



**Nestlé** Good food, Good life



**COCOA  
LIVING INCOME  
INVENTORY IN  
LATIN AMERICA**

**Solidaridad**



**Acknowledgements**

**Text:**

Andrea Olivar and William Pauffley.

**Researchers:**

Francisco Bustamante, Carolina Bueno, Vera Espindola Rafael and Miguel Zamora

**Design:**

Dinamita

This report was commissioned by Nestlé to Solidaridad in Latin America.

Solidaridad 2023.

# Contents

**Section I: Introduction**

**3**

**Section II: Methodology**

**4**

- General Country Characterisation
- Net Income Model
- Resource Library
- Consideration and limitations

**Section III: Details per country**

**6**

Closing the Living Income Gap: Analysis for three producing countries that supply Nestlé

**Ecuador**

**8**

- General Country Characterisation
- Living Income Benchmark
- Possibility to reach Living Income
- Production costs gross margin
- Opportunities to close the Living Income gap

**Brazil**

**13**

- General Country Characterisation
- Living Income Benchmark
- Possibility to reach living income
- Production costs gross margin
- Opportunities to close the Living Income gap

**Mexico**

**19**

- General Country Characterisation
- Living Income Benchmark
- Possibility to reach Living Income
- Production costs gross margin
- Opportunities to close the Living Income gap

**Section IV: Final Recommendations**

**22**

**Section V: Reference Library**

**23**

**Section VI: Annexes**

**27**

# INTRODUCTION



## Nestlé Cocoa Plan and Living Income

In 2021, Nestlé announced its ambition to advance a regenerative food system at scale. This focuses on transforming farming practices at the heart of the food system, while enabling a just and equitable transition. Working with producers to reach a living income is one of the components that contribute to this ambition.

The Nestlé Cocoa Plan is one of the avenues used by Nestlé to influence producers' income through the improvement of yields, access to capital to invest in farms and diversify their incomes.

Across the cocoa sector, many cocoa producers and their families live below recognised living income benchmarks. Nestlé acknowledges this challenge, and whilst there are a number of cocoa family living income analyses for Western Africa, there is a current gap in understanding cocoa family economics in Latin America. The inventory aims to answer a pivotal question:

**To what extent do cocoa producers in Latin America achieve a living income?**

Definition of Living Income:

**“ The net annual income required for a household in a particular place to afford a decent standard of living for all members of that household. ”**

Source: Living Income Community of Practice (2022).

To answer this question, the inventory consolidates existing information and data regarding cocoa farm economics in three key sourcing regions: Ecuador, Brazil and Mexico. The inventory has been built from sources available in the public domain, data from Nestlé's Agri-services and other publications about farmers such as living income benchmarks.

The inventory has organised the analysis according to distinct production archetypes represented in Ecuador, Brazil and Mexico. The production archetypes are differentiated through two key characteristics: cocoa yield productivity and farmland size. The study analyses the living income gap of producers for each country according to these archetypes.

The results of this inventory suggest that an important part of smallholder producers face a living income gap. In the three countries, medium and large-scale producers with viable cocoa yield currently earn a living income.

This inventory is the first step for Nestlé - and the sector at large - to improve understanding of the living income gap of cocoa producers in Latin America. This report organises analysis within each archetype in order to improve producers' net income.

# METHODOLOGY

The methodology of this Living Income Inventory was developed based on the following 4 principles:

1. Understanding that the agricultural business must be a key driver of household income and that farms have multiple agricultural and non-agricultural activities that constitute their annual income.
2. Comprehension of the diversity of producers' contexts per country and within each country. This enabled us to identify producers' profiles or archetypes to analyse their net income and potential gaps in comparison with existing living income benchmarks.
3. Generating reference points (indicators) for minimum viable productivity, margins per hectare and overall net income that describe what is within reach of specific cocoa producing households.
4. Carrying out the best interpretation of existing information in order to generate recommendations that can be realistically implemented within the Nestlé Cocoa Plan.

We also defined specific research questions and inventory criteria to guide the country specific analysis, allowing information to be compared. The inventory guiding questions were:

- What are the net income drivers for cocoa producers in Ecuador, Brazil and Mexico (i.e. yield, production costs, size of farms)?
- How can cocoa producers be segmented into archetypes that enable the development of recommendations to close the income gap?
- Which benchmarks and references are available to understand rural household living income in each country?
- What could be a viable and suitable potential income that could serve as a target for cocoa farmers in each country?
- Other than agricultural improvement of cocoa production, what alternatives can Nestlé offer to close the net income versus living income gap of their suppliers?

The assignment was delivered through two phases that allow for improvement of the methodology within the research timeframe. Firstly, the analysis was undertaken in Ecuador, as there was more information available from public sources and Nestlé agri-services data. Subsequently, the methodology was adjusted before its implementation in Brazil and Mexico.

Furthermore, the methodology of this Living Income Inventory was developed around three specific deliverables:



### General Country Characterisation

The income of cocoa households in Latin America is strongly affected by the regional context and the enabling environment that allows producers to thrive. It also depends on specific agricultural conditions. For instance, a country like Brazil has several production models. In cocoa, we found a clear differentiation per producer region (Para and Bahia).

The Inventory takes into consideration the population characterisation according to farm area and productivity level. It also takes into account the key aspects of a representative cocoa producer household and develops archetypes covering the main prevailing conditions. The Inventory avoided specific cases for high market differentiation as this is not the key market segment of the Nestlé Cocoa Plan. The country characterisation was built based on publicly available reports and data for each country.



### Net Income Model

A model to carry out net income calculation per country was developed and linked to the 4-6 producers archetypes identified in each country. The key components of the model were:

- Simplified equation for the net income of families, complemented step by step, to achieve a full understanding of income sources from cocoa production and beyond.
- Production cost structure sensitised by fixed and variable costs for different levels of production. We gave special attention to family labour as a saving in production costs or source of income. Break even point analysis integrating average sale price information.
- Comparison of net income results with living income benchmarks available. The secondary living income references used for this analysis were either studies specifically available for cocoa at national level or general rural living income benchmarks available per country or region.

It is worth mentioning that net income calculations for Ecuador were based on data provided by Nestlé Agri-services, whilst calculations for Brazil and Mexico were based on Government data. The year of reference for net income calculations was 2021.



### Resource Library

Researchers selected a total of 24 public references that created the foundations for the analysis of the Living Income Inventory in the 3 countries. This library allows for greater level of detail regarding country characterisation, the net income model and the comparison with the available living income benchmarks.



### Consideration and limitations

There are some important points to consider whilst reading this report:

- The researchers carried out the best interpretation of existing information in order to determine the living income gap of cocoa producers.
- The Net Income modeling was completed with data from different years or crop cycles. For instance, a living income benchmark for a particular country could have been calculated based on data from year X, whereas cost of production figures for the same country may have been calculated using data from year Y. However, it should be noted that benchmark studies usually remain accurate enough to be relevant for 5 years after it was undertaken and specific calculations are often updated. Inflation rates were applied when calculations were not updated.
- To increase overall accuracy, the research took into account other sources of income beyond cocoa production as well as opportunity costs, savings or income achieved via family labour.
- In the case of Brazil and Mexico, we have no references regarding purchases of certified cocoa or differentials paid by Nestlé in the country. Price differentiation could be a potential strategy to close the living income gap. Similarly in Brazil, the analysis had limitations to consider the potential impact of diversified crops in net income.

Section III

# DETAILS PER COUNTRY



## Closing the Living Income Gap: Analysis for three producing countries that supply Nestlé

In this section, we compare net annual income from cocoa farming with living income benchmarks for cocoa producers in three countries. According to the Latin America Baseline Cocoa Barometer (2022), an estimated 75% of the global cocoa production comes from West Africa and less than 20% from the American continent. The three countries for our analysis represent 67% of dry cocoa bean in Latin America and an estimated total 321,296 cocoa producer families.

The analysis identified Brazil to be the only country to have a living income benchmark specifically focused on a cocoa-growing region. In the case of Mexico and Ecuador, we have used alternative living income benchmarks for rural areas which are deemed appropriate to determine a cocoa family living income benchmark. National and international poverty lines and minimum wages have also been used as economic reference proxies for comparison in all three countries.

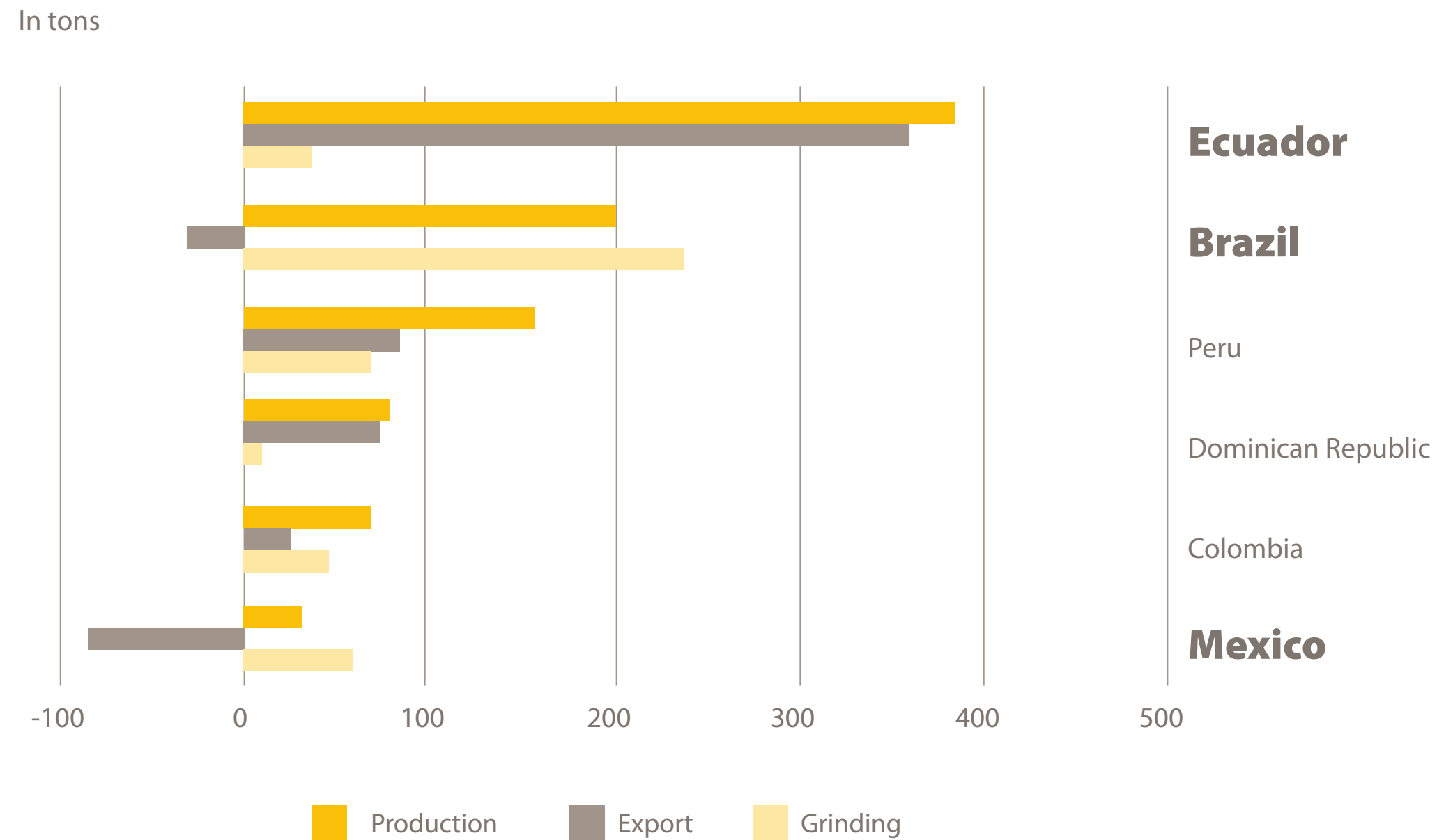


Figure 1: Latin American Production, Exporting and Grinding of Cocoa 2020/21. (1)

# KEY POINTS FROM THE COMPARISON:

## Mexico

**99%**  
OF PRODUCERS

Mexico has the largest proportion of cocoa producer families that do not achieve a living income, an estimated 99% of producers. These families tend to be cocoa gatherers rather than growers.

## Ecuador

**45%**  
OF PRODUCERS

In absolute numbers, Ecuador has the greatest number of cocoa producer families that do not achieve a living income, an estimated 103,950 cocoa producer families, as it is the largest of the three selected origins. At the same time, Ecuador brings the more realistic scenario to influence producers' net income in the medium term in order to reach the desired living income benchmark.

## Brazil

**53%**  
OF PRODUCERS

Brazil has the highest net income of the three countries, yet there remains an important 47% of producers that do not achieve a living income. These producers are concentrated in Bahia. The profile of these producers have greater similarities to cocoa growers in Mexico than to their counterparts in Para.

Figure 2: Comparison of average cocoa income and estimated Living Income levels per country.

# Ecuador



**189,000**<sup>2</sup>  
Cocoa farmers

**4**

Hectares/members (average)



**330,782**<sup>4</sup>  
Ton cocoa dry bean/year

**US\$ 8,208**<sup>5</sup>

Living income benchmark cocoa/household-year



**626,962**<sup>3</sup>  
Hectares planted in cocoa

**3.32 has**

Hectares/household (average)



**0.53**

Ton cocoa/ha-year  
Country average -2021

**1.2**

Ton cocoa/ha-year  
Minimum viable productivity



## General Country Characterisation

Ecuador is the third largest producer of cacao in the world, the largest producer in the Americas and the leader in the production of fine cacao globally. 87% of Ecuador's production is exported. Ecuador's main markets for cacao are Indonesia followed by the United States, the Netherlands and Malaysia. Ecuador's fine cacao production represents 62% of the global production. The largest cocoa traders in the world are present in Ecuador including Barry Callebaut, Cargill and Ofi. These companies have recently expanded the reach of their sustainability initiatives in this country. Local consumption of cocoa is relatively low (0.393 kg-year) compared to its neighbouring countries.

Cocoa farming areas have been slowly increasing in recent years (around 2% in the last decade). 20% of cocoa producing areas are under agroforestry systems and 80% are monocrop systems. Los Rios province and Guayas province represent around 50% of the national production in volume. Guayas has the highest yields per hectare in the country. The bulk part of the growth in volumes that the country has experienced in the last decade comes from an increase in yields. The majority of farms are under 4 hectares. Prices received by producers depend on the fluctuating price for standard cocoa at the commodity exchange, although the Central Bank of Ecuador indicates average value per ton of exported cocoa.

The cocoa sector in Ecuador has been transformed in the last decade as a result of a Government plan to boost productivity through replanting and rehabilitation of existing cocoa trees. The national plan also aimed at improving quality, traceability and post-harvest management. In 2018, a new plan to double cocoa production was launched and it is currently under implementation. The government is also fostering the production of deforestation-free cocoa through its PROAMAZONIA initiative. This initiative also aims to build a regional platform that incentivises farmer association and strategic alliances with market partners.



## Living Income Benchmark

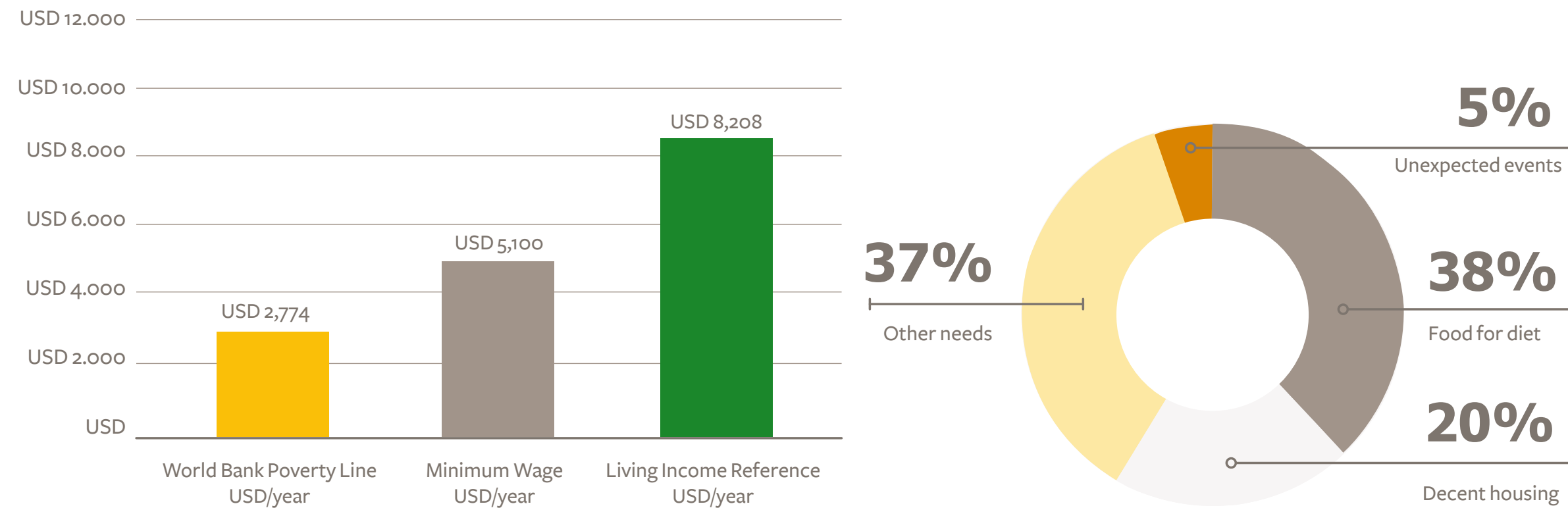


Figure 3: Living Income References for Ecuador.

Ecuador's living income benchmark can be estimated at US\$ 8,208. This benchmark is not specific for cocoa in Ecuador but to the main cocoa producing areas, los Rios and Guayanas. The benchmark was first calculated in 2016 and last updated in 2021.

It should be mentioned that this living income benchmark is equivalent to 1.6 times the minimum wage. Ecuador has one of the highest minimum wages in Latin America. In the cocoa production areas in Guayas, and Los Rios, a worker can earn approximately US\$ 15 per day.

## Possibility to reach Living Income

In recognition of the broad diversity of cocoa production in Ecuador, the inventory has classified Ecuadorian cocoa producers into 6 production archetypes to facilitate analysis of farmers that reach a living income.

The results of the net income per archetype in Ecuador and the comparison of these results with the selected living income benchmark can be observed in Figure 4.

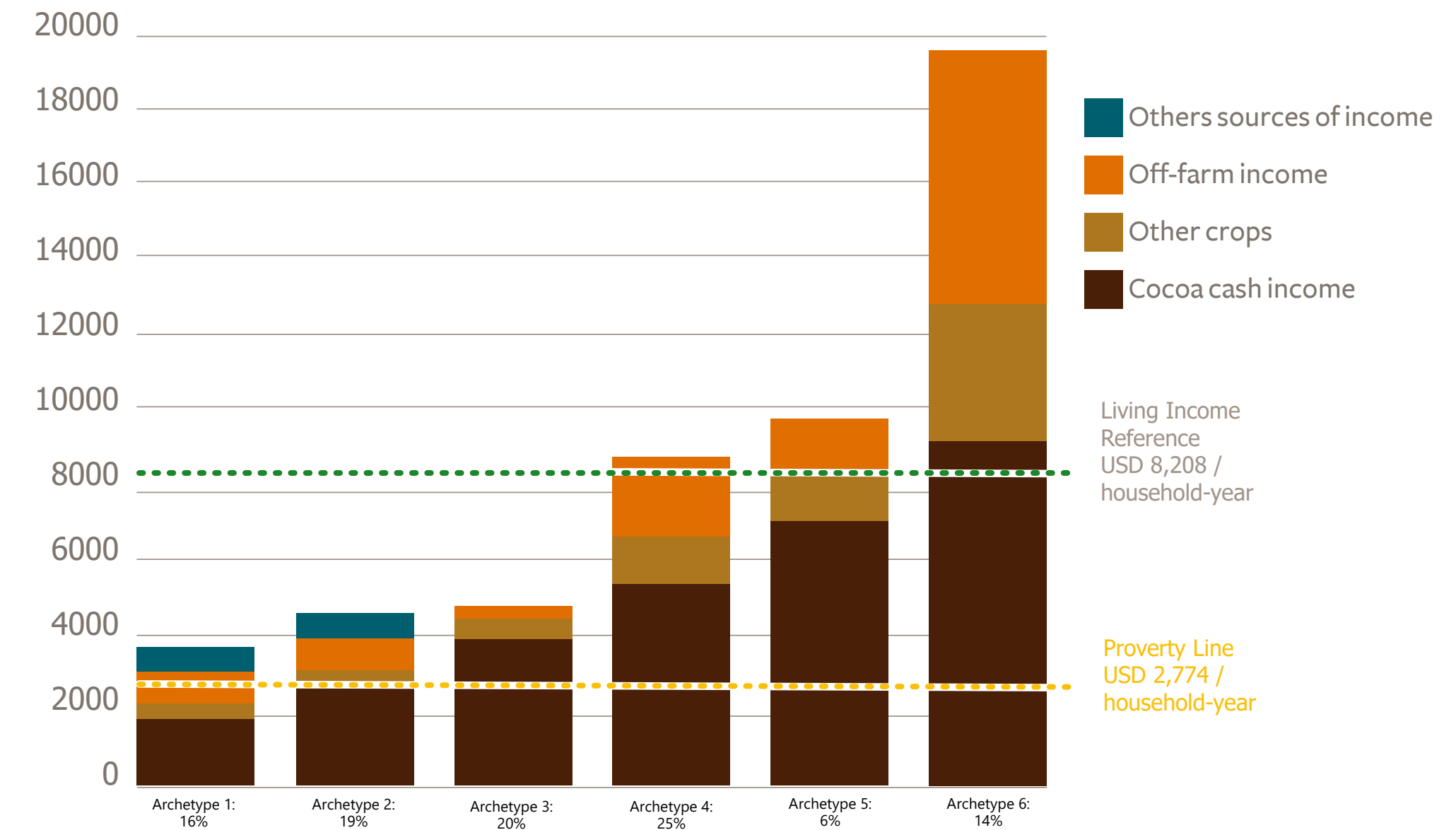


Figure 4: Ecuador Production Archetypes.

It was found that for the year of analysis (2021), 45% of cocoa producers in Ecuador were able to secure or exceed a living income (above US\$ 8,208- year). This corresponds to archetypes 4, 5 and 6 that have farms above 4 hectares and 1.1 tons median productivity per hectare. For these producers the sale of cocoa represents 60% or more of their annual income. The balance comes from other crops and other types of work outside the farm. As the net income analysis for Ecuador was calculated using data collected by Nestlé's Agri-services from the Cocoa Plan, we also found that 93% of these producers are diversifying cocoa with other crops and 80% of them implement good agricultural practices.

Income vulnerability is evident in archetypes 1, 2 and 3, which represent 55% of producers nationally. Key variables that impact net income, such as size of the farm and productivity per hectare, have a different behaviour in each of these archetypes.

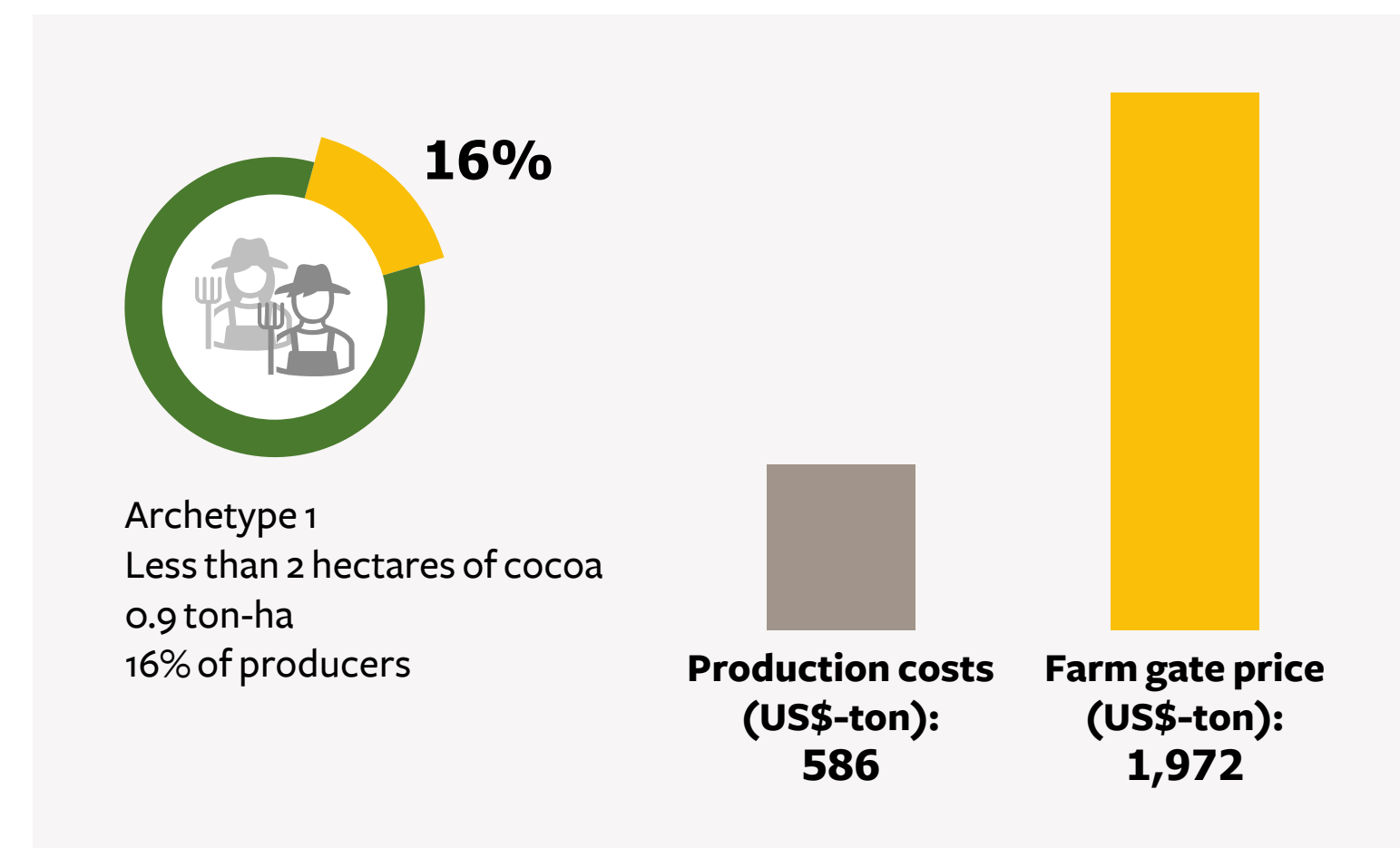
## Production costs gross margin

Annual reference costs for cocoa according to the Journal of Business and Entrepreneurial Studies are USD\$ 1,024-ton. The most representative costs in the structure correspond to labour (50%), followed by harvest and post-harvest (30%), fertilisers (15%) and pesticides (5%).

There are two important elements to highlight regarding costs in Ecuador. Firstly, the data from producers working within the Nestlé Cocoa Plan, indicate that these farms have lower production costs compared to national levels. This was consistently found throughout the sample. Secondly, when costs of renovation were included, these were not divided along the renovation period. Therefore, renovation costs seem disproportionately high in the first year of implementation. Renovation activities are a risky investment for cocoa producing families as it requires high upfront capital, it lowers productivity at the outset and increases levels of uncertainty.

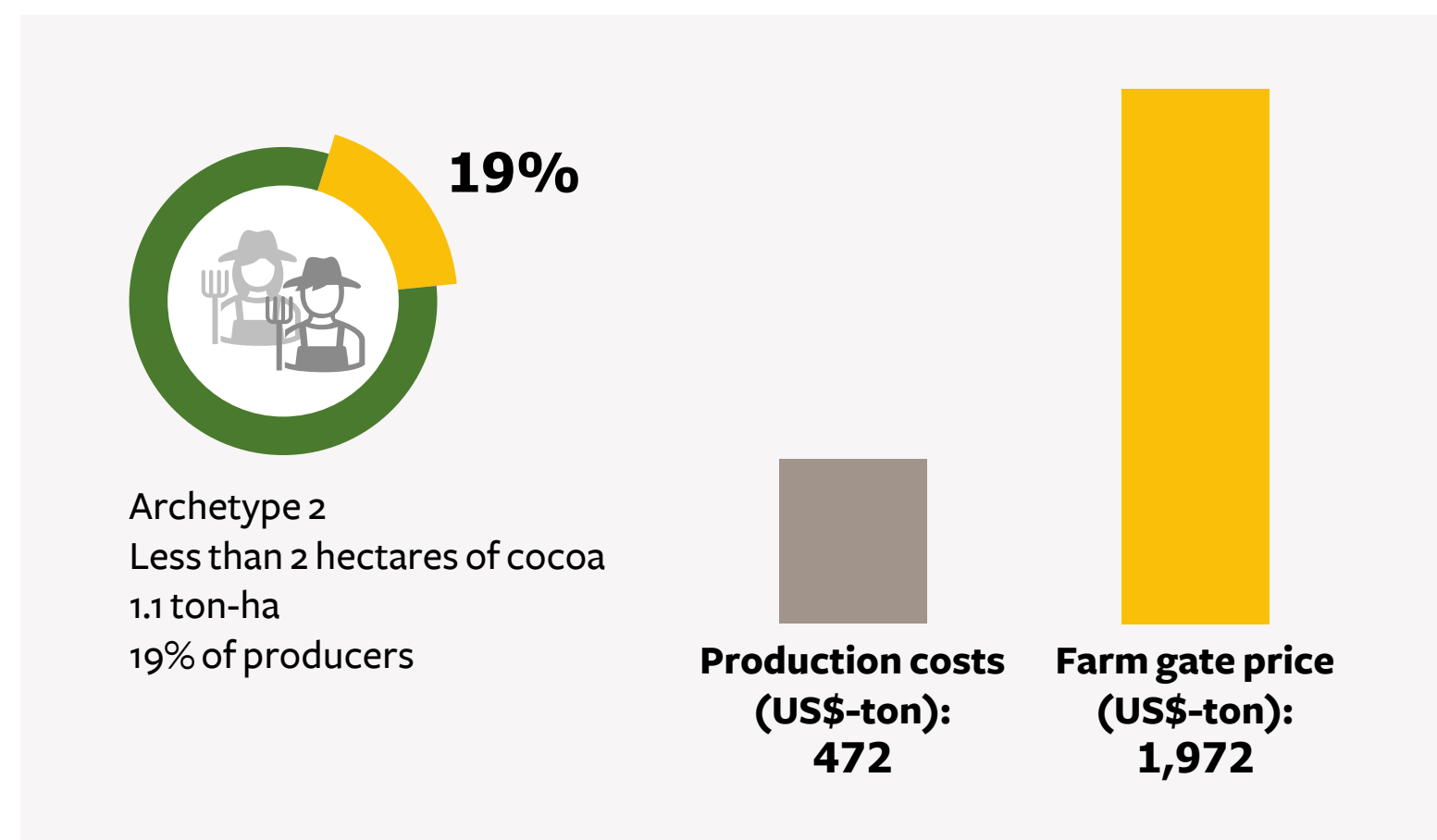
## Opportunities to close the Living Income gap

There are opportunities for closing the Living Income gap in archetypes 1, 2 and 3. Each archetype requires a different strategy to influence net income positively. It is worth mentioning that increases in productivity have an important amplification effect in producers' income. The national average productivity is 0.53 tons-hectare, which is half the minimum needed (1.2 tons) to have a viable economic performance. There are some producers that might reach the minimum viable level of productivity but the size of their farms are so small that cocoa production cannot be their only source of income.



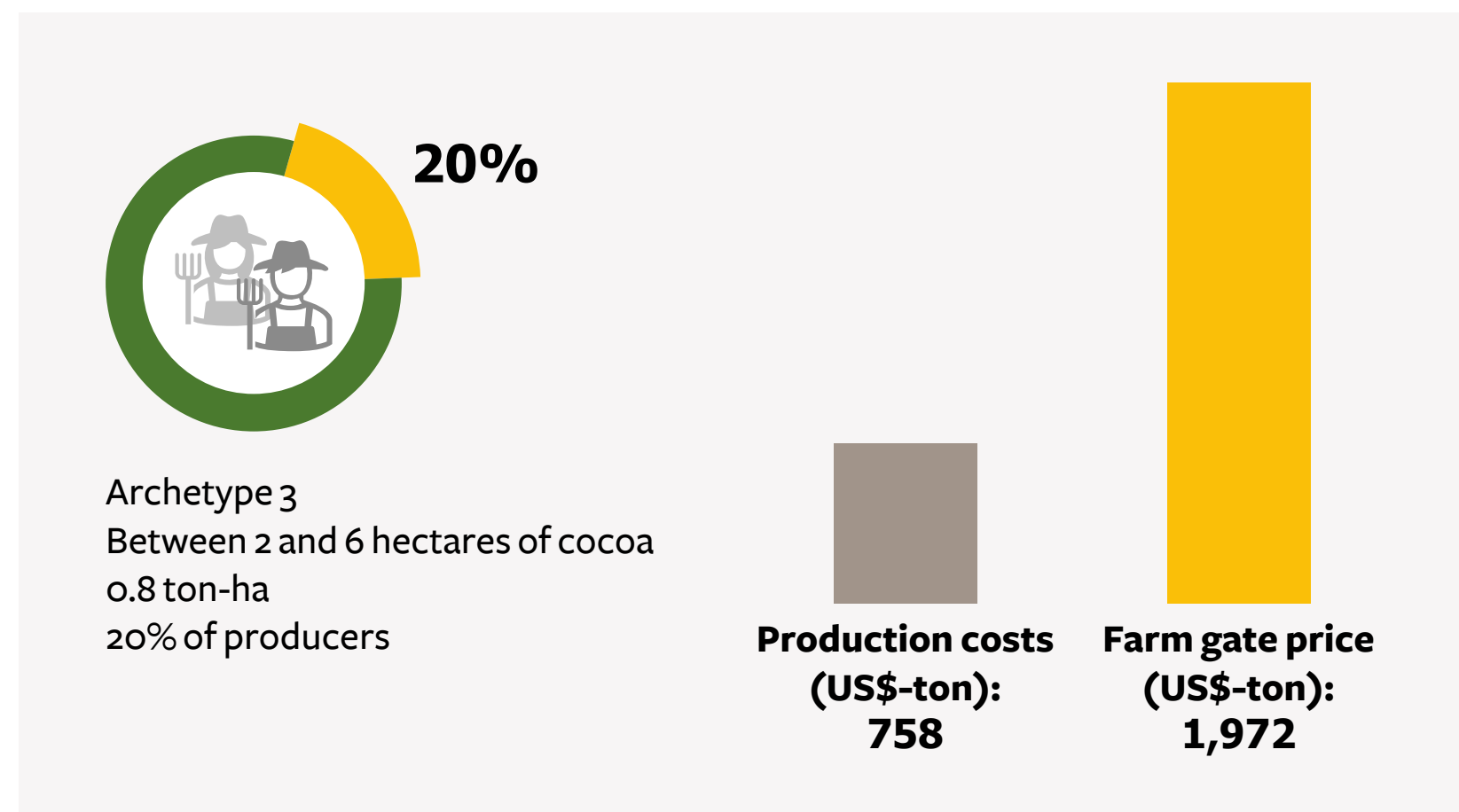
Actions to increase income	Details for implementation	Impact on net income
Productivity Increase (33%)	Improvement in productivity to be achieved between 3-4 years. Target for productivity is 1.2 ton-hectare/year Rehabilitation of trees and implementation of good agricultural practices.	US\$ 618
Food production at farm	Production of basic diet crops and animal husbandry for consumption. This strategy is dependent on family labour contributions.	US\$ 500
Price differential linked to certifications	Certification programmes (RA) US\$ 130 ton (estimated)	US\$ 233
This set of actions could represent 16% of the living income benchmark (reduction in gap).		US\$ 1,351

This archetype earned 35% of the estimated living income and it is close to the poverty line. Farmers in this archetype receive a US\$ 600 annual subsidy from the Ecuadorian Government. Although their productivity per hectare is not particularly low (0.9 tons/hectare), the size of farms are less than 2 hectares (1.5 hectares approximately), which restricts their ability to be economically viable. Farm size is the most significant variable that impacts producers' net income. This archetype is unlikely to reach a living income. However, an increase in productivity of 33%, combined with food production at farm level and a price differential of 11% per ton, could increase farmers' annual income by US\$ 1,351. This will enable growers to reach 51% of the living income reference and increase their annual net income by 47%. Under these conditions, producers in this segment would have a similar performance of archetype 2, shown in Figure 4.



Actions to increase income	Details for implementation	Impact on net income
Productivity Increase (20%)	Improvement in productivity to be achieved between 3-4 years. Target for productivity is 1.3 ton-hectare/year via implementation of good practices.	US\$ 495
Food production at farm	Production of basic diet crops and animal husbandry for consumption. This strategy is dependent on family labour contributions.	US\$ 500
Price differential linked to certifications	Certification programmes (RA) US\$ 130-ton (estimated)	US\$ 257
This increase could represent 15% of the living income benchmark (reduction in gap).		US\$ 1,252

This archetype currently earns 54% of the Living Income estimated amount. Producers in this group have similar characteristics to archetype 1, having less than 2 hectares and receiving an income subsidy from the Government. Nevertheless, they reach higher productivity levels (1.1 tons per hectare) and have lower costs of production (US\$ 114 less per ton). Actions to reduce the living income gap, such as a 20% increase in productivity, will enable producers to improve their net income by 28% (US\$ 5,682), reach 69% of the living income benchmark and surpass the minimum living wage in Ecuador. Food production for family consumption and a price differential of 13%, would also be required to deliver this impact. Although these producers would not fulfill the living income reference in the next 3 to 4 years, they would operate in conditions closer to economic viability than to poverty.



20% of producers in Ecuador are under archetype 3. They have an average of 4 hectares of planted cocoa with an annual yield per hectare of 0.8 tons. Although farmers under this group earned 57% of the living income reference, this is the archetype that has the greatest opportunity for growth and for becoming economically viable.

Cocoa contributes 83% of the income of farmers in archetype 3. This archetype could have an additional US\$ 2,935 per year (63% increase of their net income for 2021), if multiple strategies are implemented. Firstly, producers could increase productivity by 32%, to reach 1.06 tons per hectare through cocoa rehabilitation, if this transition is supported with working capital that reduces producers' risks. As farms in this segment are relevant suppliers to Nestlé, a credit facility (inputs) for small investments in rehabilitation could be considered by the Cocoa Plan. The actions regarding production of food for local consumption and price differentials are similar to those described for archetypes 1 and 2, enabling savings related to food consumption at the household. Moreover, the size of the farms would enable them to produce other crops or deliver other farm activities for commercial purposes. This is a critical approach to promote diversification and sustainability of cocoa growing units.

These combined actions will result in a total average income of US\$ 7,591, which is far above the national minimum wage, equivalent to US\$ 5,100, and will allow producers to reach on average 92% of the living income reference. As the range of this archetype is between 2 and 6 hectares, those producers with more than 4.5 hectares would have the potential to achieve the living income benchmark. This represents 20% of the number of producers in the archetype. The remaining number of producers would be able to build their financial resilience over time to make investments and ultimately reach the living income reference.

### Family Labour

The opportunity cost of labour of one member of the household was calculated at US\$ 5,100- year. As working opportunities in rural areas are more limited than in urban areas, a more realistic opportunity cost would be US\$ 3,600. In the context in which smallholder producers operate, family labour could be a variable as important as productivity. Family labour figures were not included in the net income model in Ecuador as the model was based on actual data collected by Nestlé's Agri-services.

Actions to increase income	Details for implementation	Impact on net income
Productivity Increase (32%)	Improvement in productivity to be achieved between 3-4 years. Target for productivity is 1.06 ton-hectare/year via rehabilitation and implementation of good practices, including pest and disease management.	US\$ 1,282
Food production at farm	Production of basic diet crops and animal husbandry for consumption. This strategy is dependent on family labour contributions.	US\$ 500
Price differential linked to certifications	Certification programmes (RA) US\$ 130-ton (estimated)	US\$ 553
Other sources of income	Farm diversification for commercial purposes	US\$ 600
This increase could represent 36% of the living income benchmark (reduction in gap)		US\$ 2,935

# Brazil



## General Country Characterisation

Brazil is the seventh largest cocoa producer in the world. Like in other Latin American countries, Brazil is becoming increasingly recognised for fine aromatized cocoa flavours but is unique in the sense that it orientates production to a growing domestic market. Brazil is the 6th highest consumer of cocoa in the world and the highest in the continent. Per capita consumption is equivalent to 0.89 kg/year. To satisfy the demand of its middle-class population, it must import cocoa which results in higher domestic market prices. The country has a differentiated value chain of chocolate products and imports cocoa beans for domestic processing and exports semi-finished products such as cocoa butter, fat, oil, powder and paste. The value chain is operated by subsidiaries of multinational companies such as Mondelez, Nestlé, Mars, and Hershey as well as many small and medium-sized local companies.

Brazilian cocoa farms are very diverse, however, small to medium farms predominate production (IBGE, 2022). Over 90% of cocoa production is located in two states and two tropical biomes: Para (Amazon) and Bahia (Atlantic Forest). Para has attracted more significant investments and is characterised by high-yielding cocoa varieties and the use of agrochemicals resulting in yields of roughly 900 kg/ha, while production in Bahia is still 300 kg/ha. However, Bahia has more than four times the number of cocoa producer families, including ten times the number of smallholder families compared to Para (IGBE 2017). Current production is stable compared to a decade ago when national production decreased by almost 50% due to drought in 2015/2016 and two decades ago due to an outbreak of Witch’s Broom disease in the 1990s and 2000s. Farm-gate prices are considered generally higher than in West Africa. Production costs are particularly high and in general, labour shortages are reported. 93% of cocoa production is grown under shaded systems, contributing to the regeneration and preservation of native forest ecosystems.

The Federal Government provides producers in Brazil access to significant rural pension and social security benefits. Having said that, social challenges in the sector remain and courts are investigating the responsibility of multinationals concerning cases of child and slave

labour in the cocoa sector. This has promoted the initiative Vision Cacao 2030, which aims to support local governments to tackle labour violations and increase the productivity and profits of cocoa producers. Supported by Cocoa Action Brazil, Brazil has also become a member of the Amazon Origin Cocoa Initiative, which is funded by major cocoa and chocolate companies. However, despite support programmes, it can be recognised that smallholders have very limited access to capital, extension services, and inputs.

## Living Income Benchmark

Of the three countries, Brazil has the most recent and arguably most relevant living income benchmark analysis. The study has been organised according to Brazil's most important cocoa-sourcing regions, determining a Living Income Benchmark of \$7,330 and \$5,975 for Para and Bahia, respectively.

It should be mentioned that in both cases the minimum wage is very low compared to the living income. More than two persons per household must work at minimum wage income to come close to achieving living income.

### Bahia

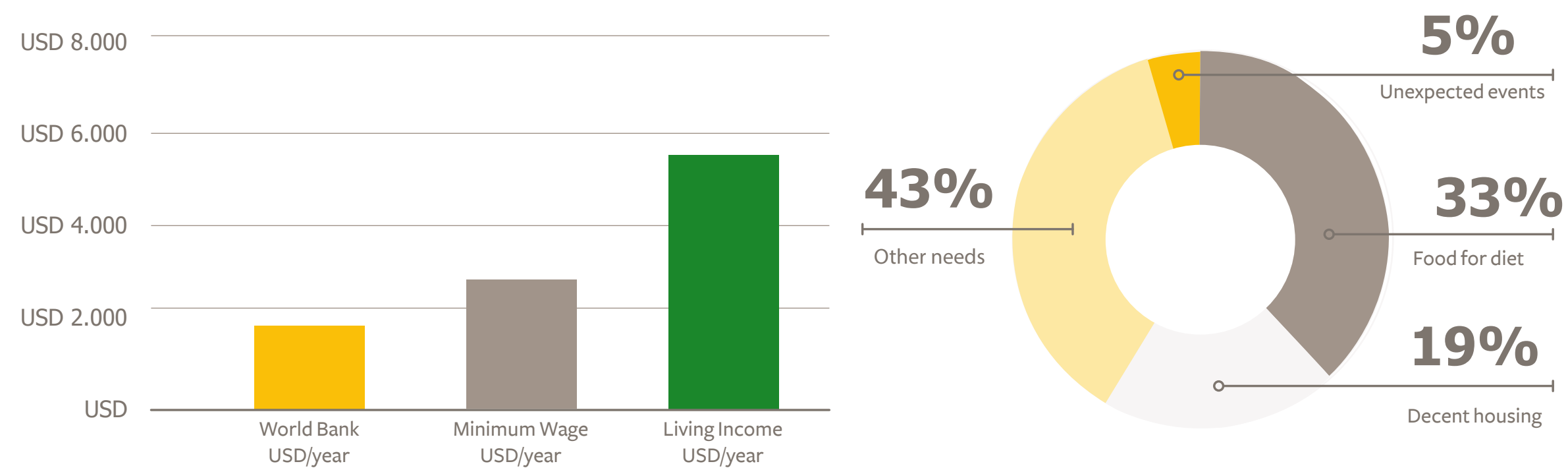


Figure 5: Living Income References for Brazil in Bahia.

### Para

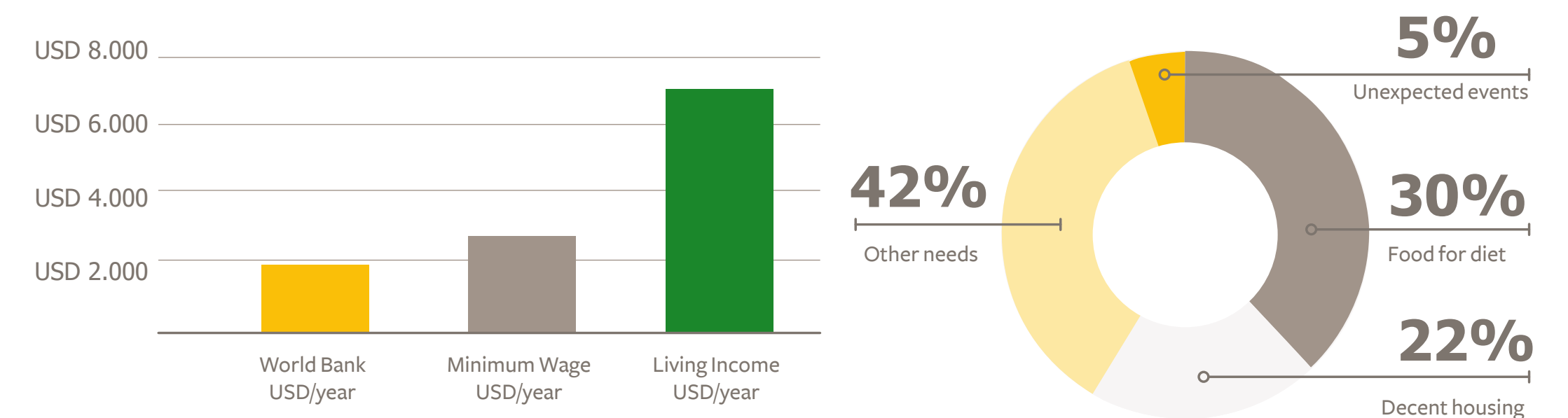


Figure 6: Living Income References for Brazil in Para.

## Possibility to reach Living Income

In recognition of the broad diversity of cocoa production and the geographic size of Brazil, the study has classified Brazilian cocoa producers into 5 production archetypes according to farmland size in each of Bahia and Para to facilitate analysis of producers that reach a living income. Unlike the other countries analysed, the research did not find a significant difference in productivity between larger and smaller farms.

The living income gap for these archetypes can be observed in Figure 7.

### Bahia (Archetypes 2-5: > 10 has)

In Bahia, 38% of producers reach a living income. This refers to an estimated 25,919 producers, which represent 81% of the total cocoa farmland (354,400 hectares) and are responsible for 77% of total production (65,564 tons of dry bean/year). Producers report average yields of around 0.2 ton-ha per year. Cocoa income corresponds to 35% of net income. The other sources of income account for 18% and the contribution of income from pensions and social benefits from the state of Brazil stands out, which in archetype 2 corresponds to 48% of the net family income. Without the latter, the number of producers with living income would decrease to 21%.

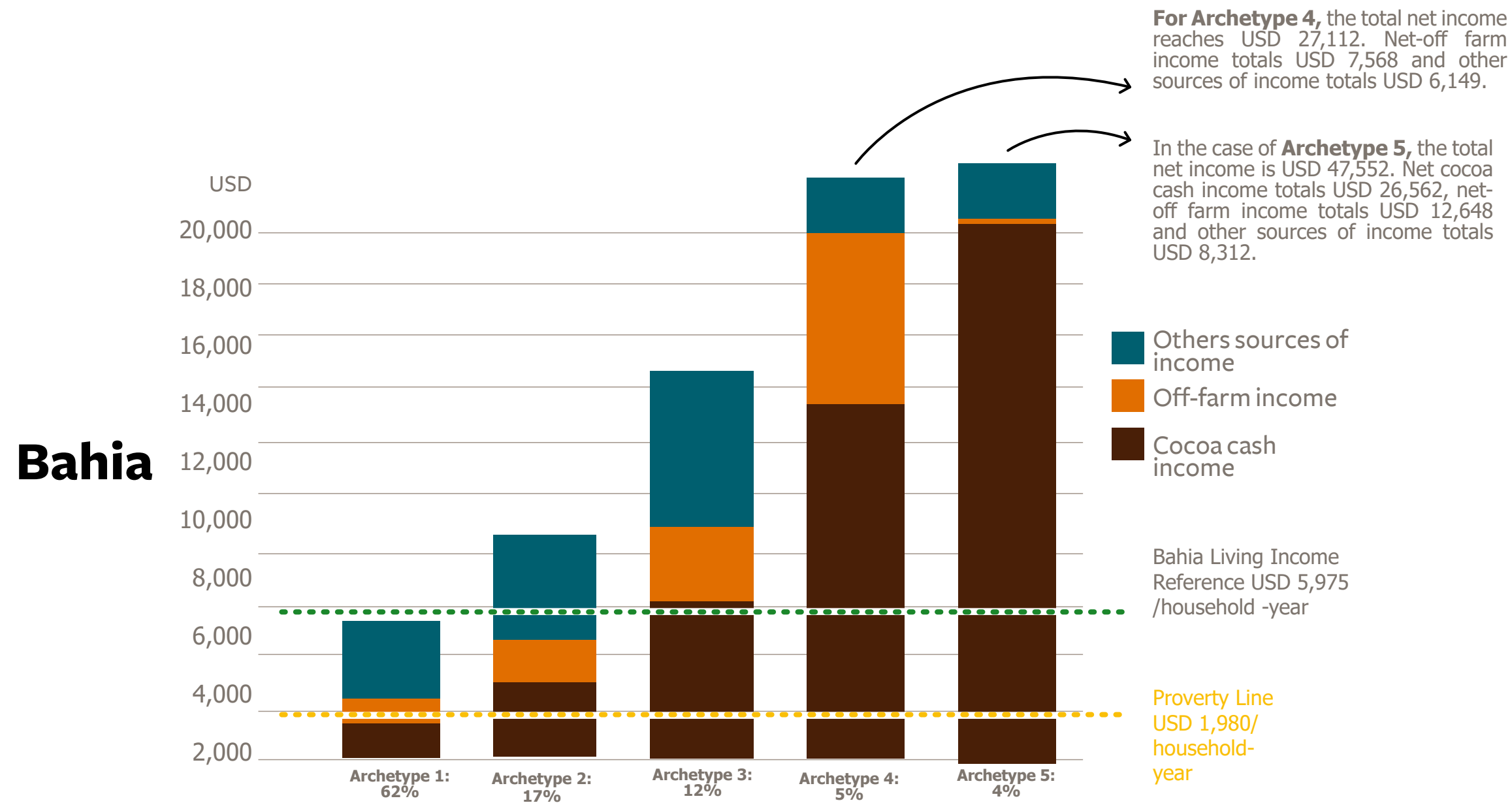


Figure 7: Bahia Production Archetypes

### Para (Archetypes 7-10: > 10 has)

76% of the total number of cocoa families attain a living income in Para. This refers to an estimated 13,859 producers which represent 90% of the total cocoa farmland (101,017 hectares) and are responsible for 90% of total production (60,661 tons of dry bean/year). Producers in these archetypes report higher average productivity of around 0.6 ton-ha per year. Cocoa income corresponds to 47% of net income, 13% higher than Bahia. Other sources of income are 14% and pensions and social benefits from the Brazilian state, which in archetype 7 correspond to 38% of net household income. Without the latter, the number of producers with living income would decrease to 65%.

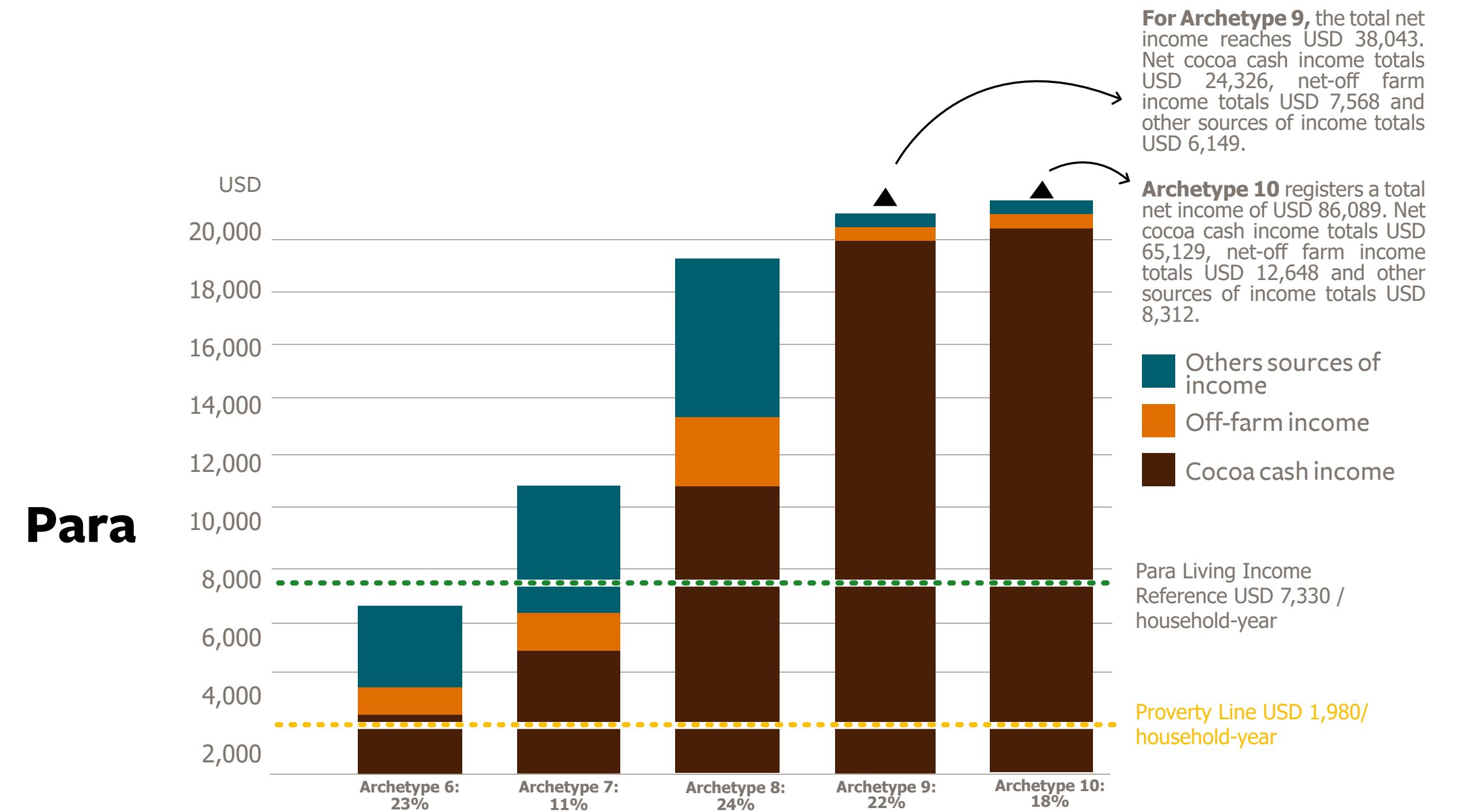


Figure 8: Para Production Archetypes



### **Social security benefits in Brazil**

The Federal Government “Social Security Programme” (Law No. 8,212; Article 194 of the Federal Constitution) entitles anyone aged 55 (women) or 60 (men) who worked at least 15 years in agricultural production with a rural pension, irrespective of their formality. In a 2017 study in Bahia, this initiative contributed the most significant income for cocoa-producing families with up to 50 hectares .

The initiative “Auxilio Brazil” provides a small amount of US\$ 75, which more than doubled from the previous US\$ 30 per month under the “Bolsa Familia”, for families in poverty and extreme poverty across the country affected by the COVID-19 pandemic. Families in extreme poverty are those with a monthly per capita family income of up to BRL 105.00 (US\$ 20 approx), and those in poverty with a monthly family income per capita between BRL 105.01 and BRL 210 (US\$ 20-40).

Income vulnerability is strongest in archetype 1 in Bahia, which represents 62% of producers in the state and 46% of producers nationally. The number of producers in a state of vulnerability in Para represents only 3% of producers nationally. Key variables that explain the difference in production models, investment and agrarian history.

### **Production costs gross margin**

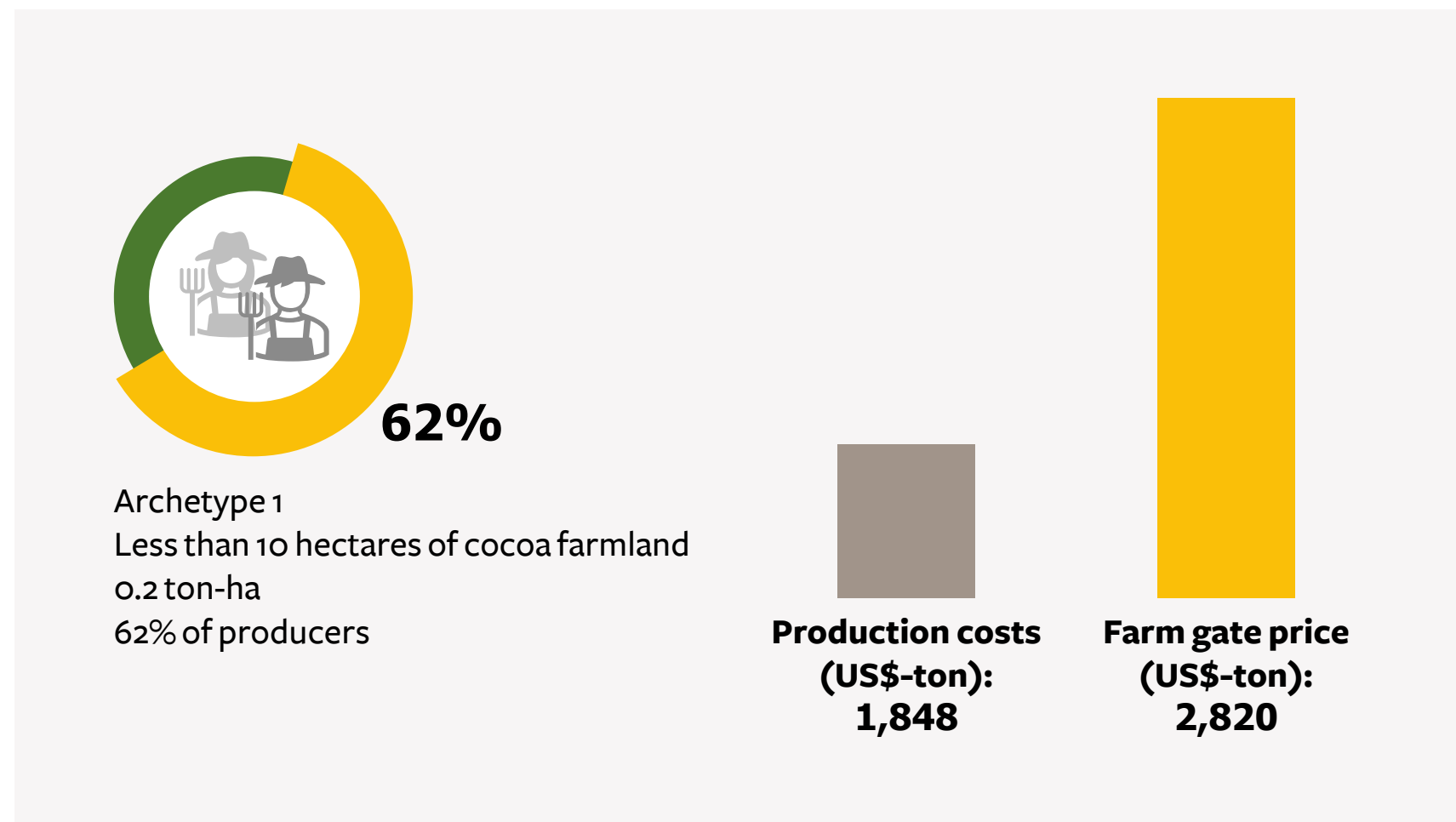
Annual reference costs have been calculated according to Conab sources . The costs have been determined at US\$ 1,846-ton for Bahia and US\$ 2,024-ton for Para, respectively. These costs derive from a cost structure that includes direct costs, administration costs, financial expenses, depreciation, fixed costs and factor income. Direct costs correspond to 83% of the value of costs in Bahia and 91% in Para. The most representative costs in the cost structure correspond to labour, Bahia (52%) and Para (52%), followed by fertiliser, Bahia (23%) and Para (12%).



# Opportunities to close the Living Income gap

## Bahia (Archetype 1: 0-10 hectares)

There are opportunities to close the average living income gap for this archetype group. It has been identified that an increase in productivity could serve as an effective strategy to increase net income. This archetype is characterised by yields of 0.2 ton-ha, more than four times what is considered a sustainable viable productivity level (0.8 ton-ha). There are some producers that might reach the minimum viable level of productivity but the size of their farms are so small that cocoa production cannot be the only source of income. We estimate that this corresponds to producers with less than 4 hectares which account for 35% of the total producers in the region.

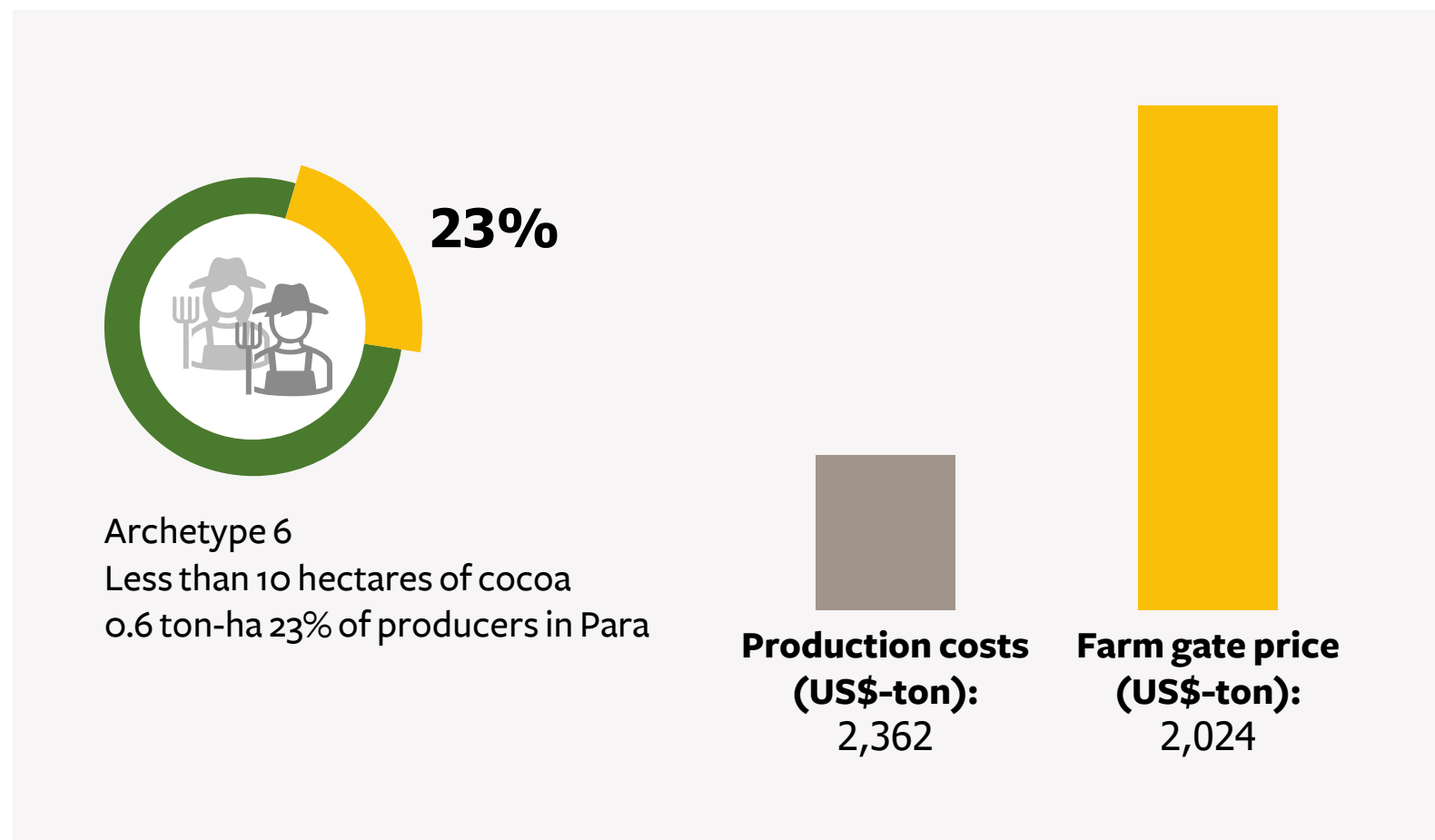


Actions to increase income	Details for implementation	Impact on net income
Improve productivity (100% increase)	Estimated 3-4 years of productivity improvement. Cultural practices and rehabilitation to reach 0.48 ton-ha.	US\$ 1,400
Production costs	5% cost savings.	US\$ 133
This income can represent 28% of the LI, a potential gap reduction.		US\$ 1,533

This archetype earned 92% of the estimated living income amount. In this archetype, producers receive an average of US\$ 2,439-year from the Federal Government’s rural pension scheme and US\$ 638-year from the Bolsa Family initiative (Auxilio Brasil), accounting for 58% of producer’s family income. Net-off farm income totals an average of US\$ 1.045. The US\$ 1,400 of net cocoa income represents 25% of the total household income in archetype 1. Farmers in this archetype have very low productivity and net income could be increased with yields of 0.48 ton-ha via adequate disease management and control. To achieve the minimum viable productivity of 0.8 ton-ha would require applying new technologies and renovation of existing farmland with new varieties which require high capital investment, a calculated risk for farmers as this results in low productivity for the first four years. We estimate that 28% of producers can be targeted to close the gap to achieve a living income under a strategy of increased productivity, as many as 19,326 families. These producers have 4 to 10 hectares of cocoa farmland.

**Para (Archetype 6: 0-10 hectares)**

Similarly, an increase in productivity serves as an important target to improve producer families' income for this archetype group. In Para this archetype group registers an average of 0.6 ton-ha per year and is 0.7 ton-ha per year below what is considered a viable sustainable productivity level (1.3 ton-ha). 9% percent of the farms have less than 4 hectares of cocoa and have a low chance of achieving a living income with cocoa production improvements.



Actions to increase income	Details for implementation	Impact on net income
Productivity (70% productivity)	Cultural practices and rehabilitation. Achieve 1.0 ton-ha.	US\$ 1,515
Production costs	Savings of 5% of production costs.	US\$ 355
This income can represent 30% of the LI, potential to decrease the gap.		US\$ 1,870

This archetype earned 85% of the estimated living Income gap. The income gap is two times higher compared to Bahia. In this archetype, producers also receive an average of US\$ 2,439-year from the Federal Government's rural pension scheme and US\$ 638-year from the Bolsa Family initiative Auxilio Brasil), accounting for 49% of total income. Net-off farm income totals an average of USD 1.045. The US\$ 2,133 net cocoa income represents 34% of household income in archetype 6. Because of the pattern of production systems in this state, the increase is possible by improving the timing and planning of work. The work should focus on farms between 4-8 hectares, with a very well-structured productivity plan.

This plan could be based on improving pest and disease management and the rehabilitation of cocoa farms accompanied with plans for farmer cash flow planning and investments.

# Mexico



**39,149**<sup>21</sup>  
Cocoa farmers

**4**<sup>22</sup>  
Household members (average)



**28,335**<sup>24</sup>  
Ton cocoa dry bean/year

**\$10,608**<sup>25</sup>  
Living income benchmark cocoa/household-year



**58,321**<sup>23</sup>  
Hectares planted in cocoa

**1.49**  
Hectares/household (average)



**0.48**  
Ton cocoa/ha-year  
Country average -2021

**0.8**  
Ton cocoa/ha-year  
Minimum viable productivity



## General Country Characterisation

Cocoa production in Mexico has been decreasing for the last 15 years. The country produced 28,335 tons of dry cocoa in 2021. Mexico is one of the few producing countries in the world that exports chocolate and chocolate products. It has consistently exported 200,000 tons of chocolate and chocolate products in the last decade. Two thirds of this production is manufactured by multinational companies, such as Nestlé, Barry Callebaut and Hersheys, and one third by local companies. Mexico has a per capita cocoa consumption higher than Ecuador (0.57 tons per year) but not as high as Brazil .

The estimated area for cocoa production in Mexico is 58,321 hectares, concentrated in the southeast. Approximately 95% of volumes are produced in two states, Tabasco and Chiapas. Mexico has 39,149 cocoa growers, 61% of whom are concentrated in Tabasco. Cocoa plantations in Mexico are on average 1.5 hectares and production is grown under agroforestry systems.

Amongst the main problems that cocoa cultivation presents are: poor agronomic and crop management, phytosanitary problems (there has been a slight recovery after the impact of moniliasis), the average age of the plantations, elderly producers, high production costs, acid soils, and lack of technical assistance. It stands out that in 2021 the planted area was 11% below than observed in 2020.

Government programmes to support the sector mainly focus on technical issues, such as agricultural practices to increase productivity and bean quality. These also promote training on cocoa processing, through grain fermentation, with the aim to increase price received by producers. In addition, the national Sembrando Vida programme encourages reforestation and has produced 33 million plants to be distributed in areas suitable for cocoa production. Nevertheless, cocoa production is shrinking and producers seem to be gatherers.

## Living Income Benchmark

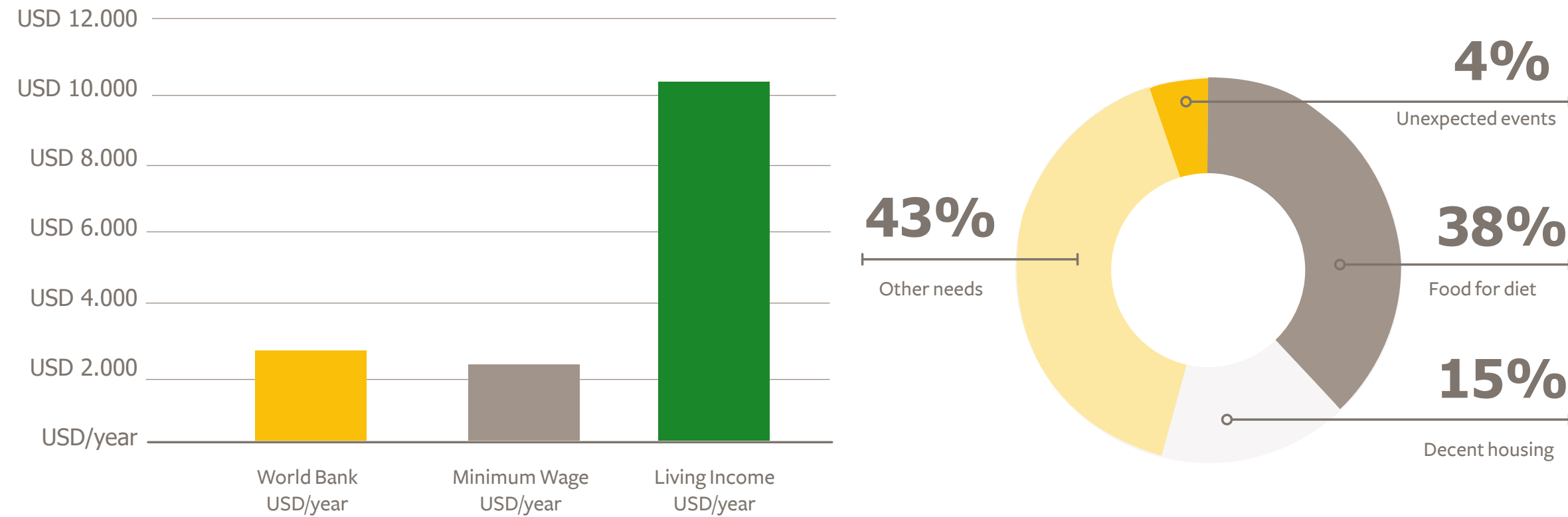


Figure 9: Living Income References for Mexico.

Mexico's living income benchmark can be estimated at US\$ 10,608. This benchmark is not specific for cocoa but it brings a comprehensive analysis that is relevant for Mexican cocoa producing regions. The benchmark was commissioned by CEEY and published in 2021.

Cocoa producing regions in Mexico face important challenges, with 58% of the population in the farming municipalities living in poverty. The national minimum wage for 2021 is US\$ 2,550 per year, 24% of the living income reference.

## Possibility to reach Living Income

As done for Ecuador, we divided cocoa producers in Mexico into 6 archetypes in order to identify which producers were already reaching the living income reference and which producers were most likely to receive a living income if a set of solutions were implemented. The results of the net income per archetype in Mexico and the comparison of these results with the selected living income benchmark can be observed in Figure 9.

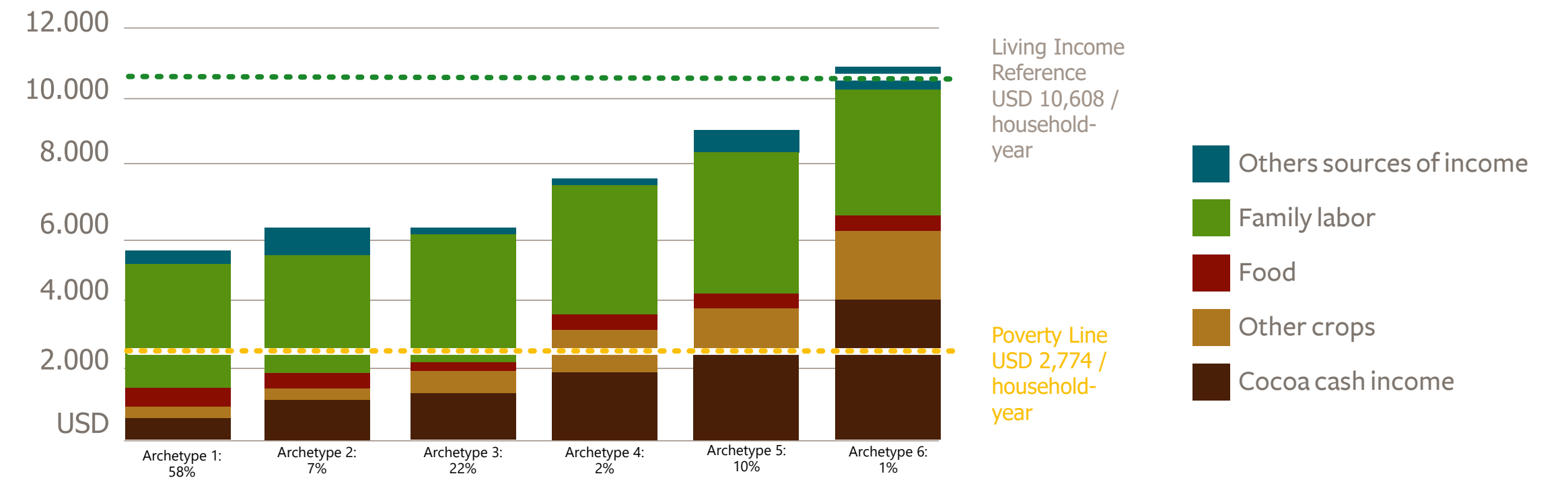


Figure 10: Mexican Production Archetypes

99% of cocoa growers in Mexico did not earn a Living Income in the period of the analysis. As indicated above, cocoa growers face a number of challenges, such as the hit of the Moniliasis disease in 2005, that have discouraged cocoa production at national level. Producers are not willing to invest in their plantations and make cocoa their main source of income as this poses high risks. Therefore, growers are no longer growers but cocoa gatherers.

1% of producers in the entire country with medium size farms (3.7 hectares), minimum viable productivity levels (0.8 tons-hectare) and with secondary sources of income from other crops (diversification) and labour, are surpassing the living income reference.

## Production costs gross margin

Annual reference costs for cocoa in Mexico according to FIRA are US\$ 456-ton. The national average is comparatively low to the other countries included in this Inventory,

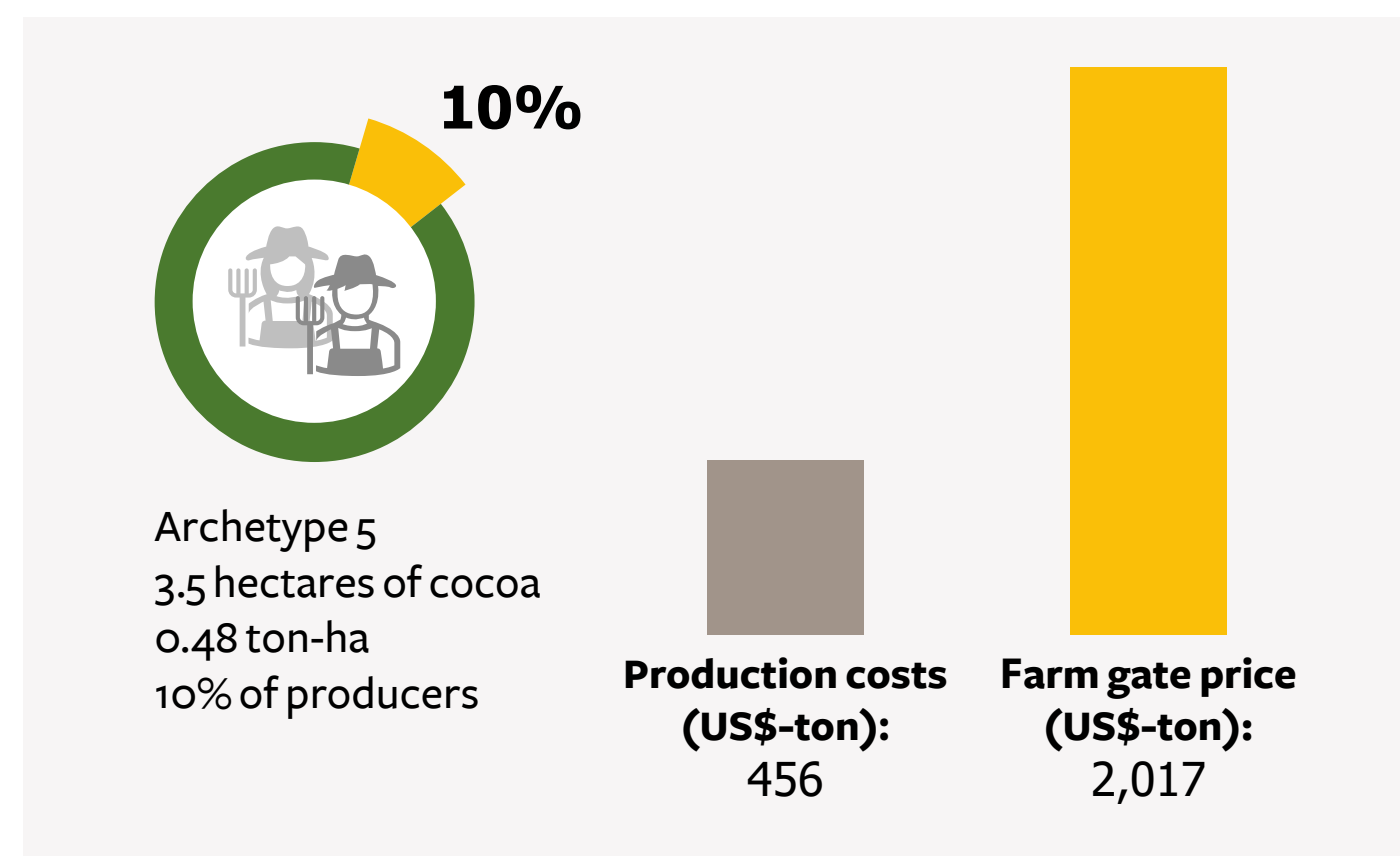
Brazil and Ecuador. The low production costs are also an indication of the limited investments carried out in farms in the last 20 years (low-input, low output model). The main sources of costs are family labour and basic farm maintenance activities. Therefore, a strategy to address the living income gap in cocoa in Mexico should not focus on reducing costs of production

## Opportunities to close the Living Income gap

The size of the farms in Mexico combined with the low productivity levels, are structural issues that limit the economic viability of cocoa nationally. It is unlikely that a single actor is able to address these challenges alone. Transforming the Mexican cocoa sector will require coordinated responses from public and private actors as well as a national plan that is well implemented and monitored.

Archetypes 1 and 2 in Mexico are a good representation of these challenges. Archetype 2, which groups 7% of producers nationally, already operates close to the minimum viable productivity level (0.8 ton-hectare) but size of farms are so small (<1 hectare) that producers can only earn 62% of the living income benchmark. Household members will need to be employed outside the farm to reach the desired level.

Archetype 1 encompasses the majority of farmers and cocoa growing areas in Mexico, 58% and 41% respectively. Producers under this group have less than 1 hectare (0.83 hectares on average) but differently than in archetype 2, productivity is 0.47 tons per hectare. As a result, they only achieve half of the living income reference. If these producers reach the minimum viable productivity levels (0.8 ton-hectare/year), the gap would only be reduced by 4% per year (US\$ 415 in total). Therefore, our recommendation for the sector in Mexico is to initially focus on those producers that have 2 hectares or more.



There are medium term opportunities for impacting 10% of total producers in the country (archetype 5) that could deliver both a positive net income and surpass the living income reference. As for the analysis of Ecuador and Brazil, productivity is the principal variable that could positively affect re-distribution of the identified archetypes. Improving productivity would depend on maintaining momentum of rehabilitating and renovating activities, as well as, effective pest control.

Overall, cocoa growers in Mexico would need to increase their productivity levels from 0.48 tons per hectare on average to 0.8 tons per hectare in order to move towards the desired results that can be seen in archetype 6.

Actions to increase income	Details for implementation	Impact on net income
Productivity Increase (75%)	Improvement in productivity to be achieved in 3 years. Target for productivity is 0.84 ton-hectare/year. Rehabilitation of trees and implementation of good agricultural practices. Access to credit and micro credit for households supported by financial literacy.	US\$ 1,945
This increase could represent 18% of the living income benchmark (reduction in gap).		US\$ 1,945

Producers in archetype 5 would be able to reach a total income US\$ 11,932 through a 75% increase in productivity and surpass the living income benchmark. Rehabilitation would need to be done progressively. In addition to technical assistance, farms will require a financing plan that enables producers to make investments in critical months of the year. These investments will need to be managed at household level and families will require support with financial literacy.

It is important to note that the net income calculation model in Mexico already includes US\$ 3,986 as income from household labour, inside or outside the farm. This represents 38% of the living income reference. This was calculated based on existing research on family labour contributions from 2013, including adjustment for inflation. The same source was used to include savings for food production (US\$ 415) and secondary crop income.

# FINAL RECOMMEN- DATIONS

The foregoing Inventory and analysis of the net income performance of different producers archetypes in the three countries of focus (Ecuador, Brazil and Mexico) contributes to the growing body of evidence documenting the living income performance of growers in the cocoa sector. It shares light about the performance of producers who operate in viable conditions and those who have living income gaps. There are positive prospects for impacting the economic resilience of producers who currently do not reach the living income benchmark, however, their current conditions can be transformed with tailored support.

## Key recommendations:

1. Focus on the archetypes that can rapidly reach the living income benchmark by implementing a set of solutions. This does not mean that buyers should stop sourcing from suppliers with lower economic performance. It will enable them to test the strategies and actions described above with those producers that have the greatest chance to succeed. This also allows more practical adjustments of a future and more ambitious strategy.
2. The size of the farmland is the single variable with the greatest amplifying effect on producers' net income. Nevertheless, this variable is especially difficult to target due to market, political and cultural reasons. As a result, productivity is king! Productivity is the key variable that can be influenced by the Cocoa Plan, or any other implementer that wants to transform farmers income in the selected countries.
3. Increase understanding of the impact of family labour. In the context in which smallholder producers operate, family labour could be a variable as closely important as productivity. Family labour was reflected in this analysis as an opportunity cost or additional source of income. Nevertheless, it was not consistently factored into the net income calculations in the three countries. A more in depth analysis is required to have a more accurate understanding of producers net income.
4. Collection of net income data in Brazil and Mexico. The basis of the net income analysis for this Inventory was secondary data. It would be important to collect net income data from a relevant sample of producers in two regions in Brazil (Para and Bahia) as well as for Mexico. This would enable more accurate net income modeling and would increase certainty of future strategies to reduce living income gaps.

# REFERENCE LIBRARY



Researchers analysed a wide range of sources for this Inventory. In this section, we present a selection of the sources with the most relevant and current information regarding living income and cocoa producer household economics.

In the last decade, the main focus of the studies has been producing countries in West Africa. There has been greater interest in studying the conditions of Latin American cocoa producers in more recent years. Below are listed some references that can contribute to a deeper understanding of cocoa producers' technical and economic variables.

There were different levels of detail in each country's statistics of production, agricultural censuses and analyses of costs and incomes. Although, in general, we do not have segmented analysis, we tend to define the study of the sector with a single average.

We highlight the work of the Global Living Wage Coalition (<https://globallivingwage.org>), making available living income analyses for various productive sectors in different countries. They were an essential reference to guide this type of study.

The sources available enabled us to begin an analysis on potential actions to improve producers' income. We suggest extending future research regarding the aspects of cocoa farmers' decision making to enhance their economic viability. It seems that the recommendations for action are clear, but the reasons for the producers to adopt these actions are not. Therefore, elements such as family labour and producers' perceptions of risks for decision making require further exploration.

## Global references

Daymond, A., Giraldo, D., Hadley, P. and Bastide, P. (Eds). (2022). A Global Guide to Cocoa Farming Systems.

International Cocoa Organization and the Swiss Foundation of the Cocoa and Chocolate Economy. <https://www.icco.org/wp-content/uploads/B27407-Cocoa-Grower-Guide-English-CFW-v9-interactive.pdf>.

Fountain, A. C. (2022). Cocoa Barometer Living Income Compendium. The Cocoa Barometer Consortium. <https://voicenetwork.cc/wp-content/uploads/2022/09/220920-Cocoa-Barometer-Living-Income-Compendium.pdf>.

GIZ. (2020). Guiding steps towards living income in the supply chain. How to mainstream living income in your company's activities. [https://www.living-income.com/\\_files/ugd/oc5ab38d2a4af1e03a43bbbea042551a19181f.pdf](https://www.living-income.com/_files/ugd/oc5ab38d2a4af1e03a43bbbea042551a19181f.pdf).

Hütz-Adams, F., Campos, P., Fountain, A.C. (2022). Latin America Baseline Cocoa Barometer, 2022. The Cocoa Barometer Consortium. <https://voicenetwork.cc/wp-content/uploads/2022/09/220923-Cocoa-Barometer-Americas.pdf>.

Pedersen, D., Backer, J. & Van der Put, T. (2020). Strategy Handbook- Full Report. A Fact-Based Exploration of the Living Income Gap to Develop Effective Sourcing and Pricing Strategies that Close the Gap. The sustainable trade initiative. Kyle Freund Consulting. <https://www.idhsustainabletrade.com/uploaded/2020/02/strategy-handbook.pdf>

## Ecuador

Andersen, L. E., Medinaceli, A., Anker, R. & Anker M. (2022). Living Wage Update Report: Rural Ecuador, Coastal Region, 2022. Anker Research Institute, Global Living Wage Coalition & SDSN Bolivia. <https://globallivingwage.org/living-wage-benchmarks/living-wage-for-rural-ecuador/>.

Carranza, W. D., Angulo, M. B., Cedeño, G. S. & Prado, Y. K. (2022). Evaluación socioeconómica del cultivo de cacao (*Theobroma cacao* L.) en la zona norte de la Provincia de los Ríos. Journal of business and entrepreneurial studies, 4(2), 96-106. <https://dialnet.unirioja.es/servlet/articulo?codigo=7888300>.

Chávez, R. X., Carbo, S. C., García, E. L. & Cobos, F. J. (2019). Estudio socio-económico del cultivo de cacao (*Theobroma cacao* L.) en la parroquia Febres Cordero, cantón Babahoyo

Los Ríos-Ecuador. Revista Observatorio de la Economía Latinoamericana. <https://www.eumed.net/rev/oel/2019/02/cultivo-cacao-ecuador.html>.

Gobierno de la República del Ecuador. (2022). Sistema de Información Pública Agropecuaria – Estadísticas. <http://sipa.agricultura.gob.ec/index.php/sipa-estadisticas/estadisticas-productivas>.

Gobierno de la República del Ecuador. (2022). Sistema de Información Pública Agropecuaria – Ficha del cultivo del cacao. <http://sipa.agricultura.gob.ec/index.php/cacao>.

Ulloa, J., López, V., Sambonino, P., Anker, R. & Anker, M. (2016). Living Wage Report Rural Ecuador. Southern Coastal Zone. Focus on bananas. November 2016. Global Living Wage Coalition. [https://www.globallivingwage.org/wp-content/uploads/2020/07/LW-Report\\_Ecuador\\_2016\\_en-1.pdf](https://www.globallivingwage.org/wp-content/uploads/2020/07/LW-Report_Ecuador_2016_en-1.pdf).

## Brazil

Barbosa, A., Barbosa, R. J., Lazzari, E., Prates, I., Silva, M. B., Tepassê, A. C., Anker, R. e Anker, M. (2021). Anker Living Income Estimates for Cocoa Growing Regions in Brazil 2021. Anker Research Institute e CEBRAP. [https://globallivingwage.org/wp-content/uploads/2022/07/Living-Income-Estimates-for-Cocoa-Brazil\\_v3.1.pdf](https://globallivingwage.org/wp-content/uploads/2022/07/Living-Income-Estimates-for-Cocoa-Brazil_v3.1.pdf).



Campos, A. e Diaz. J. C. (2020, 31 de agosto). Slave labour and inhuman wages: labour violations in Brazil's cocoa industry. Repórter Brasil 20 anos. Acessado em 1 de outubro de 2022. <https://reporterbrasil.org.br/2020/08/slave-labour-and-inhuman-wages-labour-violations-in-brazils-cocoa-industry/>.

CHIAPETTI, J.; ROCHA, R.; CONCEIÇÃO, A. Panorama da cacauicultura no território litoral sul da Bahia (2015-2019). Instituto Floresta Viva: Ilhéus, 2020. <https://www.sna.agr.br/wp-content/uploads/2021/02/Panorama-da-cacauicultura-TILSB-Versao-final-Web.pdf>

CocoaAction Brasil (WCF) e Instituto Arapyau e WRI Brasil. (2021). Viabilidade econômica de sistemas produtivos com cacau. Cabruca, Pleno Sol e Sistemas Agroflorestais nos estados da Bahia e do Para. [https://www.worldcocoaoundation.org/wp-content/uploads/2020/05/Viabilidade-economica-de-sistemas-produtivos-com-cacau\\_Cabruca-Pleno-Sol-e-Sistemas-Agroflorestais-nos-estados-da-Bahia-e-do-Para\\_CocoaAction-Brasil-Instituto-.pdf](https://www.worldcocoaoundation.org/wp-content/uploads/2020/05/Viabilidade-economica-de-sistemas-produtivos-com-cacau_Cabruca-Pleno-Sol-e-Sistemas-Agroflorestais-nos-estados-da-Bahia-e-do-Para_CocoaAction-Brasil-Instituto-.pdf).

Companhia Nacional de Abastecimento (2021). Série Histórica - Custos - Cacau - 2015 a 2021. Acessado em 1 de outubro de 2022. <https://www.conab.gov.br/info-agro/custos-de-producao/planilhas-de-custo-de-producao/item/1967->

[serie-historica-custos-cacau-2015-2019](#).

De Castro Pereira, M.S. (2021). Produção de Cacau. Caderno Setorial ETENE, 6(149), 1-29. <https://www.bnb.gov.br/s482-dspace/handle/123456789/650>.

## Mexico

Delajara, M., Espinosa, R., Fonseca, C., Anker, M. y Anker, R. (2020). Living Wage Report for Michoacán, Mexico. Non-metropolitan urban and rural northwestern regions. Global Living Wage Coalitions, Anker Research Network y Centro de Estudios Espinosa Yglesias. [https://globallivingwage.org/wp-content/uploads/2021/01/LW-Report\\_Michoacan\\_2020-update-1.pdf](https://globallivingwage.org/wp-content/uploads/2021/01/LW-Report_Michoacan_2020-update-1.pdf).

Díaz, Ó., Porras, V. H. y Aguilar, J. (2013). El cacao (*Theobroma cacao* L.): avances y retos en la gestión de la innovación. Universidad Autónoma Chapingo. <https://ciestaam.edu.mx/libro/coleccion-tropico-humedo-cacao-theobroma-cacao-l-avances-retos-en-la-gestion-la-innovacion/>.

Gobierno de México. Servicio de Información Agroalimentaria y Pesquera. (2021). Anuario Estadístico de la Producción Agrícola. Consultado el 1 de octubre de 2022.

<https://nube.siap.gob.mx/cierreagricola/>.

Molina, R. y Ramos, M. F. (2020). Variables que impiden incrementar las exportaciones de cacao en grano del estado de Tabasco. Revista Cimexus, 15(2), 63-81. <https://dialnet.unirioja.es/servlet/articulo?codigo=7767337>.  
Pérez, F., Figueroa, E., García, R. M., Godínez, L. y Jiménez, M. (Comp.) (2021). Agricultura protegida, clonación y germoplasma. Asociación Mexicana de Investigación Interdisciplinaria A. C. <https://dicea.chapingo.mx/wp-content/uploads/2021/04/Agricultura-protegida-clonacion-y-germo....pdf>

Secretaría de Gobernación. (2022, 18 de marzo). Reglas de Operación del Programa Producción para el Bienestar de la Secretaría de Agricultura y Desarrollo Rural para el ejercicio fiscal 2022. Diario Oficial de la Federación de los Estados Unidos Mexicanos. [https://www.dof.gob.mx/nota\\_detalle.php?codigo=5646225&fecha=18/03/2022#gsc.tab=0](https://www.dof.gob.mx/nota_detalle.php?codigo=5646225&fecha=18/03/2022#gsc.tab=0).

Secretaría de Hacienda y Crédito Público y Financiera Nacional de Desarrollo Agropecuario, Rural, Forestal y Pesquero. (2020). Cacao en México y el Mundo. Análisis sectorial, septiembre/2020. <https://www.gob.mx/fnd>.

## Endnotes

- (1, 6, 14, 16, 18, 19, 31) Hütz-Adams, F., Campos, P., Fountain, A.C. 2022. Latin America Baseline Cocoa Barometer, 2022.
- (2) García-Briones, A et al. 2021. The Cacao production chain in Ecuador: Resilience in the different production actors.
- (3, 4) Gobierno de Ecuador. 2021.
- (5) Ulloa Sosa et al. 2016. Living Wage Report Rural Ecuador.
- (7) Secretaría Técnica del Comité Interinstitucional para el Cambio de la Matriz Productiva. Diagnóstico de la Cadena Productiva del Cacao en el Ecuador. 2015.
- (8) Ulloa Sosa et. al., 2021. Living Wage Report Rural Ecuador.
- (9, 11, 12, 15) Brazilian Institute of Geography and Statistics. Systematic collection of agricultural data (IGBE). 2017.
- (10, 13, 20) Barbosa et all. 2021. Anker Living Income Estimates for Cocoa Growing Regions in Brazil.
- (17) Law No. 8,212; Article 194 of the Federal Constitution.
- (21, 22, 24, 25) Chiapetti, J., Rocha, R., & Conceição, A. 2020. Panorama da cacauicultura no território litoral sul da Bahia (2015-2019).
- (23) Companhia Nacional de Abastecimento. 2021. Série Histórica - Custos - Cacau - 2015 a 2021.
- (26, 28, 29) Gobierno de México. Servicio de Información Agroalimentaria y Pesquera. 2021. Servicio de Información Agroalimentaria y Pesquera.
- (27, 30) Delajara, M., Espinosa, R., Fonseca, C., Anker, M. y Anker, R. 2020. Living Wage Report for Michoacán, Mexico. Non-metropolitan urban and rural northwestern regions.
- (32) Fideicomisos Instituidos en Relación con la Agricultura.
- (33) Díaz, Ó., Porras, V. H. y Aguilar, J. 2013. El cacao (*Theobroma cacao* L.): avances y retos en la gestión de la innovación. Universidad Autónoma Chapingo

# ANNEXES



# ARCHETYPES IN ECUADOR

Archetype	Average hectares	% producers in region	Cocoa Yield tons/has-yr	Production per farm tons/yr	Net income USD/yr	Living income gap or surplus
<b>1</b> (<2 has/ 0.9 ton/ha)	1.5	16%	0.9	1.35	2,838	<b>-65%</b>
<b>2</b> (<2 has/1.1 ton/ha)	1.5	19%	1.1	1.65	4,430	<b>-46%</b>
<b>3</b> (2-4 has/0.8 ton/ha)	4	20%	0.8	3.2	4,656	<b>-43%</b>
<b>4</b> (2-4 has/1.1 ton/ha)	4	25%	1.1	4.4	8,775	<b>+7%</b>
<b>5</b> (>4-8 has/ 0.8 ton/ha)	8	6%	0.81	6.48	9,725	<b>+18%</b>
<b>6</b> (>8 has/1.1 ton/ha)	8	14%	1.1	8.8	19,390	<b>+136%</b>

Annex 1: Archetypes in Ecuador

# ARCHETYPES IN BAHIA

Archetype	Average hectares	% producers in region	Cocoa Yield tons/has-yr	Production per farm tons/yr	Net income USD/yr	Living income gap or surplus
<b>1</b> (0-10 has)	6	62%	0.24	1.4	5,523	<b>-8%</b>
<b>2</b> (10-20 has)	15	17%	0.2	3	8,491	<b>+42%</b>
<b>3</b> (20-50 has)	35	12%	0.18	6.3	14,446	<b>+142%</b>
<b>4</b> (50-100 has)	75	5%	0.18	13.8	27,112	<b>+354%</b>
<b>5</b> (>100 has)	150	4%	0.18	27.3	47,522	<b>+695%</b>

Annex 2: Archetypes in Bahia

# ARCHETYPES IN PARA

Archetype	Average hectares	% producers in region	Cocoa Yield tons/has-yr	Production per farm tons/yr	Net income USD/yr	Living income gap or surplus
<b>6</b> (0-10 has)	6	23%	0.58	3.5	6,256	<b>-15%</b>
<b>7</b> (10-20 has)	15	11%	0.55	8.2	10,541	<b>+44%</b>
<b>8</b> (20-50 has)	35	24%	0.51	17.9	19,214	<b>+162%</b>
<b>9</b> (50-100 has)	75	22%	0.53	4.0	38,043	<b>+419%</b>
<b>10</b> (>100 has)	150	18%	0.71	107.1	86,089	<b>+1,074%</b>

Annex 3: Archetypes in Para

# ARCHETYPES IN MEXICO

Archetype	Average hectares	% producers in region	Cocoa Yield tons/has-yr	Production per farm tons/yr	Net income USD/yr	Living income gap or surplus
<b>1</b> (<1 has/ffi 0.6 ton/ha)	0.83	58%	0.47	0.39	1,113	<b>-90%</b>
<b>2</b> (<1 has/>0.6 ton/ha)	0.89	7%	0.76	0.68	6,539	<b>-38%</b>
<b>3</b> (1-2 has/ffio.6 ton/ha)	1.68	22%	0.47	0.80	6,466	<b>-39%</b>
<b>4</b> (1-2 has/>0.6 ton/ha)	1.71	2%	0.75	1.29	7,282	<b>-31%</b>
<b>5</b> (>2 has/ffi 0.6 ton/ha)	3.46	10%	0.48	1.66	8,722	<b>-18%</b>
<b>6</b> (>2 has/>0.6 ton/ha)	3.74	1%	0.83	3.09	11,256	<b>+6%</b>

Annex 4: Archetypes in Mexico