Report

Living Income and Actual Income at Cocoa & Coffee Farms in 9 Indonesian Regencies

Belgium
partner in development

rikolto

REPORT

LIVING INCOME AND ACTUAL INCOME

At Cocoa & Coffee Farms In 9 (Nine) Indonesian Regencies

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EXECUTIVE SUMMARY

This report presents the estimated living income benchmark and the actual income of cocoa and coffee farmers who are members of partner cooperatives supported by Rikolto at 9 (nine) regencies in the provinces of Jambi, East Nusa Tenggara, South Sulawesi, and West Sulawesi in Indonesia. The report is based on the results of a study commissioned by Rikolto in Indonesia.

A living income is defined as the income needed by a household to achieve a decent standard of living. The calculation in this study adopts the Anker Methodology, which determines the basic cost of the necessities required for a decent life, including food that meets adequate and balanced nutritional needs, safe and healthy housing, non-food non-housing (NFNH) needs, and unexpected expenses.

The living income study uses a mixed-method approach combining both qualitative and quantitative approaches. The qualitative approach is primarily used to collect the baseline data for calculating the living income benchmark through household consumption focus group discussions (FGDs), in-depth household consumption interviews, housing FGDs, and market surveys. To obtain data for calculating actual income, the study applies a quantitative approach through farmer household surveys, supplemented by qualitative data from FGDs on cocoa/coffee farming businesses.

The study was conducted from September 9 to October 5, 2024 across the 9 regencies of Ende, Enrekang, Kerinci, East Luwu, North Luwu, Manggarai, Ngada, Polewali Mandar, and North Toraja. In the process, 18 household consumption FGDs, 17 in-depth household consumption interviews, 18 housing FGDs, 35 market surveys, 18 actual income FGDs, and 869 household surveys were carried out across the 9 regencies.

The study involved 394 qualitative informants from FGDs and in-depth interviews, consisting of 177 men and 217 women, and surveyed 869 cocoa/coffee farming households, comprising 512 male respondents (59%) and 357 female respondents (41%).

Findings

- This study has successfully calculated living income across village areas in the 9 regencies, focusing on families with 4 members (2 adults and 2 children). The calculation is based on assumed living income figures that would enable coffee and cocoa farmers in the 9 regencies, along with their families, to achieve a decent standard of living. This living income would enable them to afford low-cost, nutritious food that meets WHO and FAO recommendations; healthy housing that complies with international and national minimum standards and principles; adequate healthcare; 12 years of compulsory education; and all other essential needs in a sufficient and decent manner.

- The living income benchmark calculation for each regency is summarised in the table below:

Table 1. Annual Living Income Benchmark in 9 Regencies

Regency	Consumption Expense	Housing Expense	NFNH	Subtotal	Unexpected Expenses	Total Living Income Benchmark
Ende	31,796,640	7,655,082	19,684,791	59,136,513	2,956,826	62,093,339
Enrekang	30,382,560	7,645,122	22,966,467	60,994,149	3,049,707	64,043,857
Kerinci	32,653,440	7,617,542	24,264,859	64,535,841	3,226,792	67,762,633
East Luwu	31,413,600	9,574,215	28,242,854	69,230,670	3,461,533	72,692,203

North Luwu	30,935,580	8,059,594	25,233,453	64,228,627	3,211,428	67,439,995
Manggarai	32,433,120	5,988,002	21,110,530	59,531,652	2,976,583	62,508,235
Ngada	32,010,284	8,093,303	18,700,687	58,804,274	2,940,214	61,744,488
Polewali Mandar	31,040,640	6,451,506	24,644,272	62,136,418	3,130,681	65,243,099
North Toraja	31,393,844	7,865,765	17,389,219	56,648,828	2,832,441	59,481,270
Average	31,562,183	7,661,126	22,470,792	61,694,101	3,084,705	64,778,806

- Meanwhile, actual income calculates total income that farmers may earn, which comes from: a) farmbased income, namely income from coffee/cocoa crops, other crops, and livestock raised on the farm; b) non-farm income, namely income from non-farming activities and livestock outside the farm, as well as financial support from relatives and government aid. The summary of actual income is as follows:

Table 2. Actual Income of Farming Households in 9 Regencies

Regency	Average Income from Coffee/Cocoa	Average Income from Non-Coffee/ Cocoa	Average Net Income from Farming	Average Net Income from Non-Farming	Average Net Income of Farming Households
Ende	15,591,686	9,998,527	22,447,336	8,991,191	30,724,559
Enrekang	30,634,711	17,811,383	39,554,189	14,023,727	50,191,534
Kerinci	25,824,607	37,128,078	40,849,652	26,256,975	53,085,510
East Luwu	46,050,706	15,408,264	45,769,646	13,344,745	55,301,261
North Luwu	65,832,353	13,760,073	65,623,497	13,642,344	73,847,243
Manggarai	30,283,641	9,431,241	31,995,365	8,931,265	39,402,027
Ngada	22,954,284	19,038,984	29,945,383	14,232,355	42,630,273
Polewali Mandar	60,956,453	17,813,738	59,614,375	11,191,005	66,581,531
North Toraja	43,536,598	14,300,000	44,836,512	12,754,683	56,880,630
Grand Total	37,457,295	16,687,232	41,760,244	12,938,137	51,547,766

- Based on the results of the actual income and living income benchmark calculations, it is found that across the overall sample from the 9 regencies, there is a gap between actual income and the income benchmark amounting to Rp13,231,040.00. Two regencies show a surplus: North Luwu (+Rp6,407,478.00) and Polewali Mandar (+Rp1,338,293.00). However, the other 7 regencies show income deficit gap, with Ende having the biggest gap (-Rp31,368,779.00) and North Toraja farmers having the smallest gap (-Rp2,600,640.00). The summary of surplus/gap of each regency is as follows:

Table 3. Surplus/Gap of Actual Income vs Living Income Benchmark

Regency	Net Household Income	Living Income Benchmark	Gap/Surplus
Ende	30,724,559	62,093,339	-31,368,779
Enrekang	50,191,534	64,043,857	-13,852,323
Kerinci	53,085,510	67,762,633	-4,677,123
East Luwu	55,301,261	72,692,203	-7,390,942
North Luwu	73,847,473	67,439,995	6,407,478
Manggarai	39,402,027	62,508,235	-23,106,207
Ngada	42,630,273	61,744,488	-19,114,215
Polewali Mandar	66,581,531	65,243,239	1,338,293
Tanah Toraja/ North Toraja	56,880,630	59,481,270	-2,600,640
Grand Total	51,547,766	64,778,806	-13,231,040

- The combined income from coffee/cocoa and non-coffee/non-cocoa shows that farmers in North Luwu and Polewali Mandar Regencies earn the highest total income. Meanwhile, the lowest combined income is experienced by farmers in Ende, Ngada, and Manggarai. North Luwu and Polewali Mandar earn the highest income from farming because these two regencies rank first and second in terms of land area. In terms of productivity, these regencies are not among the highest performers, but they can still be considered relatively decent when compared to the other 7 regencies. The high price of cocoa also contributes significantly to the high income in these two cocoa-dominant regions. This is further supported by income from non-cocoa crops in both North Luwu and Polewali Mandar which, although not the highest, fall into the middle-income category among the 9 regencies.

- Meanwhile, in Ende, both income from coffee/cocoa and from non-coffee/cocoa sources fall into the low-income category compared to other regencies; likewise with Manggarai. Specifically for Ngada Regency, income from coffee/cocoa is the lowest, although income from non-coffee/cocoa sources ranks second highest. However, due to the extremely low income from coffee/cocoa, the income from other crops is not sufficient to elevate Ngada out of the bottom three regencies in total income. An interesting case is found in Kerinci District, where income from non-coffee/cocoa sources is actually higher than from coffee/cocoa. Kerinci's ranking is the second lowest based on coffee/cocoa income alone, but the non-coffee/cocoa income helps raise its ranking by three places to fifth overall.

- In all regencies, the productivity of cocoa and coffee farming remains very low, reaching less than 25% of their optimal potential. This low productivity causes income from coffee and cocoa farming to fall far below its true potential.

Recommendations

This study made the following recommendations:

- Increase income from both coffee/cocoa and non-coffee/cocoa sources to reach the living income benchmark, with regency-specific targets as follows:

Regency	Target for coffee/cocoa commodities	Target for non-coffee/cocoa commodities
Ende	Increase cocoa income to 350% of the current level	Increase non-cocoa income to 150% of the current level
Enrekang	Increase cocoa income to 50% of the current level	Increase non-cocoa income to 110% of the current level
Kerinci	Increase coffee income to 130% of the current level	Increase non-coffee income to 130% of the current level
East Luwu	Increase cocoa income to 130% of the current level	Increase non-cocoa income to 110% of the current level
North Luwu	Increase cocoa income to 110% of the current level	Increase non-cocoa income to 110% of the current level
Manggarai	Increase coffee income to 180% of the current level	Increase non-coffee income to 150% of the current level
Ngada	Increase coffee income to 200% of the current level	Increase non-coffee income to 150% of the current level
Polewali Mandar	Increase cocoa income to 110% of the current level	Increase non-cocoa income to 110% of the current level
North Toraja	Increase coffee income to 110% of the current level	Increase non-coffee income to 110% of the current level

- One of the ways to increase income from coffee/cocoa is by improving productivity of these commodities, as there is significant opportunity for a 4 to 5 times increase from the current levels.

- One of the methods to increase productivity is by encouraging farmers to rejuvenate their farms using high-quality seedlings sourced from official providers. The proportion of farmers using such seedlings is recommended to be increased to 80%, from the current rate of around 51%. Farmers who apply fertilisers are also recommended to increase from the current level of only 64.44%. The use of pesticides (provided they are environmentally safe and applied with the correct dosage, frequency, and method) should also be increased from the current rate of only 51.13%.

- In addition to the above, it is also recommended to increase guidance for the implementation of various Good Agricultural Practices (GAP) on coffee/cocoa and other types of farming. Along with that, GAP improvement among farmers should also be regularly monitored.

Table Content

List of Table

List Of Figures

1. Introduction

1.1 Background Information

This study report consists of living income benchmark estimation and baseline data for coffee and cocoa farmers who are members of Rikolto's cooperative partners in nine regencies located in the provinces of Jambi, South Sulawesi, West Sulawesi, and East Nusa Tenggara.

This study was conducted from July to November 2024. It began with the programme team strengthening their internal capacity regarding data collection for living income and actual income benchmarks for cocoa and coffee farmers. CIRCLE Indonesia facilitated this in August 2024 through training and direct practice in compiling and implementing planning, methodology, and techniques for collecting actual income data of farmers who are members of Rikolto's cooperative partners. This activity was continued with the collection of midline data on living income and actual income benchmarks of cocoa and coffee farmers by the Rikolto Team and enumerators from September to October 2024.

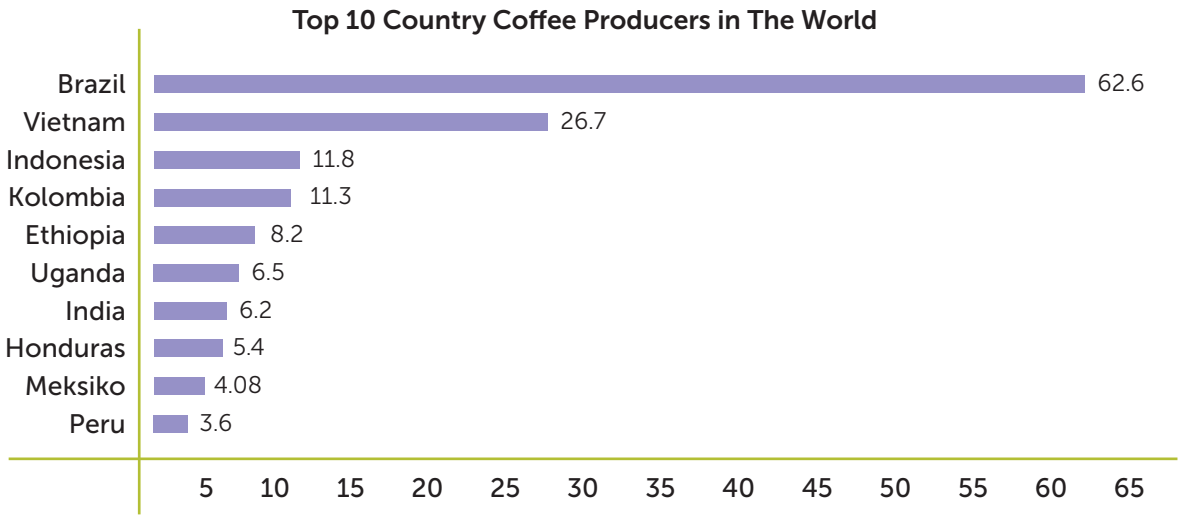
After the data was collected, the Indonesian CIRCLE Team continued the process by reviewing the quality of data obtained from the field, processing and analyzing data, and compiling a report from the data analysis results. This study report uses a comprehensive methodology developed by Martha Anker and Richard Anker (2017), which is adapted to the context of cocoa and coffee farmers who are members of Rikolto's partner cooperatives. Anker's methodology is applied to estimate the cost of a decent standard of living for farmers and their families.

1.2 Context

1.2.1 Indonesia and Its Coffee and Cocoa Potentials

Coffee and cocoa are the most important agricultural commodities in Indonesia. According to the Central Statistics Agency (BPS) report, Indonesia exported 434.19 thousand tonnes of coffee with an export value of US1.13 billion throughout 2022. Based on data from the United States Department of Agriculture (USDA), in the 2022/2023 period, Indonesia was the third largest coffee producing country in the world, after Brazil and Vietnam, with a total production of 11.8 million sacks[1]. From 2023 to 2024, Indonesia contributed 6% to the global coffee production[2].

Figure 1. World's Largest Coffee Producers, 2022/2023



Source : United States Deapartement of Agriculture (USDA)

According to the International Cocoa Organization (ICCO), Indonesia is one of the top ten cocoa producers in the world, placing seventh with a total production of 180 thousand tonnes in 2022. Based on its business status, in the last 10 years (2012-2021), the majority of cocoa plantations were Smallholder Plantations (97.57%), whereas 1.01% were State-Owned Plantations (Perkebunan Besar Negara/PBN), and the rest 1.42% were Private Plantations (Perkebunan Besar Swasta/PBS).

(https://www.cnbcindonesia.com/research/20231013101330-128-480264/cokelat-ri-kena-dendameropa-kini-juga-terancam-el-nino, 2023)

Figure 2. World's Largest Cocoa Producers, 2022

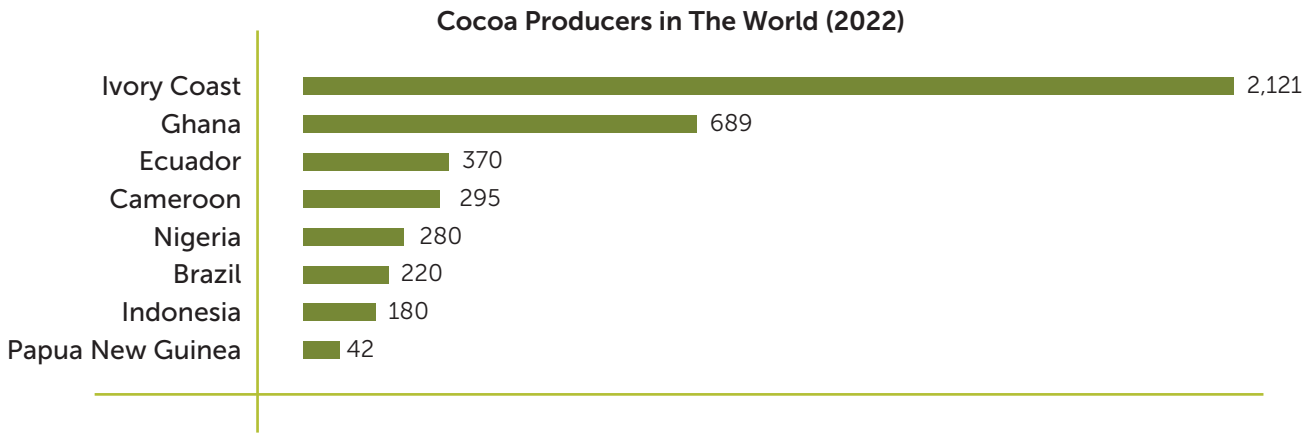


Chart : CNBC INDOENSIA RESEARCH - Source : International Cocoa Organization (ICCO) - Created with Datawrapper

1.2.2 RIKOLTO and Its Coffee and Cocoa Programmes

Rikolto's Coffee and Cocoa Programmes are currently being implemented in four provinces, i.e., Jambi, South Sulawesi, West Sulawesi, and East Nusa Tenggara, where Rikolto directly collaborated with farmers' organisations/ cooperatives. The objective of this programme is to establish mutually beneficial relationships between coffee and cocoa smallholder farmers with other actors and stakeholders in the value chain, and ultimately improve their livelihood and create a more sustainable food chain.

To achieve the above objectives, the COCO programme works with 3 main intervention strategies, namely:

1. Sustainable crop production
2. Inclusive market
3. Enabling environment

The approach of Rikolto's COCO programme measures the living income of farmers' households using a living income benchmark.

1.2.3 Study Area

This study was conducted in the areas of cooperative partners in 9 regencies as described in the following table.

Table 4. Cooperative Partners and Study Areas

No.	Commodity	Study Area	Cooperative Partner
1.	Coffee	Kerinci Regency, Jambi	Koerintji Barokah Bersama Cooperative
2.		North Toraja Regency, South Sulawesi	Toraja Coffee Farmer Association
3.		Enrekang Regency, South Sulawesi	Benteng Alla Cooperative
4.		Manggarai Regency, East Nusa Tenggara	Manggarai Coffee Farmer Association
5.		Ngada Regency, East Nusa Tenggara	Arabica Flores Bajawa Secondary Cooperative
6.	Cocoa	North Luwu Regency, South Sulawesi	Masagena Farmer Cooperative
7.		East Luwu Regency, South Sulawesi	Cahaya Sehati Farmer Cooperative
8.		Polewali Mandar Regency, West Sulawesi	Mitra Agribisnis Mandiri AMANAH Cooperative
9.		Ende Regency, East Nusa Tenggara	Produksi Agroniasia SIKAP Cooperative

1.3 Concept and Definition

1.3.1. Concept and Definition of Living Income

The popularity of the living income approach is inseparable from the popularity of the living wage approach. While the living wage approach focuses on calculating the cost of a decent life for workers and their families, the living income approach focuses on calculating the cost of a decent life for families and its connection to a company's value chain via trade mechanisms. Both approaches view a decent life as a human right. This approach builds on the previous wage approach, which only calculates nutritional adequacy. This new approach considers the fulfilment of human rights in relation to not only the right to 3 food, but also the rights to adequate housing, education, and health. It also considers rights related to association, expression of opinions, and beliefs.

Formally, the concept of a living wage was introduced by the Director-General of the ILO in 1999, highlighting the importance—through freedom, equality, security, and human dignity—of establishing equal opportunities for women and men to achieve 'decent and productive work'. The Living Wage is a combination of its four strategic objectives: promotion of rights at work, employment, social protection, and social dialogue. From a practical perspective, fundamental principles and rights are the prerequisites of decent work, while quality and secure employment or work is its content, and social dialogue is the "process of achieving it".

Living Income Community of Practice[3] defines a living wage as the net annual income required by a household in a certain place to provide an adequate standard of living for all of its members. In calculating the living wage, the Living Income Community of Practice[4] uses a methodology for measuring living wages known as the Anker Methodology, developed by Richard & Martha Anker (2017)[5] for calculating living wages. This study uses the Anker Methodology to determine the living income.

[3]https://www.living-income.com/the-concept
[4]The Living Income Community of Practice is an alliance of partners dedicated to the vision of thriving, economically stable, rural communities linked to global food and agricultural supply chains for further information can be found at. https://www.living-income.com/
[5]Anker Richard, and Martha, 2017. Living Wages Around the World. Manual for Measurement.

Estimating a living income starts with estimating the cost of a decent basic lifestyle for a family. This calculation adds up the costs of three expense groups: food (for affordable, nutritious food), housing (for basic, healthy housing), and other essential expenses for a family, and then adds a small margin for sustainability and emergencies, as illustrated in the figure below.

Figure 3. Components of Cost of Decent Living for Reference-Sized Family

1.3.2. Principles of Estimating the Living Income

Living Income Community of Practice has established guiding principles for estimating the living income in alignment with the living wage concept defined by Anker Methodology.

According to these principles, the cost of a decent standard of living should be:

- A normative concept: Its purpose is not to describe the situation of every individual, but to serve as a reference for typical families in a given place.
- Globally applicable: The international minimum standards serve as a guideline for estimating the components of the cost of living.
- Locally adapted: In making choices about implementing acceptable methodologies, those affected by the benchmark should be the focus. This means that considerations should be locally adapted to cultural norms and conditions while meeting basic international standards of decency.
- Agnostic to the source of income: The standard cost of living for a family of a particular size shall be the same for all families of the same size in the same place, regardless of their livelihood activities.
- Reflect annual needs: The standard cost of living should reflect the needs of a family over an average year, not an annual estimate of the family's total lifetime costs (e.g., including retirement costs, etc.). One exception to this is to allow for some savings to absorb cost variations that are common to all types of families and usually occur only once every few years (e.g., weddings, funerals)
- Based on market prices: Costs are estimated based on the market prices of goods and services, although in practice, the family may acquire some goods through their own efforts.

1.3.3. Living Income and Actual Income Benchmarks

A living income represents a "decent" remuneration that enables self-employed workers, such as farmers, to earn a net income (i.e., sales revenue minus production costs and required deductions) that provides a decent standard of living for themselves and their families.

Living income benchmark is the cost for a family to live decently. A family consists of a spouse or partner and children, and does not include parents or extended family members. This is something that is targeted to be achieved.

Actual income or basic income is the current family income, either from the cocoa and coffee farming sector or from other sources of income.

1.3.4. Concept and Definition of Living Income

The popularity of the living income approach is inseparable from the popularity of the living wage approach. The Living Wage Approach focuses on calculating the cost of a decent life for workers and their families, taking into account the circumstances of the country, and shall include work performed during normal working hours as defined by the International Labour Organization (ILO). Meanwhile, the Living Income Approach is defined as the net income of a family earned in dignified working conditions and sufficient to meet a decent standard of living for all members of the household (Living Income Community of Practice LICoP). Both concepts take into account the costs of food, water, housing, education, health, and other essential goods and services, such as transportation and clothing, as well as provide reserves for unforeseen incidents. Both concepts go beyond the traditional poverty level by defining a decent standard of living, rather than simply survival as a minimum target.

In short, living income focuses on self-employed workers, including smallholder farmers, while living wage relates to workers who receive wages, such as workers in companies.

1.4 An Overview of the Respondents and Participants

1.4.1. Overview of Survey Respondents

This study involves 869 survey respondents, consisting of 512 men (59%) and 357 women (41%). For the educational background, the highest is Primary School/SD (37%) and Senior High School/SLTA (31%).

Table 5. Number of Respondents Based on Educational Background

Highest Education Level	Number	Percentage
Unschooled	39	4%
Primary School/SD	318	37%
Junior High School/SMP	185	21%
Senior High School/SLTA	273	31%
Diploma	11	1%
Degree	43	5%
Total	869	100%

Most of the respondents are in the age category of 41–50 years old (30%) and 51–60 years old (30%). The composition of respondents based on their marital status is: married (91%), not married (6%), divorced (1%), and widowed (3%).

Table 6. Number of Respondents Based on Age Category

Age Category of Respondents	Number	Percentage
<30 years	68	8%
31–40 years	172	20%
41–50 years	265	30%
51–60 years	258	30%
>60 years	106	12%
Total	869	100%

The majority of respondents live with their families in their own homes (90%), and others live in family homes (10%). Their house area is 48–68 m2 (32%), 69–89 m2 (22%). The survey shows that 15% of respondents has a house area of <48 m2.

Table 7. Respondents' House Area

House Area	Number	Percentage
<48 m^2	130	15%
48–68 m^2	280	32%
69–89 m^2	191	22%
90–110 m^2	134	15%
>110 m^2	134	15%
Total	869	100%

Almost all houses (99%) use electric lighting supplied by PLN. Their houses have good access to water, with the distance to the drinking water source ranging from 1 to 100 metres (97%) and 101–500 metres (2%).

Table 8. Drinking Water Source in Respondents' Homes

Water Source	Number	Percentage
Using safe water sources (covered well, protected spring, PDAM, and refilled bottled water)	651	72%
Using unsafe water sources (open well, open spring, river water, and rainwater)	249	28%
Total	900	100%

The majority of respondents use safe water sources (72%) for consumption. A total of 97.2% of houses have a gooseneck toilet, 1.3% use a non-gooseneck toilet, and 1.5% of the houses do not have a toilet at all.

1.4.2. Overview of FGD, KII, and Market Survey Participants

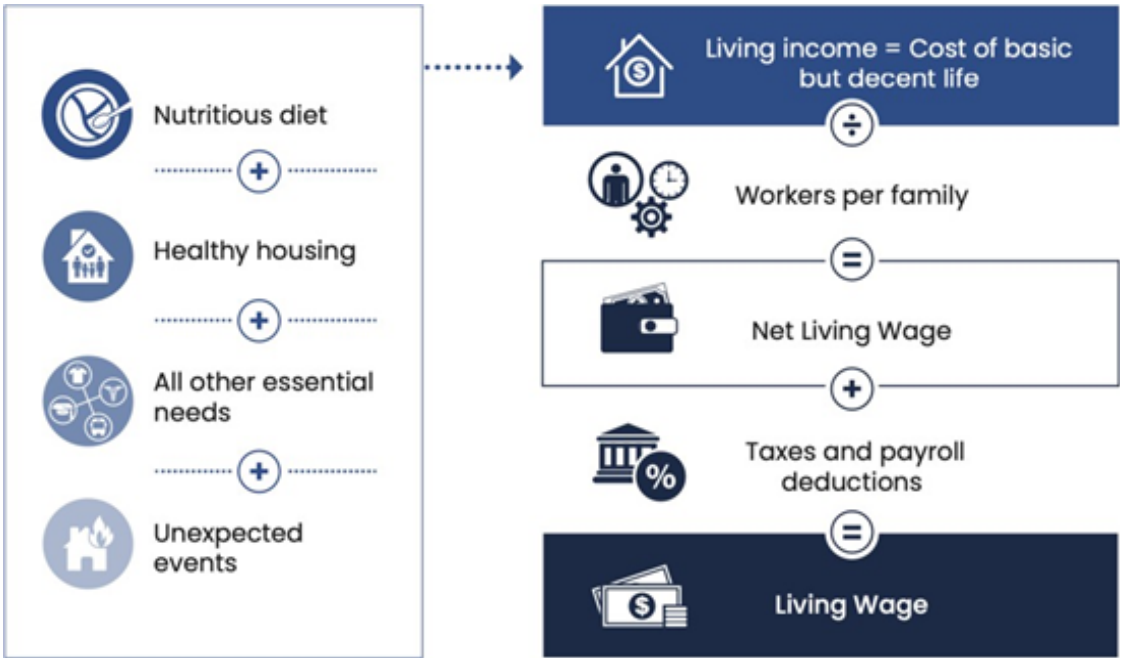
Table 9. Number of FGD, KII, and Market Survey Participants

Activities	Frequency of Activity	Total Participants	Male	Female
FGD on household consumption	18	179	21	158
FGD on Housing	17	88	80	8
FGD on Actual Income	18	110	76	34
In-depth interview on household consumption	17	17	0	17
Total	70	394	177	217
Market survey	35 sellers			

2. LIVING COST/LIVING INCOME OF COFFEE & COCOA FARMERS COOPERATIVE PARTNERS IN 9 REGENCIES

Based on the Anker methodology for estimating a living income, it is necessary to consider four essential elements for achieving a decent standard of living: (i) the cost of a nutritious staple diet; (ii) the cost of adequate and healthy housing—in accordance with established standards; (iii) the cost of all other basic needs, such as healthcare, education, clothing, and others, which in this report are referred to as Non-Food and Non-Housing (NFNH) costs; and (iv) an additional reserve to serve as a buffer, enabling farmers and their families to be less vulnerable to emergencies.

Figure 4 Methodology for Estimating Living Income



Source: Anker Research Institute, 2024

Food and housing costs are determined based on primary data on food prices collected during fieldwork, while the assessment of NFNH costs is primarily based on secondary data sources. However, three cost items (healthcare, education, and transportation) are "double-checked" using data collected during field research to ensure that the costs derived from secondary data sources are not being underestimated. These costs are then combined to produce an estimate of the living costs for a basic standard of living, with a graphical representation shown in Figure 4. This living income is then divided by the number of full-time equivalent workers per household, derived from labour statistics in the study area, to calculate the net (take-home) living wage. Finally, the gross living wage (also referred to as a decent wage) is calculated.

2.1 Reference Family Size

The Anker methodology refers to the concept of family when calculating a living income. A family consists of a husband, wife, and children, while the concept of a household includes extended family members living with the family. The Anker method recommends using a minimum family size of 4 people when calculating income. Based on data collected in the field, the average number of family members among farming families in 9 regencies is summarised in the following table.

Table 10. Average Number of Family Members in 9 Study Areas

No.	Study Area	Average Number of Family Members
1	Ende	4.4
2	Enrekang	3.5
3	Kerinci	3.5
4	East Luwu	3.0
5	North Luwu	3.9
6	Manggarai	4.8
7	Ngada	4.1
8	Polewali Mandar	4.5
9	Tanah Toraja/North Toraja	4.2
Average across all areas		4.0

Assuming that the scope of the project across the 9 regions is treated as a single unit, the researchers used the average number of family members (4) across the sample in all 9 regions as the reference for calculating household expenditures.

2.2 Food Cost

2.2.1 Standards for Adequate Food and Nutrition

General Principles of Diet Model

The following general principles are used to design a diet model for estimating the food cost in coffee and cocoa-farming areas operated by Rikolto-facilitated members of partner cooperatives across the nine regencies in the provinces of Jambi, South Sulawesi, West Sulawesi, and East Nusa Tenggara. The diet model is required to:

- Be nutritionally adequate. It must meet WHO recommendations for sufficient intake of protein calories, fat, fruit, and vegetables, ensuring that farmers and their families have enough energy to live a productive and healthy life.
- Be relatively low-cost for nutritious food. This means the diet includes food that is relatively cheap yet tasty, reflecting farmers' cost-consciousness while still maintaining nutritional standards.
- Relatively low but still nutritionally acceptable percentage of protein calories, as protein is a more expensive source of calories. At the same time, the percentage of calories from protein must meet the minimum standards of the WHO/FAO.
- Reflect local food preferences, availability, and cost, based on data from FGDs, in-depth interviews, market surveys, and household surveys. This sometimes means that certain food items included in the diet model to represent each major food group are not necessarily the cheapest options available.

2.2.2 Diet Model

The diet model used in this study is based on 2,353 calories per person. This is determined using the widely used Schofield equation for estimating caloric needs based on age, sex, average height, and activity level (WHO/FAO 2003)[6]. The study draws from various sources to determine the caloric requirements, namely: (i) the average height of Indonesian adults; (ii) a healthy Body Mass Index (BMI) of 21; (iii) the size and composition of reference family (2 adults and 2 children); and (iv) the assumption that one adult engages in heavy physical activity of farming, while the other adult and the children engage in moderate physical activity.

Food cost is determined in the Anker Methodology using a low-cost diet model that meets WHO nutrition standards, while also considering Indonesia's national nutrition standards as outlined in the Recommended Dietary Allowances (Angka Kecukupan Gizi/AKG)[7]. This approach means that relatively affordable foods (e.g., medium-grade white rice) are included in the diet model, along with locally grown fruits and vegetables, and relatively less expensive protein sources such as eggs, fish, and chicken; rather than more expensive options of protein sources like beef. Additionally, local food preferences and availability are factored in alongside local food prices.

The proposed diet model meets WHO standards for a nutritious diet, with a minimum of 10% of calories from protein, 15%-30% from fat, and 55%-75% from carbohydrates. A wide range of micronutrients is supplied through a minimum of 300 grams per day of fruits, vegetables, and legumes. A decent living income for farmers is calculated through an iterative process using an Excel spreadsheet tool designed by Richard Anker and Martha Anker for the Global Living Wage Coalition (GLWC).

2.2.3 Determining Diet Model Cost

The methods and processes to determine the diet model are as follows:

a. FGD with housewives and in-depth interviews with representative housewives who participate in the FGD;
b. Surveys of coffee and cocoa farmers;
c. Cross-check with the latest National Socioeconomic Survey (Survei Sosial Ekonomi Nasional/SUSENAS) data published by BPS;
d. Market surveys on food prices at local markets or the nearest food vendors to the respondents.

Preliminary Diet Model is developed in three stages.

- Stage 1. Information is gathered on the types and quantities of foods purchased in each regency. The diet is then adjusted to meet caloric requirements by scaling the quantity of each food item based on the ratio of required calories to the caloric content of the selected diet.
- Stage 2. The diet model is prepared according to macronutrient composition (protein, fat, carbohydrates), total grams of vegetables and fruits, grams of sugar, and grams of oil.
- Stage 3. The diet model is then adjusted to ensure it is relatively affordable. During stages 2 and 3, the diet is designed by taking into account the traditional and cultural habits of the communities.

2.2.4 Main Food Consumed by Farmers in the Study Areas in 9 Regencies

The food items typically consumed by coffee and cocoa farmers in the study area in the 9 regencies are:

Rice. White rice is the staple food typically consumed by farmers in the study areas, and serves as the foundation of most meals. Farmer families consume rice three times a day, served with various side dishes. According to the Ministry of Health Regulation No. 41 of 2014, which outlines the Balanced Nutrition Guidelines, the recommended daily intake for staple grains like rice is approximately 100 grams per serving or 300 grams per person per day. In addition, corn is an alternative carbohydrate in several study areas such as Enrekang, Polewali Mandar, Ngada, and Ende. Sago is also consumed as an alternative to white rice in areas like East Luwu and North Luwu.

Instant noodle. Among processed cereals, instant noodles are the most popular choice across the 9 regencies due to their convenience, affordability, filling nature, and versatility as a side dish. However, their consumption frequency is lower than that of white rice.

Roots and tubers. Food made from roots, tubers, and starchy fruits is typically fried, boiled, or mixed with vegetables rather than served as the main carbohydrate source. These are more commonly consumed as snacks with coffee or tea rather than as main dishes.

Tofu and tempeh. These plant-based protein sources are popular in all study areas due to their availability, tastiness, and versatility in meal preparation.

[6]The average height values of adult men and women used in the Schofied equation were obtained from Wikipedia https://en.wikipedia.org/wiki/Schofield_equation, while the data on body weight was sourced from https://health.detik.com/ibu-dan-anak/d-1431451/berat-badan-rata-rata-anak-sesuai-usia

[7]Based on AKG, every Indonesian is recommended to consume 2,100 kilocalories and 57 grams of protein per day, which also serves as a reference in the National Socioeconomic Survey (Susenas).

Fish. Fish is the most favoured source of animal protein. Both freshwater and various types of marine fish are found in the study areas, although freshwater species such as tilapia and catfish are more readily available. Marine fish are less frequently sold and are often sold in half-frozen or of lower quality. Most communities express a preference for tilapia and milkfish. In some regencies, such as Enrekang and Ende, people also consume anchovies. Salted or dried fish are also common, especially in Manggarai and Ngada.

Chicken. Chicken is the next most preferred animal protein after fish. Apart from the meat, parts such as the neck, head, and feet (ceker) are also sold and consumed in the 9 regencies.

Green vegetables. The people in the 9 study regencies regularly consume leafy green vegetables, which tend to be a regular part of their daily meals. Commonly consumed green vegetables include spinach, water spinach, pumpkin leaves, cassava leaves, papaya leaves, moringa (kelor) leaves, and mustard greens.

Other vegetables. Other routinely consumed vegetables by the people in the study areas are chayote, eggplant, carrot, cabbage, tomato, and pumpkin. Nuts, legumes, and grains. Tempeh and tofu, which are under this category, are commonly found in meals and consumed regularly. Both are affordable protein sources and substitutes for more expensive meals.

Fruits. The most commonly consumed fruits are papaya, banana, and watermelon due to their availability and affordability. Papayas and bananas are also often grown in home gardens. Other popular fruits include oranges, though they are relatively more expensive and thus not consumed as regularly by the people in the study areas.

Eggs. Chicken eggs are a common source of protein consumed by all family members across the 9 study regencies.

Cooking oil. Palm oil is a commonly used cooking oil to prepare meals by the people in the 9 study regencies.

Coffee (as a beverage). Coffee is a highly favoured beverage by the people in the 9 study regencies. They typically drink hot coffee with sugar as a daily beverage.

Sugar. White granulated sugar is consistently used by the people in the 9 study regencies, not only to sweeten coffee but also as a flavour enhancer in cooking.

The prices of these established commodities are then used to determine the cost of the diet model.

2.2.5 Diet Model Cost in the Study Areas in 9 Regencies

To estimate diet model cost, the Research Team is assisted by local enumerators coordinated by the field coordinators in the 9 regencies, to gather information on food prices in the markets, general stores, and mobile vendors where farmers and their families typically purchase food from.

Examples of Markets and Food Items Consumed by Coffee and Cocoa Farmer Households in the Study Areas

Water spinach at Kel Tomoni Market, East Luwu F

Fish at Ruteng Inpres Market, Manggarai

Tempeh at Salulemo Market, North Luwu

Papaya at one of the markets in Ende

Some of the vegetables and fruits consumed by farmers and their families come from home gardens around their houses. For these items, the Research Team uses prices from markets, mobile vendors, and kiosks as the reference for valuing foods that are self-produced and consumed. The established prices for certain commodities are then used to calculate the cost of the diet model, as presented in the following table.

Table 11. Cost of Food Items (in Rupiah) per Person per Day and per Family per Year Using Observed Prices from Local Markets and Vendors in 9 Regencies as of October 2024.

Category	Kerinci	North Luwu	East Luwu	Enrekang	North Toraja	Polewali Mandar	Manggarai	Ngada	Ende
Food cost per person per day	22,676	21,483	21,815	21,099	21,801	21,556	22,523	22,229	22,081
Food cost per family per day	90,704	85,932	87,260	84,396	87,205	86,224	90,092	88,917	88,324
Food cost per person per month	680,280	644,490	654,450	632,970	654,038	646,680	675,690	666,881	662,430
Food cost per family per month	2,721,120	2,577,960	2,617,800	2,531,880	2,616,154	2,586,720	2,702,760	2,667,524	2,649,720
Food cost per person per year	8,163,360	7,733,880	7,853,400	7,595,640	7,848,461	7,760,160	8,108,280	8,002,571	7,949,160
Food cost per family per year	32,653,440	30,935,520	31,413,600	30,382,560	31,393,844	31,040,640	32,433,120	32,010,284	31,796,640

Based on the Food Cost Table, it is found that the total daily food cost for the study area in Kerinci Regency reaches Rp22,676 per person per day or Rp680,280 per month. This implies a monthly expenditure of Rp2,721,120 for a reference family of 4 in Kerinci Regency. In North Luwu Regency, the total daily food cost for the study area is Rp21,483 per person per day or Rp644,490 per month, reflecting a monthly food expenditure of Rp2,577,960 for a reference family of 4. Meanwhile, in East Luwu Regency, the total daily food cost for the study area is Rp21,815 per person per day or Rp654,450 per person per month, implying a monthly food expenditure of Rp2,617,800 for a reference family of 4.

In Enrekang Regency, the total daily food cost for the study area is Rp21,099 per person per day or Rp632,970 per person per month, implying a monthly food expenditure of Rp2,531,880 for a reference family of 4 people. The total daily food cost in North Toraja Regency is Rp21,801 per person per day or Rp632,970 per person per month. This indicates that the monthly food expenditure for a reference family of 4 in North Toraja is Rp2,616,154. In Polewali Mandar Regency, the total food cost per person per day is Rp21,556 or Rp646,680 per person per month. This implies that the monthly expenditure for a reference family of 4 people in Polewali Mandar is Rp2,586,720.

The Food Cost Table also shows that the total daily food cost for the study area in Manggarai Regency is Rp22,229 per person per day or Rp675,690 per month, indicating a monthly expenditure of Rp2,702,760 for a reference family of 4 in the regency. In Ngada Regency, the total daily food cost for the study area reaches Rp21,099 per person per day or Rp666,881 per person per month, implying a monthly expenditure of Rp2,667,524 for a reference family of 4. Meanwhile, in Ende Regency, the total food cost per person per day is Rp22,081 or Rp662,430 per person per month, implying a monthly expenditure of Rp2,649,720 for a reference family of 4 in that regency.

Based on the table above, the annual lowest food cost for a reference family of 4 is found in Enrekang Regency, at Rp30,382,560 per year, while the highest is in Kerinci Regency, at Rp32,653,440 per year.

The Food Cost Table (Diet Model) for each regency is detailed in the Appendix.

2.3 Housing Cost

According to the Anker methodology, housing costs are divided into three components: rental cost, maintenance cost, and utility cost (water, electricity, fuel). Since renting is not a common practice in the survey areas, the rental cost is replaced by the depreciation cost of the building, calculated from the value of the building or construction cost divided by the building's economic lifespan.

2.3.1 Types of farmer housing in the study areas

Various types of farmer housing can be found in the study areas: a) full masonry (brick) house type, found in Kerinci, Ende, Manggarai, and Ngada; b) stilted wooden house, generally found in the village areas of Enrekang, North Luwu, East Luwu, Poliwali Mandar, and Toraja. These stilt houses are usually built by indigenous ethnic groups in those regions. Meanwhile, migrant farmers (transmigrants) from Java, who culturally are unfamiliar with stilt wooden houses, tend to build brick houses.

2.3.2 Housing Standards and Construction Cost

The calculation of construction costs is based on the standard of a simple, decent house. According to Statistics Indonesia (Badan Pusat Statistik/BPS) in 2019, a household is considered to have access to decent housing if it has a minimum area of 7.2 m^2 per capita (sufficient living space). Meanwhile, the minimum housing size for decent living according to Indonesian Ministry of Housing Regulation No. 22/PERMEN/M/2008 on Minimum Service Standards (SPM) for the Housing Sector at the Provincial and Regency/City levels is 8-12 m^2 per person.

According to SNI 03-1733, the minimum liveable area for decent housing is 9 m^2 per person. Therefore, for this study, a total living area of approximately 36 m^2 is needed for a reference family of 4. On FGDs in all regencies, in addition to living space, a storage area is also needed. Referring to Anker's study in Central Sulawesi (2022), an additional 12 m^2 is added for agricultural storage. As a result, the recommended total house size is 48 m^2.

The recommended type of simple house is a one-storey semi-permanent building (partly wood and partly board) and a stilt house made of medium-grade wood.

The recommended characteristics of a simple house are as follows:

- For semi-permanent houses: concrete foundations and columns, with walls made of a combination of bricks and boards, ceramic tile flooring, and roofed with clay tiles.
- For stilt houses: concrete foundations, wooden beam pillars, board walls and flooring, and roofing made of zinc or shingles.
- 2 rooms
- Goose-neck toilet
- Clean water installation
- 5 doors and 8 windows
- Electrical installation with 8 outlets

Figure 6. Examples of Farmer Housing in Study Areas

A wooden plank-type house in Nggalak Village, Lamba Leda District, East Manggarai

A masonry-type house in Batu Hampar, Kerinci

Stilt plank houses in Toraja, with 2 roof variations

A house in Ujung Baru 1 Village, East Luwu, built with 50 cm concrete blocks and planks above them.

Based on the FGD results on housing, the average construction cost in the 9 programme areas is Rp1,695,147 per square metre. With a recommended house size of 48 m^2, the total construction cost amounts to Rp81,367,069. Assuming an economic use period of 25 years, the annual depreciation is Rp3,254,683, or Rp271,224 per month.

Table 12. House Construction Cost and Depreciation Value

Description	Value	Percentage
Average housing cost per FGD results	1,695,147 per m^2	8%
Recommended size	48 m^2	20%
Total cost housing construction	Rp81,367,069	30%
Durability	25	30%
Depreciation per year	Rp3,254,683	12%
Depreciation per month	Rp271,224	100%

2.3.3 Maintenance Cost and Utility Cost

In addition to depreciation, housing costs must also account for basic utility expenses, namely water, electricity, and fuel. Based on the survey results, the average monthly household cost for water is Rp79,254; for electricity Rp71,642; and for fuel Rp80,703. This brings the total monthly utility cost to Rp231,559.

In addition to utilities, Anker recommends including maintenance costs to cover repairs in case any part of the house becomes non-functional. The recommended average maintenance cost is 2% of the construction cost per year, which is equal to Rp1,627,341 per year, or Rp135,612 per month. Therefore, the average housing cost for the living income benchmark across the 9 programme regencies is Rp638,435 per month.

Table 13. Average Housing Cost for Living Income Benchmark in 9 Regencies

Description	Value
Monthly depreciation	Rp271,224
Utility cost	Rp231,599
Maintenance cost	Rp135,612
	Rp638,435

To calculate housing cost per regency, the Research Team refers to the housing cost ratio from the 2023 SUSENAS survey across the 9 programme regencies against the average housing cost in the 9 regencies. The ratio comparison is as follows:

Table 14. Ratio Comparison between SUSENAS Housing Cost per Regency and Average Housing Cost from 9 Regencies

Category	Kerinci	North Luwu	East Luwu	Enrekang	North Toraja	Polewali Mandar	Manggarai	Ngada	Ende	Average
Housing Comparison by Areas Based on BPS	99.43%	105.20%	124.97%	99.79%	102.67%	84.21%	78.16%	105.64%	99.92%	100%
Housing Cost for the Benchmark	634,795	671,633	797,851	637,094	655,480	537,625	499,000	674,442	637,923	638,435
Housing Cost per Year	7,617,542	8,059,594	9,574,215	7,645,122	7,865,765	6,451,506	5,988,002	8,093,303	7,655,082	7,661,220

2.4 Non-Food Non-Housing Cost

Non-food and non-housing (NFNH) items represent basic household needs beyond food and shelter, such as clothing and footwear, healthcare, education, transportation, household furnishings and equipment, recreation, alcohol, communication, insurance, dining-out services, and others. All of these are essential for attaining a decent standard of living.

The Anker Method calculates NFNH costs by multiplying the NFNH-to-consumption ratio from a country's official household survey (in Indonesia, conducted by BPS) with the diet model cost for the reference family. The NFNH/consumption ratio is calculated using extrapolated data from the 2023 SUSENAS household expenditure survey across the 9 programme areas. The extrapolated NFNH ratios indicate the lowest ratio is found in North Toraja (55%) and the highest in East Luwu (90%). A complete breakdown of NFNH ratios by regency and the corresponding NFNH values in this study is presented in the following table:

Table 15. NFNH Value of Living Income Benchmark per Regency

Category	Kerinci	North Luwu	East Luwu	Enrekang	North Toraja	Polewali Mandar	Manggarai	Ngada	Ende	Average
Food cost per family per year	32,653,440	30,935,520	31,413,600	30,382,560	31,393,844	31,040,640	32,433,120	32,010,284	31,796,640	31,562,183
NFNH Ratio applied to food cost	74%	82%	90%	76%	55%	79%	65%	58%	62%	71%
NFNH Value	24,264,859	25,233,453	28,242,854	22,966,467	17,389,219	24,644,272	21,110,530	18,700,687	19,684,791	22,470,792

2.5 Post-check of Non-Food Non-Housing Items

The Research Team conducts a further verification of education and healthcare expenditures to determine whether sufficient funds are already included in the initial NFNH estimate for these two essential areas, or whether additional funds are necessary to cover required spending. Appropriate adjustments would then be made, if necessary, to the initial NFNH estimates to ensure that the amounts included in the living wage and living income calculations do not fall short in covering these needs.

Several other items categorized as NFNH (e.g., clothing and footwear, communication and recreation, as well as household furnishings and equipment) are not subject to further verification. The underlying assumption is that while these expenditure categories are important, they are not as critical to a basic and decent life. Therefore, the Research Team deems that household expenditure data from families just above the poverty line, as reported in the 2023 SUSENAS data, provides a sufficiently reliable representation of these expenses. As such, in conducting this verification, the team begins by estimating the amount already included in the initial NFNH projection.

In conducting further examination, the Research Team compares the amounts in the calculated results with information gathered from households to determine whether any adjustments are necessary.

2.5.1 Post-Check on Education

All Indonesian citizens are required to complete 12 years of compulsory education, beginning at the age of six. This includes six years of primary school (SD), three years of junior high school (SMP), and three years of senior high school (SMA). Some schools offer accelerated learning programmes, allowing high-achieving students to complete primary school in five years and junior high in two. At the senior high level, families may choose vocational schools that specialize in fields such as technology and engineering, health, arts, crafts, and tourism, information

and communication technology, agribusiness and agrotechnology, or business management. Another path is to enrol children in Islamic schools (madrasah), which include not only general subjects such as natural and social sciences but also Islamic religious education. Before entering primary school, children may attend kindergarten or daycare centres, which can be privately run or government-managed early childhood education programmes (PAUD). Education at public schools is offered free of charge.

The survey collects detailed information on education-related expenses from farming households. These include: enrolment fees, tuition (SPP), committee contributions, extracurricular activity fees, tutoring, study tours, textbooks, photocopies, stationery, course fees, transportation costs, daily allowances, and uniform costs. The results are as follows:

Table 16. Education Expenses Based on Survey Results

Cost Component	Kerinci	North Luwu	East Luwu	Enrekang	North Toraja	Polewali Mandar	Manggarai	Ngada	Ende	Average
Education Expenses	9,148,114	5,993,021	4,586,603	7,061,329	4,862,463	5,134,488	3,683,015	4,526,737	5,531,330	5,508,122

2.5.2 Post-Check on Health

The post-check on health expenses, based on the survey, calculates all types of healthcare-related expenditures, including: a) BPJS/Health Insurance contributions, for those not receiving BPJS contribution assistance; b) Outpatient consultation and medical expenses; c) Inpatient care expenses paid out-of-pocket, whether at community health centres (Puskesmas), regional public hospitals (RSUD), or private hospitals; d) Expenses for traditional healthcare; e) Child delivery expenses not covered by BPJS; f) Purchase of modern medicine at pharmacies, drugstores, or local shops without prescription; g) Purchase of assistive equipment for special needs; h) family planning expenses not covered by BPJS; and i) Other healthcare expenses; within the last year. The survey results present the average health expenses per regency, which are detailed in the following table.

Table 17. Health Expenses Based on Survey Results

Cost Component	Kerinci	North Luwu	East Luwu	Enrekang	Toraja Utara	Polewali Mandar	Manggarai	Ngada	Ende	Average
Health Expenses	2,866,173	1,256,292	702,327	1,922,859	577,832	672,324	6,016,723	4,526,737	422,338	2,107,067

2.5.3 Post-Check on Available Transportation Means

Post-check on available transportation means is conducted by calculating the possessed transportation means, including: a) car/truck/pick up; b) motorcycle; c) motorboat. The costs assessed cover fuel purchase, repair, oil change, and renewal fee of vehicle registration (STNK) for each type of motorized vehicle in the past year.

Table 18. Transportation Expenses Based on Survey Results

Cost Component	Kerinci	North Luwu	East Luwu	Enrekang	North Toraja	Polewali Mandar	Manggarai	Ngada	Ende	Average
Transportation Expenses	8,888,485	8,724,461	11,022,844	4,918,210	4,031,737	7,782,772	6,016,723	5,664,310	4,133,923	6,798,163

The total of the three main NFNH components reviewed above does not exceed the NFNH values obtained through extrapolation. Therefore, following Anker's recommendation, the extrapolated NFNH value should be retained in cases where the post-check results are lower than the calculated NFNH value based on extrapolation.

Table 19. Comparison of Main NFNH Costs from Survey Results and Extrapolated NFNH Values

Cost Component	Kerinci	North Luwu	East Timor	Enrekang	North Toraja	Poliwali Mandar	Manggarai	Ngada	Ende	Average
Transportation Expenses	8888485	8724461	11022844	4918210	4031737	7782772	6016723	5864310	4133923	6798163
Education Expenses	9148114	5939021	4586603	7061329	4862463	5134488	3683015	4526737	5531330	5608122
Health Expenses	2866173	1156292	702327	1922859	577832	672324	6016723	4526737	422338	2107067
Total	20902771	15819774	16311775	13902397	9472032	13589585	15716460	14717785	10087591	14513352
NFNH Value Based on Extrapolation	22939045	25233453	28242854	22966467	17389219	24644272	21110530	18700687	19684791	22323480

2.6 Provision for Unexpected Events to Ensure Sustainability

Because large unexpected expenses or emergencies can quickly cause farmers to fall into poverty and debt from which they may not recover, it is crucial to include a small margin to account for such contingencies when estimating income. Rural families often face a wide range of unexpected events, such as illness, accidents, natural disasters, and others. The Anker Methodology recommends a 5% margin for 18 emergencies and resilience, and this percentage has been widely applied in many living wage and living income studies conducted in other countries.

3. LIVING INCOME FOR COFFEE AND COCOA FARMERS IN 9 REGENCIES

The concept of Living Income is a family concept; therefore, the income considered is calculated to cover the basic needs of all family members. For all study areas across the 9 regencies, the reference family size is 4 people (2 adults and 2 children).

The following table shows a complete summary of the Living Income calculation results in the study areas in the 9 regencies. The Research Team used low-cost options in the living cost calculation. For example, in calculating the diet model, the Research Team used simple, affordable, and nutritious foods most consumed by farmers, such as fresh fish, dried fish/anchovies, and chicken, instead of the more expensive meats, such as beef. In addition, the rice—being the staple food—used in the calculation is medium-quality rice (instead of premium rice or special rice, such as black or red, or other types of premium rice). Likewise, the fruits and vegetables consumed by farmers in the study area used in the calculations of the diet model are the widely sold, easily obtainable, and low-priced fruits and vegetables.

Table 20. Living Income Benchmarks in 9 Regencies

Kategori	Kerinci	North Luwu	East Luwu	Enrekang	North Toraja	Poliwali Mandar	Manggarai	Ngada	Ende
Food cost per family per year	32,653,440	30,935,520	31,413,600	30,382,560	31,393,844	31,040,640	32,433,120	32,010,284	31,796,640
Housing Cost Per Month for The Benchmark	634,795	671,633	797,851	637,094	655,480	537,625	499,000	674,442	637,923
HOUSING COST PER YEAR	7,617,542	8,059,594	9,574,215	7,645,122	7,865,765	6,451,506	5,988,002	8,093,303	7,655,082
Extrapolation of NFNH to FC Ratio	74%	82%	90%	76%	55%	79%	65%	58%	62%
NFNH Value	24,264,859	25,233,453	28,242,854	22,966,467	17,389,219	24,644,272	21,110,530	18,700,687	19,684,791
TOTAL LIVING INCOME BEFORE SUSTAINABILITY	64,535,841	64,228,567	69,230,670	60,994,149	56,648,828	62,136,418	59,531,652	58,804,274	59,136,513
5% addition for unexpected events (sustainability)	3,226,792	3,211,428	3,461,533	3,049,707	2,832,441	3,106,821	2,976,583	2,940,214	2,956,826
LIVING INCOME BENCHMARK PER YEAR	67,762,633	67,439,995	72,692,203	64,043,857	59,481,270	65,243,239	62,508,235	61,744,488	62,093,339
LIVING INCOME BENCHMARK PER MONTH	5,646,886	5,620,000	6,057,684	5,336,988	4,956,772	5,436,937	5,209,020	5,145,374	5,174,445

The above table shows that the highest annual food cost is in the study area of Kerinci Regency, at Rp32,653,440, while the lowest food cost is in Enrekang Regency, at Rp30,382,560 per year.

The highest annual Housing Cost is in East Luwu Regency, at Rp9,574,215, as well as the highest NFNH Value at Rp28,242,854 and the highest Total Living Income Before Sustainability at Rp69,230,670. This results in the high yearly and monthly Living Income benchmark value in this regency, at Rp72,692,203 per year or equivalent to Rp6,057,684 per month. This value is above the Living Income Benchmark in Central Sulawesi as of June 2024, which is set at Rp5,271,554, and above the Living Income Benchmark in Kerinci Regency of RIKOLTO in 2023, at Rp5,710,561.

Other regencies having their monthly Living Income Benchmarks above the Living Income Benchmark of Central Sulawesi as of June 2024 (Rp5,271,554) are Kerinci Regency (Rp5,646,886), North Luwu Regency (Rp5,620,000), Enrekang Regency (Rp5,336,988), and Polewali Mandar Regency (Rp5,436,937).

Meanwhile, the regencies with monthly Living Income Benchmarks below the Living Income Benchmark of Central Sulawesi Tengah (Rp5,271,554) are North Toraja Regency (Rp4,956,772), Manggarai Regency (Rp5,209,020), Ngada Regency (Rp5,145,374), and Ende Regency (Rp5,174,445). However, there is no Living Income Benchmark in any other regency (apart from East Luwu) that is higher than the 2023 Kerinci Regency Living Income Benchmark Study by RIKOLTO.

Table 21. Living Income Benchmarks in 9 Regencies

Kategori	Kerinci	North Luwu	East Luwu	Enrekang	North Toraja	Poliwali Mandar	Manggarai	Ngada	Ende
LIVING INCOME BENCHMARK PER MONTH	5,646,886	5,620,000	6,057,684	5,336,988	4,956,772	5,436,937	5,209,020	5,145,374	5,174,445
REFERENCE AND COMPARISON FIGURES:									
Central Sulawesi – LI benchmark update as of June 2024 (Anker Research Institute)	5,271,554								
KERINCI–Rikolto Study 2023	5,710,561								
Household Expenses Per Capita Per Month (SUSENAS 2023, Regency in Numbers 2024)	1,395,120	1,234,961	1,390,667	1,126,318	1,069,299	1,004,050	982,218	1,111,043	1,121,833
Family Expenses Per Family (4 Family Members) (SUSENAS 2023, Regency in Numbers 2024)	5,580,480	4,939,844	5,562,668	4,505,272	4,277,196	4,016,200	3,928,872	4,444,172	4,487,332
Standard Minimum Wages (UMK)	3,037,121	3,434,298	3,434,298	3,434,298	3,434,298	2,914,958	2,186,826	2,186,826	2,186,826
Average Number of Working Household Members	1.09	1.15	1.08	1.18	1.50	1.10	1.13	1.24	1.27
UMK Value x Number of Working	3,310,462	3,949,443	3,709,042	4,052,472	5,151,447	3,206,454	2,471,113	2,711,664	2,777,269

The living income benchmark values in East Luwu, North Luwu, Enrekang, and Poliwali Mandar are slightly above the results of a study in Central Sulawesi conducted by Anker (2023). The living income in Toraja is slightly lower than in the study conducted by Anker (2023). The current study conducted in Kerinci produces a living income benchmark value slightly below the resulting value of a study conducted by Rikolto in 2023. In all the regencies researched, the living income benchmark values are slightly higher than the actual household expenditure figures from SUSENAS 2023. This standard figure is also higher than the average number of working family members multiplied by the UMK in each region.

4. ACTUAL INCOME OF FARMERS IN THE STUDY AREAS

The actual income study was conducted in the study areas based on the assumption that all surveyed coffee and cocoa farmers sold their produce to Rikolto's partner cooperatives. The Research Team selected their respondents using random sampling based on the list of partner farmers of the Cooperative. The study instrument was a detailed questionnaire completed by the enumerator through a 1–2 hours interview with each respondent to ensure the highest possible level of accuracy. All expenses as costs were recorded for the previous 12-month period.

4.1 About the Farmers' Plantations

Table 22. The average number of farmers' plantations, land areas, and productivity rate per regency

Regency	Average Number of Plantations	Average Land Area	Productivity/hectare
Ende	1.72	0.99	175
Enrekang	2.40	1.34	570
Kerinci	1.67	0.86	532
East Luwu	1.34	1.60	399
North Luwu	2.11	2.17	442
Manggarai	2.05	1.04	457
Ngada	2.07	1.02	301
Polowali Mandar	3.18	1.98	367
North Toraja	1.56	1.31	310
Grand Total	2.01	1.36	388

On average, each farmer owns more than 1 plantation, with the average number of plantations owned by a farmer in all areas being 2.01. The largest land area is owned by farmers in North Luwu and Polewali Mandar, whereas the smallest land area is in Kerinci and Ende. The highest productivity for coffee plantation is in Kerinci, whereas the highest productivity for cocoa is in Enrekang.

Overall, the productivity rate of both cocoa and coffee is still far below their optimum productivity rate. Productivity data for each type of commodity across all programme areas shows that the average coffee productivity per hectare is only 401 kg/hectare, while cocoa averaged 379 kg/hectare. Coffee productivity rate is far below its optimum productivity rate, which theoretically could reach 1.2 tonnes per year (Salim and Abdul, 2019). According to the Agricultural Office of Lampung Province, by using a particular planting technique (fencing system with a planting spacing of 1 x 2.5 metres), the coffee productivity rate could be increased to 4 tonnes per hectare (Diskominfotik Lampung, 2023). In Malaysia, coffee productivity in 2019 is 2.2 tonnes per hectare, while in Vietnam it is 2.7 tonnes per hectare (Ruslan and Prasetyo, 2021).

Table 23. Average productivity rate of coffee/cocoa

Commodity	Average Productivity per Hectare
Coffee	401
Cocoa	379

As for cocoa, its potential productivity using superior clones is 2 tonnes per hectare (Rubiyo and Siwanto, 2012). In Thailand, cocoa productivity rate has even reached 3 tonnes per hectare (Ruslan and Prasetyo, 2021).

Survey results show that among the respondent farmers, there are only 194 farmers (22.33%) who plant >10 seedlings throughout the last year. Also, 100 farmers who replant (51.55%) use seedlings obtained from official sources (corporation, government, research institutions, or designated seed centres). As many as 560 farmers use fertiliser (64.44%), and 453 farmers (52.13%) use pesticides for pest control.

In addition to coffee and cocoa, the farmers cultivate other types of crops, whether in the same or different plantations. The following are the types of crops cultivated by the farmers in the programme areas:

Table 24. Other types of crops (in addition to cocoa/coffee) in the 9 regencies

Regency	Crop 1	Crop 2	Crop 3	Crop 4
Ende	Coconut	Clove	Candlenut	Banana
Enrekang	Clove	Vegetable	Avocado	Banana
Kerinci	Chilli	Fruit vegetable	Cinnamon	Avocado
East Luwu	Durian	Clove	Banana	Avocado
North Luwu	Coconut	Banana	Oil palm	Durian
Manggarai	Clove	Banana	Wood plant	Avocado
Ngada	Taro	Corn	Ginger	Wood plant
Polman	Coconut	Langsat	Durian	Banana
North Toraja	Uru wood	Casuarinaceae (Cemara)	Rice	Tiger's claw (Dadap)

4.2 Gross Income from Coffee/Cocoa and Non-Coffee/Cocoa Crops

The average income of farmers from cocoa and coffee in all programme areas was Rp37,457,295 per year. The highest average income came from North Luwu at Rp65,832,353 per year. The lowest average income from cocoa/coffee comes from Ende Regency at Rp15,591,686 per year.

Table 25. Average income from coffee/cocoa and non-coffee/cocoa crops per year in the 9 regencies

Regency	Average Income from Coffee/Cocoa	Average Income from Non-Coffee/ Cocoa	Total Income from Crops
Ende	15,591,686	9,998,527	23,117,254
Enrekang	30,634,711	17,811,383	41,598,550
Kerinci	25,824,607	37,128,078	47,108,267
East Luwu	46,050,706	15,408,264	50,607,633
North Luwu	65,832,353	13,760,073	69,600,904
Manggarai	30,283,641	9,431,241	34,625,453
Ngada	22,954,284	19,038,984	33,680,474
Polewali Mandar	60,956,453	17,813,738	66,279,533
North Toraja	43,536,598	14,300,000	48,645,261
Grand Total	37,457,295	16,687,232	45,463,130

For non-coffee/cocoa crops, the highest income is recorded in Kerinci, while the lowest is in Manggarai and Ende. The highest combined income of coffee/cocoa and non-coffee/cocoa is earned by farmers in North Luwu and Polewali Mandar Regencies. Meanwhile, the lowest combined income is found among farmers in Ende, Ngada, and Manggarai.

North Luwu and Poliwali Mandar record the highest income from plantations, as these regions rank first and second in terms of land size, with 2.17 hectares in North Luwu and 1.98 hectares in Poliwali Mandar. In terms of productivity, the two regencies are not among the highest-ranking, but are still considered to be relatively good as compared to the other 7 regencies. The high price of cocoa contributes to the income of these two regencies, where cocoa is the main commodity. In addition, income from non-coffee/cocoa in these two regencies, although not the highest, still falls within the middle category among the 9 regencies.

Meanwhile, in Ende and Manggarai, income from both coffee/cocoa and non-coffee/cocoa crops is in the low category compared to other regencies. Ngada Regency records the lowest income from coffee/cocoa, and although its income from non-coffee/cocoa ranks second among the other regencies, it still falls within the bottom three overall.

An interesting situation is observed in Kerinci Regency, where income from non-coffee/cocoa is actually higher than that from coffee/cocoa. Despite coffee/cocoa income ranking second lowest, the income from non-coffee/cocoa boosts Kerinci's overall combined crops income, raising its position by three places to rank fifth.

4.3 Income from Livestock in Plantations

The survey shows that raising livestock in plantations is not a common practice. This is most likely due to the considerable distance between the farmers' plantations and their homes. The following table shows the number of farmers raising livestock in their plantations and their average income from livestock:

Table 26. Number of farmers raising livestock in their plantations and their annual livestock income in the 9 regencies

Regency	Number of farmers raising livestock in their plantations	Average income from raising livestock in the plantations
Ende	6	1,683,333
Enrekang	4	575,500
Kerinci	2	15,500,000
East Luwu	18	2,933,333
North Luwu	2	5,100,000
Manggarai	-	-
Ngada	4	10,550,000
Polewali Mandar	1	7,000,000
North Toraja	-	-
Grand Total	37	4,205,459

From all respondents, there were only 4.26% farmers raising livestock in their plantations, and their average livestock income is Rp4,205,459.

4.4 Plantation Gross Income, Costs, and Net Income

The average gross income for all respondents in the 9 regencies is Rp45,647,555. The average plantation cost is Rp3,537,549, and the average net income is Rp41,760,244.

Table 27. Average plantation gross income, costs, and net income in the 9 regencies

Regency	Average Plantation Gross Income	Average Plantation Costs	Average Plantation Net Income
Ende	23,213,445	621,440	22,447,336
Enrekang	41,624,415	20,702,26	39,554,189
Kerinci	47,468,733	8,770,214	40,849,652
East Luwu	50,642,358	4,663,056	45,769,646
North Luwu	69,715,511	4,810,545	65,623,497
Manggarai	34,625,453	2,025,033	31,995,365
Ngada	34,154,631	2,848,159	29,945,583
Polewali Mandar	66,357,311	4,066,008	59,614,375
North Toraja	48,645,261	2,860,070	44,836,512
Grand Total	45,647,555	3,537,549	41,760,244

The highest income is recorded by farmers in North Luwu regency, and the lowest income is in Ende regency.

4.5 Net Income from Non-Agricultural Sector

The number of people working outside the plantation for all respondents in the 9 regencies is 1.2 persons. The highest average is in North Toraja at 1.5, and the lowest in East Luwu at 1.0 persons.

Table 28. Average number of people working outside the plantation, their income, costs, and net income per year in the 9 regencies

Regency	Average Number of Working People	Average Non-Plantation Income	Average Non-Plantation Costs	Average Non-Plantation Net Income
Ende	1.3	9,008,618	135,397	8,991,191
Enrekang	1.2	13,782,573	1,289,742	14,023,727
Kerinci	1.1	26,588,082	2,314,491	26,256,975
East Luwu	1.0	13,347,297	188,889	13,344,745
North Luwu	1.1	13,729,265	968,249	13,642,344
Manggarai	1.1	8,999,840	229,774	8,931,265
Ngada	1.2	14,373,605	337,159	14,232,355
Polewali Mandar	1.1	11,235,681	1,305,827	11,191,005
North Toraja	1.5	12,759,608	119,444	12,754,683
Grand Total	1.2	12,981,387	729,861	12,938,137

The average non-plantation income from farmers' households is in Kerinci at Rp26,256,975 per year, and the lowest is in Manggarai at Rp8,931,265 per year.

4.6 Net Income of Farmers' Households

The average net income of farmers is Rp51,547,766. The highest net income is in North Luwu at Rp73,847,473 per year, and the lowest is in Ende at Rp30,724,559 per year.

Table 29. Average net income of farmers' households per year in the 9 regencies

Regency	Average Net Income of Farmers' Households
Ende	30,724,559
Enrekang	50,191,534
Kerinci	53,085,510
East Luwu	55,301,261
North Luwu	73,847,473
Manggarai	39,402,027
Ngada	42,630,273
Polewali Mandar	66,581,531
North Toraja	56,880,630
Grand Total	51,547,766

5. Gap Between Actual Income and Living Income Benchmark

5.1. Gap Between Actual Income and Living Income Benchmark in the 9 Regencies

Overall, based on the sample of farmers in the 9 regencies, there is a gap of Rp13,231,040 between actual income and the Living Income Benchmark. Two regencies record a surplus: North Luwu with Rp6,407,478 and Polewali Mandar with Rp1,338,293.

Table 30. Gap analysis: Average net income and living income benchmark of farmers' households per year in the 9 regencies

Regency	Household Net Income	Living Income Benchmark	Gap/Surplus
Ende	30,724,559	62,093,339	-31,368,779
Enrekang	50,191,534	64,043,857	-13,852,323
Kerinci	53,085,510	67,762,633	-4,677,123
East Luwu	55,301,261	72,692,203	-7,390,942
North Luwu	73,847,473	67,439,995	6,407,478
Manggarai	39,402,027	62,508,235	-23,106,207
Ngada	42,630,273	61,744,488	-19,114,215
Polewali Mandar	66,581,531	65,243,239	1,338,293
North Toraja	56,880,630	59,481,270	-2,600,640
Grand Total	51,547,766	64,778,806	-13,231,040

A total of seven regencies experience income gaps, with the highest one found in Ende at Rp31,368,779. The smallest gap is recorded in North Toraja, at Rp2,600,640.

5.2. Gap Between Actual Income and Living Income Benchmark by Age Group and Commodities

A disaggregated analysis by age group for each commodity shows that, among coffee farmers, all age groups experienced an income gap. The 41–50 age group recorded the smallest gap.

Tabel 31. Income surplus/gap analysis by farmers' age group for the coffee commodity

Age Group	Net Income	Living Income Benchmark	Gap/Surplus
<30 years	52,333,051	63,108,096	-10,775,045
31–40 years	53,915,774	63,108,096	-9,192,322
41–50 years	62,435,178	63,108,096	-672,918
51–60 years	40,293,159	63,108,096	-22,814,937
>60 years	40,682,981	63,108,096	-22,425,115
Grand Total	48,035,335	63,108,096	-15,072,761

Meanwhile, the age group <30 years among cocoa farmers experiences a net income surplus compared to the Living Income Benchmark, whereas all other age groups experience an income gap. The largest gap is observed in the 51–60 age group.

Table 32. Income surplus/gap analysis by farmers' age group for the cocoa commodity

Age Group	Net Income	Living Income Benchmark	Gap/Surplus
<30 years	67,059,727	66,867,194	192,533
31–40 years	55,194,463	66,867,194	-11,672,731
41–50 years	54,948,299	66,867,194	-11,918,895
51–60 years	39,839,020	66,867,194	-27,028,174
>60 years	47,753,537	66,867,194	-19,113,657
Grand Total	55,852,746	66,867,194	-11,014,448

5.3. Gap Between Actual Income and Living Income Benchmark by Gender and Commodities

A disaggregated analysis by gender for the coffee commodity shows that both men and women experience an income gap. The income gap for women is 50% higher than that of men.

Table 33. Income surplus/gap analysis by farmers' gender for the coffee commodity

Gender	Net Income	Living Income Benchmark	Gap/Surplus
Male	56,818,076	66,867,194	-10,049,118
Female	51,660,832	66,867,194	-15,206,362
Grand Total	55,852,746	66,867,194	-11,014,448

A similar result is found for the coffee commodity, where both men and women experience an income gap. The income gap for women is 85% higher than that of men.

Table 34. Income surplus/gap analysis by farmers' gender for the cocoa commodity

Gender	Net Income	Living Income Benchmark	Gap/Surplus
Male	52,057,812	63,108,096	-11,050,284
Female	42,632,597	63,108,096	-20,475,499
Grand Total	48,035,335	63,108,096	-15,072,761

6. CONCLUSION AND RECOMMENDATION

6.1. Conclusion

- This study successfully calculated the Living Income in the study areas across 9 rural regencies, based on a household size of 4 members (2 adults and 2 children). The calculation used assumptions to estimate the living income that allowed rural communities in the 9 regencies—especially coffee and cocoa farmers and their families—to achieve a decent standard of living. This decent income allowed them to buy nutritious, affordable food adhering to the WHO and FAO recommendations, healthy housing that met international and national minimum principles and standards, adequate health care, and 12 years of compulsory education, as well as all other needs, adequately and appropriately.

- Meanwhile, actual income was calculated based on all income that farmers received from various sources: a) plantation income from coffee/cocoa crops, non-coffee/cocoa crops, or livestock from the plantation; b) non-plantation income from non-agricultural work activities and livestock outside the plantation; c) other income, such as fund from relatives or the government.

- The summary of actual income and living income benchmarks calculations is detailed in the following table:

Table 35. Gap analysis: Average net income vs living income benchmark for farmers' households per year in the 9 regencies

Regency	Household Net Income	Living Income Benchmark	Gap/Surplus
Ende	30,724,559	62,093,339	-31,368,779
Enrekang	50,191,534	64,043,857	-13,852,323
Kerinci	53,085,510	67,762,633	-4,677,123
East Luwu	55,301,261	72,692,203	-7,390,942
North Luwu	73,847,473	67,439,995	6,407,478
Manggarai	39,402,027	62,508,235	-23,106,207
Ngada	42,630,273	61,744,488	-19,114,215
Polewali Mandar	66,581,531	65,243,239	1,338,293
North Toraja	56,880,630	59,481,270	-2,600,640
Grand Total	51,547,766	64,778,806	-13,231,040

- Overall, based on the samples from the 9 regencies, there is a gap between actual income and the living income benchmark at Rp13,231,040. The analysis results show that 2 regencies of North Luwu and Polewali Mandar experience a surplus, at Rp6,407,478 and Rp1,338,293, respectively. There are 7 regencies experiencing income gaps, with the highest gap in Ende at Rp31,368,779, and the lowest gap is experienced by farmers in North Toraja at Rp2,600,640.

- According to the study results, the highest combined income from coffee/cocoa and non-coffee/cocoa comes from farmers in North Luwu and Polewali Mandar regencies, whereas the lowest combined income comes from farmers in Ende, Ngada, and Manggarai. North Luwu and Polewali Mandar receive the highest plantation income, as both regencies rank first and second in terms of land size. Although both regencies do not have the highest productivity, they are still comparatively higher than the other 7 regencies due to the high price of cocoa, which is their main commodity. Their income also comes from non-cocoa crops, which, although not the highest, but still places in the middle ranks among the 9 regencies.

- Meanwhile, Ende and Manggarai Regencies record low income from both coffee/cocoa and noncoffee/cocoa crops compared to the other regencies. Ngada Regency has the lowest income from coffee/cocoa. And although its non-coffee/cocoa income is relatively high (ranked 2nd), it does not significantly contribute to the total income, which remains among the bottom three. Interestingly, in Kerinci Regency, non-coffee/cocoa income is higher than income from coffee/cocoa, which ranks 2nd lowest. As a result, Kerinci's total income rises to 5th place overall.

- Overall, the productivity of coffee and cocoa remains very low - at less than 25% of their optimal potential - resulting in income from coffee and cocoa plantations falling well below their potential.

- The analysis result does not show a significant difference between age groups. Meanwhile, gender analysis shows a significant difference between the income gap in female farmers—which is significantly higher—compared to the income gap in male farmers.

6.2. Recommendations

Based on the findings and analysis results, the study recommends the following:

- To increase the income from coffee/cocoa and non-coffee/cocoa crops to achieve the Living Income benchmark. Targets for each regency are as follows:

Regency	Target for coffee/cocoa commodities	Target for non-coffee/cocoa commodities
Ende	Increase cocoa income by 350%	Increase non-cocoa income by 150%
Enrekang	Increase cocoa income by 50%	Increase non-cocoa income by 110%
Kerinci	Increase coffee income by 130%	Increase coffee income by 130%
East Luwu	Increase cocoa income by 130%	Increase non-cocoa income by 110%
North Luwu	Increase cocoa income by 110%	Increase non-cocoa income by 110%
Manggarai	Increase coffee income by 180%	Increase non-coffee income by 150%
Ngada	Increase coffee income by 200%	Increase non-coffee income by 150%
Polewali Mandar	Increase cocoa income by 110%	Increase non-cocoa income by 110%
Tanah Toraja/ North Toraja	Increase coffee income by 110%	Increase non-coffee income by 110%

- One way to increase coffee/cocoa income is by improving the cocoa productivity. There is still considerable room for improvement, with the potential to increase productivity by 4–5 times the current level. 27

- Among the ways to increase productivity is by encouraging farmers to rejuvenate their plantations using high-quality seeds from official sources. The ratio of farmers using high-quality seeds from official sources should be increased to 80% from the current level of 51%. We also recommend increasing the number of farmers using fertilisers from the current level of 64.44%. The use of pesticides— environmentally-friendly pesticides in a proper dosage, frequency, and application method—should also be increased from the current level of 51.13%. Other GAP practices should be monitored and improved continuously.

- Considering the significant income gap among female farmers, Targeted Efforts are needed to support them in increasing their income, so as not to fall behind the income of male farmers.

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