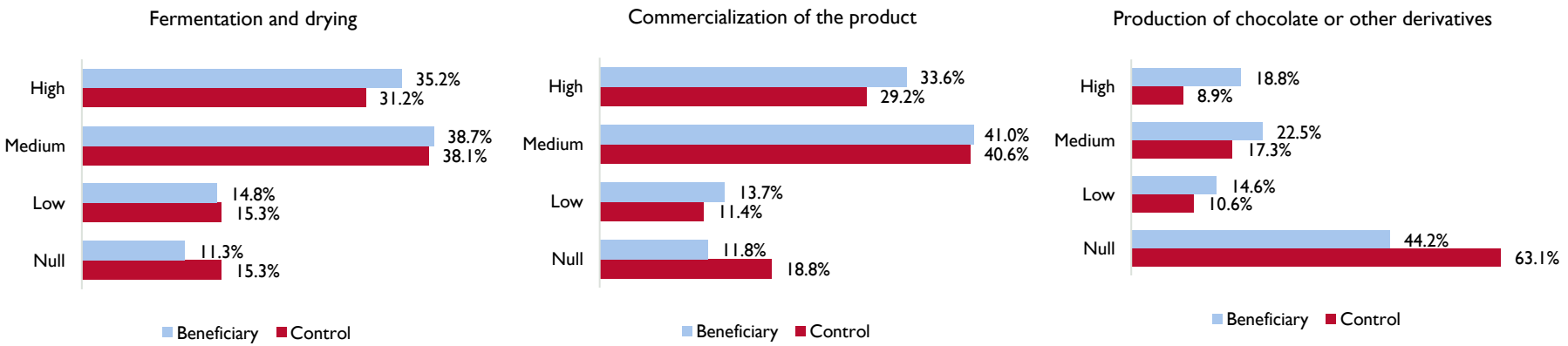
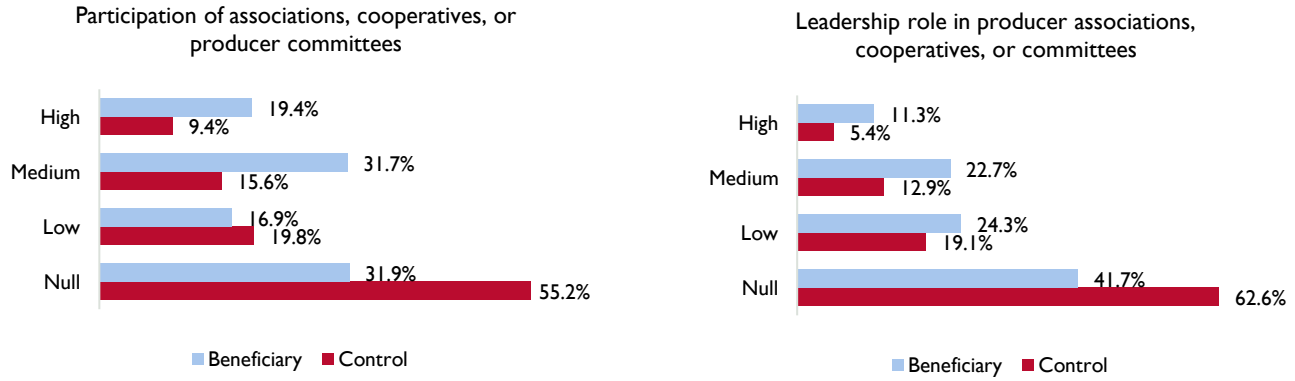


Illustration 17: Female participation in Associations, cooperatives, and/or committees



Prepared by: Macroconsult

INDICATORS SUMMARY

As a summary of the findings identified from the processing and analysis of the quantitative information from the baseline, the following table presents the key indicators of the project, which are the same as in **Table 3**, presented above, but with the estimated values for the baseline. In addition, the differences with the control group and differences according to gender are highlighted, to take them into account in the subsequent evaluation exercise, but also with the interest of extracting lessons learned about the profile of the beneficiaries.

At the level of results, the beneficiary group generates total monthly income and income from cacao sales of around S/1,400 **(USD 374)** and S/1,100 **(USD 294),** respectively. In contrast, the control group reports a little less than S/ 800 **(USD 214)** total monthly income and almost S/ 600 **(USD 160)** from cacao sales. Consequently, the beneficiary group has better profit margins, representing 92% of household income, while in the control group, profits represent 68% of the income generated.

The group of beneficiary or participating farmers has a larger area of land for planting and harvesting crops (3.19 ha) than the 2.2 ha of the control group. Given the larger scale, the beneficiaries allocate hectares to cacao (2.71 Ha) larger than the controls (1.81 Ha). However, there are no significant differences between treated and controls when we refer to the indicator of cacao plantations per hectare since in both groups there are around 1000 plantations per hectare.

If we compare the results by gender, male farmers in the beneficiary group have higher income levels than the females, which is explained by the larger amount of land they have and that they use for cacao (Ha), a slightly higher land yield, which results in a higher level of crop production.

Regarding the indicators at the level of component, the gross monthly value of cacao crop production is more than S/ 1,300 **(USD 348)** among beneficiaries, while among control farmers it is S/677 **(USD 181).** However, despite the monetary difference, the relative contribution of cacao is similar between the two groups (close to 80% of total GVP). Despite this, the data show higher earnings per hectare in the beneficiary group (S/ 347 / Ha, equivalent to USD 93) compared to the control group (S/ 271 / Ha, equivalent to **USD 72 / Ha),** a higher yield per hectare.

In addition, there is a greater presence of farmers who market cacao with organic certification (25%) in the beneficiary group compared to the control group (5%), as well as a higher percentage of beneficiary farmers who process cacao by-products (16% versus 10% among controls). Regarding the perception of the farmer, a higher proportion of the beneficiary group considers cacao as a profitable alternative (85% versus 75% of the control group), however, there are no significant differences when we measure the subjective importance of cacao in the family economy (86%).

By gender, since male farmers have higher production levels, they obtain a higher gross production value and earnings per hectare than female farmers. However, there are no significant differences in the contribution of cacao over total GVP and total sales. In addition to the higher production quantities, men record higher quality cacao products, particularly products with organic certifications.

As for the indicators at the level of products, although there are no significant differences between the two groups in the percentage of farmers adopting good practices (around 10%), the beneficiary farmers apply them on a larger area of hectares over the controls. Also, a higher proportion of beneficiary farmers participate in a traceability system reporting information on production, marketing, and sales of cacao. Finally, the data suggest a slightly higher degree of access to credit by the beneficiary group (30 versus 23% of the controls).

Similarly, by gender, male farmers report more training, and therefore a greater adoption of good practices in their plots.

In summary, at the level of results, the data suggest that before the implementation of the project, cacao cultivation had a significant importance in the family economy of the farmers of the beneficiary localities and this would be slightly higher than in the control group. Also, at the component level, it seems that a priori the beneficiary group has higher levels of production and marketing of cacao, as well as profits and yields per hectare. A greater proportion even diversifies their sources of income by cacao by-product production. On the perception level, it is impossible to be conclusive about cacao cultivation as an economic alternative. Finally, at the product level, the beneficiary group applies good practices on larger tracts of land, there is greater participation in traceability systems, and there are better levels of access to credit.

This result is important because, on the one hand, it indicates that the project would have focused its intervention among larger-scale farmers with higher yields, probably those who have more options to take advantage of the intervention. If the described profile of the beneficiaries reveals the necessary conditions to be part of the project, then it is possible that it faces limitations when seeking to scale up if farmers with the same profile were not found in other locations.

In addition, the differences found also indicate that for the impact evaluation, it will be necessary to implement beneficiary and control matching exercises to choose the most similar sample to detect impacts. Alternatively, the observations could also be reweighted based on the probability of selection in the Activity, so that those farmers in the control group who are more different from the beneficiaries are given a lower weighting and those who are more similar are given a higher weighting.

SUMMARY OF LOGICAL FRAMEWORK INDICATORS[29]

	Indicators	Operationalized indicators for EI	Indicator in document	Total Control	Total Treated	Diff	Beneficiary Sample	
							Male	Female
				[A]	[B]	[B-A]	[C]	[D]
Results								
Cacao farming and other licit economies gain greater importance in the household economies of cacao farmers in the VRAEM	0.1a. Revenues from fine flavor cacao, alternative crops, and other enterprises.	*0.1a. Farmer's monthly revenues from cacao sales, alternative crops, and other enterprises (disaggregated by cacao sales and gender of the farmer).*	Total monthly income	S/ 786	**S/ 1,396**	***	S/ 1,631	S/ 1,152
			Monthly income from cacao sales	S/ 592	**S/ 1,140**	***	S/ 1,292	S/ 983
		0.1b. Farmer's monthly net income (profits) generated by cacao and other products over total household income (measured in S/ and in %).	Contribution of profits to household income	68%	**92%**		100%	81%
	0.1b. Several farmers switched from illegal crop production to the cultivation of fine flavor cacao and other legal crops.	*0.1c. Hectares under cacao and other associated crops over total cultivated hectares (Measured in No. Ha and in %).*	Area for crops (Ha)	2.20	**3.19**	***	3.51	2.86
			Area of cacao harvested (Ha)	1.81	**2.71**	***	2.94	2.48
		0.1d. Number of cacao plantations per cultivated hectare (production density).	Cacao Plantations per Ha	997	**1,022**		1044	1000
Components								
C-1. Increased production and sale of fine flavor cacao in the Activity's intervened areas in the VRAEM	1.0a. Percentage of fine flavor cacao production in the VRAEM.	*1.0a. Monthly gross value of cacao production in the intervened area over the total gross value of production (Measured in S/ and in %)*	GVP of cacao and its by-products	S/ 677	**S/ 1,315**	***	S/ 1,412.9	S/ 1,213
			Cacao contribution to total GVP (%)	80%	**81%**		80%	82%
	1.0b. Number of farmers who sell certified fine flavor cacao	*1.0b. Percentage of farmers who sell certified organic cacao in the intervention area.*	Organic cacao cultivation	5%	**25%**	***	33%	17%
		1.0c. Percentage of cacao sales over the total sales of the farmer (S/)	% Income generated from cacao sales	85%	**85%**		80%	82%

[29] For calculation details - See Annex F

	Indicators	Operationalized indicators for EI	Indicator in document	Total Control	Total Treated	Diff	Beneficiary Sample	
							Male	Female
C-2. Change in the perception of high-quality cacao as an alternative economy in the Activity's intervened areas in the VRAEM	2.0. Perception of the population of the Activity intervened areas regarding fine flavor cacao as a profitable alternative in the VRAEM.	*2.0a. % of farmers in the intervention area consider cacao a profitable alternative in their locality.*	Cacao is considered a profitable alternative	75%	**85%**	***	82%	88%
		2.0b. Farmers' perceptions regarding cacao cultivation within the family economy.	Subjective importance of cacao in the family economy	86%	**86%**		86%	86%
		2.0c. Gross profit per hectare (Soles/ha)[30]	Profit per hectare	S/ 271	**S/ 347**	**	S/ 408	S/ 284
C-3. Economic diversification related to the production of cacao by farmers and related services in the Activity's intervened areas in the VRAEM	3.0. Number of farmers who have other income sources related to cacao production.	*3.0a. Percentage of farmers who have other sources of income associated with cacao production.*	Under-production derived from cacao	10%	**16%**	**	17%	16%
Products								
P-1.2. Farmers trained in plot management and growing high-quality cacao in the VRAEM	1.2a. Percentage of farmers who adopt practices to manage high-quality cacao in the VRAEM.	*1.2a. % of farmers in the intervened areas who adopt practices to manage cacao.*	% of farmers with good practices adopted	10%	**11%**		15%	7%
	1.2b. Number of hectares of fine flavor cacao crops in the VRAEM.	*1.2b. Percentage of hectares on which the proper practices to grow cacao are employed.*	% of hectares with good practices	37%	**48%**	**	51%	45%
P-1.3. Implementation, monitoring, and evaluation of a traceability system for high-quality cacao farmer organizations.	1.3. Number of farmers who use the traceability system for the high-quality cacao production chain.	*1.3a. Percentage of farmers in the intervened areas that participate in the traceability systems by providing information on their cacao crops.*	Delivery of information on Cacao production	14%	**39%**	***	40%	38%
			Delivery of information on Cacao marketing	12%	**36%**	***	37%	35%
			Delivery of information on Cacao sales	13%	**36%**	***	37%	36%
P-1.4. Production credits for high-quality cacao farmers from the VRAEM	1.4. Percentage of farmers who use credits from the financial sector.	*1.4a. Percentage of farmers from the intervened areas that use credits from the financial sectors.*	Accessed a loan in the last 12 months	23%	**30%**	*	32%	28%

[30] This indicator is measured on total hectares farmed by the farmer and not on cacao hectares because cacao production expenses cannot be accurately estimated for cacao production. Farmers are multi-product and report the expenditure associated with all farm production and it is not possible to allocate the proportion of expenditure that goes only to cacao production.

QUALITATIVE ANALYSIS

PROBLEMS FACED BY VRAEM'S POPULATION AND ASSOCIATED INITIATIVES

The informants have mentioned a series of problems that allow us to diagnose the difficulties faced by the people of the VRAEM at a general and productive level:

- High levels of poverty. Farmer families are subsistence farmers, so they are not usually profitable farmers.
- Poor road infrastructure development (lack of highways and paved roads). This leads to a low level of accessibility, generating high costs and complexity in the transportation of the crops produced.
- Lack of labor for agricultural work. The labor supply has not grown in proportion to demand and has become more expensive.
- Shortage of water and difficulties in accessing it.
- Lack of technification in production processes. Failure to apply good practices (e.g., land management, fertilization, etc.) and lack of technification (e.g., irrigation systems) limit the production of quality products and therefore the sale of cacao at higher prices.
- Climatic issues, usually associated with droughts.
- Lack of connectivity to markets. If farmers are not part of a cacao association or organization, selling their production at competitive prices will be more difficult.

In this context, initiatives are being carried out to address these problems. The institutions most frequently mentioned, apparently because of their greater presence and capacity for action in the VRAEM zone, are PROCOMPITE, DEVIDA, and PROVRAEM. On the one hand, DEVIDA and PROVRAEM usually implement productive development projects, forestry, and environmental projects, meanwhile, PROCOMPITE seeks to promote business improvement with improvements in technified irrigation, investment in machinery and equipment, and processing plants that help strengthen and consolidate micro and small enterprises (MYPES) in the VRAEM through co-financing.

Furthermore, the proposal of public institutions such as regional governments (GORE) and municipal governments is to enhance the productive capacity of the agricultural sector through, for example, the technification of crops with productive plantations in nurseries or through grafting. They have also implemented strategies to promote the commercialization of this sector's production, particularly by developing expo fairs and encouraging associativity and coordination between farmers and the market.

The road aspect is a problem emphasized by most of the informants, as indicated, and it is agreed that it should be improved significantly because it complicates accessibility and is inefficient for commercial activity. For this reason, projects and work plans are developed to improve the road infrastructure in the VRAEM zone and the rest of the territories in Ayacucho, Cusco, and Junín.

The institutions are aware that the VRAEM is an area with low levels of productive development with little technology and is not necessarily sustainable. For this reason, some districts seek to implement strategies that can be used by the farming population to achieve improvements in productivity, technology, and quality inputs. Pichari is a great example of better-elaborated projects with clear work components. In this regard, the informant from the municipality of the district indicates:

> *"We are also relying on the agroecological cooperative of Pichari VRAEM, which was created a month ago to obtain organic certification and be able to sell cacao to other places. We want to transform a good ferment and be able to sell cacao for at least 18 soles per kilo. This project is the sixth in our district and we want to strengthen the propagation of plants in nurseries and retribution to the beneficiaries, The second component refers to the cooperative formation, which is already in place. Also, technified irrigation to improve the quality of the plots and to manage the planting with irrigation or without irrigation. All the projects are initiatives of the municipality with the support of the Canon."*

As for direct work for the eradication of coca cultivation, the types of projects most often mentioned are alternative crop products, which DEVIDA usually promotes. DEVIDA's projects are not only economic, but also comprehensive programs that diagnose each intervention area, identify strengths and weaknesses to develop life plans for the families, and define strategies to take advantage of opportunities according to each context. The products most incorporated in this program are coffee, cacao, pineapple, avocado, passion fruit, and vegetable plantations, among others.

An important precision that should be highlighted is what was mentioned by the informant from the municipality of Pangoa, who emphasizes that, although alternative productive development programs are effective, they should have a longer intervention period to show expected results:

> *"We believe the alternative productive development programs are effective, but we should have them longer. The projects should have a three- to four-year follow-up. Previously we worked on projects for one year and two years and they did not have results. DEVIDA, with its implementation of projects since 2019 is now looking at projects focused on 2030. In recent years, cacao production has improved due to the longer intervention time."*

PERCEPTIONS OF CACAO CULTIVATION

A cross-cutting finding in all three regions is the positive perception by public officials about cacao cultivation, who consider that farmers would also have a good perception of it. Almost all informants say that growing cacao in the VRAEM is beneficial. Informants from public institutions claim that cacao and coffee have become very important in recent years, as they generate significant returns and improve family incomes. This premise has been promoted on several fronts, either from the municipalities with the development of agricultural fairs, from the associations with awareness and information on cacao cultivation, and among the farmers themselves, resulting economically attractive, deciding to migrate to cacao cultivation and allocating more hectares to this crop.

This is supported by the informant from the provincial municipality of La Convencion in the following statement:

> *"Economically, cacao production is exceeding expectations, we have a good variety that is purely native to Pichari, thanks to a purely aromatic factor. Economically, we cacao growers are satisfied. Conventional cacao costs 12 soles per kilo, but quality processed cacao can reach 18 soles per kilo. This is our objective".*

In turn, the informant from the Huanta provincial municipality mentions:

> *"Cacao has had a lot of prominence even during the pandemic. Cacao and coffee have improved their exports. Up to 500 tons of cacao were exported nationally. For example, the Candela company has opted for special fermented cacao for which they pay up to 20 soles which means that the prices are above the market. Before, the VRAEM did not win recognition, but since 2020 it has been recognized and has allowed VRAEM chocolate to be competitive."*

However, informants from the cacao associations do not have as encouraging statements as informants from public institutions. Although they recognize that a larger population has become interested in growing cacao or coffee, some farmers have unfavorable perceptions. These include not wanting to produce cacao because they feel they will not make enough profit, as well as concerns about inexperience in cacao cultivation, which are associated with a lack of knowledge of good practices, and a lack of contingency plans for possible diseases that can affect the cacao crop.

FACTORS THAT FACILITATE CACAO CULTIVATION

A favorable aspect highlighted mainly by informants in the Cusco region is that in recent years there has been a substantial increase in demand for cacao, which has led to an increase in price and consequently has been attractive for farmers to allocate larger areas of their land to cacao cultivation. The informant from the provincial municipality of La Convención argued the following:

> " *Socioeconomically, this year we have had a lot of demand and exceeded expectations because previously cacao cost 7 soles per kilo, and now cacao costs between 12 and 13 nuevos soles per kilo. This demand, plus the price of cacao, motivates many cacao farmers not to hesitate to plant more and want to renew their crops to improve the economy of their families.*"

One of the main reasons for the increase in demand for cacao cultivation in the VRAEM has been the exposure and recognition the crop has received at expo fairs, contests, obtaining certifications, and more. As a result, VRAEM cacao has become known for its high quality and is in demand even by foreign consumers. Therefore, the result is a beneficial circle, where VRAEM cacao is recognized and demand for the crop increases; consequently, cacao prices increase, and supply must cover this excess demand with more farmers dedicated to cacao cultivation. In this context, farmers experience increasing purchasing power, get motivated, and seek to improve the quality of their products and by-products with certifications, technification, and technology. This revalues the product and improves its reputation in the national and international markets, thus repeating the cycle above.

Another crucial determinant is public or private institutional support. As mentioned, support has been oriented to implement strategies promoting productive dynamism, training, technical assistance, connection with international markets, technification, and irrigation systems. One outstanding case is that of PROCOMPITE GORE CUSCO, which has a business plan that has been successful and will receive co-financing. The plan seeks to take advantage of the great market acceptance of cacao from the VRAEM, especially for its derivatives such as drinking chocolate bars and sweet chocolate. DEVIDA is also working with the district municipality of Pangoa to provide technical assistance to more than 2,000 cacao farmers.

Another factor that has already been explained is the quality of the land, which is of good quality in the VRAEM, but with areas that still have low agricultural yields. Quality land allows for significant production levels and profitable yields with favorable productivity levels (up to 3,000 kilograms per hectare) and obtaining quality products allows them to increase above 12 soles per kilogram.

FACTORS LIMITING FARMERS FROM CULTIVATING CACAO

The incursion into cacao production is influenced by a series of factors, which affect farmers' decision to continue growing cacao or replace it with another crop, whether legal or illegal.

In general, the unstable economic context faced by farmer families throughout the VRAEM is a determining factor in the decision to cultivate profitable products such as coca leaf. Since the average VRAEM farmer does not have more than 5 hectares (ha) of land, it is not a profitable business, so he or

she ends up not taking the risk of growing cacao or giving up cacao production. For instance, the informant from the district municipality of Sivia states:

> "*The economic issue in our district is concerning and scarce because we do not have enough production support. We have farmers who dedicate themselves empirically to their crops. Farmers without support cannot sell their products at a better price. Given that we do not have much investment in planting, the harvest is quite low and seasonally. It is not the whole year.*"

It is important to consider the heterogeneity of the territory throughout the VRAEM. In other words, land yields are not the same in different VRAEM areas, due to soil quality, climatic conditions, and other factors. According to cacao organization informants, production does not exceed 300 kg per hectare in the south, while in the center it is 600 to 750 kg per hectare, and the north is where the best yields are obtained with more than 1000 kg per hectare. This is either a favorable or limiting condition for deciding to grow cacao. Meanwhile, when comparing the three regions, there are greater complications in the areas of Ayacucho to obtain better agricultural yields.

In addition, four factors have been identified that influence and limit the promotion of cacao production: (i) limited accessibility of roads, (ii) barrier to land irrigation systems, (iii) technification in the production process, (iv) lack of connection to the post-harvest market.

Regarding (i), there is a deficient road infrastructure, restricting better road accessibility, making transportation more difficult, and increasing costs. The increase in mobilization is coinciding with a notorious increase in local commerce. As noted, for example, by the regional government of Ayacucho:

> "*In the area, the issue of road infrastructure is very deficient. One of the economic corridors is the road from Kimbiri to La Convencion and there are many transiting problems. The road to Junin is also affected. Transportation costs up to 100 soles.*"

Regarding irrigation systems, informants from Ayacucho and Cusco face problems due to the water deficit, which increases production costs, and limitations in agricultural yields. In addition, there is a shortage of other production inputs, such as the lack of quality seeds, especially in Ayacucho districts.

Technification of farmers is the third point emphasized by public officials and managers of cacao associations. Very few farmers implement techniques such as crop management, fertilization, soil recovery, organic production, little use of technology, and grafting, among others. Furthermore, it seems that institutional intervention and support to farmers have not been evenly distributed throughout the territory. Initiatives have been more emphasized in Cusco and Junin, compared to the less intervention in certain areas of Ayacucho. This generates inequality of opportunities and knowledge about implementing good practices in the sowing, harvesting, and post-harvesting processes.

Finally, the lack of connection to the market is a major constraint for farmers to allocate more hectares to coca cultivation, which is more critical in areas of Ayacucho. To give an example, the municipality of La Mar reports the following:

> "*The main problem identified is the market, suggesting that the lack of commercial opportunities may dampen farmers' interest in cacao. Probably behind this idea is that it is usually necessary for farmers to be associated in cooperatives, for marketing cacao, particularly in international markets.*"

NEW INCOME OPPORTUNITIES

As for emerging income-generating activities and businesses for farmer families in various localities that may eventually compete with cacao, these include coffee, cassava, fruits (banana, pitahaya, passion fruit, granadilla), potatoes, corn, and grains. In addition, family gardens focused on planting vegetables and raising small animals, as well as handicrafts, are promoted.

The Chamber of Commerce also emphasizes the crucial role of trade and tourism in the region's economic future, seeking to attract visitors to the VRAEM. The areas where they aim to promote tourism are the Province of Huanta, the district of Sivia, Pichari, and the Tambo River, among others.

TRACEABILITY SYSTEM

Regarding the traceability system, managers of cacao organizations and the Technical Group on Cacao have high expectations about the results that can be achieved with this system. In addition, some of these informants suggest recommendations that should be complemented with the traceability system to achieve greater impacts on the beneficiary farmers.

For example, the Technical Group on Cacao in VRAEM recognizes its ethical and quality importance. It underlines the relevance of the system to prevent lot contamination by providing a code that reveals the origin of the cacao and the type of lots. However, it identifies the need to improve organization and teamwork in some associations. In addition, it hopes to improve cacao prices, seeking a positive economic impact for farmers.

The Qori Warmi Cooperative, despite considering traceability as something new, expects opportunities for improvement. It is hoped that the system will enable data control of the members and facilitate information storage necessary for certifications, thus optimizing processes. The cooperative also highlights challenges in quality control and requests support for knowledge transfer through manuals to guide post-harvest quality processes, focusing on overcoming obstacles to product quality.

The El Quinacho Cooperative concentrates on internal traceability, identifying farmers in four production zones and focusing on bean exports. Supported by Lutheran World Relief, it aims to implement a more organized collection system, prioritizing logistical efficiency in cacao harvesting.

CACAO VRAEM points out that the current approach seems more commercially oriented and expresses the need for a more complete integration, including accounting, technical, and logistical aspects, to achieve optimal traceability. In addition, it expects the traceability system to be a single comprehensive software, capable of handling up-to-date accounting aspects, and QR codes, and addressing internal and technical issues for effective traceability management.

VRAEM ACTIVITY KNOWLEDGE

Both the informant from the Technical Group on Cacao and the informants from the three associations interviewed are aware of the VRAEM Activity, which will last 3 years and will be implemented by Lutheran World Relief. According to their statements, they expect to achieve two central aspects with the implementation of the Program: (i) to enhance and improve production levels through technical assistance, especially by standardizing knowledge and techniques among farmers and (ii) to provide logistical support from post-harvest, either by articulating and expanding the marketing of their cacao and establishing agreements with potential cacao buyers.

CONCLUSIONS

The study has allowed us to derive a set of findings that are of interest for implementing the intervention and, subsequently, for the impact evaluation. First, the intervention to be implemented by Lutheran World Relief is in a complex area of the country such as the VRAEM, with territorial coverage over part of the high jungle of Cusco, Ayacucho, and Junín. This is a highly agricultural area for cacao development but faces severe threats due to the presence of illicit crops. In any case, the information gathered suggests that a project with the characteristics of Transforming the VRAEM (Transformando el VRAEM) has great potential to expand the presence of cacao.

The survey applied to farmers reveals that the average project beneficiary is about 50 years old, equally distributed between men and women, and mostly married (73.4%). In addition, they have about 8 years of education, on average. Similarly, half of them are migrants (51%) and have Quechua as their main mother tongue.

As for **housing characteristics**, the beneficiary farmers own their housing (93.1%), with an average of 2.2 rooms. Having public water and sewage inside the house (65% and 62%, respectively) and almost 9 out of 10 have access to public electricity; however, only 4 out of 10 use gas for cooking. Regarding electronics, 90% of farmers have a cell phone and almost 40% have internet access, indicating a high connectivity rate.

Concerning **agricultural production**, the survey results indicate that 51% of cacao farmers also carry out livestock activities. In the same line, it was found that 4.17 ha corresponds to the total area exploited by the farmers, the largest part of the land they own (3.95 ha). Of the total area, farmers would use about 3.19 Ha on average for crops and, of this, 2.71 Ha of harvested area corresponds to cacao. In other words, 87% of the total cultivated area is used for cacao, making it the main crop. In addition, an average of 1,025 plantations are planted per hectare, producing approximately 1,700 kg of cacao with a 600 kg/ha yield. The most important cacao varieties are the Castro Naranjal 51 Collection - CCN 51 (produced by 67% of the beneficiary farmers), VRAE 99 (42%) and Cacao Criollo (29%). Furthermore, there is a significant presence of fruit trees, especially citrus (36%), banana (31%) and mango (11%).

The total gross value of the production of each agricultural farmer, which values all the products in the production basket at market prices, is around S/1,912 soles (USD 511). Of this total, about 81% corresponds to cacao. Likewise, farmers report around S/1396 soles (USD 373) of monthly income from agricultural sales. Again, about 85% of these sales correspond to cacao. In addition, discounting the value of the expenses incurred in the development of the activity, households would register about S/1,115 soles (USD 298) of average monthly gross profit.

It is useful to note that the cacao grown is organic (25.2%) and mostly fine flavor cacao (48.8%) according to the verbal report of the respondents. Also, it is worth mentioning that 60.9% use organic fertilizers, and only about 8% use fertilizers. Those who do not use organic fertilizer are mainly because of high prices (42.6%) and lack of knowledge (24.9%), while those who do not use fertilizer are mainly because the majority (52.1%) consider that it pollutes the soil or because of high prices (28.6%).

Among the details of production, almost 100% use rain-fed irrigation, and only 34.5% use machinery or equipment, mainly the motor mower (78.5%). However, 45.8% consider it difficult to obtain inputs, mainly because agricultural inputs are expensive (approximately 70%). This finding is consistent with what was stated by the informants who participated in the interviews since one of the main

complications that agricultural farmers faced in the VRAEM zone is the lack of technification, scarce irrigation systems, and difficulties in accessing quality inputs for crop production.

Regarding **sales**, 46.8% sell their produce on their farms, and 41% sell to cooperatives/associations. In addition, 78% of farmers consider that they have recurring customers and have a good relationship with them (70%). For this reason, 81% find it easy to sell cacao, which corresponds to the high price of this product. This generates a certain contradiction with what was gathered by the informants in the interviews, since they consider that there are deficiencies on the part of the farmers to be able to sell their crops to other markets, obtaining limited sales prices. Moreover, it is more difficult to connect with the market if they are not part of an association or cooperative.

A survey was conducted to determine **the best practices** that farmers implement in cacao cultivation. Of the eight practices considered, the most common were pruning management (49%), selective harvesting and cutting/breaking of pods (43.5%), and shade management (42.0%). However, only a little more than 10% would implement all eight practices. Along the same lines, information was collected on the traceability system, understood as the information reporting at critical moments in production. It was found that 39.1% of farmers report information on cacao production, 36.1% on cacao marketing, and 36.6% on cacao sales.

Regarding **farmer perceptions**, more than 80% consider cacao a profitable alternative, a high-quality product, a certified crop that enhances the product value, etc. Thus, 86.1% of beneficiaries consider it important in the family economy. This finding is strongly related to the perception of public officials and managers of cacao organizations, as they mention the great importance of cacao in the VRAEM area during the last 10 to 15 years.

It was found that farmers have little connection with the **financial system**. Only 21.8% have a savings account and only 4.6% use debit/credit cards. Another 46.3% reported needing a loan in the last 12 months, and 30% accessed this loan, mainly from banks (14.6%) and municipal savings banks (8.1%).

Regarding the **control group**, the field operation has made it possible to gather information on more than 400 cacao farmers who are not expected to be part of the intervention and will be potential controls. This group comes from a similar area as they are residents of localities relatively close to the Transforming the VRAEM project's intervention area. Because of this, they share similar demographic and socioeconomic characteristics, besides being cacao farmers and having incomes highly dependent on this product. However, they differ in doing their activities on a slightly smaller scale. For example, they grow their products on an average of 1.8 hectares, representing two-thirds of the average number of hectares cultivated by the beneficiaries, generating a gross production value of just over S/900 (USD 241) per month. They also generate sales of S/786 (USD 210) and profits of S/626 (USD 167), equivalent to S/271 (USD 72) per hectare. As a result, they report a lower probability of growing organic cacao and a lower probability of producing fine flavor cacao.

Regarding the **estimated gender differences** of the intervention group, male farmers have better initial social and economic conditions than female farmers, which translates into better productive opportunities and higher economic returns. Specifically, the most important findings are that male farmers have a higher level of education, higher levels of access to basic services (water, sewage), larger land extensions for agricultural work, higher levels of production, and consequently higher income levels. In addition, their higher income levels are not only explained by larger landholdings but also by the fact that male farmers have better tools in training and learning opportunities on good agricultural practices, as well as better quality products, as is the case of certified organic and fine flavor cacao. These better opportunities are related to a closer relationship between the male farmers and the

associations, allowing them to have a better marketing reach for their cacao crop and reaching the national market to a greater extent.

The baseline collected has made it possible to extract information, considered by the consulting team, that reasonably outlines the potential beneficiary population and is a valid tool for the post-intervention follow-up work. We say "potential beneficiaries" because the list of the 1,200 effective beneficiaries will only be known in the exit period when the impact evaluation is implemented. At this point, there is no certainty that the sample of partners will participate in the intervention. In the rest of the cases, only the list of localities is known, and it is about them that the information has been obtained.

Conversely, the sample of controls constitutes a valid comparison group for project evaluation that is subsequently carried out under the proposed difference-in-differences design. Since they are populations dedicated to cacao cultivation as their main activity and exposed to the same shocks as the beneficiaries, they will allow replicating the trajectory that the beneficiary population would experience if the Activity did not occur. It is recognized that the control informants have a smaller scale of operation than the beneficiaries, however, this does not invalidate their usefulness in replicating the counterfactual status of beneficiaries if they allow the assumption of common trends to be sustained. The consulting team considers that being informants residing in similar localities, with similar agricultural vocations, and dedicated to the same crop, are elements strengthening the assumption of common trends.

Notwithstanding the above, during the impact evaluation, and depending on the actual beneficiary population available at that time, treatment probability modeling processes should be implemented to reconsider observations and penalize any differences between beneficiaries and controls. Currently, this is not useful because there is only a sample of potential beneficiaries, as indicated above. In the output sample, on the other hand, the actual profile of beneficiaries will be available, and it is on these characteristics that the modeling of the intervention probability will have to be done.

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ANNEXES

ANNEX A: EVALUATION TEAM

Macroconsult worked with an experienced team to conduct the study, composed of internal company staff and external professionals.

Team leader (Evaluation and Sampling Specialist): Álvaro Monge Zegarra

Economist from Universidad del Pacífico (Peru), M.A. in Economic Development from the University of Sussex (England) and Ph.D. in Economics from the same university. Currently, he is a partner and General Manager of Macroconsult, with more than 18 years of experience in economic consulting. He has led several studies related to developing socio-economic studies, baselines, and impact evaluations, both experimental and quasi-experimental. He has published and conducted studies on social development issues and has experience in evaluations of development projects sponsored by the IDB, WB, USAID, UNICEF, ECLAC, and 0IT, among other organizations. In his professional life, he is in charge of the Quantitative Methods of Impact Evaluation course at the University of Piura, Lima.

Mr. Monge has significant experience relevant to the execution of this study. Additionally, he has led several design and impact evaluation studies in many areas of Peru. Here, it is important to highlight the studies of "Intermediate Impact and Baseline of the New Private Sector Competitiveness and *Poverty Reduction and Alleviation Activityeru* - PRA project" and "Quasi-experimental Evaluation of USAID's *Poverty Reduction and Alleviation* project." He also has knowledge of the study area due to his participation in the Quipu Commission for the VRAEM[31].

Rural Development Specialist (Evaluation and Sampling Specialist): Yohnny Campana Morales

Economist from Universidad San Antonio Abad del Cusco (Peru), with a master's degree in economics from Universidad de San Andrés (Argentina). Currently, he is an associate economist at Macroconsult. He has more than 12 years of experience in economic consulting, mainly in the social field, participating in the preparation of socio-economic studies, baselines, and impact evaluation, and in the management and analysis of databases. This experience has been built on studies carried out for the public and private sectors, multilateral entities, and international cooperation agencies, including the MEF, IDB, WB, USAID, and UNICEF, among others. Additionally, he spends part of his professional life teaching a Quantitative Methods of Impact Evaluation course at Universidad de Piura, Lima.

Most of Mr. Campana's studies are carried out in rural areas, which provides him with the knowledge to analyze agriculture markets and propose relevant indicators. Some studies to highlight in this regard are, for example, "Roads and Agriculture: Impacts of Connectivity in Peru"[32], "How effective are protected natural areas when roads are present? An analysis of the Peruvian case"[33], and "Consultancy for the design and execution of the baseline of the water and sanitation program for the rural Amazon" for the National Rural Sanitation Program, among others.

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[31] The final report published by the commission, wherein Chapter 3 was prepared by Mr. Monge, can be downloaded from the following link: https://centroderecursos.cultura.pe/sites/default/files/rb/pdf/Comision-Quipu-para-el-VRAEM-Informe-final.pdf.
[32] Published in the International Journal of Transport Economics - VOL. XLV/4 (with Julio Aguirre, Elmer Guerrero and Daniel De La Torre Ugarte).
[33] Published in the Environmental Economics and Policy Studies (with Julio Aguirre and Elmer Guerrero).

Qualitative Research Specialist: Sandra Flores

An economist from Pontificia Universidad Católica del Perú with a master's degree in Economic Analysis Specialized in Economics and Public Policy from the Barcelona School of Economics (Spain). Currently, she is a senior economist at Macroconsult. She has more than six years of experience in economic consulting, conducting studies for the public, private, and multilateral sectors.

She has relevant experience in field data collection processes, both quantitative and qualitative, which are useful in the framework of this study. Some examples of her participation in the consultancies "Preparation of the impact assessment and extension of the baseline of the Decentralized Rural Transportation Program" for the Ministry of Transportation and Communications - PROVIAS, and the "Preparation of the socio-economic baseline of the Camisea pipeline - Sierra area" for TGP (developed in Ayacucho and Huancavelica), among others. In these studies, Ms. Flores has participated in the creation of the sample design and has monitored the data collection.

Quantitative Research Specialist Enrique Vera

An economist from the University of Piura, currently working at Macroconsult. He has more than five years of experience in economic consulting, carrying out studies for public, private, and multilateral entities. As part of his work at Macroconsult, Mr. Vera has participated in numerous studies like the present one, including the impact evaluation of the EDF for the European Union, the Impact Assessment of Law 95.5, and two studies on the care economy in Peru, among others.

Field supervisor: Lorenzo Oimas

An economist from Universidad del Pacífico, he is currently the general manager of Yupaq S.A., a company specialized in information gathering that has participated jointly with Macroconsult in several field processes like the one implemented in this study. Mr. Oimas has extensive experience leading field operations throughout Peru, several of them in the VRAEM.

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ANNEX B: METHODOLOGICAL MATRIX

The following is the methodological matrix of this study, which details the verification means that will be used to adequately answer the evaluation questions and sub-questions.

Questions	Sub-questions	Means of verification
1. **What are the changes in production and income of high-quality cacao and other legal activities for farmers participating in the VRAEM Activity that can be attributed to the intervention?**	1.1 How much has the importance of fine flavor cacao increased in terms of cultivated area (hectares), crop density (number of plants/hectare), gross production value (S/), and sales (S/) for farmers in the intervened areas?	- Surveys directed at farmers
	1.2 What were the strategies that worked best to increase the production, sales, and income of farmers in the intervened areas?	- Surveys directed at farmers - Semi-structured interviews
	1.3 What are the success factors for increasing the sale of fine flavor cacao?	- Semi-structured interviews
	1.4 How has the work by associations enabled the improvement in production and income of the high-quality cacao beneficiary farmers?	- Semi-structured interviews
	1.5 To what extent has the traceability system improved the sale of high-quality cacao?	- Semi-structured interviews
	1.6 What is the level of inclusion of farmers in the financial system (need, application, access, and use)?	- Surveys directed at farmers
2. What are the changes regarding the perception of cacao farming as a licit activity among the VRAEM population that can be attributed to the intervention?	2.1 How important (assessment) is cacao farming in the family economy of the farmers in the intervened areas?	- Surveys directed at farmers
	2.2 How has the Activity impacted and improved the farming of high-quality cacao for families' incomes?	- Surveys directed at farmers
	2.3 How has the Activity affected the farmers' profits and margins?	- Surveys directed at farmers
	2.4 What are the socio-economic, cultural, and demographic factors that motivate farmers to stop growing illicit crops and start producing fine flavor cacao?	- Semi-structured interviews
	2.5 What has been the importance of the Technical Roundtables on fine flavor cacao farming in the area?	- Semi-structured interviews
	2.6 Has financial inclusion been favorable to the household economies of farmers in the intervened areas?	- Surveys directed at farmers
3. What changes in the diversification of income sources of high-quality cacao farmers can be attributed to the intervention?	3.1 What other forms of entrepreneurship did the farmers in the intervened areas adopt to generate income? (value-added businesses and/or other legal crops)	- Surveys directed at farmers
	3.2 What types of enterprises have become more relevant among cacao farmers in the intervened areas?	- Surveys directed at farmers - Semi-structured interviews

ANNEX C: FIELDWORK REPORT

INTRODUCTION

EnCompass has contracted Macroconsult S.A. to develop the baseline of the Activity "Transforming the VRAEM: the land of fine flavor cacao" being implemented by Lutheran World Relief in the regions of Junín, Ayacucho, and Cusco. In this regard, Macroconsult S.A. hired the services of Yupaq Investigación y Desarrollo S.A.C., with the objective of collecting the necessary information for this task. The collected information will be used for the elaboration of the project's baseline that Lutheran World Relief will implement.

The tasks assigned to Yupaq in the data collection stage consisted of: i) preparing the organization and logistics of the quantitative and qualitative fieldwork; ii) ensuring the implementation of adequate safety protocols for field personnel; iii) hiring field personnel and participating in the training to conduct the information gathering; iv) Collaborating in the elaboration of the information gathering instruments and application manuals, conducting the pilot of the same, and preparing a report with the pilot results; v) Collecting quantitative and qualitative information by implementing adequate supervision mechanisms and protocols to guarantee the quality of the collected information; vi) preparing a field report detailing the achievements of the survey regarding the goals, reporting field incidents, and explaining lessons or findings that may contribute to the baseline study being conducted.

These tasks involved visiting the LWR offices in the city of Pichari (province of La Convención in Cusco) prior to the fieldwork departure to select the control group localities and verify the localities and membership lists of the treatment or beneficiary group. It is necessary to mention that the treatment group was composed of members and future members of 3 cacao production cooperatives: Qoriwarmi, El Quinacho, and Cacao VRAEM. Additionally, information was collected from a control group delineated by Macroconsult.

Thus, this report details how the tasks have been carried out and consists of 4 parts. The first corresponds to this introduction. The second describes the organization of the field team. The third presents the main incidents that occurred during the fieldwork. Finally, in the fourth part, the result of the fieldwork is presented.

PREPARATORY ACTIVITIES: FIELD TEAM ORGANIZATION, TRAININGS, AND PILOT APPLICATION OF INSTRUMENTS

The preparatory activities included: initiation of field staff recruitment, organization of field deployment (for both qualitative and quantitative data collection), questionnaire review by the field team under the supervision of the analysis team, coordination with local leaders and officials for activity implementation, training on the initial version of the quantitative data collection instrument, and finally, execution of the field pilot.

PILOT APPLICATION OF INSTRUMENTS

This activity was carried out with farmers whose homes and plots were located near the city of Satipo, specifically in the Native Community of Bajo San Pascual, and with members of the Walash Tsinani VRAEM Agricultural Farmers Association. Additionally, it was planned to visit the native community of Atahualpa, but final confirmation from the communal leadership for the activity was not received, although discussions with the community leader regarding the questionnaire were possible. Due to the low profile required for the activity, it was decided not to wear any distinctive marks to avoid raising any

expectations among the population, especially those not participating in the pilot activity. As complementary activities, training was conducted on the questionnaire, both physical and digital (November 3rd), and a feedback meeting was held with the entire field team (November 5th).

In total, the questionnaire was administered to 30 farmers by a team of 7 people, which is detailed in the following Table 1.

Table 1: Pilot Personnel List

N°	Names and Surnames	Position
1		Supervisor
2		Coordinator
3		Enumerator
4		Enumerator
5		Enumerator
6		Enumerator
7		Enumerator

The pilot was carried out without major operational issues, that is, reaching the populated centers and convincing cacao farmers to participate in the activity. However, some queries arose among respondents regarding the questions of the survey specifically related to cacao production and related varieties and certifications. In this pilot, training was conducted with both versions of the questionnaire, the physical and the digital one. During the pilot with the informants, only the electronic version was used, with each interview lasting an average of 40 minutes.

RECRUITMENT OF FIELD STAFF AND ORGANIZATION OF FIELD TEAMS

The recruitment of enumerators was done with personnel who had experience working with Yupaq and in previous studies conducted by Macroconsult. Additionally, it was sought that the staff had experience in conducting agricultural surveys and/or surveys in rural areas, preferably in the jungle, especially in the regions of Junín, Ayacucho, and Cusco. Table 2 shows the field staff organized by teams, regions to which they were assigned, and the related projects for which information was collected.

Table 2: Field team for the cacao farmer survey

N°	Names and surnames	Position
1		Fieldwork general coordinator
2		Team leader and field coordinator
3		Team leader
4		Team leader
5		Enumerator
6		Enumerator
7		Enumerator
8		Enumerator
9		Enumerator
10		Enumerator
11		Enumerator
12		Enumerator

TRAINING ON APPLICATION OF INSTRUMENTS

The training had two main components. The first was related to the instrument itself, the questions, and how they would be formulated for the informant. The second was about the electronic application in which the questionnaire was developed: Kobo Toolbox. There were four moments of preparation and training:

a) Review of the questionnaire by the field team, from November 1st, before the pilot, and from November 6th, after the pilot and in its final version.

b) Training on the questionnaire for the pilot aimed at the staff who carried out the pilot and remained in the field team for this service. It was conducted on November 10th in a remote format.

c) Training on the quantitative questionnaire in the electronic application. It was held on November 14th – 15th in the city of Ayacucho in-person.

d) Practical training in the use of the mobile application and review of the questionnaire with all the team members from November 16th – 17th, conducted in-person in the city of Pichari.

EXECUTION OF FIELD WORK

COLLECTION OF QUANTITATIVE INFORMATION

PLANNED SAMPLE

The baseline data collection planned to gather information for the sample of 400 farmers from the localities that will be intervened by the Activity and 400 farmers from the group of localities that will not be benefited with the Activity (control group). This sample of 400 observations in each group is distributed by region and by type of informant as shown in Table 3 for the treated group and Table 4 for the control group.

Table 3. Number of expected farmers for the treated group

Region	Partners		Independents		Native communities		Total Treated	
	N°	%	N°	%	N°	%	N°	%
Ayacucho	108	68%	45	28%	7	4%	160	100%
Cusco	48	30%	53	33%	59	37%	160	100%
Junín	45	56%	21	26%	14	18%	80	100%
Total	201	50%	119	30%	80	20%	400	100%

Table 4. Number of expected farmers for the control group

Region	Partners/Independents	Native communities	Total Control

	N°	%	N°	%	N°	%
Ayacucho	154	96%	6	4%	160	100%
Cusco	101	63%	59	37%	160	100%
Junín	64	80%	16	20%	80	100%
Total	319	80%	81	20%	400	100%

SUMMARY OF THE SURVEY RESULTS BY REGIONS

Fieldwork for data collection began on November 17th in the locality of Puerto Mayo, Kimbiri - Cusco, and ended on December 6th in the locality of Coriri, Pangoa, Junín. In total, throughout the fieldwork a sample of 836 respondents was collected. Table 5 and Table 6 detail the distribution of the effective sample by departments and by interest group for treated and control groups, respectively.

Table 5. Number of farmers interviewed for the treated group

Region	Partners		Independents		Native communities		Total Treated	
	N°	%	N°	%	N°	%°	N°	%
Ayacucho	98	65%	42	28%	11	7%	151	100%
Cusco	45	22%	91	45%	65	32%	201	100%
Junín	25	31%	17	21%	38	48%	80	100%
Total	168	39%	150	35%	114	26%	432	100%

Table 6. Number of farmers interviewed for the control group

Región	Partners/Independents		Native communities		Total Control	
	N°	%	N°	%	N°	%
Ayacucho	137	96%	6	4%	143	100%
Cusco	115	65%	61	35%	176	100%
Junín	27	32%	58	68%	85	100%
Total	279	69%	125	31%	404	100%

SELECTION OF CONTROL AND TREATMENT LOCALITIES

In the office, a group of treatment localities was selected, and then, for each of them, 02 control localities were selected. In total, there were 40 beneficiary localities (30 main and 10 replacement) with their respective 80 control localities (two control localities for each beneficiary). Although the proposed sample was 30 beneficiaries and 30 controls, a much larger number was chosen to address potential access problems.

This original list was shared with the LWR team (on November 17, 2023) at their offices in Pichari, where their location on the map was also visualized. The meeting aimed to define the localities to be visited to collect information based on ease of access, the existence of cacao plantations in control localities, and the safety of the team. As a result of this review, the localities to be visited were selected, 30 for treatment and 30 for control. This list is presented in Table 8. In this table, the paired locality code is presented, which linked the treatment locality with one of the available control localities, of the two selected in the meeting. By department, it was planned to visit 26 localities in Ayacucho, 22 in

Cusco, and 12 in Junín. In the field, this distribution changed slightly, as described in the following section.

Table 8: Listo of selected localities for the fieldwork

Departament	Province	District	Localities	Category	Treated locality matched
Ayacucho	Huanta	Sivia	Sivia	CP Treated	0504070001
	Huanta	Sivia	Triboline	CP Control	0504070001
	Huanta	Sivia	Sanamarca	CP Treated	0504070027
	Huanta	Sivia	Triboline Alta	CP Treated	0504070040
	Huanta	Sivia	Balsamuyocc	CP Control	0504070040
	Huanta	Sivia	San Juan De Matucana	CP Control Reemplazo	0505070001
	Huanta	Llochegua	Periavente Alta	CP Control	0504070027
	Huanta	Llochegua	Llochegua	CP Treated	0504080001
	Huanta	Llochegua	Unión San Miguel	CP Control Reemplazo	0505100002
	Huanta	Llochegua	Nueva Esperanza Alta	CP Treated	0504080035
	Huanta	Canayre	Canayre	CP Treated	0504090001
	Huanta	Canayre	San Juan De Mejorada	CP Control Reemplazo	0504090006
	Huanta	Canayre	Villa Virgen	CP Treated Reemplazo	0504090006
	La Mar	Anco	Naranjal (Puerto Naranjal)	CP Control	0504080035
	La Mar	Anco	San Antonio	CP Control	0505020043
	La Mar	Anco	Lechemayo	CP Treated	0505020043
	La Mar	Anco	Santa Rosa De Lima	CP Control	0505050008
	La Mar	Ayna	Las Palmas	CP Treated	0505030015
	La Mar	Ayna	Nueva Unión	CP Control	0504080001
	La Mar	Chungui	Villa Aurora	CP Treated	0505050008
	La Mar	Chungui	Balsamo Ccasa	CP Control	0505050009
	La Mar	Chungui	Chinchibamba	CP Treated	0505050009
	La Mar	Santa Rosa	Santa Rosa	CP Treated Reemplazo	0505070001
	La Mar	Santa Rosa	Ccahuasana	CP Control	0505030015
	La Mar	Anchihuay	Unión Nueva Florida	CP Control	0504090001
	La Mar	Anchihuay	Nain	CP Treated Reemplazo	0505100002
Cusco	La Convención	Kimbiri	Kimbiri	CP Treated	0809070001
	La Convención	Kimbiri	Irapitari	CP Treated	0809070018
	La Convención	Kimbiri	Sampantuari Alta	CP Control	0809070018
	La Convención	Kimbiri	Sirenachayocc	CP Treated	0809070042
	La Convención	Kimbiri	Manitea Baja	CP Control	0809070042
	La Convención	Kimbiri	Lobo Tahuantinsuyo	CP Treated	0809070045
	La Convención	Kimbiri	Samaniato	CP Control	0809070045
	La Convención	Kimbiri	Chirumpiari	CP Treated	0809070046
	La Convención	Kimbiri	Manitea Alta	CP Control	0809070048
	La Convención	Kimbiri	Palestina Alta	CP Treated	0809070048
	La Convención	Kimbiri	Ivankiriari	CP Control	0809100020
	La Convención	Kimbiri	Vista Alegre Alta	CP Control	0809100030
	La Convención	Kimbiri	Camonachari	CP Control	0809100032
	La Convención	Kimbiri	Santa Fe	CP Control	0809120001
	La Convención	Pichari	Tarancato	CP Control	0809070046
	La Convención	Pichari	Teresa	CP Treated	0809100020

Departament	Province	District	Localities	Category	Treated locality matched
	La Convención	Pichari	Nogal Pampa	CP Treated	0809100030
	La Convención	Pichari	Shankirwato	CP Treated	0809100032
	La Convención	Pichari	Catarata	CP Control	0809070001
	La Convención	Pichari	Puerto Mayo	CP Treated	0809100034
	La Convención	Pichari	Sankiroshi	CP Control	0809100034
	La Convención	Villa Virgen	Villa Virgen	CP Treated	0809120001
Junín	Satipo	Pangoa	Puerto Villa	CP Treated	1206060226
	Satipo	Rio Tambo	Yoyato	CP Control	1206060226
	Satipo	Pangoa	Shaoriato	CP Control	1206060227
	Satipo	Pangoa	Nuevo Berlin	CP Treated	1206060227
	Satipo	Rio Tambo	Sol Naciente	CP Treated	1206080082
	Satipo	Rio Tambo	Sonachicari	CP Control	1206080082
	Satipo	Pangoa	Boca Anapate	CP Control Reemplazo	1206080083
	Satipo	Rio Tambo	Fe Y Alegría	CP Treated Reemplazo	1206080083
	Satipo	Rio Tambo	Shapo	CP Treated	1206080109
	Satipo	Rio Tambo	Cutivireni	CP Control	1206080109
	Satipo	Vizcatán Del Ene	La Florida (Florida)	CP Treated	1206090018
	Satipo	Vizcatán Del Ene	Boca Mantaro	CP Control	1206090018

FIELD INCIDENTS IN SURVEY APPLICATION

There were two main incidents during the fieldwork. The first one refers to the difficulty in identifying localities with cacao farmers for the control group, and the second, to a lesser extent, the difficulty in finding farmers, from both treatment and control groups, belonging to indigenous populations. In both cases, this forced the team to search for other localities to collect information from in both groups of informants. The final list of localities where information was gathered is presented in Table 9.

Table 9: Sample of informants by localities and mother tongue

CONTROL	TREATED
AYACUCHO	
Balsamo Ccasa	Canayre
Caservine Norte	Chinchibamba
Caservine Sur	Las Palmas
Ccahuasana	Lechemayo
Kapashiari	Llochegua
Naranjal (Puerto Naranjal)	Nueva Esperanza Alta
Periavente Alta	Sanamarca
San Antonio	Santa Rosa
San Juan De Matucana	Sivia
San Juan De Mejorada	Villa Aurora
Santa Rosa De Lima	Villa Virgen
Sevite Alta	Canayre
Sevite Baja	
Triboline	
Unión San Miguel	
CUSCO	
Camonachari	Chirumpiari
Catarata	Irapitari
Ivankiriari	Kimbiri
Manitea Alta	Lobo Tahuantinsuyo
Manitea Baja	Nogal Pampa
Nueva Fortaleza	Palestina Alta
Omaya	Pichari
Samaniato	Puerto Mayo
Sampantuari Alta	Shankirwato
Sampantuari Nativo	Sirenachayocc
Sankiroshi	Teresa
Santa Fe	Villa Virgen
Tarancato	
Ubiato	
Unión Rosales	
JUNÍN	
Boca Mantaro	Fe Y Alegría
Coriri	La Florida (Florida)
Kempiri	Nuevo Berlin
Pampa Hermosa	Puerto Villa
Sonachicari	Selva De Oro
Yoyato	Sol Naciente

During the fieldwork, 65 localities were visited. Table 10 shows the distribution of the sample by treatment group and department.

Table 10: Number of de localities visited during the fieldwork

Departamento	Control	Treatment	Total
Ayacucho	15	11	26
Cusco	15	12	27
Junín	6	6	12
Total	36	29	65

COLLECTION OF QUALITATIVE INFORMATION

A total of 20 semi-structured interviews were conducted. One of them was conducted as a brief conversation with the Manager of Economic and Social Development of the Municipality of Kimbiri. Table 11 shows the type of informant, political jurisdiction, institution, and position of the interviewee.

Table 11: Institutions and informants of the qualitative interviews

Instance	Department	Province	District	Institution	Position
Public officials and civil society	Ayacucho	Huanta	Huanta	Provincial Municipality of Huanta	Manager of Economic Development
	Ayacucho	Huanta	Sivia	District Municipality of Sivia	Manager of Economic Development
	Ayacucho	La Mar	San Miguel	Provincial Municipality of La Mar	Manager of Economic Development
	Ayacucho	La Mar	Santa Rosa	District Municipality of Santa Rosa	Manager of Economic Development
	Ayacucho	Ayacucho	Huanta	Chamber of Commerce of Ayacucho	Manager
	Ayacucho	Ayacucho	Ayacucho	Ayacucho Regional Government (GORE)	Regional Director of Agriculture
	Cusco	La Convención	Pichari	Provincial Municipality of La Convención	Project Cacao Resident
	Cusco	La Convención	Pichari	Chamber of Commerce of VRAEM	Secretary
	Cusco	La Convención	Kimbiri	District Municipality of Kimbiri*	Manager of Economic Development
	Cusco	La Convención	Quillabamba	Chamber of Commerce of La Convención	Manager
	Cusco	Cusco	Cusco	Chamber of Commerce of Cusco	Cacao Specialist of the CCC
	Cusco	Cusco	Wánchaq	Cusco Regional Government (GORE)	Regional Manager of Economic Development and Procompite Strategy
	Junín	Junín	Satipo	Provincial Municipality of Satipo	Manager of Economic Development
	Junín	Junín	Río Tambo	District Municipality of Rio Tambo	Manager of Productive Development
	Junín	Junín	Pangoa	District Municipality of Pangoa	Manager of Economic Development
	Junín	Junín	Huancayo	Junín Regional Government (GORE)	Regional Director of Agriculture
Farmer	Ayacucho	Huanta	Sivia	El Quinacho	Manager

Instance	Department	Province	District	Institution	Position
Associations	Cusco	La Convención	Kimbiri	Qori Warmi	Manager
	Cusco	La Convención	Kimbiri	Cacao VRAEM	Administrator
	Cusco	La Convención	Pichari	Cacao Technical Roundtable	Member (former president)

* Conversation-style interview at the municipality of Kimbiri. Recording was not permitted.

LUTHERAN WORLD RELIEF

ENCUESTA DE LÍNEA DE BASE DE PROYECTO VRAEM

- CUESTIONARIO DE HOGARES -

Nº DE CUESTIONARIO

DATOS GENERALES

A. UBICACIÓN GEOGRÁFICA

DEPARTAMENTO	
PROVINCIA	
DISTRITO	
LOCALIDAD DIRECCIÓN DE LA VIVIENDA	

B. NOMBRE DEL INFORMANTE

Nombres
Apellido Paterno
Apellido Materno

C. PERSONAL DE LA ENCUESTA

Nombre del Encuestador (a)	COD	FECHA DE: 1era. Visita	2da. Visita	3ra Visita
Nombre del Jefe de Brigada	COD	Supervisión	Observaciones	
Nombre del codificador (a)	COD	Codificación	Observaciones	

D. ¿ES USTED PRODUCTOR DE ALGÚN TIPO DE CACAO?:

Sí……..... 1 No……..... 2

E. NOMBRE DE ASOCIACIÓN A LA QUE PERTENECE EL PRODUCTOR:

El Quinacho……..... 1 Qori Warmi……..... 2 Cacao VRAEM…… 3 Otro, especifique……. 4 Ninguno…..... 5

PRESENTACIÓN DEL ENCUESTADOR

Buenos días/tardes/noches, mi nombre es (NOMBRE DE ENCUESTADOR). Soy parte de un equipo de investigación social que está realizando la línea de base del proyecto "Transformando el VRAEM: La Tierra del Cacao Fino de Aroma" implementado por Lutheran World Relief (LWR). El objetivo de este estudio es conocer la situación de los agricultores de cacao, así como la producción y venta de este en el VRAEM, promoviendo una gestión mejorada y acceso a mercados especiales. La encuesta tendrá una duración de 30 a 40 minutos. Asimismo, es anónima es decir nadie tendrá acceso a tus datos personales y estos no podrán vincularse con la información que este me brinde. La información que usted me brinde será utilizada exclusivamente para fines del estudio y será tratada de forma reservada. Por ello, solicito su consentimiento para realizarle algunas preguntas. ¿ME PERMITE HACERLE LA ENCUESTA, POR FAVOR?

SECCIÓN 1. CARACTERÍSTICAS DEL HOGAR

[ENCUESTADOR]: Ahora quisiera hacerle algunas preguntas sobre usted y los miembros de su hogar.
Por "Hogar" nos referimos al conjunto de personas que comen de una misma olla y viven bajo el mismo techo durante un lapso de 30 días

Sección 1. Características del/la miembro de la asociación y su cónyuge

Encuestador: Identifique al productor del hogar y consigne su nombre **Productor/a:**

0 Nombre y apellidos _____

1 Fecha de nacimiento _____

2 Sexo Hombre……. 1 Mujer…….2

3 Estado civil
Soltero……1 Viudo……. 4
Casado……2 Separado……5
Conviviente.. 3 Otro……. 6

4 ¿Es usted jefe de hogar?
Si……1 **>>>** Pase a Preg 6
No……2

5 ¿Quién es el jefe de hogar?
Hombre…… 1
Mujer……2

6 ¿Cuál fuel el máximo nivel de estudios que aprobó?

Nota:
Encuestador: Anote en la cuadrícula (A) de la pregunta 5 el código que corresponda.

A. Código _____ **B. ¿Asiste a CEBA?** 1…….Si 2…….No

Código de educación					
0	*Ninguno*	***6***	*5° de primaria*	***12***	*5° de secundaria*
1	*Sólo nivel inicial*	***7***	*6° de primaria*	***13***	*Educación técnica incompleta*
2	*1° de primaria*	***8***	*1° de secundaria*	***14***	*Educación técnica completa*
3	*2° de primaria*	***9***	*2° de secundaria*	***15***	*Educación universitaria incompleta*
4	*3° de primaria*	***10***	*3° de secundaria*	***16***	*Educación universitaria completa*
5	*4° de primaria*	***11***	*4° de secundaria*	***17***	*Postgrado*

7 ¿Nació en este centro poblado?
Si……1 **>>>** ***Pase a Preg 9***
No……2

8 ¿Dónde nació?
Departamento: _____
Provincia: _____
Distrito: _____

9 ¿Cuál es su lengua materna?
Castellano….**1** Otra Lengua nativa amazónica.. **5**
Quechua……**2** Otro: _____ **6**
Aymará……**3** No habla……**7**
Ashaninka…. 4

10 ¿Es usted o algún miembro de su hogar beneficiario de alguno de los siguientes programas sociales?

Juntos……1 Cuna Mas……5 Vale GLP del FISE ……9
Pension 65……2 Haku Wiñay…….6 Otro (Especifique)……10
Qali Warma……3 Jóvenes productivos ……7 Ninguno……11
Contigo……4 Programa Lurawi ……8

11 Sin considerarse usted, por favor responda a las siguientes preguntas

		A ¿Cuántas personas de las siguientes características hay en su		**B ¿Cuántas se encuentran estudiando?**	
		Hombre	**Mujer**	**Hombre**	**Mujer**
a	Niños menores de 5 años				
b	Niños de 5 a 17 años				
c	Peronas de 18 a 24 años				
d	Peronas de 25 a 64 años				
e	Personas mayores de 65 años				
	Total (sumar) >>>>				

12 ¿Usted o algun miembro de su hogar participa en organizaciones sociales? Si…… 1 No……2 **>>** ***Pase a Preg 13***

Si responde (1) 11.B ¿Cuáles?
1. Asociaciones deportivas / culturales
2. Agrupación o partido político
3. Asociación vecinal / junta vecinal
4. Ronda campesina
5. Comunidad campesina
6. Asociación regantes
7. Club de madres / Vaso de Leche / Comedor popular
8. Organización agraria de productores
9. Asociación de padres de familia (colegio)
10. Otro (detallar)…..

SECCIÓN 2: CARACTERÍSTICAS DE LA VIVIENDA Y EQUIPAMIENTO

[ENCUESTADOR]: A continuación formularé preguntas sobre su vivienda, los equipos que dispone en ella y los materiales utilizados en su construcción. Por vivienda quiero decir todos los cuartos y habitaciones usadas por los miembros de su hogar.

13 ¿La vivienda que ocupa este hogar es .... ?
(Mencionar alternativas)

- Propia.... 1
- Alquilada.... 2
- Otro (Especifique) _____ 3

14 ¿Qué material predomina en las paredes exteriores de su vivienda? (*Mencionar alternativas)*

- Ladrillo o bloque de cemento.... 1
- Adobe o tapia 2
- Quincha (caña con barro) 3
- Piedra con barro 4
- Madera 5
- Estera 6
- Otro (cual) _____ 7

15 ¿Qué material predomina en los pisos de su vivienda?
(Mencionar alternativas)

- Parquet o madera pulida.... 1
- Laminas asfálticas, vinílicos o similares 2
- Losetas, terrazos o similares 3
- Madera (pona, tornillo, etc.).... 4
- Cemento.... 5
- Tierra 6
- Otro (Especifique) _____ 7

16 ¿Qué material predomina en el techo de su vivienda?
(Mencionar alternativas)

- Concreto armado.... 1
- Madera.... 2
- Tejas.... 3
- Planchas de calamina, fibra o similares (Eternit).... 4
- Caña o estera con torta de barro.... 5
- Triplay/estera/carrizo.... 6
- Paja, hojas de palmera, etc.... 7
- Otro (cual) _____ 8

17 Principalmente, ¿cómo se abastece de agua este hogar?
(Mencionar alternativas)

- Red pública, dentro de la vivienda.... 1
- Red pública, fuera de la vivienda, dentro del edificio .. 2
- Pilón de uso público.... 3
- Pozo artesano.... 4
- Agua entubada no tratada 5
- Río, acequia, manantial 6
- Otro (cual) _____ 7

18 ¿Tiene servicio higiénico conectado a .... ?
(Mencionar alternativas)

- Red Pública dentro de la vivienda 1
- Red públicafuera de la vivienda dentro del edificio.... 2
- Letrina 3
- Pozo séptico 4
- Pozo Ciego o negro.... 5
- Sobre acequia o canal 6
- No tiene servicio higiénico 7
- Otro: ¿Cuál? _____ 8

19 ¿Qué tipo de alumbrado usa este hogar?
(Mencionar alternativas)

- Electricidad de red pública 1
- Generador eléctrico 2
- Petróleo o gas.... 3.
- Mechero, Vela 4
- Otro (Especifique) _____ 5
- NO UTILIZA.... 6

20 ¿Qué tipo de combustible utiliza para cocinar?
(Preguntar por el principal)

- Electricidad 1
- Gas (balón GLP) 2
- Gas natural (sistema de tuberías) 3
- Carbón.... 4
- Leña.... 5
- Bosta, estiércol.... 6
- Otro (Especifique) 7
- NO COCINAN.... 8

21 ¿Cuenta ud. con telefono celular?

- Sí 1
- No 2

22 ¿Cuenta ud. con acceso a internet?

- Sí 1
- No 2

22A ¿Cuántas habitaciones se usan EXCLUSIVAMENTE para dormir?

[ ] Ninguna.....0

EQUIPAMIENTO DEL HOGAR

23 ¿Cuenta Ud. con … en su hogar?
(Lea cada alternativa y circule la respuesta según corresponda)

- A Televisor.... 1
- B Refrigeradora.... 2
- C Licuadora.... 3
- D Horno microondas.... 4
- E Lavadora.... 5
- F Plancha.... 6
- G Auto/camioneta/camión.... 7
- H Motocicleta/mototaxi/Vehiculo de 3 ruedas 8
- I Bicicleta/Vehiculo no motorizado.... 9
- J Lancha/Bote/Otro vehiculo maritimo 10
- K Laptop/computadora.... 11
- L Ninguno.... 12

SECCIÓN 3: ACTIVIDAD AGROPECUARIA

[ENCUESTADOR]: Ahora quisiera preguntarle sobre la actividad agropecuaria que realiza actualmente.

PARTE A: CARACTERÍSTICAS DE LA UNIDAD AGROPECUARIA

24 ¿Qué tipo de actividad realiza en sus tierras actualmente?
(respuesta múltiple)
Agrícola…….. 1
Pecuaria…….. 2

25 Usualmente, ¿quién es la persona a cargo de las actividades agrícolas y/o pecuarias?
(respuesta múltiple)
Jefe de hogar…….. 1
Conyuge…….. 2
Otro…….. 2

26 ¿Cuántas parcelas conduce en la actualidad? # _____
(incluya bajo riego, secano, layme o muyus, descanso y barbecho)

1 Hectáreas 3 Topos
2 Cuadras 4 Otro

27 ¿Cuál es la superficie total de las parcelas que explota?

[Encuestador]: si el informante responde en una unidad de medida distinta a hectáreas, colocar la unidad mencionada y especificar su equivalencia aproximada respecto a hectáreas

	Cant.	Unidad Med.
A. Total		
B. Propia		
C. Alquilada		
D. Cedida		
E. Parcelas comunales		

Regla: Si tiene un valor mayor a 0 en superficie alquilada, entonces se apertura la Preg 28. Si tiene un valor mayor a 0 en superficie propia, entonces se apertura la Preg 29.

28 ¿Quién es el propietario de las parcelas alquiladas que conduce?
Comunidad…….. 1
Familiar residente en localidad…….. 2
No familiar residente en localidad…….. 3
No residente en localidad…….. 4

28A ¿Quién es el propietario de las parcelas cedidas que conduce?
Comunidad…….. 1
Familiar residente en localidad…….. 2
No familiar residente en localidad…….. 3
No residente en localidad…….. 4

29 Situación de la propiedad
(respuesta múltiple)
Con título en registros…….. 1
Con título no inscrito en registros…….. 2
Con certificado de posesión…….. 5
Sin título, pero en trámite…….. 3
Sin título ni trámite…….. 4
Otro…….. 6

29A ¿La titularidad de su propiedad está a nombre de...?
Productor…….. 1
Conyuge…….. 2
Otro miembro hombre…….. 3
Otro miembro mujer…….. 4

30 En la actualidad, ¿Cuántas hectáreas se utilizan para…

	Cantidad	Unidad medida
A. Cultivos (cacao, frutales, otros cultivos)?		
B. Producción maderable?		
C. Descanso o barbecho?		
D. Pastos naturales?		
E. Montes y bosques sin fin maderable?		
F. Otra clase de tierras?		

1 Hectáreas 3 Topos
2 Cuadras 4 Otro

[Encuestador]: si el informante responde en una unidad de medida distinta a hectáreas, colocar la unidad mencionada y especificar en comentarios su equivalencia aproximada respecto a hectáreas

Encuestador, verifique que la sumatoria de todas las categorías sea igual a la superficie total de las parcelas que el hogar explota (respuesta en Preg 27.A)

PARTE B: PRODUCCIÓN AGRÍCOLA

31 En las parcelas que explota, ¿cuál de los siguientes productos produce?
(respuesta múltiple)
Cacao y variedades…….. 1
Frutales…….. 2
Otros cultivos…….. 3
Maderables…….. 4
(Ej: Bolaina, shaina, wilca/pashaco, quinacho, quina)

Nº CULTIVOS	32 ¿Cuáles son los principales cultivos que cosechó en los últimos 12 meses? Revelar con detalle las variedades del cultivo de cacao e indague en particular por el cacao fino de aroma	33 ¿Cuál fue la superficie total que cultivó de...?	34 En tal superficie ¿Cuantas plantas cultivadas tiene en total de….	35 ¿Cuál fue la producción total de … (1 Kilos, 2 Quintales, 3 Arrobas, 4 Jabas, 5 Otro (esp))			36 ¿Cuánto se destinó a la venta de...? (Incluir el trueque o pago en especies valorizado a precio de productor)		37 ¿Cuenta con algún tipo de certificación? Si…..1 No…..2 37A ¿Con qué organización o empresa?	38 ¿Su cacao es catalogado como fino de aroma? Si…..1 No…..2	39 ¿Qué hizo con los productos no destinados a la venta de…. Autoconsumo…..1 Desechos……2 Obsequiado…..3 Trueque…..4 Otro…..5 (detallar)
	Nombre de Cultivos	Superficie cultivada (Ha.)	Plantas cultivadas (#)	Cantidad	Unidad de Medida	Equiv. En Kgs	Cantidad	Valor Total (S/.)			
ENCUESTADOR: Indague por las variedades de cacao, si en la pregunta 31 ha marcado la opción 1. Las variedades de cacao son criollo, oriundo, chuncho, criollo mejorado, CCN51, VRAE 99, VRAE 15, otros											
01	Variedades de cacao										
02											
03											
04											
ENCUESTADOR: Indague por los diversos frutal, si en la pregunta 31 ha marcado la opción 2											
05	Frutales										
06											
ENCUESTADOR: Indague por los cultivos distintos del cacao, si en la pregunta 31 ha marcado la opción 3											
07	Otros cultivos										
08											
ENCUESTADOR: Indague por los diversos maderables si en la pregunta 31 ha marcado la opción 4. (Ej: Bolaina, shaina, wilca/pashaco, quinacho, quina)											
09	Maderables										
10											

SECCIÓN 3: ACTIVIDAD AGROPECUARIA

PARTE C: SUBPRODUCTOS DE CACAO

40 A. En los últimos 12 meses, ¿produjo usted algun sub producto agrícola derivado del cacao destinado a la venta?

Sí 1
No ..... 2 → **Pase a 44**

B. ¿Qué tipo de cacao usó para sus derivados?
(respuesta múltiple)

Cacao oriundo..... 1
Cacao criollo..... 2
Cacao criollo mejorado..... 3
Cacao chuncho..... 4
Cacao CCN51..... 5
Cacao VRAE 99..... 6
Cacao VRAE 15..... 7
Otro (especifique)..... 8

Nº	41 ¿Cuáles? *(Registrar los 5 subproductos más importantes para el agricultor)*	42 ¿Cuál fue la producción total de *[Subproducto]*?		43 ¿Cuánto fue el valor total vendido?	
	Nombre de subproductos	**Cant.**	**Unidad de Medida**	**Cantidad**	**Valor (S/)**
01					
02					
03					
04					
05					

Códigos de Unidad de Medida		
	1 Kilos	4 Arrobas
	2 Quintales	5 Moldes
	3 Litros	6 Docenas
		7 Otros

PARTE D: SUBPRODUCTOS AGRÍCOLAS

44 En los últimos 12 meses, ¿cuáles de las siguientes actividades ha desarrollado para la generación de ingresos adicionales?

1	**Elaboración de subproductos agrícolas no derivados del cacao**
2	Generación de Fincas Agroecoturísticas
3	Elaboración de artesanías
4	Alquiler o venta de trajes típicos
5	Elaboración de comidas y bebidas
6	Comercialización de plantas
7	Actividades de apicultura
8	Actividades de acuicultura
9	Otras actividades para la generación de ingresos
10	No desarrolla actividades adicionales → **Pase a 46**

45 En los últimos 12 meses, ¿cuál fueron los ingresos totales generados por otros subproductos agrícolas distintos al cacao y la realización de estas actividades adicionales?

Si no ha vendido, colocar valor 0.

S/.	

SECCIÓN 3: ACTIVIDAD AGROPECUARIA

PARTE E: Actividad pecuaria

46 En los últimos 12 meses, ¿realizó usted actividades de crianza de animales?

Sí 1
No ..... 2 → ***Pase a 50***

Nº	47 ¿Cuáles son las principales especies de animales que ha criado en los últimos 12 meses?	48 ¿Cuántas cabezas de [ESPECIE] tiene actualmente?
	Nombre de animales	Cantidad
01		
02		
03		
04		
05		

49 En los últimos 12 meses, ¿cuál fue el valor total de la venta de sus animales y de sus derivados (subproductos)?
Si no ha vendido, colocar valor 0.

S/. _____

50 Considerando todas las actividades que realiza los miembros de su hogar, ¿en cuál de los siguientes rangos se encuentra los ingresos totales que genera mensualmente?

De 0 a 1,000 soles..... 1
De 1,000 a 2,500 soles..... 2
De 2,500 a 5,000 soles..... 3
De 5,000 a 10,000 soles..... 4
De 10,000 a más..... 5

PARTE F: GASTOS EN ACTIVIDADES AGROPECUARIAS

51 En la actividad AGROPECUARIA de los últimos 12 meses: ¿Cuánto gastó en : [.....] ?
(Encuestador: NO considerar donaciones)
(Si no gastó anote 00)

		Soles
Agrícolas	1 Semillas y plantones	
	2 Abonos y fertilizantes	
	3 Pesticidas; insecticidas, fungicidas, etc.	
	4 Transporte de productos agrícolas	
	5 Arrendamiento de tierras	
	6 Pago de jornaleros o peones	
	7 Agua o sistemas de riego	
	8 Trámites de certificación en cultivos	
	9 Gastos para elaboración de subproductos agrícolas	
	10 Otros gastos agrícolas (alquiler de maq., reparaciones, etc.)	
Pecuarios	11 Gastos para la producción pecuaria	
	12 Gastos para la elaboración de subproductos pecuarios	
	13 Otros gastos pecuarios adicionales	
	99 TOTAL DE GASTOS	

52 En los últimos 12 meses, ¿recibió insumos por donación u obsequio?

Sí 1
No ..... 2 → ***Pase a 55***

53 ¿A cuánto estima el valor de las donaciones en insumos?

S/. _____

54 ¿De qué institución recibió la donación de insumos?

_____

SECCIÓN 4: INCLUSIÓN DE GENERO

55 ¿Cuál es el nivel de participación de la mujer en su comunidad en las siguientes tareas relacionadas con la actividad agrícola?
(marcar con una X, leer cada una de las opciones)

Etapas	Nada	Bajo	Medio	Alto
A) Etapa de pre cosecha				
1 Compra de insumos	1	2	3	4
2 Compra / alquiler de maquinaria y equipos	1	2	3	4
3 Instalación de viveros	1	2	3	4
B) Etapa productiva				
4 Actividades de siembra	1	2	3	4
5 Actividades de cosecha	1	2	3	4
6 Manejo de cultivo	1	2	3	4
C) Etapa de post cosecha				
7 Fermentación y secado	1	2	3	4
8 Comercialización del producto	1	2	3	4
9 Producción de chocolatería u otros derivados del cacao	1	2	3	4
D) Asociaciones, cooperativas y/o comités				
10 Participación en asociaciones, cooperativas o comités de productores	1	2	3	4
11 Rol de liderazgo en asociaciones, cooperativas o comités de productores	1	2	3	4

SECCIÓN 5: PRODUCTORES DE CACAO

[ENCUESTADOR]: Ahora quisiera hacerle algunas preguntas sobre la comercialización, capacitación, asistencia técnica, y prácticas para el manejo adecuado del cacao. SECCIÓN EXCLUSIVA PARA PRODUCTORES DE CACAO

PARTE A: PROCESO DE PRODUCCION

56 En los últimos 12 meses, ¿Utilizó abono orgánico?
- Sí 1
- No ..... 2 → ***Apertura 58***

57 En los últimos 12 meses, ¿Utilizó fertilizantes?
- Sí 1
- No ..... 2 → ***Apertura 58A***

58 ¿Por qué no utilizó abono orgánico?
- Precios elevados 1
- Falta de conocimiento 2
- No venden por la zona 3
- Otro 4

58A ¿Por qué no utilizó fertilizantes?
- Precios elevados 1
- Contaminan el suelo 2
- No venden por la zona 3
- Otro 4

59 ¿Qué sistema de riego utiliza?
- Exudación 1
- Goteo 2
- Microaspersión 3
- Aspersión 4
- Multicompuertas 5
- Mangas 6
- Gravedad 7
- Lluvia o secano 8
- Inundación 9
- Otro 10

60 En los últimos 12 meses ¿ud. Ha utilizado maquinaria y/o equipo para el desarrollo de su actividad agrícola?
- Sí 1
- No ..... 2 → ***Pase a 62***

61 ¿Qué clase de maquinaria?

(Pregunta de selección multiple)
- Arado de hierro/palo de tracción animal 1
- Cosechadora 2
- Chaqui Taclla 3
- Fumigadora a motor/manual 4
- Molino para grano 5
- Picadora de pasto 6
- Trilladora 7
- Bomba para pozo 8
- Motor para bombeo de agua 9
- Generador eléctrico 10
- Tractor de rueda 11
- Otro 12

62 En general, que tan facil es conseguir insumos agrícolas?
- Muy facil 1
- Facil 2
- Regular 3
- Dificil 4
- Muy dificil 5

63 En general, que tan caros son sus insumos agrícolas?
- Muy caros 1
- Caros 2
- Baratos 3
- Muy baratos 4

64 En general, como califica su relación con proveedores ?
- Muy buena 1
- Buena 2
- Regular 3
- Mala 4
- Muy mala 5

PARTE B: PROCESO DE COMERCIALIZACION

65 ¿Dónde vendió la mayor parte de su cosecha?
- Chacra o acopiador 1
- Mercado o feria de la localidad 2
- Mercado o feria distrital 3
- Mercado y feria departamental 4
- Mercado Nacional 5
- Cooperat. /Asocia. de Productores 6
- Procesadora 7
- Otro 8

66 ¿A quién le vendió la mayor parte de su cosecha?
- Acopiador 1
- Comerciante mayorista 2
- Comerciante minorista 3
- Asociación / cooperativa 4
- Empresa / agro industria 5
- Consumidor final 6
- Otro (especifique) 7

67 ¿Cuál fue el precio de la última venta?

A. S/	B. Unid Med	C. Mes

1 Kilos
2 Quintales
3 Arrobas
4 Otro (especificar)

67D Indague por la equivalencia de la unidad de medida en Kilos

68 ¿Sus clientes son recurrentes?
- Sí 1
- No 2

69 En general, ¿qué tan fácil es vender el cacao?
- Muy facil 1
- Facil 2
- Regular 3
- Dificil 4
- Muy dificil 5

70 En general, ¿cómo califica su relación con su principal cliente?
- Muy buena 1
- Buena 2
- Regular 3
- Mala 4
- Muy mala 5

71 Usualmente, ¿está informado sobre es cuál el precio de cacao?
- Sí 1
- No ..... 2 → ***Pase a 73***

72 ¿Mediante qué medio se informa sobre el precio del cacao?
- App Cacao Móvil 1
- Acopiador 2
- Radio 3
- Asociación 4
- Otros productores de la comunidad 5
- Otro (especifique) .....

SECCIÓN 5: PRODUCTORES DE CACAO FINO DE AROMA

[ENCUESTADOR]: Ahora quisiera hacerle algunas preguntas sobre la comercialización, capacitación, asistencia técnica, y prácticas para el manejo adecuado del cacao.

PARTE C: CAPACITACIONES

73 En los últimos 12 meses, ¿ha recibido capacitaciones / asesorías técnicas para el manejo adecuado del cacao .... ?

Sí 1
No ..... 2 → **Pase a 77**

74 ¿Mediante qué medio recibió esa capacitación?

Un promotor de Asociación..... 1
Talleres virtuales..... 2
Sesiones demostrativas en parcelas..... 3
APP Cacao Móvil..... 4
Otro (Especifique) _____ 5

75	**75A. Como productor, usted realiza .....**	**75B. .....Recibio capacitaciones acerca de tal practica?**	**75C. ... Adoptó tal practica a consecuencia de la capacitación?**	**76 ¿En cuántas hectáreas del total cultivada aplicó estas prácticas?**		
				En total		ha
1 Producción de plantas de cacao en viveros						
2 Fertilización o abonamiento						
3 Manejo de Podas						
4 Manejo integrado de plagas						
5 Cobertura de suelos o control de malezas						
6 Manejo de la sombra						
7 Conservación de suelo y agua						
8 Cosecha selectiva y corte/quiebre de mazorcas						

PARTE D: SISTEMA DE TRAZABILIDAD

77	**En relación a la trazabilidad del cacao que produce, ¿Ha entregado información a promotores de la Asociación sobre…? (Solo para productores de zonas intervenidas por Programa)**	**Si**	**No**
1	Producción de cacao		
2	Comercialización de cacao		
3	Venta de cacao		

SECCIÓN 6: PERCEPCIONES

[ENCUESTADOR]: A continuación le plantearé algunas afirmaciones relacionadas sobre el cacao.

78 En una escala de 1 a 5, donde 1 es muy en desacuerdo y 5 muy de acuerdo, ¿usted que tan de acuerdo está con las siguientes afirmaciones?

	1	2	3	4	5
A. El cacao es una alternativa rentable para los productores					
B. El cacao es un producto de alta calidad a nivel nacional e internacional					
C. Tener un cultivo de cacao certificado revalorizará el producto y me permitirá obtener mejores ingresos					
D. Si sigo produciendo cacao, puedo progresar economicamente					
E. Gracias a la producción de cacao mis ingresos son mayores					
F. Gracias a la producción de cacao mis ingresos son mas estables					
G. Es importante pertenecer a una organización de productores					
H. El proyecto "Transformando el VRAEM" me ha ayudado a mejorar mi producción y productividad (Solo Tratados)					

79 En una escala de 1 a 5, donde 1 es poco importante y 5 muy importante, ¿Qué tan relevante considera que el cultivo de …..... para la economia familiar?

(Consultar por todo el listado de cultivos declarados en pregunta 32)

Corregir el listado de cacao según declaración del productor	1	2	3	4	5
A.					
B.					
C.					
D.					
E.					
F.					
G.					
H.					

SECCIÓN 5: PRODUCTORES DE CACAO FINO DE AROMA

[ENCUESTADOR]: Ahora quisiera hacerle algunas preguntas sobre la comercialización, capacitación, asistencia técnica, y prácticas para el manejo adecuado del cacao.

PARTE C: CAPACITACIONES

73 En los últimos 12 meses, ¿ha recibido capacitaciones / asesorías técnicas para el manejo adecuado del cacao .... ?

Sí 1
No ..... 2 → **Pase a 77**

74 ¿Mediante qué medio recibió esa capacitación?

Un promotor de Asociación..... 1
Talleres virtuales..... 2
Sesiones demostrativas en parcelas..... 3
APP Cacao Móvil..... 4
Otro (Especifique) _____ 5

75	75A. Como productor, usted realiza	75B. .....Recibio capacitaciones acerca de tal practica?	75C. ... Adoptó tal practica a consecuencia de la capacitación?	76 ¿En cuántas hectáreas del total cultivada aplicó estas prácticas?		
				En total		ha
1 Producción de plantas de cacao en viveros						
2 Fertilización o abonamiento						
3 Manejo de Podas						
4 Manejo integrado de plagas						
5 Cobertura de suelos o control de malezas						
6 Manejo de la sombra						
7 Conservación de suelo y agua						
8 Cosecha selectiva y corte/quiebre de mazorcas						

PARTE D: SISTEMA DE TRAZABILIDAD

77	En relación a la trazabilidad del cacao que produce, ¿Ha entregado información a promotores de la Asociación sobre...? (Solo para productores de zonas intervenidas por Programa)	Si	No
1	Producción de cacao		
2	Comercialización de cacao		
3	Venta de cacao		

SECCIÓN 6: PERCEPCIONES

[ENCUESTADOR]: A continuación le plantearé algunas afirmaciones relacionadas sobre el cacao.

78 En una escala de 1 a 5, donde 1 es muy en desacuerdo y 5 muy de acuerdo, ¿usted que tan de acuerdo está con las siguientes afirmaciones?

	1	2	3	4	5
A. El cacao es una alternativa rentable para los productores					
B. El cacao es un producto de alta calidad a nivel nacional e internacional					
C. Tener un cultivo de cacao certificado revalorizará el producto y me permitirá obtener mejores ingresos					
D. Si sigo produciendo cacao, puedo progresar economicamente					
E. Gracias a la producción de cacao mis ingresos son mayores					
F. Gracias a la producción de cacao mis ingresos son mas estables					
G. Es importante pertenecer a una organización de productores					
H. El proyecto "Transformando el VRAEM" me ha ayudado a mejorar mi producción y productividad (Solo Tratados)					

79 En una escala de 1 a 5, donde 1 es poco importante y 5 muy importante, ¿Qué tan relevante considera que el cultivo de ..... para la economia familiar?

(Consultar por todo el listado de cultivos declarados en pregunta 32)

Corregir el listado de cacao según declaración del productor	1	2	3	4	5
A.					
B.					
C.					
D.					
E.					
F.					
G.					
H.					

SECCIÓN 7: INCLUSIÓN FINANCIERA

[ENCUESTADOR]: Por último, quisiera consultarle por la inclusión financiera que usted ha logrado para el bienestar de su actividad agropecuaria

80 Actualmente, tiene usted en algún banco, financiera, caja municipal, caja rural o cooperativa:

(Pregunta de respuesta múltiple)

¿Cuenta de ahorro ocuenta sueldo? 1
¿Cuenta a plazo fijo? 2
¿Cuenta corriente? 3
¿Cuenta CTS? 4
NO TIENE 5

81 ¿Qué medios de pago utiliza usted?

(Pregunta de respuesta múltiple)

Efectivo..... 1
Tarjeta de débito/crédito..... 2
YAPE/PLIN..... 3
Otro (especifique):_____ 4

82 En los últimos 12 meses, ¿necesitó ud. De un préstamo o crédito?

Sí 1
No ..... 2 → **Pase a 86**

83 En los últimos 12 meses, ¿solicitó ud. un préstamo o crédito?

Sí 1
No ..... 2 → **Pase a 86**

84 ¿A quién le solicitó el préstamo o crédito?

(Pregunta de respuesta múltiple)

Banco..... 1
Caja municipal/rural..... 2
EDPYME/Cooperativa..... 4
Amigos/Familiares..... 5
Prestamistas informales..... 6
Otros (Especifique)..... 7

85 ¿Accedió ud. A un préstamo o crédito?

Sí ..... 1 → **Pase a 87**
No 2

86 ¿Por qué no necesitó/solicitó/accedió al préstamo?

No necesitó un prestamo 1
Desconocimiento/Desconfianza sobre créditos..... 2
Tasas de interés muy elevadas..... 3
Otras razones..... 4

Finaliza encuesta

87 En comparación al periodo anterior desde el acceso al préstamo ¿Usted considera que su nivel de vida...

Ha mejorado?..... 1
Esta igual?..... 2
Ha empeorado? 3

88 ¿Ha tenido dificultades pagando el crédito?

Sí 1
No 2

COMENTATIOS FINALES

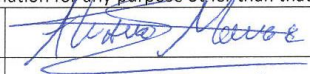
_____
_____
_____

ANNEX E: NON-CONFLICT OF INTEREST FORM

Disclosure of Conflict of Interest for USAID Evaluation Team Members

Name	Alvaro Monge Zegarra
Title	Mr.
Organization	Macroconsult
Evaluation Position?	☒ Team Leader ☐ Team member
Evaluation Award Number *(contract or other instrument)*	***S-23-1019-006-012-Macroconsult-01***
USAID Project(s) Evaluated *(Include project name(s), implementer name(s) and award number(s), if applicable)*	***USAID/Peru Monitoring, Evaluation, and Learning for Sustainability (MELS) Transformando el VRAEM Project Impact Evaluation Design and Baseline*** Lutheran World Relief
I have real or potential conflicts of interest to disclose.	☐ Yes ☒ No
If yes answered above, I disclose the following facts: *Real or potential conflicts of interest may include, but are not limited to:* 1. *Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.* 2. *Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.* 3. *Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.* 4. *Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.* 5. *Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.* 6. *Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.*	

I certify (1) that I have completed this disclosure form fully and to the best of my ability and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use or disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished.

Signature	
Date	19/09/2023

Disclosure of Conflict of Interest for USAID Evaluation Team Members

Name	Yohnny Gastón Campana Morales
Title	Mr.
Organization	Macroconsult
Evaluation Position?	☐ Team Leader ☒ Team member
Evaluation Award Number *(contract or other instrument)*	***S-23-1019-006-012-Macroconsult-01***
USAID Project(s) Evaluated *(Include project name(s), implementer name(s) and award number(s), if applicable)*	***USAID/Peru Monitoring, Evaluation, and Learning for Sustainability (MELS) Transformando el VRAEM Project Impact Evaluation Design and Baseline*** Lutheran World Relief
I have real or potential conflicts of interest to disclose.	☐ Yes ☒ No
If yes answered above, I disclose the following facts: *Real or potential conflicts of interest may include, but are not limited to:* 1. *Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.* 2. *Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.* 3. *Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.* 4. *Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.* 5. *Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.* 6. *Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.*	

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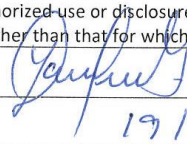
Signature	
Date	19/09/23

Disclosure of Conflict of Interest for USAID Evaluation Team Members

Name	José Enrique Vera Ocaña
Title	Mr.
Organization	Macroconsult
Evaluation Position?	☐ Team Leader ☒ Team member
Evaluation Award Number *(contract or other instrument)*	***S-23-1019-006-012-Macroconsult-01***
USAID Project(s) Evaluated *(Include project name(s), implementer name(s) and award number(s), if applicable)*	***USAID/Peru Monitoring, Evaluation, and Learning for Sustainability (MELS) Transformando el VRAEM Project Impact Evaluation Design and Baseline*** Lutheran World Relief
I have real or potential conflicts of interest to disclose.	☐ Yes ☒ No
If yes answered above, I disclose the following facts: *Real or potential conflicts of interest may include, but are not limited to:* *1. Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.* *2. Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.* *3. Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.* *4. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.* *5. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.* *6. Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.*	

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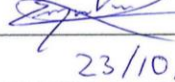
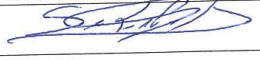
Signature	
Date	23/10/2023

Disclosure of Conflict of Interest for USAID Evaluation Team Members

Name	Sandra Paola Flores Pérez
Title	Ms
Organization	Macroconsult
Evaluation Position?	☐ Team Leader ☒ Team member
Evaluation Award Number *(contract or other instrument)*	***S-23-1019-006-012-Macroconsult-01***
USAID Project(s) Evaluated *(Include project name(s), implementer name(s) and award number(s), if applicable)*	***USAID/Peru Monitoring, Evaluation, and Learning for Sustainability (MELS) Transformando el VRAEM Project Impact Evaluation Design and Baseline*** Lutheran World Relief
I have real or potential conflicts of interest to disclose.	☐ Yes ☒ No
If yes answered above, I disclose the following facts: *Real or potential conflicts of interest may include, but are not limited to:* 1. *Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.* 2. *Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.* 3. *Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.* 4. *Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.* 5. *Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.* 6. *Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.*	

I certify (1) that I have completed this disclosure form fully and to the best of my ability and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use or disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished.

Signature	
Date	19/09/2023

ANNEX F: LIST OF BASELINE LOCALITIES

Region	Province	District	Code	Locality	Group	Total sample	Associate farmer sample	Independent farmer sample	Indigenous farmer sample	Longitude	Latitude
Ayacucho	La Mar	Santa Rosa	0505070001	Santa Rosa	Intervened	8	4	4	0	637277	8597052
Ayacucho	La Mar	Anco	0505020043	Lechemayo	Intervened	6	4	2	0	661094	8561414
Ayacucho	La Mar	Chungui	0505050009	Chinchibamba	Intervened	3	2	1	0	664483	8541580
Ayacucho	La Mar	Ayna	0505030015	Las Palmas	Intervened	7	4	3	0	633806	8601030
Ayacucho	Huanta	Canayre	0504090006	Villa Virgen	Intervened	13	9	4	0	606684	8641106
Ayacucho	La Mar	Chungui	0505050008	Villa Aurora	Intervened	12	10	2	0	666385	8548960
Ayacucho	Huanta	Sivia	0504070027	Sanamarca	Intervened	15	10	5	0	615961	8616136
Ayacucho	Huanta	Llochegua	0504080035	Nueva Esperanza Alta	Intervened	18	8	0	10	619459	8623759
Ayacucho	Huanta	Llochegua	0504080001	Llochegua	Intervened	19	14	4	1	618864	8627879
Ayacucho	Huanta	Sivia	0504070001	Sivia	Intervened	30	20	10	0	623975	8616581
Ayacucho	Huanta	Canayre	0504090001	Canayre	Intervened	20	13	7	0	606236	8642054
Cusco	La Convención	Kimbiri	0809070042	Sirenachayocc	Intervened	5	3	2	0	647883	8590008
Cusco	La Convención	Kimbiri	0809070045	Lobo Tahuantinsuyo	Intervened	10	4	6	0	649509	8585420
Cusco	La Convención	Kimbiri	0809070048	Palestina Alta	Intervened	13	6	7	0	653932	8579390
Cusco	La Convención	Pichari	0809100020	Teresa	Intervened	10	4	6	0	616785	8634482
Cusco	La Convención	Kimbiri	0809070046	Chirumpiari	Intervened	13	1	11	1	651487	8583682
Cusco	La Convención	Pichari	0809100034	Puerto Mayo	Intervened	12	0	0	12	622833	8622952
Cusco	La Convención	Pichari	0809100001	Pichari	Intervened	24	1	13	10	627230	8615710
Cusco	La Convención	Kimbiri	0809070018	Irapitari	Intervened	21	5	16	0	632451	8604181
Cusco	La Convención	Kimbiri	0809070001	Kimbiri	Intervened	27	10	17	0	631505	8604572
Cusco	La Convención	Pichari	0809100030	Nogal Pampa	Intervened	21	0	0	21	625570	8625690
Cusco	La Convención	Villa Virgen	0809120001	Villa Virgen	Intervened	24	11	13	0	661284	8562073
Cusco	La Convención	Pichari	0809100032	Shankirwato	Intervened	21	0	0	21	624606	8623685
Junín	Satipo	Rio Tambo	1206080083	Fe Y Alegria	Intervened	6	0	0	6	607492	8668200
Junín	Satipo	Rio Tambo	1206080081	Selva de Oro	Intervened	23	0	0	23	605077	8668803
Junín	Satipo	Rio Tambo	1206080082	Sol Naciente	Intervened	9	0	0	9	607129	8663903

Region	Province	District	Code	Locality	Group	Total sample	Associate farmer sample	Independent farmer sample	Indigenous farmer sample	Longitude	Latitude
Junín	Satipo	Pangoa	1206060226	Puerto Villa	Intervened	9	6	3	0	615254	8684778
Junín	Satipo	Pangoa	1206060227	Nuevo Berlin	Intervened	11	8	3	0	612750	8683781
Junín	Satipo	Vizcatan Del Ene	1206090018	La Florida (Florida)	Intervened	22	11	11	0	607232	8642772
Ayacucho	Huanta	Sivia	0504070046	Triboline	Control	22	3	19	0	623855	8609057
Ayacucho	Huanta	Llochegua	0504080024	Periavente Alta	Control	15	0	15	0	615264	8628130
Ayacucho	La Mar	Anco	0505020020	Naranjal (Puerto Naranjal)	Control	16	2	14	0	662472	8568448
Ayacucho	Huanta	Canayre	0504090009	San Juan De Mejorada	Control	3	0	3	0	605360	8632505
Ayacucho	La Mar	Anco	0505020018	San Antonio	Control	5	0	5	0	659168	8569898
Ayacucho	La Mar	Santa Rosa	0505070018	Cahuasana	Control	10	0	10	0	632239	8594691
Ayacucho	La Mar	Anco	0505020011	Santa Rosa De Lima	Control	6	0	6	0	656625	8573396
Ayacucho	La Mar	Chungui	0505050099	Balsamo Casa	Control	5	3	2	0	671059	8542738
Ayacucho	Huanta	Sivia	0504070047	San Juan De Mejorada	Control	6	1	5	0	624860	8606472
Ayacucho	Huanta	Llochegua	0504080016	Union San Miguel	Control	1	0	1	0	607831	8628686
Ayacucho	Huanta	Llochegua	0504080042	Kapachari	Control	9	0	3	6	620206	8625442
Ayacucho	Huanta	Sivia	0504070009	Caservine Norte	Control	11	1	10	0	619331	8618973
Ayacucho	Huanta	Sivia	0504070015	Caservine Sur	Control	15	1	14	0	619845	8618098
Ayacucho	Huanta	Sivia	0504070031	Sevite Baja	Control	19	2	17	0	626569	8613645
Cusco	La Convención	Pichari	0809100052	Catarata	Control	21	1	20	0	632457	8613473
Cusco	La Convención	Kimbiri	0809070012	Sampantuari Alta	Control	23	0	0	23	632123	8607311
Cusco	La Convención	Kimbiri	0809070040	Manitea Baja	Control	7	3	4	0	646548	8591310
Cusco	La Convención	Kimbiri	0809070005	Ubiato	Control	9	0	9	0	631207	8610138
Cusco	La Convención	Kimbiri	0809070025	Samaniato	Control	10	0	0	10	640098	8601514
Cusco	La Convención	Pichari	0809100050	Tarancato	Control	13	2	11	0	631613	8613779
Cusco	La Convención	Pichari	0809100037	Tupac Amaru Ii	Control	1	0	0	1	626450	8622365
Cusco	La Convención	Kimbiri	0809070036	Manitea Alta	Control	4	1	3	0	648907	8592516
Cusco	La Convención	Kimbiri	0809070078	Sampantuari Nativo	Control	24	0	0	24	633445	8606524
Cusco	La Convención	Kimbiri	0809070016	Ivankiriari	Control	11	0	11	0	641075	8602329
Cusco	La Convención	Pichari	0809100056	Nueva Fortaleza	Control	1	0	0	1	619119	8641599
Cusco	La Convención	Kimbiri	0809070033	Union Rosales	Control	22	0	22	0	647095	8593620

Region	Province	District	Code	Locality	Group	Total sample	Associate farmer sample	Independent farmer sample	Indigenous farmer sample	Longitude	Latitude
Cusco	La Convención	Kimbiri	0809070006	Camonachari	Control	7	0	7	0	631028	8609199
Cusco	La Convención	Pichari	0809100053	Omaya	Control	8	0	8	0	629550	8611262
Cusco	La Convención	Pichari	0809100040	Sankiroshi	Control	2	0	0	2	631878	8620320
Cusco	La Convención	Kimbiri	0809070028	Santa Fe	Control	13	1	12	0	645334	8596355
Junín	Satipo	Rio Tambo	1206080076	Yoyato	Control	18	0	0	18	614716	8682030
Junín	Satipo	Rio Tambo	1206080130	Sonachicari	Control	9	0	9	0	610607	8670944
Junín	Satipo	Vizcatan Del Ene	1206090015	Boca Mantaro	Control	19	2	16	1	608786	8646142
Junín	Satipo	Pangoa	1206060086	Coriri	Control	8	0	0	8	601329	8663788
Junín	Satipo	Rio Tambo	1206080111	Pampa Hermosa	Control	10	0	0	10	611559	8678759
Junín	Satipo	Rio Tambo	1206080077	Quempiri	Control	21	0	0	21	608575	8673774

Note: The longitude and latitude georeferencing points are measured in WGS 84 - UTM zone 18S.

ANNEX G: LIST OF INTERVIEWED ACTORS

Instance	Region	Province	District	Institution	Position
Public officials and civil society	Ayacucho	Huanta	Huanta	Provincial Municipality of Huanta	Manager of Economic Development
	Ayacucho	Huanta	Sivia	District Municipality of Sivia	Manager of Economic Development
	Ayacucho	La Mar	San Miguel	Provincial Municipality of La Mar	Manager of Economic Development
	Ayacucho	La Mar	Santa Rosa	District Municipality of Santa Rosa	Manager of Economic Development
	Ayacucho	Ayacucho	Huanta	Chamber of Commerce of Ayacucho	Manager
	Ayacucho	Ayacucho	Ayacucho	Ayacucho Regional Government (GORE)	Regional Director of Agriculture
	Cusco	La Convención	Pichari	Provincial Municipality of La Convención	Project Treated Resident
	Cusco	La Convención	Pichari	Chamber of Commerce of VRAEM	Secretary
	Cusco	La Convención	Kimbiri	District Municipality of Kimbiri*	Manager of Economic Development
	Cusco	La Convención	Quillabamba	Chamber of Commerce of La Convención	Manager
	Cusco	Cusco	Cusco	Chamber of Commerce of Cusco	Cacao Specialist of the CCC
	Cusco	Cusco	Wánchaq	Cusco Regional Government (GORE)	Regional Manager of Economic Development and Procompite Strategy
	Junín	Junín	Satipo	Provincial Municipality of Satipo	Manager of Economic Development
	Junín	Junín	Río Tambo	District Municipality of Rio Tambo	Manager of Productive Development
	Junín	Junín	Pangoa	District Municipality of Pangoa	Manager of Economic Development
	Junín	Junín	Huancayo	Junín Regional Government (GORE)	Regional Director of Agriculture
Farmer Associations	Ayacucho	Huanta	Sivia	El Quinacho	Manager
	Cusco	La Convención	Kimbiri	Qori Warmi	Manager
	Cusco	La Convención	Kimbiri	Cacao VRAEM	Administrator
	Cusco	La Convención	Pichari	Cacao Technical Roundtable	Member (former president)
Associated Managers	Cusco	La Convención	Pichari	Cacao Technical Roundtable in VRAEM	President
	Cusco	La Convención	Pichari	Qoriwarmi Cooperative	Manager
	Cusco	La Convención	Kimbiri	CACAOVRAEM	Administrator

* Conversation-style interview at the municipality of Kimbiri. Recording was not permitted.

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