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Wake up and smell the coffee: Challenges and opportunities for better price transmission along the coffee value chain in El Salvador

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Coffee in El Salvador

According to data from the Central Bank of El Salvador, agriculture employed almost one-third of the country's population in 2020, and coffee production accounted for 7.7% of agricultural employment, and contributed to 4.2% of the agriculture gross domestic product, equivalent to US\$109.4 million.

Whilst coffee was the second highest agricultural product exported in 2020, its contribution was lower than in previous years because of the effects of leaf rust on production and the downward trend in the international coffee price¹ (CSC, 2020). Compounded to this, the lack of investment at the farm level has also led to declining production and job losses in the sector, although recent data show an increasing trend in the latter (USDA, 2022).

Despite the coffee sector's decline in El Salvador, it still is an important source of employment in rural areas, accounting for almost 8% of rural employment (CSC, 2020), or even 22% considering its forward and backward production linkages. In short, the coffee sector is an important source of income for farmers and other stakeholders along the value chain.

Background

In late 2019, the government of El Salvador approved a program called "Fortalecimiento de la resiliencia climática de los bosques cafetaleros"² with the aim to strengthen the climate resilience of the coffee sector. The main goals are (i) to maintain the ecosystem services provided by the sector and (ii) to improve the food security of small coffee producers. To reach its goals, the program works in three main areas: (a) the adoption of climate-smart technologies, (b) marketing and associativity, and (c) the modernization of the national information, innovation, and extension systems for the coffee sector; and contemplates conducting several complementary studies with the support of the Inter-American Development Bank (IADB).

¹ The plummeted coffee price in the New York Stock responded to a higher world offer and financial speculation.

² For more information, visit: <https://bit.ly/3tvod5y>

What we did

The Alliance of Bioversity International and CIAT implemented one of the complementary studies (financed by IADB), whose goal was to make more transparent the costs and value-added along the coffee value chain, as well as to identify gaps and limitations that cause small- and medium-sized farmers to remain in poverty and food insecurity, with the intent to make recommendations for policy action and make the value chain more equitable and environmentally sustainable. This brief summarizes the results of this study.

How we did it

Using a mixed methods approach, we carried out interviews in late 2021 and early 2022 (Figure 1) with a sample of 380 farmers, and conducted 51 interviews with 29 actors representing farmer cooperatives (6 interviews), coffee processors from cherry to dry parchment (or “*pergamineros*”, 5 interviews), coffee processors from cherry to green coffee (or “*beneficiadores*”, 12 interviews), roasters (4 interviews), and exporters (20 interviews).³ Some actors did more than one activity along the value chain (for example, processors also exported coffee). We also implemented 4 focus groups with 27 of the 380 sampled farmers, to fill information gaps. The data refers to the 2020/2021 harvest season.

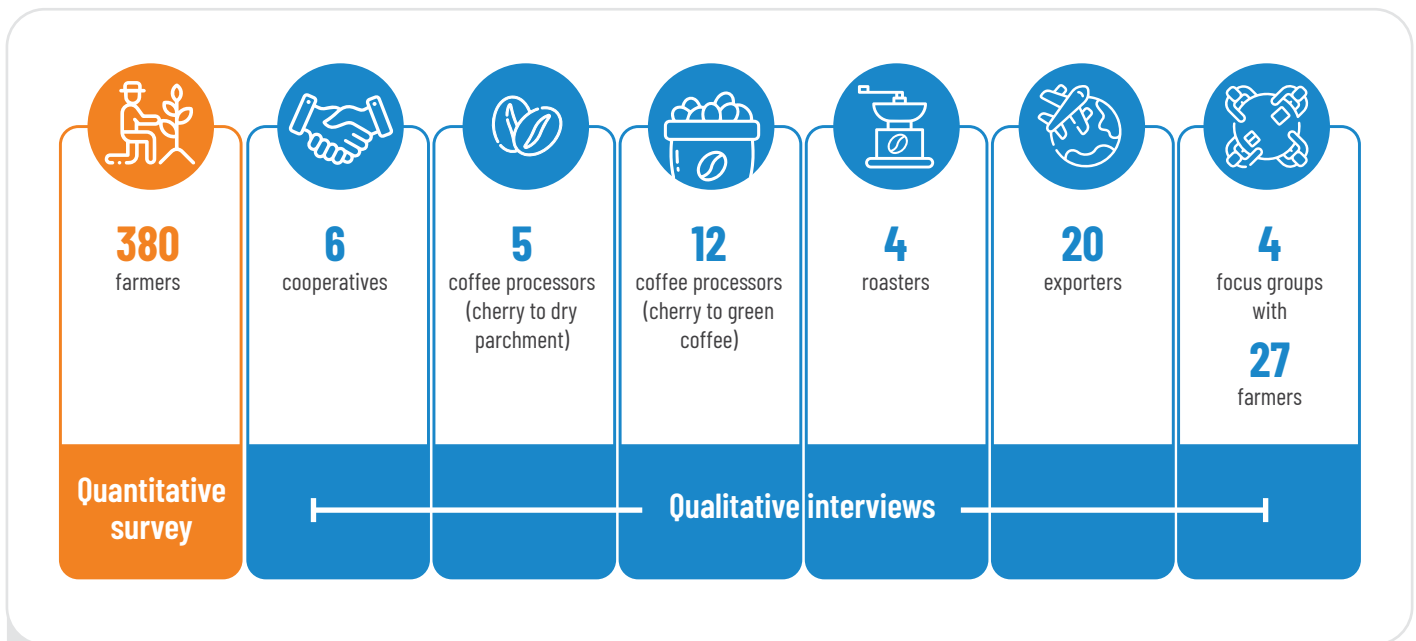


Figure 1 Interviews by type of actor.

About the farmers

In El Salvador, coffee is produced by independent farmers or collective farmers (who work as a group, with group-owned land). We interviewed 380 independent farmers, of which 49% came from the Apaneca-Illamatepec region (represents 51% of the 2019/20 coffee area, and 46% of all farmers in the country), 28% came from El Balsamo-Quezaltepec (26% of the area, 19% of farmers) and 23% came from Chichontepec (5% of the area, 10% of farmers), distributed across 9 departments and 50 municipalities (Figure 2).

³ Our sampling frame were 7,097 farmers, 46 cooperatives, 52 coffee processors (cherry to wet parchment), 24 roasters, and 107 processors or exporters, from data from the Consejo Salvadoreño del Café (Salvadoran Coffee Council or CSC) (CSC, 2020).

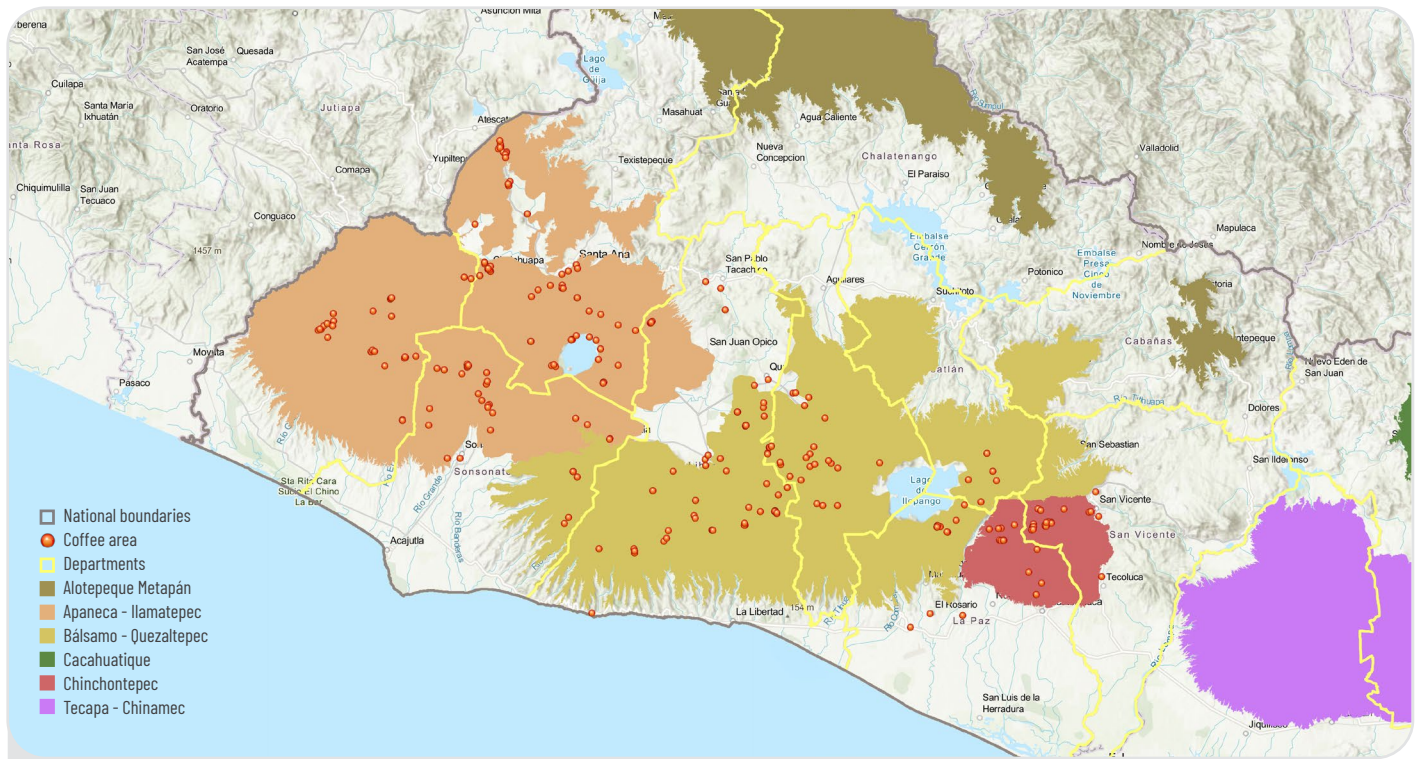


Figure 2 Location of interviewed farmers.

Interviewed farmers were 61 years old, roughly 71% were male, 61% had completed elementary education, 62% were married, and they had 25 years of experience producing coffee (Figure 3). Farmers grew an average of 3.5 m², had 1,630 productive coffee trees/mz, and the most common varieties (or types) grown were Cuscatleco, Catimores, Bourbon, and Pacas. Farmers reported harvesting 7.6 qq⁵ of green coffee/mz and selling almost 90% of it.

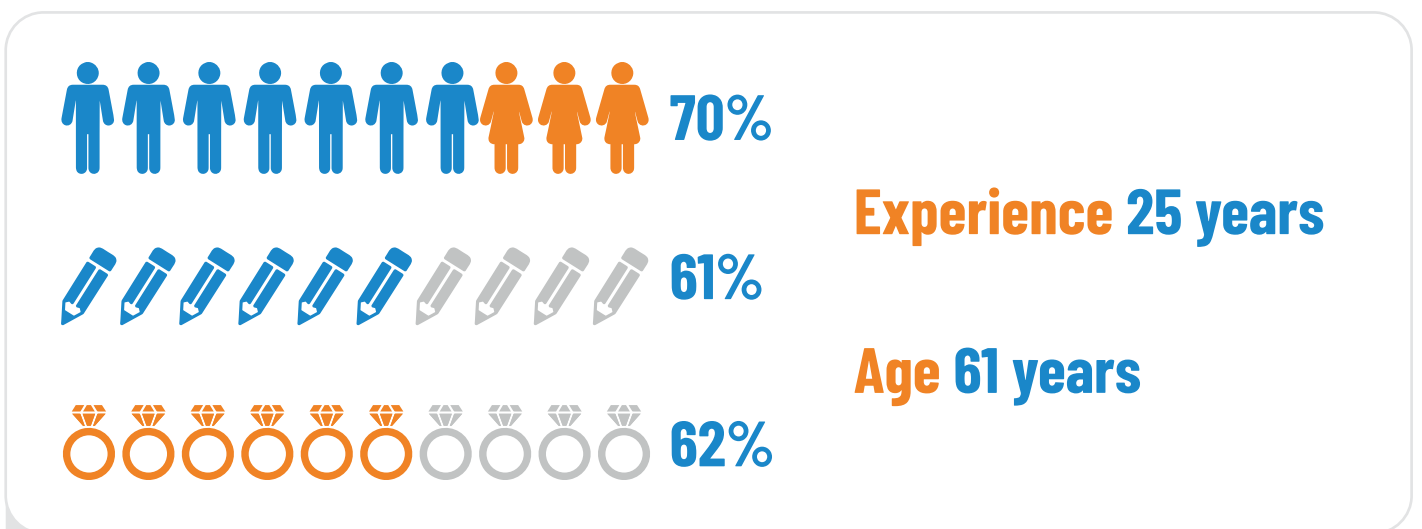


Figure 3 Demographics of interviewed farmers.

4 1 mz (manzana)=7,000 m²

5 1 qq (quintal)= 100 lb. Although the farmers sell their coffee as cherry, they are paid for its **green-coffee equivalent**, at an official conversion rate of 5:1. For this reason, when denoting qq, we are referring to green coffee only.



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About other actors along the value chain

In addition to farmers, we interviewed several actors along the coffee value chain. The interviewed farmer cooperatives were distributed in 4 departments and had an average coffee area of 453 mz (with a range between 48 and 950 mz). Most of the cooperatives' harvested area corresponded to aged and unmanaged plantations of older varieties (up to 87%), which they only harvest (without any management; the larger the cooperative, the larger the unproductive/unmanaged land). Between 13% and 30% of the cooperatives' area has been renovated with modern varieties and is properly managed. Due to the low productivity of the unmanaged land, the cooperatives reported average yields of 5.9 qq/mz, which is a weighted average of renovated (over 10 qq/mz) and unrenovated plantations (as low as 1 qq/mz).

The coffee processors (cherry to dry parchment), distributed in 5 departments, only did wet processing, and either sold dry-parchment coffee or hired the milling services to obtain green coffee and exported it on their own. These organizations were relatively small, processing a median of roughly 1,500 qq in the season, and using only 44% of their processing capacity.

The other type of coffee processors (cherry to green coffee) were located in 6 departments, did diverse types of processing, including honey and natural processing (but 70-90% is washed coffee), and 8 of them were also direct exporters. These actors were highly diverse, processing a median of roughly 13,250 qq in the season, with a range between 550 to 117,300 qq, and used on average 53% of their processing capacity.

The roasters were located in 3 departments, had their own farms, most processed and/or exported coffee, and roasted a median of 342 qq in the season; and they considered themselves small roasters.

The exporters were located in 8 departments, some were cooperatives, most did their own processing, almost half had their own farms (fully vertically integrated) and exported a median of 8,232 qq in the season, with a range between 445 qq and 191,820 qq (including the aforementioned processors-exporters).

About the focus group participants

The 27 farmers participating in the focus groups came from each of the three regions of interest (4 departments) and represented 23 farms (with an average coffee area of 4.5 mz and yields of 8 qq /mz), 9 were women, and 2 were younger than 35 years.

Marketing margins along the value chain

We analyzed the margins along the value chain separately for each relevant activity and value chain node. There are various channels through which coffee can be exported, starting from different production systems. For simplification, we assumed that coffee cherries are sold by producers to processors/exporters in their collection centers, as this is the most common channel in the sector. From here onward, we present values per quintal of green coffee⁶ for the 2020/2021 season and assume a New York arabica coffee price of US\$125 (from now on referred to as stock price).

At the production level

The production costs vary by who produces the coffee and how it is produced. For non-organized farmers, the total cost is roughly US\$87.8. Since farmers do not usually process coffee directly, the cost of this service is discounted from the price they receive. Farmers usually receive between US\$55-70 below the weekly international price, plus US\$5 if they bring the product to the collection center. At a stock price of US\$125, this means that farmers receive US\$66.6 on average, obtaining a net loss of nearly US\$21.2.

In contrast, certified producers or members of cooperatives may incur in similar production costs (higher when certified) but tend to receive higher prices—between US\$5 and \$30 above the price received by non-organized farmers. For the case of cooperatives with collective land, 66% of them conduct wet or full post-harvest processing in their own facilities, capturing a higher share of the added value, obtaining an average selling price of US\$112 to \$230,⁷ depending on quality and certifications.

In short, given the market prices at the time of the analysis, small and medium coffee farmers were obtaining net losses; organized farmers receiving price premiums might have been breaking even (i.e., recovering costs); and cooperatives providing processing services obtained profits, especially if they managed to reduce processing costs and negotiate higher export prices.

Coffee processing: cherry to dry parchment

In the next step of the coffee value chain, wet coffee processors turn cherry coffee into parchment coffee at an average cost of US\$12.6. This includes labor, public utilities (e.g., water and energy) and depreciation (excluding transport costs).

Wet coffee processors sell parchment coffee at stock prices minus US\$18 to US\$30 of green-coffee equivalent, using a conversion factor of 2:1 between parchment and green coffee. They can also pay for the service of dry milling and export the green coffee themselves, usually receiving premium prices. While most wet coffee processors only use their own coffee, some purchase coffee cherries from nearby farmers, paying between US\$65 to \$85. Profits vary depending on the final product sold — when selling parchment coffee, these may reach between US\$7 and \$20 depending on the stock price and processing costs.

Coffee processing: cherry to green coffee

Although the next step (after dry parchment) is dry milling, millers usually conduct the full post-harvest process starting from cherry until exporting the green coffee. For this, they purchase cherry coffee directly from farmers and intermediaries or, to a lesser extent parchment coffee from wet coffee processors. The interviewed actors estimated a full processing cost from cherry to green coffee of around US\$30. They also provide the milling service, charging around US\$15 for washed coffee and US\$17 to \$22 for honey and natural coffee. Green coffee may be exported directly, but there are also major exporters in the country who have specialized in purchasing from different processors. Prices paid by these actors vary according to the product's quality — at the time of the study, specialty coffees were bought at around US\$7 over the stock price; strictly high-grown (SHG) and high-grown coffee (HG) at around US\$5 and US\$1 over the stock price, respectively. Given that most of these actors are also exporters, their profit margins will be presented in the next section.

⁶ This includes all prices, costs, and profits; i.e., when there is a value, the value is per quintal of green coffee.

⁷ The higher coffee price generally corresponds to organic certified coffee production.

Exports

Coffee in El Salvador is mostly exported under FCA INCOTERM terms, where the exporter undertakes all costs and risks until loading the coffee into the truck. Export costs were estimated at around US\$11 with the main costs being labor for packaging and loading, bags, samples, permits and export fees, taxes and the export charge required by the Consejo Salvadoreño del Café (CSC). A small share of coffee is exported FOB from the Acajutla port or through Guatemala, which increases exporting costs by around US\$2.00–\$3.50.








Exporters receive a tiered price according to the coffee quality. Their final average export price is determined according to the average of the prices for each tier: specialty coffee can be sold between US\$400 and \$1,000, with the prices in the highest end obtained for micro batches of extremely high-quality coffee. Despite this, most of the coffee in this category was priced between US\$160 and \$300 at the time of the study, with average price premiums of US\$80 above the stock price. Prices for SHG coffee reached around US\$10 above stock prices and HG coffee reached up to US\$5 above the stock price. Further, actors reported that HG can get negative premiums depending on the season and market conditions. Low-quality coffee (or inferior), which can represent nearly 20% of the total coffee processed, could be exported at around US\$30 below the stock price, while the lowest quality was sold in the domestic market at up to US\$60 below the stock price at the time of the study.

Estimating the exporters' profit margin would require information on the proportion of coffee purchases by quality, which was not obtained due to confidentiality concerns from the informants. Nevertheless, in the following section, we present a hypothetical case for coffee processors-exporters, who provided us with broad information regarding the proportion of coffee qualities after processing.

A non-integrated coffee value chain: the most common case

It is relevant to highlight that reported costs and benefits i) vary substantially by organization, ii) are presented as average values, and iii) are the result of the following assumptions and simplifications about the prices and

types of coffee produced and traded. Using a stock price of US\$125, the local prices for the different types and qualities of coffee traded were estimated as follows:

-  Cherry coffee (farmer) price: US\$66.6 (green coffee equivalent), including transport cost.
-  Parchment coffee (wet processors) price: US\$95–\$107 (green coffee equivalent).
-  Green coffee (GC) specialty: US\$205 (20% of amount traded).
-  GC commercial-certified: US\$160 (15%).
-  GC commercial-SHG: US\$135 (45%).
-  GC low-quality export: US\$95 (10%).
-  GC low-quality domestic: US\$75 (10%).

Using these prices and proportions of coffee qualities, we estimated an indicative processor-exporter price of US\$143.3 (received by them).

With this estimated price, and linking the reported cost by actor, the blue-orange solid line in Figure 4 represents the average cumulative coffee production and processing cost by activity along the value chain.⁸

The farmers' costs considerably increase because of fertilization and harvest costs (steep slope), which together account for 56% of their total cost. Farmers received US\$66.6 per quintal of green coffee equivalent sold. However, their reported production costs were US\$21.2 higher, suggesting they obtained negative profits in the season evaluated.

Once sold, the costs along the value chain incurred by processor-exporters, which includes post-harvest, processing, "*merma*" (more information below), export and administrative costs, adds up to US\$57.6, which together with the cost of purchasing the coffee from farmers (at US\$66.6), the total cost along the value chain was estimated at US\$124.2. Considering the estimated processors-exporters price of US\$143.3, we estimated these actors obtained a profit of US\$19.1 per quintal of green coffee equivalent sold.

⁸ We only summarize the average production costs for independent (individual) farmers, and the processing costs for processors (cherry to green coffee) and exporters, as this is the most common production and trading form in the country.

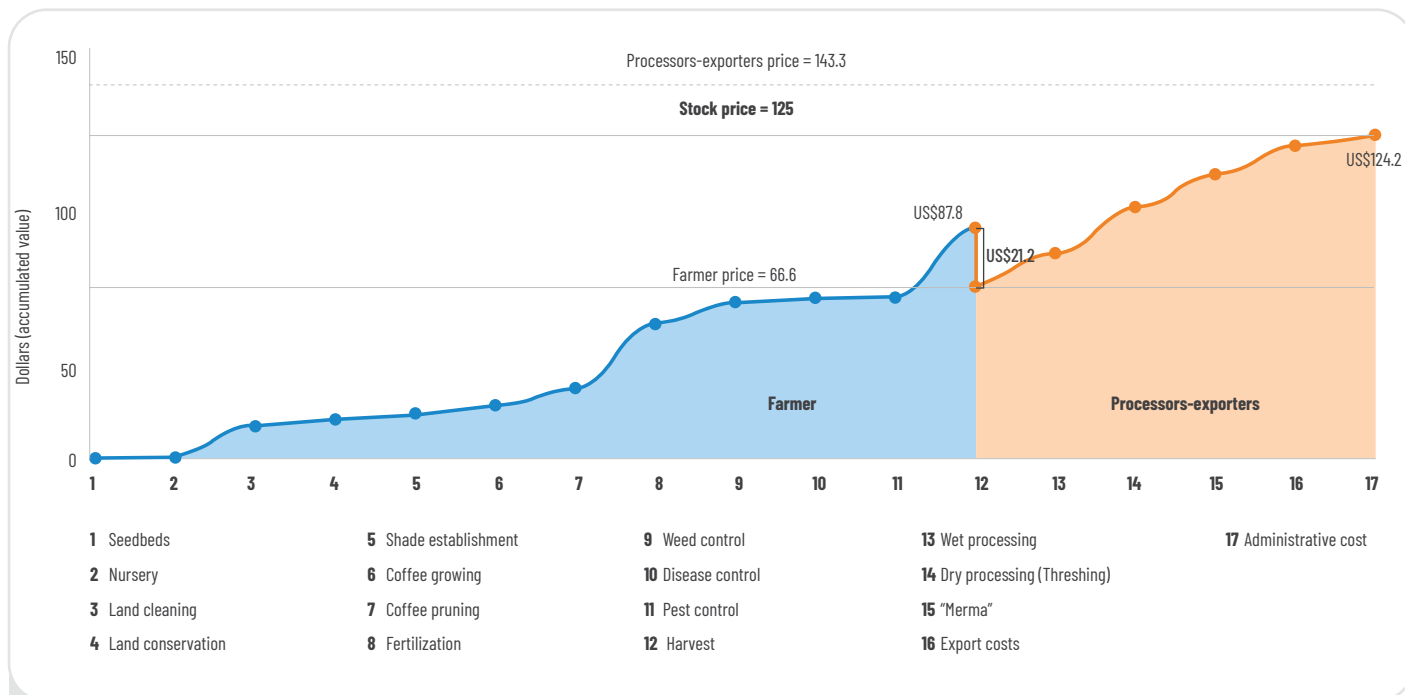


Figure 4 Costs of production and selling prices along the value chain (US\$ dollar per green coffee quintal).

Farmers: the most vulnerable actor along the coffee value chain

With stock prices of US\$125, all actors along the value chain would obtain profits except individual farmers.⁹

The lack of profits for farmers is a result of several factors that are deeply interrelated. All actors pointed out that low yields are a major limitation and the largest threat to the sector's sustainability. Low yields have been widely attributed to the lack of renovation and rehabilitation of old plantations, as well as the lack of fertilization and management practices. While most farmers reported using synthetic fertilizers, expert interviews and focus group discussions revealed that the amounts used are lower than recommended, and fertilization is completely omitted in years when the stock price is very low. In the 2020-2021 harvest, only 34% of the interviewed farmers had renovated coffee, and most of them only had basic farm equipment due to financial

limitations. Lack of adequate pruning and pest and disease management could also be factors contributing to the low yields. While farmers could obtain loans from different sources, tied to the sales of coffee, many were reluctant to do this due to past and current debts. The rust crisis in 2013 combined with a lack of adequate management practices and resources for investing, increasing input and labor costs, and low coffee prices during consecutive years led to underinvestment in the plantations, which in turn has led to lower yields, hence lower incomes, spiraling down in a vicious cycle.

Farmers raised concerns about the 'lack of transparency' in the coffee processing discounts they receive during commercialization. As mentioned above, the most common trading form is selling cherry coffee to coffee processors-exporters, who weight it and pay farmers the stock price minus processing costs and other discounts.

⁹ We did not analyze the profits for organized farmers.

There are two relevant discounts coffee processors use to cope with risk and uncertain coffee quality. The first and most important is called “*merma*”, which is the difference between the conversion factor from cherry to green coffee established by the government (5:1), and the real factor these actors face (around 5.4:1). This difference has two effects: first, processors must purchase an extra 8-10% of cherry coffee to produce one quintal of green coffee; and second, processors pass this cost to producers by paying a lower price in a process that farmers believe is not transparent. The second discount is called “*destare*”, which is an established discount of 1% due to the potential presence of foreign materials (e.g., rocks) in the coffee delivered.

This perceived lack of transparency reported by farmers regarding processing discounts, as well as a lack of oversight by the authorities to determine, control, and communicate accurate conversion factors, have created an environment of mistrust between farmers and processors, which, if unattended, will remain a sensitive issue, especially in times of low prices.

The current profitability in the coffee sector is therefore being threatened by poverty traps faced by farmers, who, for the above-mentioned reasons, obtain low yields. Further, low international prices, along with other factors, have prevented much-needed on-farm investments.

What stock price would allow farmers to cover their production costs?

In the 2020-2021 marketing season, we demonstrated that farmers were obtaining negative profits with a stock price of US\$125, that is, they were not covering their production costs. However, if we keep all other conditions during that season constant, farmers would have been able to cover their production costs with a stock price of US\$148.96 (Figure 5, left), which is the break-even price for farmers.

However, given that by the time when this study was finalized the international coffee prices were soaring, as were input and labor costs, we estimated an alternative scenario to determine the break-even price for farmers under these new market conditions. For this alternative scenario, we assumed that fertilizer costs increased 83% and labor costs increased 20%.¹⁰ Keeping all other variables constant, the stock price for farmers to break even under this new scenario would be US\$185.66 (Figure 5, right), an increase of almost 27% of the baseline stock price used in the report.

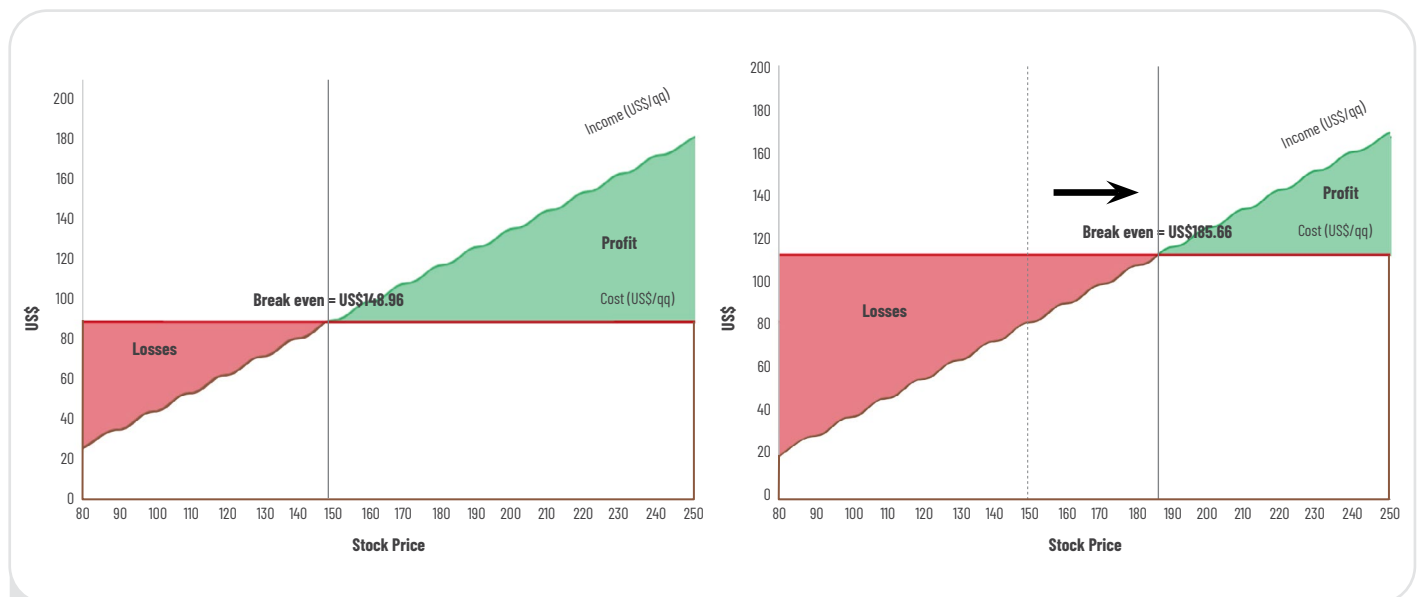


Figure 5 Comparative analysis: break even stock price under baseline (left) and increase in fertilizer and labor costs (right).

¹⁰ The CSC suggested these values because they represent the increase in costs of these two inputs by the beginning of 2022 in El Salvador, due to an increase in fertilizer prices and the minimum wage set by the government in 2022.

Policy recommendations

Using these results, we draw the following recommendations for consideration by policy makers.

First, continue or increase the promotion of climate- and pest-resistant varieties to reduce the coffee sector's vulnerability to these factors. This is important because farmers would obtain higher yields, reducing production costs, and this in turn will reduce the unused processing capacity of processors, hence also reducing processing costs. Also, investments in this area will help ease the current cycle of inefficiencies, between low productivity and high production costs (each one feedback into each other).

Second, to avoid dependency to external assistance (e.g., the current input-subsidy government program), we suggest a countercyclical program that reduces (increases) input support when coffee productivity goes up (goes down). Assistance over time could be tied to performance indicators to encourage competitiveness but should also respond to other household-level socioeconomic indicators, given the extent and relevance of the coffee sector and the vulnerability of the producers.

Third, to achieve greater impact from the current subsidy program (seedlings and inputs), it is required to improve its implementation, which can be achieved with greater oversight along all steps. For example, making sure inputs arrive timely at the farms.

Fourth, there is a need to invest in both technical and (affordable) financial assistance to improve farmers' knowledge of renovation and rehabilitation, and crop management, and to facilitate on-farm investments.

Fifth, it is crucial to improve the communications related to costs (discounts) associated with coffee processing, as farmers mistrusting coffee processors because they perceive some discounts are not granted. However, on this particular issue, policy-makers may need to better study the problem, as it may be necessary to revisit the existing conversion rates for coffee processing, as they may be outdated.

Finally, although coffee price volatility and input prices are exogenous factors threatening the sector, some strategies that can be implemented to mitigate these risks are: promoting a comprehensive crop management (e.g., adequate and timely soil management to avoid erosion and fertilizer loss, increased use of organic fertilizers), implement regional pest and disease monitoring systems, better study the net effect of the increase in the minimum wage on the agricultural labor market¹¹, and promote participation in farmer groups (evidence suggests members of a cooperative obtain higher prices).

Recommendations for future research

Further research can be oriented, but not limited to:

-  A quantitative and specialized study is necessary to determine the effect of climate change and weather events on yields and income, not only for farmers, but for all actors along the value chain. This may also aid in the development of early warning systems and deployment of risk-mitigation strategies to address the effects of extreme weather events.
-  Study the short and long term effects of outmigration, aging population, remittances, and the opportunity cost of labor on all nodes along the value chain, as these factors were reported as limitations or threats to the sustainability of the sector.
-  Under the historically high market prices observed during 2022, we suggest studying investment decisions made by farming households and other actors, to understand how much of the additional income (if any) is being invested in the farm, paying debt, or covering other expenditures. It will also be interesting to understand how prices along the value chain have been redistributed under the current environment, which can help understand the effect of unusually high input and coffee market prices on this.

¹¹ A higher minimum wage might encourage coffee workers to increase their participation in the sector but might also affect prices throughout the value chain.

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