LIVING INCOME REPORT

RURAL AREAS AND SMALL TOWNS OF COFFEE AND COCOA GROWING REGIONS OF CAJAMARCA, CUSCO, JUNIN, AND SAN MARTIN, PERU

MAY - JUNE 2022

LYKKE E. ANDERSEN • NATASHA NINA ANDERSEN • RICHARD ANKER • MARTHA ANKER

Living Wage Benchmark Series
No. 2022-01-02

Anker Research Institute

GLOBAL LIVING WAGE COALITION

ABSTRACT

LIVING INCOME REPORT

RURAL AREAS AND SMALL TOWNS OF COFFEE AND COCOA GROWING REGIONS OF CAJAMARCA, CUSCO, JUNIN, AND SAN MARTIN, PERU

MAY - JUNE 2022

AUTHORS: LYKKE E. ANDERSEN* • NATASHA NINA ANDERSEN**
RICHARD ANKER*** • MARTHA ANKER***

Abstract: This report estimates the family living income and the living wage for the cacao- and coffee-growing regions of San Martín, Cajamarca, Junín and Cusco, Peru for May 2022. The monthly cost of a basic but decent life for a family of four was found to be PEN 2,371 for San Martín, PEN 2,146 for Cajamarca, PEN 2,101 for Junín, and PEN 2,359 for Cusco, while the monthly living wage for a full-time worker is PEN 1,853 for San Martín, PEN 1,678 for Cajamarca, PEN 1,643 for Junín, and PEN 1,844 for Cusco. Given the relatively small differences between regions, we recommend using the highest value for all coffee and cacao growing regions of Peru, i.e. a living income of PEN 2,371 and a living wage of PEN 1,853 for May/June 2022.

Keywords: Living costs, living wages, living income, coffee, cacao, Peru, Anker Methodology.

JEL classification codes: J30, J50, J80.

Any questions, comments, or observations about this study and the results it reports should be directed to the Anker Research Institute leadership: marthaandrichard@ankerinstitute.org

* Executive director, SDSN Bolivia, lykke.e.andersen@gmail.com
** SDSN Bolivia, natashanina.andersen@sciencespo.fr
*** Anker Research Institute, marthaandrichard@gmail.com

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

This study was conducted by the Anker Research Institute, which leads a global effort to determine living wages and living incomes around the world using standardized, high-quality, cost-effective measurement methods. The Anker Research Institute is a founding partner of the Global Living Wage Coalition with many important sustainability organizations.

The study was made possible thanks to the coordinated efforts of various key stakeholders, including the Ministry of Agricultural Development and Irrigation of Peru (MIDAGRI), United Nations Development Program (UNDP-Peru), the Swiss Platform for Sustainable Cocoa, Sustainable Food Lab, Rikolto, Solidaridad, and CLAC Fairtrade.

Starbucks, Keurig Dr Pepper (KDP), Nespresso, ofi, Sustainable Harvest, Solidaridad, and SECO/Max Havelaar provided funding for the study.

The authors spent five weeks visiting cacao and coffee producers across Peru, and greatly appreciate the invaluable support provided by the lead institutions in organizing the fieldwork. We are particularly thankful to the people who took time out of their busy schedules to join us on the farm visits, including Honolu Pozo of CLAC Fairtrade, Franz Bauman of UNDP, Lith Montes and Armando Inga of Rikolto, Pether Huaroc of the Perené Coffee Project, and José Figueroa of the Mesa Técnica Regional de Café de Cusco.

While all the families we visited were incredibly welcoming and generous with their time, some organizations went out of their way to make sure we could visit them. The Choba Choba Foundation, for example, brought us way upriver in San Martín to visit some of their cocoa suppliers in the remote community of Santa Rosa. The Chirinos Coffee Cooperative literally drove for days across several states to pick us up in San Martín and bring us back to visit their little corner of paradise on a mountain in Cajamarca, and the specialty coffee they gifted us spread joy in our office back in La Paz for many months afterwards.

Behind the scenes, Jorge Figueroa of MIDAGRI, Stephanie Daniels of Sustainable Food Lab, Isabel Heidler and Manuela Stiffler of Max Havelaar, Franz Bauman of UNDP, Will Pauffley and Benjamín Kroll of Solidaridad, and Mariela Wismann of Rikolto, have all helped to make sure the study is well-integrated into the larger strategy for a sustainable and prosperous coffee sector in Peru and beyond. This effort was the first coordinated living income benchmark study generated from the ICO Living Prosperous Income technical workstream and will provide a blueprint for the additional benchmarks to come.

Finally, the authors would like to thank Marcelo Delajara of the Anker Research Institute for carefully reviewing earlier drafts of the report and making sure all calculations follow the high standards of the Anker Research Institute.

PART I. INTRODUCTION

This report estimates the family living income and the living wage for the cacao- and coffee-growing regions of San Martín, Cajamarca, Junín and Cusco, Peru for May/June 2022.

The report is divided into 3 main parts. Part I provides background on the methodology and the study regions. Part II estimates the cost of a basic but decent life for a typical family in each of the four study regions. Part III presents and discusses the living income estimate in context for the four study regions. In an annex, we use our estimate of the living income to infer the living wage for full-time workers in the area.

This study uses the Anker and Anker (2017) Methodology to estimate the living income and the living wage in the study areas. This methodology has by now been used in more than 50 studies in more than 40 countries. The methodology combines primary data from fieldwork with the analysis of secondary data from official sources to determine the needs and cost of living of the population under study. The present report is part of a series of living wage and living income reports of the Anker Research Institute (ARI) and the Global Living Wage Coalition (GLWC), which are done using the methodology developed in Anker & Anker (2017).[1]

1. DEFINITION OF LIVING INCOME AND LIVING WAGE

A living income can be defined as:

> "[...] The net annual income required for a household in a particular place and time to afford a decent standard of living for all members of that household."
>
> **(The Living Income Community of Practice, n.d.).**

According to the Anker Methodology (Anker and Anker, 2017), a decent standard of living includes access to a basic yet nutritious diet in line with local preferences and possibilities; access to housing that complies with both national and international minimum standards for healthy housing; education for children through secondary school; access to adequate healthcare when needed; clothing, transportation, communication, household furnishings, recreation, and other essentials; as well as something extra for emergencies.

1 The GLWC is a partnership between influential sustainability standard setting organizations and the Anker Research Institute and in association with ISEAL. The GLWC has the shared mission of improving the wages of workers in the farms, factories and supply chains that participate in their respective certification systems, with the long-term goal of workers receiving a living wage. Every living wage estimate anywhere in the world commissioned by the GLWC is made public with the goal of promoting the payment of a living wage. See the *Global Living Wage Coalition* website for more information (https://www.globallivingwage.org/).

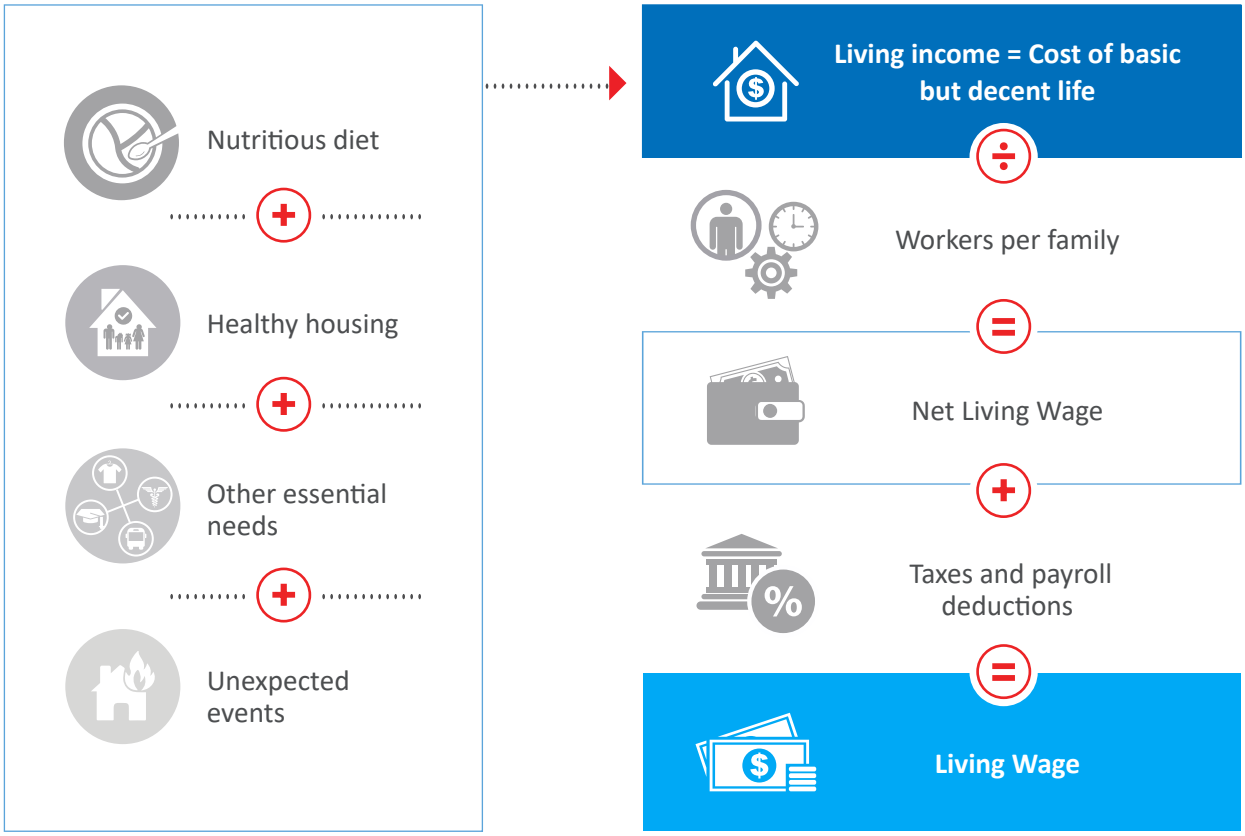
The net annual income required can be divided by the number of full-time equivalent workers in the family to arrive at the net living wage. Adding to that social security contributions, income taxes and other payroll deductions, we arrive at the gross living wage (a.k.a. living wage).

The Global Living Wage Coalition uses the following definition of a living wage:

> "Remuneration received for a standard work week by a worker in a particular place sufficient to afford a decent standard of living for the worker and her or his family. Elements of a decent standard of living include food, water, housing, education, healthcare, transport, clothing, and other essential needs, including provision for unexpected events."
>
> **(Global Living Wage Coalition, 2016, cited in Anker and Anker, 2017).**

Figure 1 shows the components of a living income and the relationship between the living income and the living wage.

Figure 1. Components of living income and living wage estimates



Source: Adapted from Anker and Anker (2017).

2. HOW TO ESTIMATE A LIVING INCOME AND A LIVING WAGE

This study applies the Anker Methodology which is described in the Anker and Anker (2017) book *Living Wages Around the World: Manual for Measurement.* The Anker Methodology has gained widespread acceptance among diverse stakeholders globally and has been used to estimate living incomes and living wages in a wide variety of settings, such as banana growers in Ecuador, manufacturing industries in China, tea plantations in Sri Lanka, and football producers in Pakistan.[2] To date, there have been approximately 50 Anker Benchmark studies for 84 locations in 50 countries completed around the world. The main principles of the Anker Methodology are listed below:

- **Transparency.** The methodology clearly sets out the principles and assumptions behind the living income and living wage estimates. This enables stakeholders and others to understand the standards and methods used to estimate the living income and living wage benchmarks and what exactly workers and their families would be able to afford on a living income and living wage. Plus, it helps clarify in what ways it differs from the national minimum wage and the national poverty line.
- **Normative basis.** The methodology estimates the living income based on normative standards for nutritious food, healthy housing, adequate healthcare, and education for children through secondary school.
- **Time and place-specific estimates.** Since the costs of living, and the expected standards of living vary not only over time, but also across space between and within countries, the Anker Methodology calls for time and place-specific living income and living wage estimates.
- **International comparability.** The living income and living wage estimates are comparable between countries, as they are all based on the same principles.
- **Practical and modest cost.** The methodology uses a judicious mix of secondary data analysis and primary data collection and analysis, which results in reliable estimates at a modest cost.
- **Comparison with prevailing wages.** The methodology also includes principles and guidelines for measuring prevailing wages, so that it is possible to compare them with the living wage estimate. All forms of remuneration including in kind benefits are considered.
- **Living income reports are more than just a number.** They also paint a picture of what it means to live on less than a living income, and what the living standards would be for workers who would earn a living income. This type of reporting facilitates effective dialogue with stakeholders and others and helps improve conditions for those who carry out the hardest part of the work in the value chain by raising the incomes of smaller farmer and the wages of workers.

The main steps of the Anker Methodology used to estimate the living wage are the following:

- **Determine the size and composition of a reference family in the region of interest.** In the case of the present study, this was done using information from the latest household surveys (*Encuesta Nacional de Hogares*, ENAHO for its acronym in Spanish) carried out during the first and second trimester of 2022 by Peru's National Institute of Statistics and Informatics (INEI, for its acronym in Spanish) and latest demographic and health survey in Peru (*Encuesta Demográfica y de Salud Familiar* - ENDES 2020).

2 All living wage and living income reports are freely available at the website of the GLWC here: https://www.globallivingwage.org/.

- **Estimate the cost of a basic but nutritious diet for the reference family.** Since food is an important expenditure for families living on a living income, this step receives considerable attention. It involves two main steps: 1) develop a model diet that complies with World Health Organization recommendations concerning nutrition, but which is adapted to local preferences and possibilities, and 2) estimate the costs of this diet using price data collected by the researchers during May and June 2022 for all the major food items at shopping locations frequented by cacao and coffee workers and producers in the study areas.
- **Estimate the costs of decent housing for the reference family.** Since housing is usually the second biggest expenditure item for families in developing countries, this step is also a priority. A local healthy housing standard is set that meets minimum international standards and local norms. The rental value for such decent healthy housing was estimated using data from the first and second trimester of the 2022 ENAHO household survey.
- **Estimate the costs of all other essential needs and unforeseen events.** The remaining non-food and non-housing expenditures are estimated as a mark-up over food costs using data from the 2019 ENAHO household survey. We use the pre-pandemic expenditure patterns, because by 2021 expenditure patterns were still clearly affected by the pandemic (e.g., lower expenditure on clothing, transportation, and recreation than normal), and the ENAHO for the first two semesters of 2022 does not have sufficient data for these calculations. Ideally, we would have used the more detailed household expenditure survey (*Encuesta Nacional de Presupuestos Familiares*, ENAPREF for its acronym in Spanish) carried out during 2019 and 2020, but this survey only covered major cities, and our study is for rural areas and small towns.
- **Determine the living income.** This is done by adding up food, housing and non-food non-housing costs and something extra for emergencies and sustainability.
- **Determine the number of full-time workers per family.** This is a number between one and two, depending on local employment conditions and social norms. The number was calculated using data from the first two trimesters of the 2022 ENAHO household survey.
- **Estimate the Net Living Wage.** This is done by dividing the total family living costs (the living income) by the number of full-time equivalent workers per family.
- **Estimate the Gross Living Wage.** This is done by adding required mandatory payroll deductions, and income taxes to the net living wage.

3. LIVING INCOME AND LIVING WAGE ESTIMATES

The monthly living income for families in the cacao- and coffee-growing regions in Peru for May/June 2022 was estimated at PEN 2,371 for San Martín, PEN 2,146 for Cajamarca, PEN 2,101 for Junín, and PEN 2,359 for Cusco. The gross living wage (aka living wage) was found to be PEN 1,853 per month for San Martín, PEN 1,678 for Cajamarca, PEN 1,643 for Junín, and PEN 1,844 per month for Cusco (USD 448 – 505).[3]

3 This value in USD was calculated using an exchange rate of 3.67 PEN/USD (average value for May 2022 according to the IMF). It should be noted that the exchange rate fluctuates constantly, so it is best to focus on the values reported in Peruvian Soles (PEN) rather than USD, as the former are much more stable and relevant from the viewpoint of workers and producers in Peru.

The difference between the highest and the lowest living income (San Martín and Cajamarca, respectively) is almost 13%, which is why we present all the estimations separately for each region.

These estimates are for families and workers living in rural areas and towns of less than 50,000 inhabitants, as this is the type of locations where cacao and coffee workers and producers typically reside.

4. CONTEXT OF THE STUDY

4.1. Peru's coffee sector

In 2021, Peru reached a production of around 365,000 tons of coffee (making Peru the 7th largest coffee producer in the world) and exported around 194,000 tons of green coffee (INEI, 2022a) with a total value of USD 766 million (INEI, 2022b). Peru has specialized mainly in organic coffee, where it holds the 2nd place in quantity of exports (behind Mexico).[4]

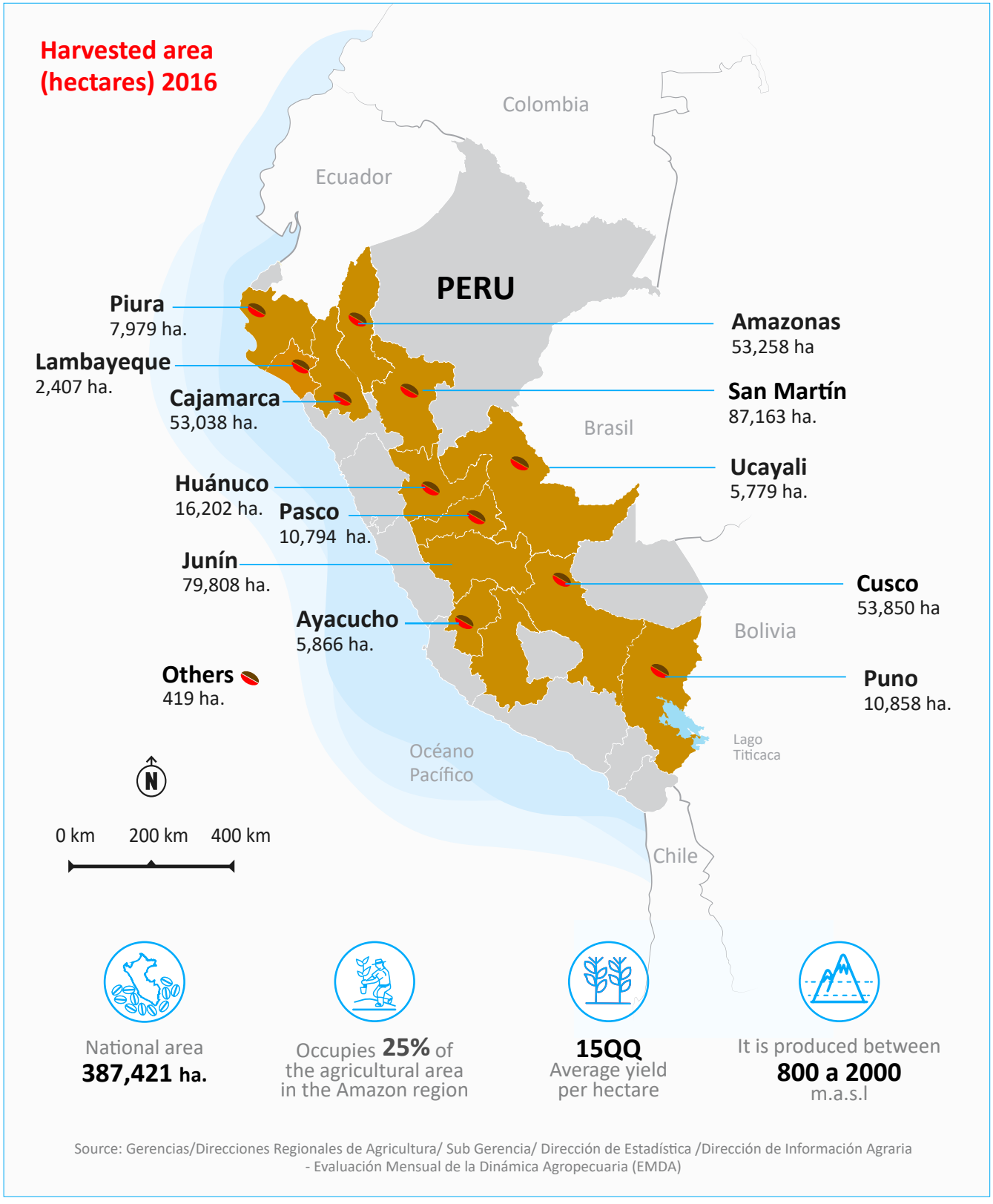
According to the Ministry of Agricultural Development and Irrigation (formerly MINAGRI, but MIDAGRI since November 2020), Peru has around 425,000 hectares dedicated to coffee cultivation, which represents about 6% of the national agricultural area (Choque Alave, 2021). Most of the country's coffee plantations are located on the eastern slopes of the Andes commonly referred to as high jungle, which includes 17 regions, 67 provinces and 338 districts (Choque Alave, 2021). Despite this great dispersion (see Figure 2), five regions (San Martín, Junín, Cajamarca, Amazonas and Cusco) concentrate more than 85% of all coffee production (see Table 1). The northern cluster is responsible for almost 60% of the national coffee production, and is concentrated in the departments of San Martín, Cajamarca and Amazonas. In the central jungle cluster, Junín leads the way producing 21.2% of the national coffee production. In the southern cluster, most of the production is found in Cusco, accounting for 6.3% of the total national coffee production in 2020 (see last column in Table 1).

According to the latest National Agricultural and Livestock Census (INEI, 2012), approximately 223,000 families were involved in coffee production in 2012 in Peru (see Table 1).

Peru's coffee production is mostly small scale with 95% of coffee producers having 5 hectares or less.[5] Yields are relatively low, averaging 725 kg/ha in 2016, but with substantial differences between departments (see Table 1). Low productivity is mainly due to poor technical management of the farms, and lack of investment to improve yields and product quality. Only 20% of coffee producers are associated, generally in cooperatives, which provide technical assistance to farmers and prioritize organic certification and specialty coffees. The remaining 80% sell directly to local intermediaries, which pay according to global coffee commodity prices, irrespective of quality. A very small percentage of coffee producers will independently roast, grind and package their coffee to sell it directly to consumers at a premium price (PNUD, 2017).

4 https://www.midagri.gob.pe/portal/485-feria-scaa/10775-el-cafe-peruano
5 https://www.midagri.gob.pe/portal/485-feria-scaa/10775-el-cafe-peruano

Figure 2. Map of the coffee production in Peru in 2016



Source: Plan Nacional de Acción del Café (2016).

Table 1. Number of coffee producers and total coffee production by region

Coffee regions	Nº of producers in 2012[1]	% of total producers in 2012[1]	Average yield in 2016 (kg/ha)[2]	Production in 2020 (tons)[3]	% of total production in 2020[3]
NORTH/EAST JUNGLE					
San Martín	**49,309**	**22.0**	**944**	**101,453**	**27.3**
Cajamarca	**38,473**	**17.2**	**908**	**71,793**	**19.3**
Amazonas	22,497	10.0	657	42,875	11.5
Piura	2,462	1.1	382	4,987	1.3
CENTRAL JUNGLE					
Pasco	6,015	2.7	935	13,193	3.6
Junín	**56,792**	**25.4**	**585**	**78,685**	**21.2**
Huánuco	8,852	4.0	485	11,921	3.2
Ucayali	1,039	0.5	784	10,968	3.0
SOUTHERN JUNGLE					
Cusco	**27,486**	**12.3**	**564**	**23,301**	**6.3**
Puno	4,323	1.9	639	8,105	2.2
Ayacucho	4,622	2.1	661	2,212	0.6
OTHERS	**2,033**	**0.9**	**746**	**2,119**	**0.6**
TOTAL	**223,903**	**100.0**	**725**	**371,611**	**100.0**

Sources: [1] PNUD (2017). [2]MINAGRI (2018). [3]MIDAGRI (2020).

4.2 Peru's cacao sector

In 2021, Peru produced 157,859 tons of cacao (making Peru the 8th largest producer in the world) and exported around 92,737 tons of cacao and derivatives (49% were cacao beans, 35% cocoa butter, 10% chocolates, 7% cocoa powder, 5% coca shells and 2% roasted cacao beans), worth a total of USD 302 million.[6] Peru distinguishes itself in the international market with its organic cacao, being the 2nd largest producer of organic cacao in the world (after the Dominican Republic), and has been qualified by the International Cocoa Organization (ICCO) as a country where fine and aromatic cacao is produced (INEI, 2021).

6 https://agraria.pe/noticias/produccion-peruana-de-cacao-alcanzo-las-157-859-toneladas-en-28009#:~:text=Entre%20las%20regiones%20que%20son,la%20producci%C3%B3n%20total%20del%20pa%C3%ADs.

The cacao tree is commercially cultivated in the lower portion of the western slopes of the Andes, with optimal altitude between 300 and 900 meters above sea level.[7] The main cacao-producing areas are clustered in five of the country's 16 cacao-growing departments: San Martín, Junín, Ucayali, Huánuco and Cusco, accounting for 87% of total national production (see Table 2). Most notably, the department of San Martin has consolidated its position as the leading national cacao producer, accounting for almost 40% of the total national production.

Table 2. Total cacao production, by region, in 2020

Coffee regions	Production in 2020 (tons)	% of total production in 2020
NORTH/EAST JUNGLE		
San Martín	**60,076**	**39.62**
Amazonas	3,367	2.22
Cajamarca	**1,390**	**0.92**
Piura	1,385	0.91
CENTRAL JUNGLE		
Junín	**27,536**	**18.16**
Ucayali	21,705	14.32
Huánuco	14,395	9.49
Pasco	4,033	2.66
SOUTHERN JUNGLE		
Cusco	**7,424**	**4.90**
Ayacucho	5,634	3.72
OTHERS	**4,675**	**3.08**
TOTAL	**151,620**	**100.00**

Source: MIDAGRI (2021b).

7 https://www.sierraexportadora.gob.pe/programas/cacao/que-significa.php

PART II. FAMILY LIVING COSTS

This part of the report estimates the basic living costs for a reference family. It first determines the size of the reference family, and then goes on to estimate food costs, housing costs, and all other Non-Food-Non-Housing (NFNH) costs for the reference family in accordance with the Anker Methodology.

5. FAMILY SIZE TO BE SUPPORTED BY THE LIVING INCOME

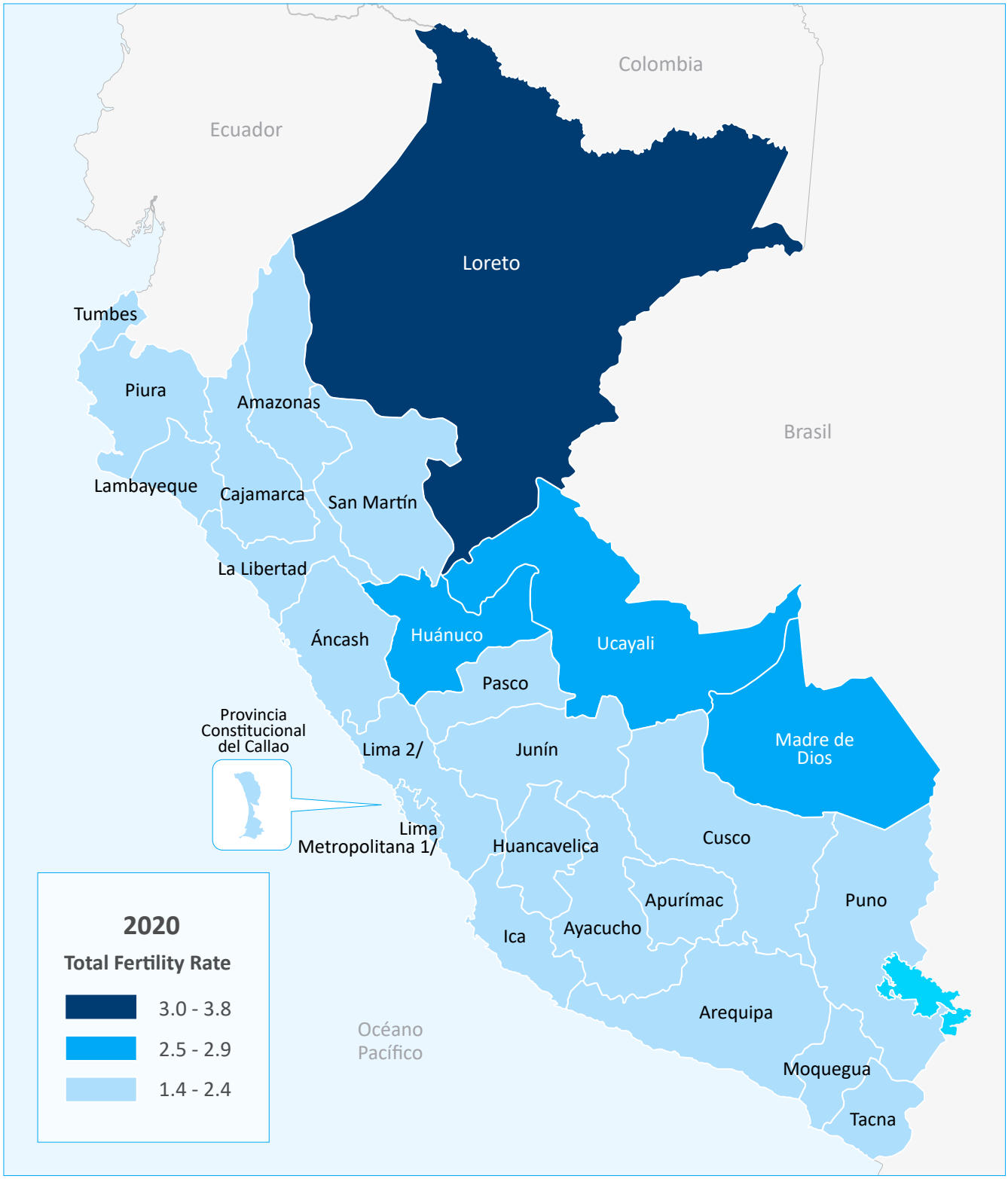
The Anker Methodology uses the family as the unit of analysis when estimating a living income. It determines an appropriate reference family size using two types of information: (i) number of surviving children that women typically have, and (ii) average household size adjusted for living wage or living income purposes.

According to the latest demographic and health survey in Peru (*Encuesta Demográfica y de Salud Familiar* - ENDES 2020), the total fertility rate in Peru has fallen to 1.9 children per woman, being lower in urban areas (1.8) and higher in rural areas (2.5) (INEI, 2021a). According to the same survey, the highest fertility rates are found in the Amazon region, while the coastal regions and central mountains have lower fertility rates (see Figure 3). This means that since our study regions are located on the border between the mountains and the jungle, all four of our study departments are likely to have slightly lower total fertility rates than the 2.5 for all rural areas of Peru. The total fertility rate for the urban areas of our study regions is unknown, but undoubtedly higher than the national urban average of 1.8, because large cities such as Lima have relatively low total fertility rates. Although speculative, this probably means that the total fertility rates for the rural and urban areas of our study regions are likely be somewhere around 2.4 (slightly lower than the 2.5 for all rural areas of Peru) and 2.0 or so (slightly higher than the 1.8 for all urban areas of Peru that includes Lima and other large cities), respectively.

The child mortality rate (deaths by age 5 per 1,000 live births) in Peru is 13 in 2020 for Peru according to World Bank which means that 98.7% of live births in Peru survive the first five years of life which are the most vulnerable years of life (with a somewhat higher rate for rural areas and small towns). This means that the child mortality adjusted total fertility rate is only around 0.04 births less than the total fertility rate. Thus, the child mortality adjusted total fertility rate for study areas is around 2.2 considering that these areas are around one-half rural and one-half small towns (see table 17), which implies a family size of around 4.2.

According to the 2022 ENAHO household survey, two, three and four-person households are the most common in rural areas and small towns in the jungle regions of San Martín, Cajamarca, Junín and Cusco (see Table 3). After excluding one-person households (which are not relevant for this report, given that a living income is a family concept) and large households with more than seven members (which are probably extended families with possibly more than two adult workers providing support), the average household size in rural areas and small towns in the jungle regions of our study regions is 3.6 persons, which is not much below 4 (see Table 3). In addition, a household size of 4 is quite common as it is the modal household size in Junín and Cusco and the median household size in San Martin and Cusco.

Figure 3. Total fertility rates in Peru 2020, by department



Source: INEI (2021a).
https://www.inei.gob.pe/media/MenuRecursivo/publicaciones_digitales/Est/Lib1795/

Table 3. Percentage distribution of households by number of members in rural areas and small towns in the jungle regions of San Martín, Cajamarca, Junín and Cusco in 2022

	San Martín	Cajamarca	Junín	Cusco	All 4 regions
Distribution of households by number of household members (%)					
1	10.3	14.6	11.4	10.2	**11.4**
2	17.1	19.0	19.8	18.6	**18.4**
3	22.5	27.6	21.5	11.6	**22.3**
4	21.7	19.2	21.8	28.4	**21.8**
5	14.3	11.5	12.8	14.9	**13.4**
6	7.5	4.2	6.6	13.4	**7.1**
7	2.6	2.5	3.0	2.9	**2.7**
8	2.0	0.0	1.6	0	**1.4**
9 +	2.0	1.4	1.5	0	**1.5**
Average household size	**3.7**	**3.3**	**3.6**	**3.7**	**3.6**
For 2 to 7 person households only					
Average household size	3.8	3.5	3.7	4.0	**3.7**
Share of single parent households (%)	10.9	12.5	12.4	1.9	**10.9**
Share of households without children (%)	27.1	31.7	33.2	36.3	**30.5**

Source: Authors' calculations based on the 2022 ENAHO household survey.

Based on the above analysis, we decided on a reference family of four (two adults and two children) for all four study regions. This is consistent with the mortality adjusted total fertility rate of slightly more than 2 and the adjusted average household size of slightly less than 4.

6. FOOD COSTS

Food costs were estimated by first developing a low-cost nutritious model diet consistent with local food preferences and availability and relative local food prices, and then calculating its cost by surveying local food prices in the towns and cities where cacao and coffee workers usually shop, **the estimated cost of the model diet, for a reference family of two adults and two children, varies from PEN 7.26 per person per day in Junín to**

PEN 8.29 per person per day in San Martín. This corresponds to PEN 883 and PEN 1009 per family per month, respectively.[8]

After taking into consideration how free school meals reduce the cost of preparing meals at home, we find that the **average daily costs of a nutritious diet are PEN 8.08 per person per day in San Martín, PEN 7.75 in Cajamarca, PEN 7.07 in Junín, and PEN 8.07 in Cusco.** Details on how these estimates were reached are provided below.

6.1. Guiding principles and standards for a model diet

According to the Anker Methodology, a model diet should meet WHO/FAO recommendations on nutrition in the most economical way possible, while at the same time being palatable and consistent with local food preferences and availability. A model diet for an upper-middle-income country,[9] such as Peru, should fulfill the following principles and standards:

- The number of calories in the model diet needs to be sufficient to cover the energy needs of the family members.
- The model diet needs to be nutritious, so 350 grams of vegetables, fruits and pulses per day are included to help provide micronutrients and minerals, as well as some dairy which is rich in calcium and high-quality protein.
- To meet the WHO/FAO recommendations, the model diet can only include a maximum of 30 grams of sugar and 30–34 grams of oil per person per day.
- Approximately 13% of calories must come from proteins, 15–30% of calories must come from fats, and 55–75% of calories must come from carbohydrates.

6.2. Constructing a model diet for Peru's cacao- and coffee-growing regions

The development of our model diet started by calculating the average daily calorie requirement per person in the reference family of four persons (two adults and two children) using Schofield equations recommended by the World Health Organization, which turned out to be 2,355 calories per person per day. This was determined using the following assumptions:

- The average adult height in Peru is 152.9 cm for women and 165.3 cm for men.[10]
- One adult is assumed to have a vigorous Physical Activity Level (PAL), due to strenuous farm work such as on a coffee farm, while the other adult and the children are assumed to have a moderate PALs and thus require fewer calories.

The model diet was developed through an iterative process, facilitated by the Excel calorie requirement and model diet programs that form part of the Anker Methodology.

8 This corresponds to USD 1.98 – 2.26 per person per day or USD 241 – 275 per family per month. The exchange rate used in this report is 3.67 PEN/USD, corresponding to the average exchange rate for May 2022.

9 According to the World Bank's classification, Peru is an upper middle-income country with a GDP per capita of USD 6,692 in 2021: https://data.worldbank.org/country/PE.

10 https://www.insider.com/shortest-people-in-world-by-country-2019-6#12-malawi-15831cm-5-feet-232-inches-14

We started with the Basic Food Consumption Basket (*Canasta Básica de Consumo Alimentario*) established by INEI to represent the general structure of Peruvian food consumption and the main food items consumed in rural areas and small towns of the Peruvian jungle where most cacao and coffee workers and farmers reside.[11] The main food items were grouped into major food groups with a limited number of food items per food group (while allowing for additional variety separately) following the Anker Methodology (see Table 4).

The most important items are foods that give consistency to a meal such as cereals and grains (see Table 4). **Rice, pasta** and **bread** were included in our model diet to represent this food group.

The two food items in the roots and tubers food group included are **cassava** and **potato** since these were the most consumed root vegetables in the study regions; for simplicity, sweet potatoes was excluded. As for starchy fruits and vegetables, **plantains** are one of the most consumed food items in the Peruvian jungle region given that they are widely available and they can be eaten in a variety of ways. For example, they are boiled (*plátano sancochado*), mashed and formed into a ball with pork meat (*tacacho*), or in thin fried slices (see Figure 4).

In rural areas of the Peruvian jungle region, it is common to have some kind of bean or legume (which are referred to as *menestras*) to accompany a meal (see Table 4 and Figure 4). **Beans** and **lentils** were included in our model diet.

The most common foods containing dairy in the region of interest are **evaporated milk** and **fresh cheese**. Yogurt was not included as refrigerators are not widely available in study regions.

Table 4 shows that **chicken** and **beef** are the most commonly consumed meats. Indeed, the great majority of the meals served during the fieldwork were either chicken stew (*Guiso de gallina)* or chicken soup (*Caldo de gallina*) (see Figure 4). Yet, most of the households we visited informed us that they also consumed fish, either fried or in a stew. Some even had their own fish ponds, called *piscigranjas*. Some **pork meat** was also added for variety. **Chicken eggs** are also commonly added in dishes (see Figure 4).

As for fruits and vegetables, the most common vegetables in side salads in the regions of interest are **onion**, **tomato** and **cabbage** (see Table 4). They are usually seasoned with lemon and cilantro (see Figure 4). As for fruits, **banana** is the most widely consumed fruit, followed by **papaya**, so these two were included in the model diet.

Lastly, although in a limited quantity, both **sugar** and **vegetable oil** were included in the model diet. As for hot beverages, coffee and cacao producers obviously have easy access to their own beans, but in general Peru has one of the lowest levels of coffee consumption in the World (PNUD, 2017), a situation that the coffee sector is trying hard to change. Instead, it is common to brew herbal tea from the many different herbs abundantly available in the region, so we have not included a hot-beverage in our model diet. Carbonated drinks are not considered essential and are thus excluded. Salt, spices and condiments are accounted for in the final cost of our model diet as a percentage of total food costs (see Table 8).

11 INEI uses the term “Selva Rural,” meaning rural jungle to refer to this region.

Table 4. Food items in the INEI Basic Food Consumption Basket for "Selva Rural" for the year 2010, classified by major food group

Food list	Per capita consumption (edible grams/day)
Cereals, grains and prepared cereals	
Rice	143.1
Pasta	48.6
Corn	16.7
French bread	16.0
Wheat flour	14.8
Biscuits, cookies and soda crackers	14.2
Oatmeal	6.7
Popcorn	5.8
Roots, tubers and starchy fruit or vegetable	
Green plantain	143.1
Cassava	93.5
White potato	87.7
Sweet potato	28.1
Pulses, legumes and beans	
Beans	20.0
Lentils	13.4
Dried split peas	11.7
Creole green peas	11.1
Dairy	
Evaporated milk	14.7
Fresh cheese	11.1
Yogurt	11.1
Meats, fish and eggs	
Chicken	29.2
Beef	20.0

Food list	Per capita consumption (edible grams/day)
Eggs	16.8
Canned fish	10.5
Fruits and vegetables	
Banana	182.3
Papaya	44.5
Orange	40.1
Tomato	23.4
Cabbage	22.3
Onion	20.0
Garlic	2.8
Other	
Sugar	50.1
Carbonated beverages	36.5
Vegetable oil	20.0
Salt	11.1

Source: Authors' elaboration using information from INEI (2012).

These food items correspond to most of the ingredients present in the meals offered at cantinas and rural households during our fieldwork. Some examples are shown in Figure 4.

Figure 4. Food dishes served at local restaurants and families in rural Peru, May/June 2022

Notes: (A1) *Guiso de gallina* served with rice, split peas and a tomato and cabbage salad.
(A2) *Guiso de gallina* served with rice, lentils, and a fried plantain.
(B1) Fried fish served with rice, white beans stew, and an onion, tomato, lemon and cilantro salad.
(B2) *Cuy* served with rice, potatoes, green plantains fried and mashed, and an onion and cilantro salad.
(C1) A green beans, potatoes and beef stew served with rice and a fried egg, and a side of bread.
(C2) *Caldo de gallina* with angel hair pasta and a piece of cassava, served with a side of boiled plantains.
Sources: Authors' photos.

Since our experience is that diets are similar in our four study regions and they also share the same regional food basket in INEI's classification (*Selva rural*), we use the same model diet for our four study regions. Table 5 shows the food items and number of grams included in our model diet.

Table 5. Model diet in edible and purchased grams (per person per day) for the cacao- and coffee-growing regions in San Martín, Cajamarca, Junín and Cusco

Food item	Purchased grams	Edible grams
Rice	179	179
Bread	38	38
Pasta	56	56
Potato	139	105
Cassava	113	95
Plantains	172	112
Beans	28	28
Lentils	28	28
Evaporated milk	60	60
Fresh cheese	14	14
Eggs	50	44
Chicken	71	49
Fish	61	36
Pork	16	12
Beef	20	12
Cabbage	74	59
Onion	65	59
Tomato	65	59
Papaya	95	59
Banana	92	59
Oil	24	24
Sugar	30	30

Source: Authors' calculations.

With this composition, the model diet provides 12.8% of calories from proteins, 20.2% from fats, and 67.0% from carbohydrates. Some key characteristics of the model diet are the following:

- It relies relatively heavily on starchy foods such as potato, cassava and plantains (312 edible grams) compared to unprepared cereals (179 grams of rice) and prepared cereals (38 grams of bread and 56 grams of pasta)
- It includes a considerable amount of pulses (56 grams)
- One cup of milk per day for children with some cheese for adults
- One egg per day
- Nine meals per week of 85 edible grams of meat or fish (consisting of 4 chicken, 3 fish, 1 beef, and 1 pork meals per week) with this distribution determined by relative prices per kilo
- 350 grams of vegetables, fruits and pulses
- Limited amount of sugar at 30 grams.

6.3. Determining food prices and estimating food costs

This section provides details on how food prices were established. Households in the cacao- and coffee-growing regions in San Martin, Cajamarca, Junín and Cusco buy most of their food at markets and shops in the nearest town or city (see Figure 5), so this is where we collected food price data. Food prices were collected from more than 80 sellers across the four regions.

Figure 5. Places of local food provision

Sources: Authors' photos.

It is common for rural households in the cacao- and coffee-growing regions in the study areas to grow vegetables, raise animals (such as chicken and *cuy*), have fruit trees, and even maintain a pond for raising fish (see Figure 6). This is mainly done for convenience and food security purposes, and not because it is substantially cheaper for farmers to grow their own food than to buy it at the nearest market. Although this means that the cost of food might appear to be lower for farm families than for non-farm families in the cacao- and coffee-growing regions because of own food production, it is very difficult to determine if this is so, or by how much, because own food production has various labor and non-labor costs in addition to the opportunity cost of not using land for commercial uses. Moreover, it is important to make sure that landless workers can also afford the model diet, which is why the Anker Methodology recommends only using market prices.

Figure 6. Food security measures implemented in cacao and coffee farms in the cacao- and coffee-growing regions of San Martín, Cajamarca, Junín and Cusco

Sources: Authors' photos.

Therefore, for each food product, the median price[12] was calculated using the food prices collected at markets and shops in small towns and cities across San Martin, Cajamarca, Junín and Cusco[13] during May/June 2022. This was done separately for each region in order to determine whether there were significant differences in food prices in these regions (see Table 6).

12 Median values are used instead of average values, as the median is less sensitive to extreme observations.

13 More precisely, in the districts of Tocache, Uchiza, Nuevo Progreso, Juanjuí, Huicungo, Tarapoto, Moyobamba, Soritor, Alonso de Alvarado, Nueva Cajamarca, Santo Domingo De La Capilla, La Coipa, Chirinos, San Ignacio, Perené, Pichanaki, Satipo, Santa Ana and Santa Teresa.

Table 6 Median costs (PEN/kg) of each food item of the model diet, by region, for May/June 2022

Food item	San Martin	Cajamarca	Junín	Cusco	All 4 regions
Rice	3.00	2.87	2.76	3.46	**3.02**
Bread	8.00	8.22	10.00	9.50	**8.93**
Pasta	4.00	4.00	3.84	4.36	**4.05**
Potato	2.00	2.50	1.20	1.81	**1.88**
Cassava	2.00	2.17	2.50	2.00	**2.17**
Plantains	0.60	0.90	1.20	1.03	**0.93**
Beans	6.00	6.00	6.00	6.75	**6.19**
Lentils	6.80	6.00	6.75	7.00	**6.64**
Evaporated milk	10.00	9.70	8.75	9.50	**9.48**
Fresh cheese	20.00	19.50	16.50	16.00	**18.00**
Eggs	8.50	8.50	7.50	9.35	**8.46**
Chicken	12.25	12.00	9.50	12.20	**11.49**
Fish	14.00	10.67	7.25	11.67	**10.90**
Pork	15.00	15.54	14.75	15.00	**15.07**
Beef	18.00	15.50	16.33	13.58	**15.85**
Cabbage	2.50	2.13	2.50	1.88	**2.25**
Onion	2.50	2.63	2.25	2.13	**2.38**
Tomato	3.50	4.00	2.75	2.45	**3.18**
Papaya	1.67	2.33	1.50	1.65	**1.79**
Bananas	1.60	1.60	1.60	1.60	**1.60**
Oil (in liter)	9.44	10.56	9.31	9.72	**9.76**
Sugar	4.50	4.00	3.80	4.29	**4.15**

Source: Authors' calculations based on food price surveys conducted during fieldwork.

6.4. Deducting the value of free school meals

The Anker Methodology requires that researchers check for the existence of food programs that might diminish the cost of meals at home by reducing the number of meals that need to be prepared at home.

Since 2013, Peru has seen the implementation of a nation-wide school feeding program named *Programa Nacional de Alimentación Escolar* (PNAE) – *Qali Warma* (from Quechua, meaning "vigorous child"). It aims to provide a quality food service to children at the pre-school and primary school levels of public educational institutions throughout the country, every day of the school year. *Qali Warma* covers food services at the pre-school level (from 3 years of age) and primary school level (from 6 to 12 years old) in public educational institutions, meaning a total of ten years, and the food service is available 180 days per year.[14] It has two modalities: delivery of prepared meals and delivery of products to be prepared locally. The first modality was designed for urban areas, that usually get the delivery of breakfasts or snacks for immediate consumption, industrially packaged and that do not require preparation. The second modality was designed for rural areas with low connectivity and where it is difficult to find suppliers. Under this modality, primary, processed or industrialized non-perishable foods are delivered, and the school is responsible for preparing the breakfasts and/or lunches. The technical specification indicates that these cover between 55% and 65% of the daily energy needs (Francke and Acosta, 2021).

Vaso de Leche (PVL, for its acronym in Spanish) is another noteworthy food program, that offers a daily food ration to vulnerable populations, mainly children from 0 to 6 years old and pregnant and breastfeeding mothers. This program, however, is not considered further in this section, partly because it is for vulnerable populations and therefore families earning a living income would not qualify for it and partly because a minority of families benefit from it in study regions.

Using data from the first two trimesters of the 2022 ENAHO household survey, we have calculated what percentage of children of qualifying age in each study region report that they receive each of the subsidies (see Table 7).

Table 7. Percentage of children of qualifying age who benefit from a food program in rural areas and small towns in the jungle regions of San Martín, Cajamarca, Junín and Cusco in 2022

Food program received	San Martin	Cajamarca	Junín	Cusco	All 4 regions
PNAE – *Qali Warma* Breakfast	73	85	76	54	75
PNAE – *Qali Warma* Lunch	12	83	19	0	25
PLV - *Vaso de Leche*	32	52	16	16	28
None	18	8	22	29	18

Source: Authors' calculations based on the first two trimesters of the 2022 ENAHO household survey.

The table shows that most children between 3 and 12 benefit from the *Qali Warma* food program, but with significant variation between regions. In Cajamarca, only 8% of families with children of qualifying age reported that they received no food support at all, but in Cusco the corresponding share was 29%. In Cajamarca, more than 80% of the children received both breakfast and lunch, while in Cusco, only about half received school breakfast, and none reported receiving school lunch. The two remaining regions reported intermediate coverage.

14 https://www.colegiosdelperu.com/calendarizacion-del-ano-escolar-2022-oficial-peru

To reflect these regional differences, we decided to recognize 50% of calories from *Qali Warma* for children between 3 and 12 years of age in Cajamarca, but only 25% for San Martín and Junín, and 0% for Cusco. These are conservative assumptions to be on the safe side. During our fieldwork, we found that all households visited with children between the ages of 3 to 12 received at least one *Qali Warma* meal per school day.

The formula established by the Anker Methodology to estimate the replacement value of free school food is the following:

Replacement value of free lunch provided in school = (number of years of school during which free school food is provided ÷ 18 years as a child) × (number of school days in year ÷ 365) × (average value of free school food for relevant age groups from our model diet)

Since the cost of the model diet and the value of the free school food vary between regions, the replacement values also vary between regions. The equations below show the calculations for each study region.

$$\textbf{San Martín Replacement value} = \frac{10}{18} \times \frac{180}{365} \times 1.53 = \mathbf{0.42}$$

$$\textbf{Cajamarca Replacement value} = \frac{10}{18} \times \frac{180}{365} \times 3.02 = \mathbf{0.83}$$

$$\textbf{Junín Replacement value} = \frac{10}{18} \times \frac{180}{365} \times 1.34 = \mathbf{0.37}$$

$$\textbf{Cusco Replacement value} = \frac{10}{18} \times \frac{180}{365} \times 0.00 = \mathbf{0.00}$$

Since our reference family of four includes two children, the above per child PEN values need to be multiplied by 2 and then divided by the reference family size of 4 to make this a per person in the family value. These above amounts are then deducted from the per person per day cost of our model diet.

6.5. Cost of the model diet

To the costs of the model diet, 2% was added for salt, spices, sauces and condiments; 5% was added for waste and spoilage; and 13% was added for additional variety, following the recommendations of the Anker Methodology. Table 8 shows the detailed costs of the model diet per person per day for each of the study regions.

Table 8. Daily cost per person (in PEN) of the model diet for the cacao- and coffee-growing regions in San Martín, Cajamarca, Junín and Cusco in May/June 2022

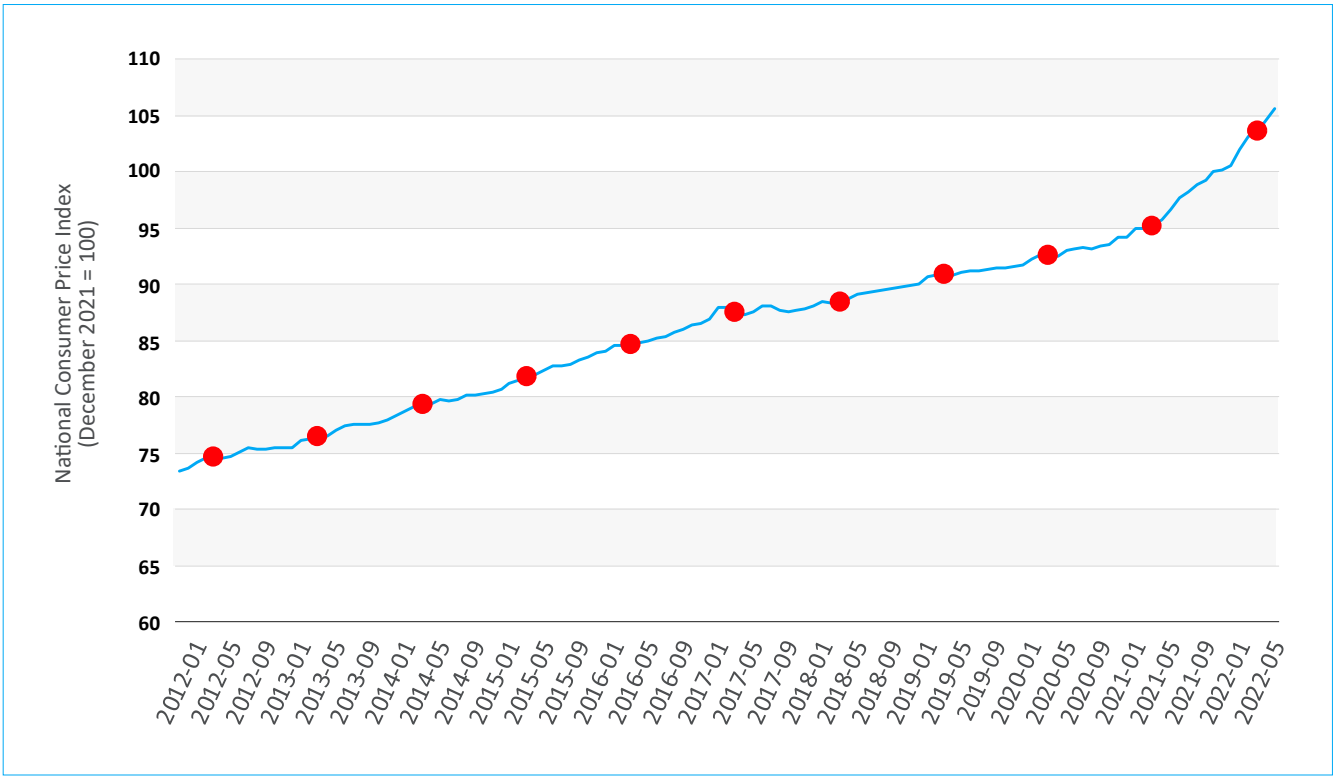
Food item	San Martín	Cajamarca	Junín	Cusco	All 4 regions
Rice	0.54	0.51	0.50	0.62	0.54
Bread	0.30	0.31	0.38	0.36	0.34
Pasta	0.22	0.22	0.22	0.24	0.23
Potato	0.28	0.35	0.17	0.25	0.26
Cassava	0.23	0.25	0.28	0.23	0.25
Plantains	0.10	0.15	0.21	0.18	0.16
Beans	0.17	0.17	0.17	0.19	0.17
Lentils	0.19	0.17	0.19	0.20	0.19
Evaporated milk	0.60	0.58	0.53	0.57	0.57
Fresh cheese	0.28	0.27	0.23	0.22	0.25
Egg	0.43	0.43	0.38	0.47	0.42
Chicken	0.88	0.86	0.68	0.87	0.82
Fish	0.85	0.65	0.44	0.71	0.66
Pork	0.24	0.25	0.24	0.24	0.24
Beef	0.36	0.31	0.33	0.27	0.32
Cabbage	0.18	0.16	0.18	0.14	0.17
Onion	0.16	0.17	0.15	0.14	0.16
Tomato	0.23	0.26	0.18	0.16	0.21
Papaya	0.16	0.22	0.14	0.16	0.17
Bananas	0.15	0.15	0.15	0.15	0.15
Oil	0.23	0.25	0.22	0.23	0.23
Sugar	0.14	0.12	0.11	0.13	0.12
Total cost of the 23 food items of the model diet (Excluding additional costs indicated below)	**6.91**	**6.81**	**6.05**	**6.72**	**6.62**
Additional costs					
Spices, sauces, salt and condiments (2%)	0.12	0.14	0.12	0.13	0.13
Waste and spoilage (5%)	0.35	0.34	0.30	0.34	0.33
Additional variety (13%)	0.91	0.89	0.79	0.87	0.86
Total cost of model diet	**8.29**	**8.17**	**7.26**	**8.07**	**7.95**
Value of free school meals	**- 0.21**	**- 0.42**	**- 0.19**	**- 0.00**	**- 0.20**
Cost of model diet for home cooked meals	**8.08**	**7.75**	**7.07**	**8.07**	**7.75**

Source: Authors' calculations.

6.6. Seasonality in food prices

Since the living income was estimated using May and June 2022 food prices, it is important to check whether food prices are unusual during May and June. Figure 7 shows the evolution of the national Consumer Price Index for Peru over the last decade, highlighting the month of May each year. There is no clear seasonal variation in prices, and May and June are in no way unusual. Therefore, there is no reason to adjust the food prices which we calculated for seasonality of food prices.

Figure 7. National Consumer Price Index for Peru, January 2012 – July 2022



Note: Green dots highlight the month of May each year.
Source: INEI. https://www.inei.gob.pe/media/MenuRecursivo/indices_tematicos/02_indice-precios_al_consumidor-nivel_nacional_2b_5.xlsx.

7. HOUSING COSTS

The housing costs for the living income and living wage were estimated by adding the rental cost of a basic acceptable dwelling plus utility costs (water, electricity, and cooking fuel).

The monthly costs of decent housing for a family of four in the cacao- and coffee-growing regions was estimated to be PEN 321 for San Martín, PEN 328 for Cajamarca, PEN 324 for Junín, and PEN 371 for Cusco.

The remainder of this section explains how these estimates were obtained using the first two trimesters of the 2022 ENAHO household survey. It also contains information on current housing conditions, and how we set our local healthy housing standard as well as a general impression of the housing situation in the cacao- and coffee-growing regions of San Martín, Cajamarca, Junín and Cusco that came to light during our fieldwork.

7.1. Housing quality in the study areas

Table 9 presents a series of relevant variables to assess housing-quality in the cacao- and coffee-growing regions of San Martín, Cajamarca, Junín, and Cusco, based on information from the first two trimesters of the 2022 ENAHO household survey. INEI divides the country into 8 geographical regions, of which we concentrate exclusively on the jungle region (*selva*) as that is where cacao and coffee are grown. Moreover, INEI classifies each location by number of inhabitants (*estrato geográfico*). This study covers only rural areas and small towns up to 49,999 inhabitants, which is where most cacao and coffee growers and workers live. Lastly, the households relevant for a living wage estimate are households with two to seven members, so these are the ones included in the calculations.

While the original ENAHO survey for the first two trimesters of 2022 includes 22,085 households, only 723 of these households are located in our study regions and comply with all the inclusion criteria mentioned above (392 in San Martín; 101 in Cajamarca; 186 in Junín; and 44 in Cusco). Although sample sizes are quite small, this is the only updated information available. Table 9 indicates housing conditions for rural areas and small towns in the jungle regions of San Martín, Cajamarca, Junín and Cusco in the first semester of 2022.

Table 9. Percentage distribution of housing conditions for rural areas and small towns in the jungle regions of San Martín, Cajamarca, Junín and Cusco in the first semester of 2022

Characteristics and variables of housing quality	San Martín	Cajamarca	Junín	Cusco
Type of location (by number of inhabitants)				
100,000 – 499,999	19	0	0	0
50,000 – 99,999	12	36	0	0
20,000 – 49,999	13	0	33	10
2,000 – 19,999	28	14	20	35
500 – 1,999	4	4	0	0
Rural	24	46	47	55
Type of housing				
Independent house	100	99	88	88
Apartment or house on shared plot	0	1	3	2
Slum/improvised house	0	0	9	10
Have a second home				
Yes	15	13	10	18
No	85	87	90	82

Characteristics and variables of housing quality	San Martín	Cajamarca	Junín	Cusco
Exterior walls				
Brick or cement block	55	13	51	44
Adobe	4	78	0	23
Tapia (rammed earth)	4	3	0	0
Quincha (caña with mud)	6	0	1	0
Stone with mud	1	3	0	0
Wood	26	0	47	33
Plywood, calamine or matting	2	1	1	0
Other material	2	2	0	0
Floors				
Parquet or polished wood	0	0	0	3
Asphalt, vinyl or similar	3	0	0	0
Tiles, ceramic bricks or similar	6	4	8	5
Wood planking	3	2	18	35
Cement	51	45	46	35
Earth	37	49	28	22
Roof				
Reinforced concrete	13	9	21	27
Wood	0	0	2	0
Roof tiles	2	2	0	0
Calamine, fiber cement or similar sheets	84	89	76	73
Straw and other unacceptable material	1	0	1	0
Total number of rooms (excluding bathroom, kitchen, passageways and garage)				
1	8	23	25	9
2	24	23	21	28
3	32	31	27	26
4+	36	23	27	37

Characteristics and variables of housing quality	San Martín	Cajamarca	Junín	Cusco
Number of persons per potential sleeping room				
0 to 2	89	74	75	82
More than 2 to 3	7	16	13	16
More than 3	4	10	12	2
Water service				
Public network inside the house	89	94	78	80
Public network on plot	1	0	9	10
Tap for public use	0	1	1	0
Well (groundwater)	2	0	0	0
Spring	1	5	7	10
River, ditch, lake, lagoon	4	0	3	0
Other	3	0	2	0
Payment for water services?				
Yes	88	20	65	41
No	12	80	35	59
Potable water				
Yes	65	9	54	41
No	35	91	46	59
Electricity				
Yes	92	88	87	96
No	8	12	13	4
Cooking fuel				
Electricity	2	0	1	0
Gas canister	82	79	77	70
Piped gas	0	0	0	2
Charcoal	2	1	1	0
Firewood	75	52	66	37
Other (e.g., agricultural waste)	38	61	33	48

Characteristics and variables of housing quality	San Martín	Cajamarca	Junín	Cusco
Toilet facility				
Public sewage system	47	32	48	63
Latrine (with treatment)	3	17	3	0
Septic tank or biodigester	24	36	15	0
Cesspit	21	6	15	10
Other unacceptable	5	9	19	27
EXTRAS				
Cellular phone	98	93	94	96
TV connection	56	20	28	17
Internet connection	40	28	42	28

Notes: Only including households with 2-7 members.
Source: Authors' calculations based on data from the first two trimesters of the 2022 ENAHO household survey.

The main distinction used to classify dwellings in Peru is whether they are built using so-called "noble materials" (bricks and cement) or traditional, local materials (mud, wood, bamboo, etc.). While local materials are cheap, environmentally friendly, and can potentially be used to build perfectly nice homes, in reality the homes built of these materials are often precarious and do not always provide adequate protection against the elements, insects, or other potential threats.

According to Table 9, most homes in the study regions are independent houses, but of highly varying quality. In Cajamarca, most exterior walls are made of adobe bricks, which provide good protection against the elements. In the other regions, wood planks are more common. However there are often large gaps between planks, meaning that they provide good ventilation and light, but little protection against insects and other potential threats. Roofs are generally in acceptable condition, but 22% - 49% of homes have dirt floors, which is not acceptable for decent housing.

The study regions are prone to several different diseases transmitted by insects, such as dengue, malaria, zika, yellow fever, and chagas. Lately, dengue is the disease causing the most problems. In October of 2021, the Government of Peru declared a health emergency in 15 states, including the four states covered in this report, due to a major dengue outbreak.[15] During 2021, a total of 48,296 cases of dengue were reported, including 45 that resulted in death (Centro Nacional de Epidemiología, Prevención y Control de Enfermedades, 2022a).

15 https://www.gob.pe/institucion/minsa/normas-legales/2205756-029-2021-sa

Chagas, a disease associated with poor housing conditions, is fortunately relatively rare in Peru. Since 2000, the highest reported number of cases was 133 in the year 2006. In 2021, only 29 cases were reported (Centro Nacional de Epidemiología, Prevención y Control de Enfermedades, 2022b).

Table 9 shows that families usually use a combination of gas and firewood for cooking. While firewood is cheap, the smoke can cause significant harm, which is why kitchens are often located outside the main home, and usually include large holes in the walls for ventilation. Likewise, inadequate toilet facilities are common in all regions, with 9 – 37% of homes using cesspits or other unacceptable solutions. Due to the precarious quality and risk of bad odors, the facilities are often located outside the main house as well.

Figure 8 illustrates the range of housing quality observed during fieldwork. The first row of pictures corresponds to a house in poor conditions of a coffee-growing family in Junín. The second row corresponds to houses located in the department of San Martín and Cajamarca with exterior walls made of adobe bricks and quincha (caña with mud). The third row shows two houses in Junín with exterior walls made of wood. The last pictures correspond to houses built of bricks, located in the departments of Cajamarca and Cusco, respectably. Further below there are photos of kitchens and toilet facilities as well.

Figure 8. Examples of varying housing quality and constructing materials in the cacao- and coffee-growing regions of San Martín, Cajamarca, Junín and Cusco, May/June 2022

Sources: Authors' photos.

7.2. Standard for basic acceptable local housing

A living income or living wage should be sufficient to cover the rental costs of a home that satisfies both minimum national and international housing standards. National standards are based on the Unsatisfied Basic Needs (UBN) methodology used by INEI to construct Peru's Poverty Map.[16] As for international standards, they are based on the World Health Organization's (WHO) Housing and health guidelines;[17] the International Labor Organization (ILO) Workers' Housing Recommendation;[18] the United Nations International Covenant on Economic, Social, and Cultural Rights;[19] and the UN-Habitat definition of a slum.[20] These are presented in Table 10.

16 http://proyectos.inei.gob.pe/web/biblioineipub/bancopub/est/lib0068/POB00006.htm
17 https://www.who.int/publications/i/item/9789241550376
18 https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:R115
19 https://www.ohchr.org/en/professionalinterest/pages/cescr.aspx
20 https://unhabitat.org/sites/default/files/2020/06/indicator_11.1.1_training_module_adequate_housing_and_slum_upgrading.pdf

Table 10. The study's housing standard based on national and international decent housing criteria

Housing characteristics	International minimum requirements	National standards based on the UBN methodology
Materials		
Walls	Durable material providing protection from elements	"Dwellings with *estera (mat)* as the predominant material on the exterior walls, with dirt floors and exterior walls of *quincha*, stone with mud, wood or other materials, in improvised dwellings are not considered to meet the minimum requirements."
Roof	Durable material without leaks	
Floor	Durable material	
Amenities		
Toilet	Access to sanitary toilet and washing facilities	"The minimum necessary is the availability of a toilet."
Water	Access to safe water (max. 30 min. total collection time per day)	NA
Electricity	Access to electricity	NA
Ventilation & Lighting		
Ventilation	Adequate ventilation, especially when cooking indoors	NA
Lighting	Adequate lighting	NA
Nº of windows	Sufficient for adequate lighting and ventilation	NA
Living Space		
Nº of m^2	≥ 30 m^2 (increases with economic development) and 48-60 m^2 for middle-income country	"Overcrowding is defined as more than three persons per room."
Nº of rooms	≤ 2 people per room excluding kitchen and toilet	
Kitchen location	If kitchen is inside, adequate ventilation for cooking needed	NA

Housing characteristics	International minimum requirements	National standards based on the UBN methodology
Condition	**In good state of repair**	**NA**
Environment	**Not a slum; no site hazards (surface water drainage, industrial pollution, danger of landslides, flood zone)**	**NA**

Note: NA indicates that a quantifiable standard is not available.
Source: Authors' elaboration.

Based on these national and international standards as well as local housing conditions, seven criteria were developed to determine our local healthy housing standard: [21]

1. **Walls** are considered acceptable if they if made of bricks, cement blocks, stone, or adobe bricks.
2. **Roofs** are considered acceptable if of tile, calamine, or re-enforced concrete.
3. **Floors** are considered acceptable as long as they are not dirt floors.
4. **Water** is considered acceptable if there is piped, potable water within the house or within the property.
5. **Toilet** facilities are acceptable if there is a toilet or latrine on property connected to a sewerage system or septic tank.
6. **Electricity** is required.
7. **Rooms** are considered adequate if there are no more than 2 persons per potential sleeping room.

Table 11 shows the percentage of dwellings in rural areas and small towns in the jungle regions of San Martín, Cajamarca, Junín and Cusco, that meet the seven minimum standards indicated above.

It is clear from Table 11 that housing quality is highly variable and that only about a fifth of homes in rural areas and small towns in the study regions comply with all seven minimum conditions. It is also important to keep in mind, that some, or perhaps even many, of these houses are not acceptable in practice, because they are either in poor condition or are located in a hazardous site environment, or have poor ventilation, or have insufficient number of windows or square meters of living space.

The main deficiencies in terms of housing quality in the study areas are lack of potable water, dirt floors and walls that do not provide adequate protection. Lack of sufficient rooms for the family is another common problem, particularly in Cajamarca and Junín (see Table 11). Figure 9 shows examples of the inside of coffee- and cacao-farmer homes visited during the fieldwork.

21 It is noteworthy that the seven criteria used do not include several criteria which are usually considered in Anker Methodology living wage and living income studies, because of data limitations of the ENAHO survey. These criteria are: at least one window per room, good ventilation, safe environmental condition around house, good condition ad state of repair, and sufficient living space in terms of square meters.

Table 11. Percent of homes[1] complying with 7 key healthy housing quality conditions for rural areas and small towns in the jungle regions of San Martín, Cajamarca, Junín and Cusco in 2022

Housing quality conditions (Sample size)	% of households				
	San Martín (392)	Cajamarca (101)	Junín (186)	Cusco (44)	All 4 regions (723)
Walls	60	91	51	67	63
Roof	99	100	100	99	99
Floor	63	51	72	78	65
Water	59	8	47	37	45
Toilet	74	85	66	63	72
Electricity	92	88	86	96	90
Rooms	88	74	75	82	81
Meets all 7 conditions	**28**	**6**	**20**	**20**	**21**

Note: [1] Only including households with 2-7 members.
Source: Authors' calculations based on data from the 2022 ENAHO household survey.

Access to piped water is almost universal, although the quality is variable. In the cacao- and coffee-growing regions of Cajamarca and Cusco, the majority of families do not pay for water (see Tables 9 and 11), but that also means that the water they have is not potable and thus can constitute a health risk. Most homes have a functioning toilet facility. However, they are of highly varying quality and usually located outside the house (see Figure 10).

Figure 9. Examples of deficiencies regarding healthy housing seen during fieldwork in the cacao- and coffee-growing regions of San Martín, Cajamarca, Junín and Cusco, May/June 2022

Sources: Authors' photos.

Figure 10. Examples of toilet facilities seen during fieldwork in the cacao- and coffee-growing regions of San Martín, Cajamarca, Junín and Cusco, May/June 2022

Notes: The first row of pictures shows several cesspits, all located in the backyard of the houses. The second row shows toilet facilities constructed with brick and cement. The last picture is a toilet facility constructed by a community project in Cajamarca.
Sources: Authors' photos.

7.3. Rent or user cost for basic acceptable housing

In order to determine the cost of renting basic acceptable housing in cacao- and coffee-growing regions in the departments of San Martín, Cajamarca, Junín and Cusco, we used data from the first two trimesters of the 2022 ENAHO household survey. The survey collected information from each household on the rent they actually paid or, more commonly, the rent they estimate they would have to pay if they had to rent their current home. For this reason, reported values tend to be multiples of PEN 50, such as 50, 100, 150, 200, 250, etc.

From the first two trimesters of the 2022 ENAHO household survey, a sub-set of houses was chosen for analysis using the following restrictions:

- Households located in rural areas and small towns in the jungle regions of San Martín, Cajamarca, Junín and Cusco.
- Households with two to seven members (excluding one-person households and especially large households likely to be multi-family households).
- Households that comply with all 7 key healthy housing quality conditions.
- Houses with an estimated monthly rent from PEN 100 to PEN 300, to exclude unrealistically low rents (perhaps because the house is in poor condition or in a hazardous zone) as well as homes that are clearly above the minimum requirements for decency.

Figure 11 shows the distribution of estimated rental values for 186 decent single-family dwellings (complying with all seven minimum criteria) extracted from the first two trimesters of the 2022 ENAHO household survey with rents between PEN 50 and PEN 500.

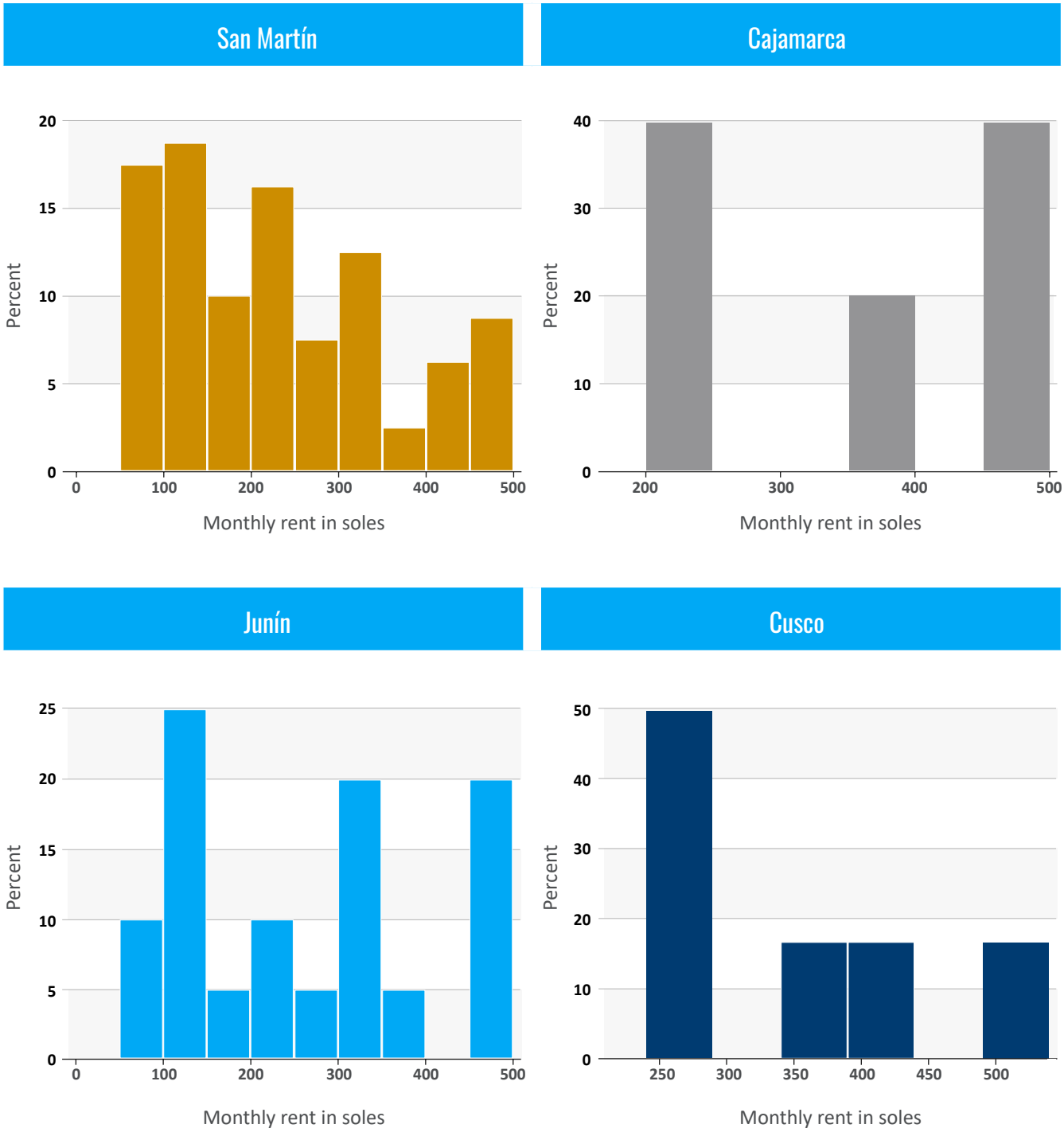
Since so few homes in the coffee and cacao growing regions of Peru currently comply with all seven minimum criteria, we have only a small number of estimated rental values for decent homes available in the ENAHO 2022 survey, especially in Cajamarca and Cusco.

These reported rents should be considered minimum values since the homes only comply with the seven measurable criteria, while they may be deficient in other aspects. For example, they may not have glass windows to permit light to get into the home, while still protecting against the elements. This was a common deficiency observed during fieldwork.

According to our discussions with people in the study regions, a decent house of noble materials for a family of four in a small town would cost about PEN 300 per month, while decent housing in rural areas could be achieved for half that amount. These estimates, however, are speculative because their only experience with actually paying rent was for a room for their adult children studying at a university in a big city, which would typically cost PEN 150 per month.

To narrow down the rent for decent housing, we increased the lower limit to PEN 100 (to exclude homes possibly in bad repair and without windows), but we also reduced the upper limit to PEN 300, as in all regions it was possible to rent a decent house at that price. When restricting rents to the PEN 100-300 range, the median rent for acceptable housing in the cacao- and coffee-growing regions is PEN 200 in San Martín, Cajamarca and Junín, but PEN 240 in Cusco (see Table 12).

Figure 11. Distribution of the estimated rental values of decent houses in rural areas and small towns in the jungle regions of San Martín, Cajamarca, Junín and Cusco in 2022



Source: Authors' elaboration based on data from the 2022 ENAHO household survey.

Table 12. Median rent for homes[1] complying with 7 key housing quality conditions

Region	San Martín	Cajamarca	Junín	Cusco	All 4 regions
Share of homes complying with all 7 housing quality conditions (%)	28	6	20	20	21
Median rent[2] for homes complying with all 7 housing quality conditions (PEN)	200	200	200	240	200

Notes: [1] Only households with 2-7 members in rural and small towns in the jungle part of the regions of interest.
[2] Excluding extreme values (less than PEN 100 or more than PEN 300).
Source: Authors' calculations based on data from the first two trimesters of the 2022 ENAHO household survey.

7.4. Utility costs

Table 13 shows the median utility costs for rural and small-town households in the jungle regions of San Martín, Cajamarca, Junín and Cusco, that meet all seven criteria of decent housing and have 2-7 members, according to data from the first two trimesters of the 2022 ENAHO household survey.

Electricity costs range between PEN 35 to PEN 45 per month across study regions. As for monthly gas cost, it equals the median price of one medium size gas canister, which is what households typically use each month, as long as they can complement with firewood. The median cost of firewood was calculated using only households reporting a positive value. Monthly water costs are low, ranging from PEN 8 to PEN 20, which is consistent with what was reported during field visits. Total utility costs for rural and small-town households in the study areas of range from PEN 121 to PEN 131 per month.

Table 13. Median utility costs (in PEN) for rural and small-town households1 in the jungle regions of San Martín, Cajamarca, Junín and Cusco in 2022

Region	San Martín	Cajamarca	Junín	Cusco	All 4 regions
Median monthly electricity costs	35	45	40	40	40
Median monthly gas costs	56	60	60	58	57
Median monthly firewood costs	20	15	15	15	15
Median monthly water costs	10	8	9	20	10
Total utility costs	**121**	**128**	**124**	**131**	**122**

Note: [1] Only including households with 2-7 members that meet all 7 decent housing conditions in "rural jungle" in regions of interest, and with rent in the PEN 100-300 range.
Source: Authors' calculations based on data from the first two trimesters of the 2022 ENAHO household survey.

In summary, for May/June 2022, the total cost of decent housing for a family of four living in rural areas and small towns in the jungle regions is estimated at PEN 321 for San Martín, PEN 328 for Cajamarca, PEN 324 for Junín, and PEN 371 for Cusco (see Table 14).

Table 14. Total housing costs (in PEN) for rural and small-town households in the jungle regions of San Martín, Cajamarca, Junín and Cusco in 2022

	San Martín	Cajamarca	Junín	Cusco	All 4 regions
Rental costs	200	200	200	240	200
Utility costs	121	128	124	131	122
Total housing costs	**321**	**328**	**324**	**371**	**322**

Source: Authors' calculations.

8. NON-FOOD AND NON-HOUSING (NFNH) COSTS

While food and housing account for the majority of expenditures for a typical household, there are other essential expenses that should be included in living income calculations. Health and education are considered human rights, but people also need to spend money on for example clothing and footwear, personal hygiene, transportation, communication, recreation, household furnishings and certain durable goods.

Whereas food and housing costs are estimated based on normative standards for a nutritious diet and healthy housing, Non-Food and Non-Housing (NFNH) costs are estimated as a mark-up based on an estimated ratio of NFNH costs to food costs according to secondary data. Information about the structure of household expenditures was obtained from the 2019 ENAHO survey, which covers both rural and urban areas of Peru.[22]

Table 15 shows the expenditure shares for the twelve main expenditure groups for households in Metropolitan Lima, other urban areas, and rural areas, respectively, as well as the national average.

The main differences between areas are found in food expenditures and housing costs, with food being the most important expenditure in rural areas, but housing the most important in Metropolitan Lima. Eating out at restaurants is actually the second biggest expenditure category for rural households. While some of the cost of meals away from home is for the food in these meals, about half is typically for profit and services such as food preparation, cooking, cleaning, and serving in an upper-middle income country like Peru. This is why the Anker Methodology adds half of food away from home costs to food costs, while the other half remains in the group of Non-Food Non-Housing expenditures.

22 The latest survey before the COVID-19 pandemic is used, because by 2021 expenditure patterns had still not returned to normal. For example, the expenditure shares on clothing, transportation, recreation and restaurants were all much lower in 2021 than before the pandemic, while food, housing and healthcare expenditures were higher (INEI, 2022d, p. 153, Table I.5).

Table 15. Average household expenditure patterns for different parts of Peru, 2019 (%)

	Metropolitan Lima	Other urban	Rural	National
1. Food and non-alcoholic beverages	20.4	26.9	40.9	26.0
2. Alcoholic beverages and tobacco	0.2	0.1	0.2	0.1
3. Clothing and shoes	3.4	4.9	5.7	4.4
4. Housing	25.1	17.7	11.0	19.8
5. Furniture and home equipment	3.8	3.9	3.7	3.8
6. Healthcare	8.1	8.5	8.2	8.3
7. Transportation	7.7	7.6	5.9	7.5
8. Communications	4.5	3.8	2.1	3.9
9. Recreation and culture	3.9	3.7	3.1	3.7
10. Education	6.1	3.4	1.1	4.2
11. Restaurants and hotels	11.9	13.6	13.3	12.9
12. Various	5.0	6.0	4.9	5.4
Total	**100.0**	**100.0**	**100.0**	**100.0**

Source: INEI (2020, p. 110, Table I.12), based on the 2019 ENAHO survey.

Two other adjustments are normally carried out in the Anker Methodology before calculating the NFNH/food ratio. First, tobacco expenditures are eliminated altogether as unnecessary. According to the detailed ENAPREF survey (*Encuesta Nacional de Presupuestos Familiares*) carried out in urban areas of Peru in 2019-2020, tobacco expenditures account for only 3.3% of the alcohol and tobacco expenditure group (INEI, 2022c, Anexos, Cuadro 1). The corresponding information is not available for rural areas, but we assume it is too small to affect our calculations, as Table 14 only includes expenditure shares of 0.1 - 0.2% for tobacco and alcohol together.

Second, half of private transportation is considered as unnecessary expenditure when ownership of private vehicles is not common, because ownership and operation of a private vehicle is more expensive than use of passenger transportation. According to the 2019-2020 ENAPREF survey, about 27% of transport costs in urban areas were for private vehicles, whereas 73% were for public transportation services. The corresponding information is not available for rural areas, but according to the fieldwork carried out for this report, private vehicles in the region were not common even though no system of public transportation is available. We therefore assume that the share of private vehicle costs in rural areas are half those of urban areas (i.e. 13.5% of total transportation costs are for private vehicles for rural areas while 86.5% are for public/passenger transportation). After eliminating half the share of private transportation, we obtain transportation expenditure shares of 6.6% for other urban areas ([7.6 – (0.27x7.6)/2] = 6.6) and 5.5% for rural areas ([5.9 – (0.135x5.9)/2] = 5.5).

With these adjustments, Table 16 presents the adjusted NFNH/Food ratios for the different types of locations, ranging from 0.87 in rural areas to 1.81 in Metropolitan Lima.

Table 16. Adjusted mean NFNH/Food ratios for different parts of Peru, 2019 (%)

	Metropolitan Lima	Other urban	Rural	National
Food at home + half of food away	26.4	33.7	47.6	32.5
Housing	25.1	17.7	11.0	19.8
Non-Food-Non-Housing	47.6	47.7	41.2	46.7
Adjusted NFNH/Food ratio	**1.81**	**1.41**	**0.87**	**1.44**

Source: Authors' calculations.

To calculate a NFNH/Food ratio for each of our study areas, we use a weighted average of the ratio for Other urban and Rural areas, with the weights corresponding to the share of the study population living in each of these areas, as calculated from the data in Table 9 and reported in Table 17. This gives us NFNH/Food ratios ranging from 0.99 in Cajamarca (which is predominantly rural) to 1.19 in San Martín where 59% of our study population lives in small towns with 2,000 to 49,999 inhabitants.

Table 17. Adjusted mean NFNH/Food ratios for different parts of Peru, 2019 (%)

	San Martin	Cajamarca	Junín	Cusco
Population distribution in study areas				
Rural areas and villages (<2,000 inhabitants)	41%	78%	47%	55%
Towns (2,000 – 49,999 inhabitants)	59%	22%	53%	45%
Preliminary NFNH/Food ratio	**1.19**	**0.99**	**1.16**	**1.11**
Revised NFNH/Food ratio	**0.97**	**0.82**	**0.95**	**0.91**

Source: Authors' calculations.

One final adjustment to the NFNH/Food ratio is needed before finalizing it. This is needed, because the data in tables 16 and 17 are based on average (i.e., mean) household expenditures, but the NFNH/Food ratio should be calculated for a relevant part of the income distribution where families are neither poor nor well to do. This is important because mean household expenditures are greatly affected by the spending of richer households, yet it is known that the percent spent for food decreases with income (Engel's law, see Anker, 2015) and the NFNH/Food ratio increases with income (see Anker and Anker, 2017). This relationship is reflected in Table 15 where the NFNH/Food ratio is highest for Lima and lowest for rural areas. The relationship of the NFNH/Food ratio to income indicated in Anker and Anker (2017) based on data for five countries (Cambodia, Dominican Republic, India, South Africa, and Vietnam) found that the NFNH/Food ratio was 23% lower for the median household expenditure compared to mean household expenditures for these 5 very different countries. Anker and Anker (2017) also found that the difference between median to mean NFNH/Food ratios is higher (lower) for countries

with higher (lower) income inequality and higher for urban areas compared to rural areas.[23] Based on these observed relationships on the effect of income inequality and location, Peru's level of income inequality, and the degree of urbanization of each study region, we adjusted the above regional mean NFNH/Food ratios downwards by 15% for rural areas and 20% for urban areas (or around 18% overall compared to the 23% in Anker and Anker 2017).[24] This results in NFNH/Food ratios of 0.97, 0.82. 0.95, and 0.91 for San Martin, Cajamarca, Junín, and Cusco respectively.

9. POST CHECKS ON HEALTHCARE AND EDUCATION COSTS

According to Table 15, healthcare costs accounted for 8.3% of total household expenditures in Peru in 2019, with similar shares for both rural and urban areas. Education expenditures were much lower, at 3.4% in other urban areas and 1.1% in rural areas according to the 2019 ENAHO survey. The purpose of the present section on post checks is to verify that the spending indicated by the secondary data is indeed enough to secure decent healthcare and education services, since these are considered human rights in the Anker Methodology. If these amounts are not enough, we would increase amounts for healthcare and education for our living income and living wage estimates.

9.1. Amounts for healthcare and education included in preliminary NFNH estimate

When applying the preliminary NFNH/Food ratios from Table 17 to calculate total family expenditures on a living income, we obtain monthly family expenditures ranging between PEN 2,065 in Cajamarca and PEN 2,332 in San Martín. Using Cajamarca as an example to calculate the minimum amount available for healthcare and education according to the preliminary NFNH estimates, we find that at least PEN 171 is available for healthcare per family per month (i.e., 0.083 x PEN 2,065) and at least PEN 33 (i.e., (0.011*0.78+0.034*0.22) x PEN 2,065) for education. In the following sub-sections, we evaluate whether those amounts are sufficient to secure adequate healthcare and education.

9.2. Health care post check

In 2002, Peru implemented a system of universal health insurance (*Seguro Integral de Salud* - SIS), which is supposed to bring free health care to everybody, especially the most vulnerable. After almost 20 years of functioning, by the end of 2021, it supposedly covered 98.99% of the target population (MINSA, 2022). However, the fact that households spent more than 8% of their total household budget on healthcare before the pandemic, and even more in 2021, suggests that the system is not working adequately, and that people find themselves forced to pay substantial amounts of money to secure the healthcare they need.

That said, basic health outcomes are not that bad in Peru. Although per capita GDP is only about half the world average, many health indicators are well above average. For example, life expectancy in Peru in 2020 was 77

23 The effects of rural or urban location and income inequality are also found for Ecuador and Dominican Republic in Latin America (authors calculations).

24 According to INEI (2022c), the poverty rate in rural areas of Peru was 40.9% in 2019. This means that more than this is relevant for our NFNH/Food ratio estimate which is why we use the median.

years, compared to the world average of 73.[25] The infant mortality rate in 2020 was 1.0% in Peru compared to the world average of 2.7%.[26] The maternal mortality rate (per 100,000 live births) was 88 in Peru in 2017, compared to the world average of 211.[27] The prevalence of stunting (permanent malnutrition) in under-fives had dropped to 10.8% in Peru by 2020, compared to the world average of 22%.[28]

Given the substantial amount of more than PEN 2,052 per year per family (or PEN 171 per month) included for healthcare in our preliminary NFNH estimate, this amount would seem to be sufficient for households to be able to cover adequate healthcare and for this reason we did not make a healthcare post check adjustment.

9.3. Education post check

Children in Peru start pre-school at age 3, primary school at age 6, and secondary school at age 12. By 16 they are supposed to finish high school. Enrollment is generally high at all levels, with our study regions being similar to the national average (see Table 18).

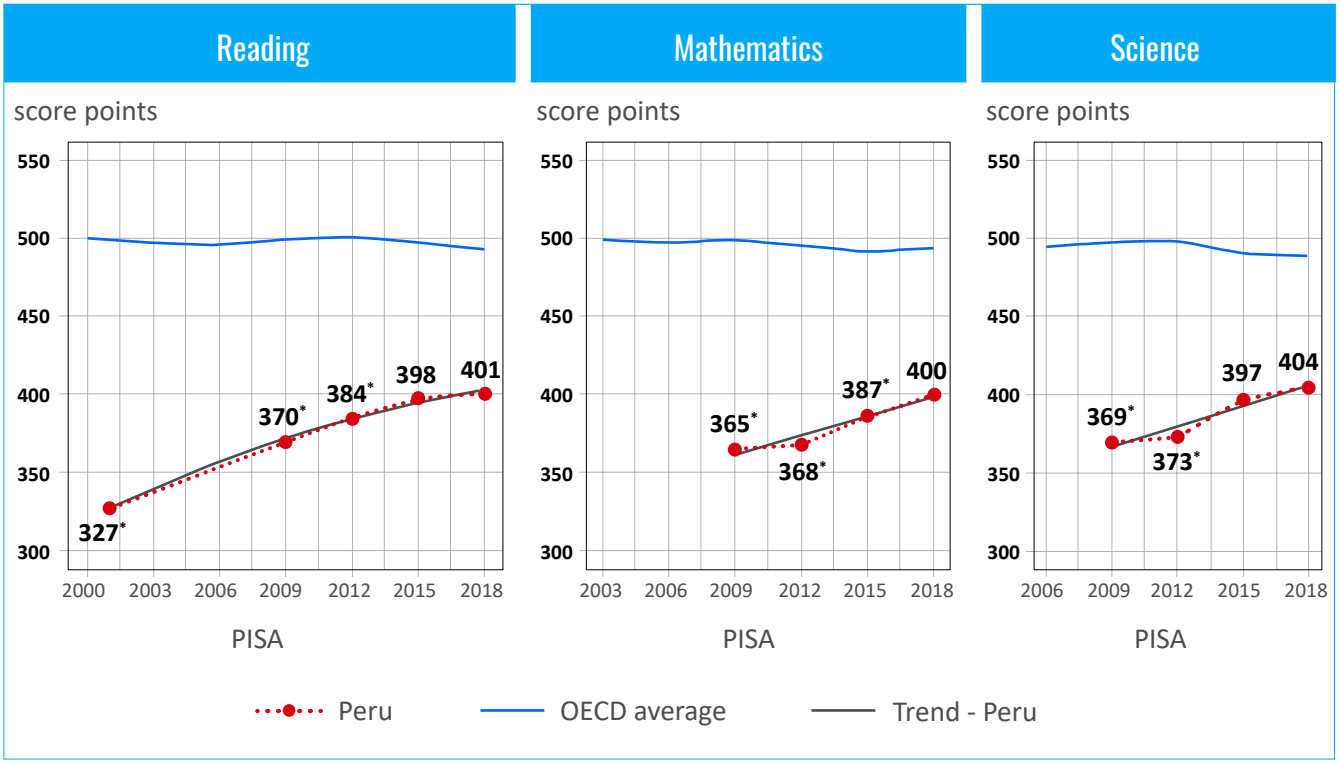
The quality of education is not satisfactory, however. Peru has a universal testing system (*Evaluación Censal de Estudiantes*), which was cancelled during the pandemic, but in 2018 it showed that less than a third of fourth grade students in public schools achieved satisfactory results in math and reading. In San Martín and Cajamarca, the results were a bit worse, while in Junín and Cusco a bit better (see Table 18). Peru also participates in various international achievement tests, such as PISA (Programme for International Student Assessment), which confirms the unsatisfactory results, but at least the country is improving steadily over time, reducing the gap to the average for OECD countries (see Figure 12).

About a quarter of students across the country attend private schools in an attempt to achieve better results, but still only 42.9% of private school children obtained satisfactory test results in fourth grade (see Table 18). However, private schools are concentrated in the country's capital and other relatively affluent cities on the coast. In the coffee and cacao growing regions, people had the choice between a rural public school or a public school in a nearby town.

Government expenditure on education is about 4% of GDP, which is close to the global average.[29] Expenditure per pupil in our study regions is similar to national level expenditures, except Cusco which seems to be spending 15-40% more, depending on the education level (see Table 18).

25 https://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=PE-1W
26 https://data.worldbank.org/indicator/SP.DYN.IMRT.IN?locations=PE-1W
27 https://data.worldbank.org/indicator/SH.STA.MMRT?locations=PE-1W
28 https://data.worldbank.org/indicator/SH.STA.STNT.ME.ZS?locations=PE-1W.
29 The World Bank: https://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS?locations=PE-1W

Figure 12. Trends in performance in reading, mathematics and science for Peruvian school children



Source: OECD (2019).

Public school attendance is free, but families usually have to pay for school uniforms and school materials. According to our fieldwork, school uniforms (including shoes and physical education uniform) cost PEN 200 - 400 per child per year, and school materials approximately the same. Assuming two children of school age in our reference family, each family would spend about PEN 800-1600 per year on education.

The amount for education included in our preliminary NFNH estimate is only around PEN 396 per year per family (i.e., PEN 33 per month), which does not seem to be quite enough. However, the education expenditure category in Peru's household expenditure statistics does not include school uniforms (which are included in the clothing category), nor school materials (which are included in the recreation and culture category). It only includes school fees, and mainly at the tertiary level which our living income standard does not require. Thus, we find that it is not necessary to make any adjustments for education expenditures given that attendance at public school is considered acceptable.

Table 18. Key education indicators for the study regions, 2019

Region	San Martín	Cajamarca	Junín	Cusco	Peru
Net enrollment rate (%)					
Pre-school (3 – 5 years)[1]	79.8	86.8	75.6	87.1	83.4
Primary school (6 - 11 years)[2]	93.1	94.6	89.6	96.1	93.6
Secondary school (12 - 16 years)[3]	79.4	83.7	88.0	87.1	84.5
Private school (% of total)					
Primary school[4]	NA	NA	NA	NA	26.0
Secondary school[5]	NA	NA	NA	NA	27.0
Public education expenditure per pupil (PEN)[6]					
Pre-school (3 – 5 years)	4,323	3,364	3,259	4,584	3,260
Primary school (6 - 11 years)	2,593	3,576	3,150	4,335	3,150
Secondary school (12 - 16 years)	3,916	4,584	4,446	5,139	4,480
Share of students with satisfactory level of math and reading in 4th grade, 2018[7]	27.6	26.8	38.1	37.3	34.8
Public schools	NA	NA	NA	NA	31.9
Private schools	NA	NA	NA	NA	42.9

Sources: [1] INEI: https://www.inei.gob.pe/media/MenuRecursivo/indices_tematicos/5.17a_1.xlsx
[2] INEI: https://www.inei.gob.pe/media/MenuRecursivo/indices_tematicos/5.18a_1.xlsx
[3] INEI: https://www.inei.gob.pe/media/MenuRecursivo/indices_tematicos/5.19a_1.xlsx
[4] The World Bank: https://data.worldbank.org/indicator/SE.PRM.PRIV.ZS?locations=PE-1W
[5] The World Bank: https://data.worldbank.org/indicator/SE.SEC.PRIV.ZS?locations=PE-1W
[6] INEI: https://www.inei.gob.pe/media/MenuRecursivo/indices_tematicos/5.2_4.xlsx
[7] INEI: https://www.inei.gob.pe/media/MenuRecursivo/publicaciones_digitales/Est/Lib1680/cap08.pdf

10. PROVISIONS FOR UNEXPECTED EVENTS TO ENSURE SUSTAINABILITY

Unforeseen events and expenses can quickly throw workers living at a basic lifestyle into poverty and debt from which it is difficult to recover. For this reason, it is common when estimating a living income or living wage to add a small margin above the cost of the basic quality of life allowed for by a living wage. Without such a margin, a living income or living wage is not sustainable (Anker and Anker, 2017).

The Anker Methodology recommends adding 5% to the costs of living in order to cover unexpected events. Using this recommended value, **PEN 100 – 113 per month per family were added to cover unexpected events and discretionary spending, depending on the region.**

PART III. THE LIVING INCOME

This part summarizes the family living costs estimated in the previous part to arrive at the living income benchmark estimate for each of the four study areas.

While family living expenses were estimated separately for the cacao- and coffee-growing regions of San Martín, Cajamarca, Junín and Cusco, most of the key values and assumptions are the same for all four regions (see Table 19). Note that among these key indicators, only the NFNH/Food ratio varies by region due to differences in urbanization rates.

Table 19. Key values and assumptions used for calculating the living income for the coffee and cacao growing regions of Peru

Key values and assumptions	
Study month and year	**May/June 2022**
Exchange rate of local currency to USD	3.67
Reference family size	4
Number of children in reference family	2
NFNH/Food ratio	
San Martín	0.97
Cajamarca	0.82
Junín	0.95
Cusco	0.91

Source: Values derived in previous sections of this report.

Table 20 below presents a summarized version of our calculations of the living income for the cacao- and coffee-growing regions in San Martín, Cajamarca, Junín and Cusco. The difference between the lowest (Junín) and highest (San Martín) living income is 13%.

Table 20. Calculation of the living income (in PEN) in the cacao- and coffee-growing regions of San Martín, Cajamarca, Junín and Cusco, for May/June 2022

FAMILY EXPENSES	San Martín	Cajamarca	Junín	Cusco
Food cost per month for reference family of 4 (1)	**983**	**943**	**860**	**981**
Cost of model diet per person per day	8.29	8.17	7.26	8.07
Savings on food costs per person per day from free school meals	- 0.21	- 0.42	- 0.19	- 0.00
Food cost per person per day considering free school meals	8.08	7.75	7.07	8.07
Housing costs per month (2)	**321**	**328**	**324**	**371**
Rent per month for acceptable housing	200	200	200	240
Utility costs per month	121	128	124	131
Non-food non-housing costs per month (3)	**954**	**773**	**817**	**893**
Preliminary estimate of NFNH costs[1]	954	773	817	893
Healthcare post check adjustment	0	0	0	0
Education post check adjustment	0	0	0	0
Additional amount (5%) for sustainability and emergencies (4)	**113**	**102**	**100**	**112**
Total living costs per month for basic but decent living standard for reference family (5) [(5) = (1) + (2) + (3) + (4)]	**2,371**	**2,146**	**2,101**	**2,359**

Notes: [1] Based on an estimated NFNH/food ratio of 0.97 in San Martín, 0.82 in Cajamarca, 0.95 in Junín and 0.91 in Cusco.
Source: Authors' calculations.

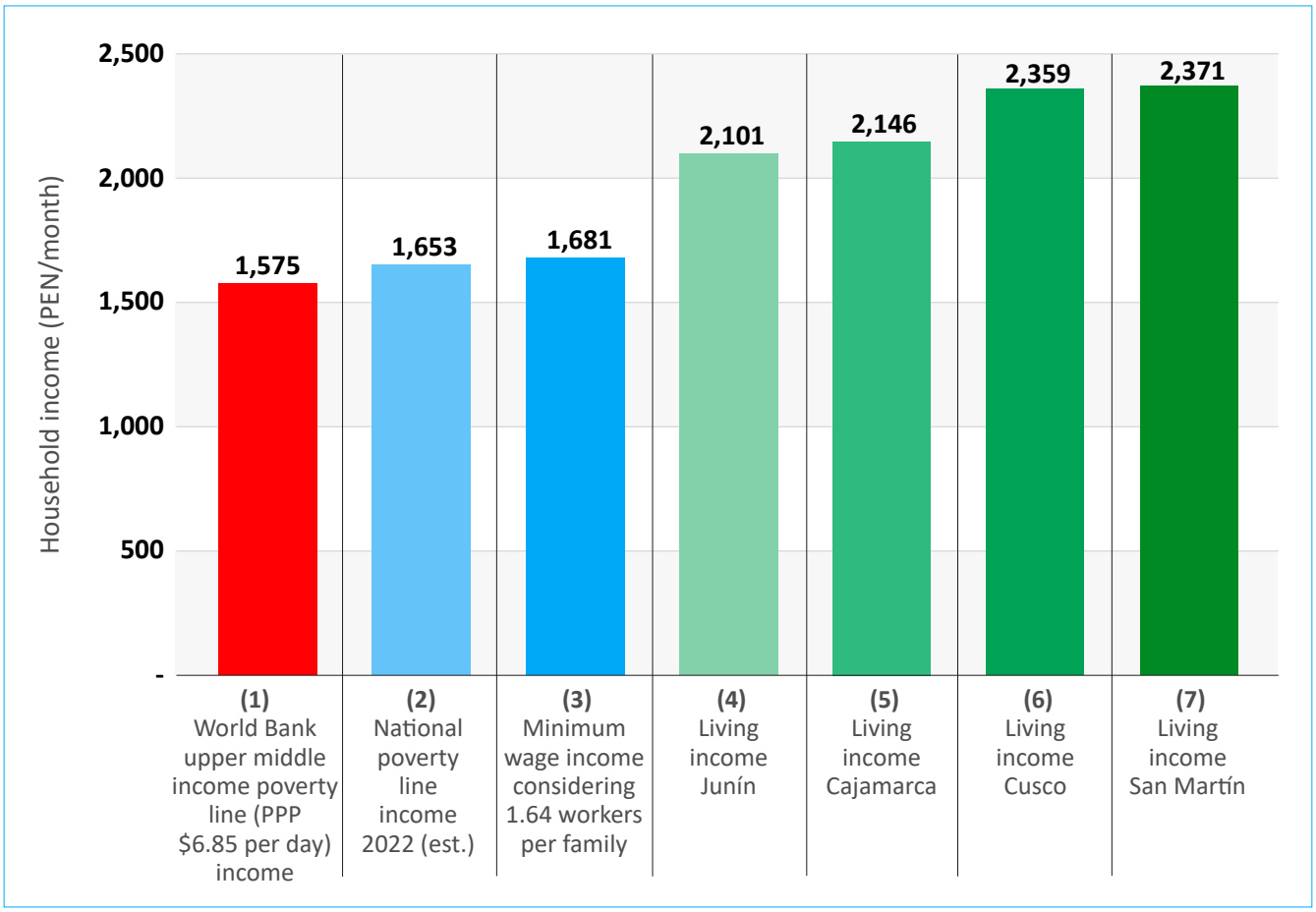
11. FAMILY INCOME LADDER

This section puts the estimated living incomes in context by comparing them to the family income that corresponds to the World Bank's poverty line for upper-middle income countries such as Peru, the national poverty line, and the household income that would be earned if workers in the family earned the official minimum wage.

Figure 13 shows an income ladder, which compares our estimated living incomes for May/June 2022 for Cajamarca, Junín, Cusco, and San Martin (columns 4 to 7) with three other family income comparisons. The first column shows the income for a family of four living on the World Bank's international poverty line for upper-middle-income countries (USD 6.85 PPP per person per day, measured in purchasing power parity adjusted international

dollars).[30] Even after the recent increase in the international poverty line for upper middle-income countries from $5.50 to $6.85 PPP in September of 2022, this poverty line is still too low for families in our study regions to afford a basic but decent standard of living.

Figure 13. Family income ladder for coffee- and cacao-growing regions of Peru, 2022



Source: Authors' elaboration.

The second column shows the income for a family of four living on the national poverty line. The national poverty line for 2021 was PEN 378 per person per month, but we have added 9.3% to this value, assuming that the poverty line will soon be updated to take into account the inflation experienced between mid-2021 and mid-2022. Thus, the family income at the national poverty line is 4 x PEN 378 x 1.093 = PEN 1,653. This is higher than the World Bank poverty line income, but still too low for basic decency in the coffee and cacao producing regions of Peru.

30 The World Bank updated its international poverty lines in September of 2022. For upper-middle-income countries, like Peru, the international poverty line is set at 6.85 PPP-adjusted international dollars per person (https://blogs.worldbank.org/opendata/september-2022-global-poverty-update-world-bank-2017-ppps-and-new-data-india). The World Bank also publishes private consumption PPP-conversion factors. The value for Peru for 2021 is 1.89 (https://data.worldbank.org/indicator/PA.NUS.PRVT.PP?locations=PE). This is equivalent to a monthly poverty line for a family of four for 2022 of 4 x (365/12)6.85*1.89 = PEN 1,575.

The third column shows the minimum wage family income, under the assumption that 1.64 workers per family[31] earns the minimum wage which is PEN 1,025 since May 2022.[32] The resulting value of PEN 1,681 per month is higher than both the national and international poverty line income, but still not enough to afford a decent standard of living in our study regions (see Figure 13).

12. PREVAILING INCOMES

It is difficult to establish prevailing incomes for coffee and cacao families in Peru, as they are predominantly small independent producers who do not receive wages for their work, but instead earn a net income from their productive activities, which often include other crops as well as off-farm labor.

In a survey of 596 cacao farmers in Peru in 2019 - 2020, Alianza Cacao Perú (2021) found that 49% of family incomes came from cacao, while 19% was derived from other on-farm products, and the remaining 32% originated from off-farm sources. They also found that incomes differ greatly between producers. While the average annual income from cacao was PEN 9,870, the poorest quintile earned only PEN 1,413 per year from their cacao production, while the richest quintile earned PEN 30,243 (net of operating expenses). According to this study of 596 cacao farmers, most cacao farmers do not earn a living income from cacao production.

No recent study is available on the prevailing incomes of coffee growers in Peru, but the generally precarious housing conditions documented in Section 6 and observed during fieldwork indicate that the majority of small coffee farmers are currently far from earning a living income.

13. CONCLUSIONS

The estimated family living expenses for the four cacao- and coffee-growing regions of Peru in May/June of 2022 were PEN 2,371 per month in San Martín, PEN 2,146 in Cajamarca, PEN 2,101 in Junín and PEN 2,359 in Cusco. The average living income for the four regions is PEN 2,244. This is the monthly net income necessary for a typical family of four (two adults and two children) to pay for a low-cost nutritious diet, decent healthy housing, adequate healthcare, education of children through secondary school, clothing, and all other essential expenses.

The average living income for the four study regions is 36% higher than the national poverty line income for a family of four and 34% higher than the minimum wage income (minimum wage for 1.64 full-time workers per family). Because of the high level of informality, it is difficult to determine the prevailing incomes among coffee and cacao producers and workers in the study regions, but judging by the current quality of housing, it is safe to say that the great majority do not earn a living income.

The living incomes for our four study regions are reasonably similar as they are all within plus or minus 6% of the average for the four regions. Thus, an argument can be made that one living income for the four study regions

31 See Annex.

32 See https://www.ppulegal.com/insights/prensa/nuevo-sueldo-minimo-entro-en-vigencia-el-1-de-mayo-todo-lo-que-debes-saber-sobre-el-incremento/#:~:text=Con%20esto%2C%20la%20remuneraci%C3%B3n%20m%C3%ADnima,de%20ayer%201%20de%20mayo.

is appropriate. On the other hand, the difference between the highest and the lowest living income for the four cocoa- and coffee producing regions is almost 13%, so an argument can also be made that separate living incomes are appropriate for each of the four study regions.

Our view is that one living income for all coffee and cacao growing regions in Peru would be the most convenient for everybody involved since coffee and cocoa prices are determined in international markets. In that case, the highest of the four estimated living incomes in this report should be used (i.e. PEN 2,371 per month), in order to be sure that the income is sufficient for a basic but decent standard of living in all regions; otherwise, families in some of the study regions would not earn a living income.

REFERENCES

Alianza Cacao Perú (2021). "La heterogeneidad tecnológica en la producción de cacao y los ingresos de las familias cacaoteras en las regiones de Desarrollo Alternativo: Evidencias y retos para una mayor producción de cacao peruano sostenible, resiliente y sin deforestación." PowerPoint presentation by José Yturrios Padilla, Director Nacional - Alianza Cacao Perú. 8 November 2021.

Andersen, L. E. and Andersen, N. N. (2022). "Living Income and Living Wage Report: Rural areas and small towns of coffee-growing regions in central Colombia (December 2021)." Living Wage Benchmark Series, No. 2021-01-03. Global Living Wage Coalition.

Andersen, L. E. and Hernani-Limarino, W. (2019). "Living Wage Report, Northwest Nicaragua (October 2017)" *Global Living Wage Coalition*, Series 1, Report 20. https://www.globallivingwage.org/wp-content/uploads/2019/01/2017-LW-Nicaragua-Benchmark.pdf

Anker, R. and Anker, M. (2017). *Living Wages Around the World: Manual for Measurement,* Cheltenham, UK and Northampton, USA: Edward Elgar Publishing.

Centro Nacional de Epidemiología, Prevención y Control de Enfermedades (2022a). Boletín epidemiológico 02 – 2022: Situación de dengue en el Perú. Semana 02 – 2022. https://www.dge.gob.pe/epipublic/uploads/boletin/boletin_20222_11_195328.pdf

Centro Nacional de Epidemiología, Prevención y Control de Enfermedades (2022b). Boletín epidemiológico 21 – 2022: Situación de enfermedad de chagas en el Perú. SE 21 - 2022. https://www.dge.gob.pe/epipublic/uploads/boletin/boletin_202221_20_122458.pdf

Choque Alave, D. H. (2021). "Evolución de la exportación de café: 2010-2020". Universidad de Lima, Facultad de Ingeniería y Arquitectura. Carrera de Ingeniería Industrial.

Delajara, M., Espinosa, R., Fonseca, C., Anker, M. and Anker, R. (2020). Living Wage Report, Michoacán, Mexico: Non-metropolitan urban and rural northwestern regions (October 2020). *Global Living Wage Coalition*, Series 1, Report 24. https://www.globallivingwage.org/wp-content/uploads/2021/01/LW-Report_Michoacan_2020-update.pdf

Instituto Nacional de Estadística e Informática (INEI). (2012*). Metodología de la Pobreza Monetaria.*

INEI. (2020). *Evolución de la Pobreza Monetaria 2008-2019. Informe Técnico*. May. Lima: Instituto Nacional de Estadística e Informática.

INEI. (2021a). *Encuesta Demográfica y de Salud Familiar – ENDES 2020.* Retrieved October 2022, from: https://www.inei.gob.pe/media/MenuRecursivo/publicaciones_digitales/Est/Lib1795/

INEI. (2021b). *Informe Técnico: Producción Nacional*. *Diciembre 2020.* N°2 February 2021. Retrieved July 19, 2022, from: https://www.inei.gob.pe/media/principales_indicadores/02-informe-tecnico-produccion-nacional-dic-2020.pdf

INEI. (2022a). *Informe Técnico: Producción Nacional. Diciembre 2021*. N°2 February 2022. Retrieved July 19, 2022, from: https://www.inei.gob.pe/biblioteca-virtual/boletines/produccion-nacional/1/

INEI. (2022b). *Informe Técnico: Evolución de las Exportaciones e Importaciones. Enero 2022.* N°3 March 2022. Retrieved July 19, 2022, from: https://cdn.www.gob.pe/uploads/document/file/3066204/Evolución%20de%20las%20Exportaciones%20e%20Importaciones%20-%20Enero%202022.pdf.pdf

INEI. (2022c). *Informe Técnico: Variación de los Indicadores de Precios de la Economía*. May. Lima: Instituto Nacional de Estadística y Informática. Retrieved August 29, 2022, from: https://www.inei.gob.pe/media/MenuRecursivo/boletines/05-informe-tecnico-variacion-de-precios-abr-2022.pdf

INEI. (2022d). *Evolución de la Pobreza Monetaria 2010-2021. Informe Técnico:* May. Lima: Instituto Nacional de Estadística y Informática. Retrieved August 29, 2022, from: https://www.inei.gob.pe/media/MenuRecursivo/publicaciones_digitales/Est/pobreza2021/Pobreza2021.pdf

MINAGRI. (2018). *Plan Nacional de Acción del Café Peruano 2018-2030.* Lima, Perú: MINAGRI. Retrieved July 19, 2022, from: https://www.undp.org/content/dam/peru/docs/Publicaciones%20medio%20ambiente/PNA-Cafe%20(pliegos)%2018Oct2018%20(1).pdf

MIDAGRI. (2021a). *Observatorio de Commodities: Café*. Boletín de Publicación Trimestral Abril – Junio. Retrieved July 19, 2022, from: https://www.gob.pe/institucion/midagri/informes-publicaciones/1924480-commodities-trimestral-2021

MIDAGRI. (2021b). *Observatorio de Commodities: Cacao*. Boletín de Publicación Trimestral, Enero – Marzo. n° 01-2021. Retrieved July 19, 2022, from: https://cdn.www.gob.pe/uploads/document/file/2009611/Commodities%20Cacao%3A%20ene-mar%202021.pdf

MIDAGRI. (2020). *Observatorio de Commodities: Café*. Boletín de publicación trimestral, Octubre-Diciembre. Ministerio de Desarrollo Agrario y Riego – Dirección General de Políticas Agrarias (DGPA).

MINSA (2022). INFORME DE EVALUACION DE RESULTADOS DEL PEI 2020-2024. CORRESPONDIENTE AL AÑO 2021. May. Lima, Peru: Ministerio de Salud. Retrieved August 29, 2022, from:

OECD. (2019). *Programme for International Student Assessment (PISA) 2018 Results: Peru - Country Note*. OECD Education GPS. Retrieved August 30, 2022, from: https://gpseducation.oecd.org/CountryReports?primaryCountry=PER

PNUD. (2017). *Linea de Base del Sector de Café en Perú*. Documento de Trabajo. Programa de las Naciones Unidas para el Desarrollo. Retrieved October 31, 2022, from: https://www.midagri.gob.pe/portal/download/2017/pncafe/sector-cafe-peru.pdf

ANNEX. LIVING WAGE FOR WORKERS

The living wage can be estimated by dividing the living income (i.e., family living expenses) by the number of full-time equivalent workers in the reference family. In this annex, we first determine the number of full-time equivalent workers per family, and subsequently calculate the net and gross living wages and then provide a wage ladder.

A.1. NUMBER OF FULL-TIME EQUIVALENT WORKERS IN THE FAMILY

When calculating a living wage, it is important to determine how many full-time workers sustain the reference family. The larger the number of income earners in the family, the smaller the required living wage.

Following the Anker Methodology, it is assumed that one adult in the family works full-time, that the spouse works part-time, and that none of the children work. Children below the age of 18 are assumed in the Anker Methodology to be in school, as a living wage should be sufficient to have children in school and avoid child labor.

The maximum legal working day established in the Peruvian Constitution is up to 8 hours per day, or 48 hours per week.[33] According to the 2022 ENAHO household survey for rural and small towns in the jungle regions of San Martín, Cajamarca, Junín and Cusco, by far the most commonly reported workweek was 48 hours. The second most common was 40 hours.

Since one adult in the family is assumed to work full-time, the main challenge in this section is to determine how much time the other adult typically works. According to the Anker Methodology, the analysis is made for men and women of prime working ages and takes into account labor force participation rates (the likelihood that someone is economically active or unemployed), unemployment rates (likelihood that someone in the labor force cannot find work), and part-time work rates (likelihood that someone working is working part time).

The proportion of full-time equivalent work per prime working age adult, *P*, is calculated as follows:

Proportion of full-time equivalent work per prime working age adult

= Average adult LFPR

× (1 − unemployment rate)

× (1 − [part-time employment rate ÷ 2])

where LFPR is the labor force participation rate for people of prime working age (25-54). This proportion is calculated separately for men and women, and then averaged to obtain the final proportion. We use ILOSTAT and World Bank data for Peru for 2021 (shown in Table 21) to calculate P for men and women separately, as follows:

33 https://www.trabajo.gob.pe/archivos/file/informacion/TRABAJADORES/INF_JORNADA_TRABAJO.pdf

$$P_{male} = 0.897 \times (1 - 0.040) \times (1 - 0.28/2) = \mathbf{0.741}$$

$$P_{female} = 0.742 \times (1 - 0.049) \times (1 - 0.45/2) = \mathbf{0.547}$$

$$P_{average} = (0.741 + 0.547)/2 = 0.644 = \mathbf{64.4\%}$$

Assuming that one adult in the family works full-time, and applying the average proportion to the second adult in the family, we find that the number of full-time equivalent workers per family is 1.64.

Table 21. Labor market data for Peru, 2021

	National
Labor force participation rate[1]	
Males, 25-54 years	89.7%
Females, 25-54 years	74.2%
Unemployment rate[2]	
Males, 25-54 years	4.0%
Females, 25-54 years	4.9%
Part-time employment rate[3]	
Male	28.0%
Female	45.0%

Sources: [1] ILOSTAT: https://www.ilo.org/shinyapps/bulkexplorer11/?lang=en&segment=indicator&id=EAP_2WAP_SEX_AGE_RT_A
[2] ILOSTAT: https://www.ilo.org/shinyapps/bulkexplorer11/?lang=en&segment=indicator&id=EAP_2WAP_SEX_AGE_RT_A
[3] The World Bank: https://data.worldbank.org/indicator/SL.TLF.PART.MA.ZS?locations=PE and https://data.worldbank.org/indicator/SL.TLF.PART.FE.ZS?locations=PE

A.2. TAXES AND SOCIAL SECURITY CONTRIBUTIONS

Mandatory deductions from wages reduce the amount of take-home pay workers receive. These need to be taken into account when calculating a living wage, to ensure that workers have sufficient net income to cover their living costs. While most coffee workers are currently informal (see below), and do not pay either income taxes or social security contributions, this is neither fair nor sustainable, so the contributions that workers ought to pay if they were formally employed is added to the net living wage as recommended by the Anker Methodology.

As shown in Table 22, for the year 2022, the first PEN 32,200 of labor income per year is exempted from income tax.[34] The living wage is well below that limit, so no income taxes need to be paid on a living wage. However, workers (via their employers) are supposed to contribute 9% of their monthly gross salary to the health system[35] and 13% to the pension system.[36]

Table 22. Labor income tax brackets for Peru, 2022

Income range in UIT (Tax Units)	Income range in PEN/year	Marginal Tax Rate
First 7 UIT are tax free	0 to 32,200	0%
Next 5 UIT (0-5)	32,200 – 55,200	8%
Next 15 UIT (5-20)	55,200 – 124,200	14%
Next 15 UIT (20-35)	124,200 – 193,200	17%
Next 10 UIT (25-45)	193,200 – 239,200	20%
Rest (> 45)	239,200	30%

Note: For the fiscal year 2022, 1 UIT = PEN 4,600 (https://www.gob.pe/435-valor-de-la-uit).
Sources: https://taxsummaries.pwc.com/peru/individual/taxes-on-personal-income and https://www.gob.pe/7319-calcular-el-impuesto-a-la-renta-de-quinta-categoria)

A.3. NET AND GROSS LIVING WAGE

Table 23 calculates the net and gross living wage for each of the four study areas. Total family living costs are first divided by the number of full-time equivalent workers per family to obtain the net living wage. Then social security contributions of 22% are added to obtain the gross living wage.

Table 23. Net and gross living wages for the coffee and cacao producing regions of Peru, May 2022

PART I. FAMILY EXPENSES	San Martín	Cajamarca	Junín	Cusco
Total living costs per month for basic but decent living standard for reference family (1)	**2,371**	**2,146**	**2,101**	**2,359**

34 https://taxsummaries.pwc.com/peru/individual/taxes-on-personal-income
35 https://orientacion.sunat.gob.pe/3282-06-calculo-de-los-aportes
36 https://taxsummaries.pwc.com/peru/individual/other-taxes

PART II. LIVING WAGE PER MONTH	San Martín	Cajamarca	Junín	Cusco
Net living wage per month based on 1.64 full-time equivalent workers (2) [(2) = (1)/1.64]	**1,445**	**1,309**	**1,281**	**1,438**
Statutory deductions from pay (3)	**408**	**369**	**361**	**406**
Social security contributions are 22% of pay	408	369	361	406
Income tax	0	0	0	0
Other statutory deductions from pay that are fixed amounts	0	0	0	0
Gross living wage per month (4) [(4) = (2) + (3)]	**1,853**	**1,678**	**1,643**	**1,844**

Source: Authors' calculations.

A.4. WAGE LADDER

Figure 14 shows a wage ladder, which compares the estimated gross living wages for May 2022 for Junín, Cajamarca, Cusco, and San Martin (columns 4 to 7) with three other wage comparisons. The first column shows the World Bank poverty line wage. It is the gross wage that would be needed to keep a reference family of four persons with 1.64 full-time equivalent workers just at the World Bank's international poverty line for upper-middle-income countries (USD 6.85 PPP per person per day, measured in purchasing power parity adjusted international dollars).[37] It is clear that the World Bank international poverty line wage for upper-middle income countries is much too low for workers to earn a living wage in the coffee and cacao-producing regions of Peru.

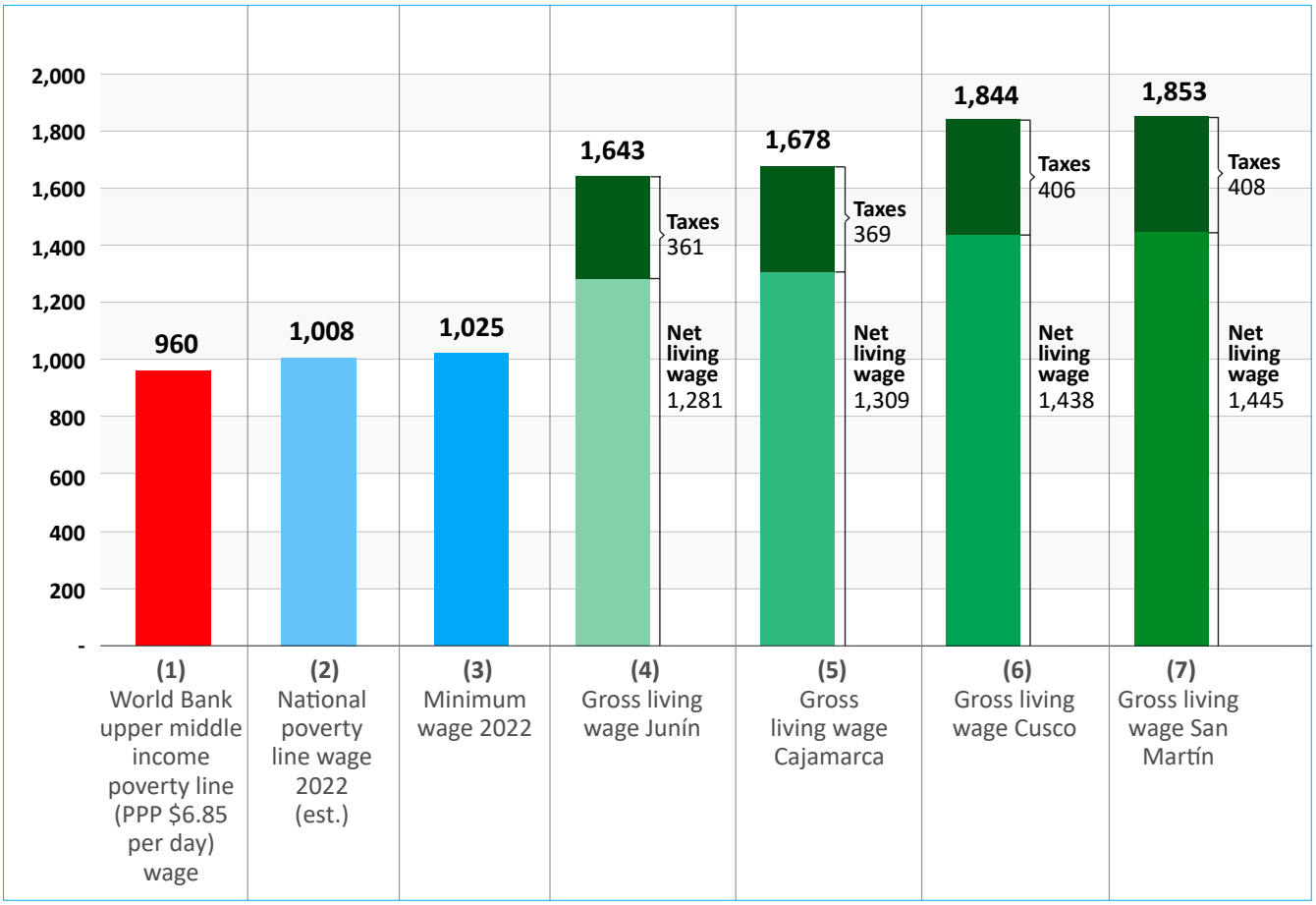
The second bar represents the national poverty line wage. It is the gross wage that would be needed for the same family to be at the 2022 national poverty line of PEN 413 per month per person, which is PEN 1,008 per month (4x413/1.64) for a family of four. The national poverty line wage is higher than the World Bank poverty line wage, but still much too low for basic decency in the coffee and cacao producing regions of Peru.

The third bar shows the gross minimum wage in Peru, which is PEN 1,025 since May 2022.[38] The estimated net living wages are 25 – 41% higher than the minimum wage. However, since workers ought to pay social security contributions of 22%, we find that the gross living wages are 60 – 81% higher than the minimum wage. Clearly, the minimum wage is not enough to secure basic decency while also contributing to the country's public health and pension systems.

37 As shown in Section 11, a family of four living on the World Bank international poverty line for upper-middle income countries in Peru would need to earn PEN 1,575 per month. This necessary income would be shared between 1.64 full-time equivalent workers, meaning that each full-time worker should earn PEN 960 to keep the family just at the World Bank's poverty line.

38 See https://www.ppulegal.com/insights/prensa/nuevo-sueldo-minimo-entro-en-vigencia-el-1-de-mayo-todo-lo-que-debes-saber-sobre-el-incremento/#:~:text=Con%20esto%2C%20la%20remuneraci%C3%B3n%20m%C3%ADnima,de%20ayer%201%20de%20mayo.

Figure 14. Wage ladder for the coffee- and cacao-growing regions of Peru. Gross wages per worker (PEN/month)



Source: Authors' elaboration

Considering that each family has about 1.64 full-time equivalent workers, the net monthly living wage needed for each full-time worker ranges from PEN 1,281 in Junín to PEN 1,445 in San Martín. While most agricultural workers in Peru currently do not have to make social security contributions, this is not a sustainable situation. The Anker Methodology calculates gross living wages (aka living wages) under the assumption that workers pay income taxes and make social security contributions as if they were formally employed. Under that assumption, the gross monthly living wages range from PEN 1,643 in Junín to PEN 1,853 in San Martín.