



Living Income Benchmark and Actual Income Assessment of Coffee Farmers in Bandung District, West Java, Indonesia

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Abbreviations

AI	Actual Income
BMI	Body Mass Index
BPJS	Badan Penyelenggara Jaminan Sosial (Social Security Administration Agency)
BPJSK	Badan Penyelenggara Jaminan Sosial Kesehatan (Social Security Administration for Health)
BPS	Badan Pusat Statistik (Central Bureau of Statistics)
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
GIZ	Deutsche Gesellschaft-fur-Internationale Zusammenarbeit gGmbH
ICO	International Coffee Organization
IDR	Indonesian Rupiah
ILO	International Labour Organisation
ISEAL	The International Social and Environmental Accreditation and Labeling Alliance
KII	Key Informant Interview
LIB	Living Income Benchmark
LiCoP	Living Income Community of Practice
LPG	Liquid petroleum gas
M2	Meter square
NFNH	Non-Food Non-Housing
NTP	Nilai Tukar Petani (Farmer's Exchange Rate)
PLN	Perusahaan Listrik Negara (state electricity company)
Posyandu	Pos Pelayanan Terpadu (integrated community health post)
Puskesmas	Pusat Kesehatan Masyarakat (community health center/clinic)
Puskesmas	Puskesmas desa (sub-health center)
SASCI+	The Sustainability and Value Added in Agricultural Supply Chains in Indonesia Project
SUSENAS	Survei Sosial Ekonomi Nasional (National Socio-Economic Survey)
USDA	United States Department of Agriculture
WHO	World Health Organization

Executive Summary

This living income benchmark and actual income assessment was conducted by Result+ Consulting and funded by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH under the *Sustainability and Value Added in Agricultural Supply Chains in Indonesia (SASCI+)* Project. This report also aims to support the work of the Anker Research Institute¹ and the Global Living Wage Coalition (GLWC)² and to promote the idea of living wages and living incomes for workers and producers in global supply chains.

The aim of this study is to assess the income needed for farming families to have a decent life in Bandung Regency, West Java province. This includes having access to nutritious food, healthy housing, adequate health services, and an adequate level of education. The Anker methodology is used to measure this standard of living income. At the same time, the actual income was also calculated to find out how much Arabica coffee farmers actually earn in the area.

The findings of this research identify that a decent living income for coffee farmers in Bandung Regency is estimated at around IDR 5,455,506 (USD 332.88 at an exchange rate of 1 USD = IDR 16,388) per reference farming family. Meanwhile, the average Actual Income is IDR 2,754,968 (USD 168.10). Therefore, there is a gap of IDR 2,700,538 or Actual Income is about half when compared to a Decent Living Income.

The actual income of coffee farmers is also less than the Bandung Regency Wage Standard (2023) of IDR 3,492,466, and below the World Bank poverty figure (April 2023) of IDR 4,696,613, but above the National Poverty Line (March 2023) of IDR 2,201,832.

The results of this study were presented to stakeholders at a Validation Workshop (27 June 2024) at the Bandung District Agricultural Service Hall. Furthermore, an Action Plan Workshop was held (8 August 2024), inviting discussion from wider stakeholders to find solutions to overcome the income gap. Through these two workshops, commitment and recommendations for further steps were achieved, which also will involve various stakeholders -including government and private parties- to improve the standard of living of Java Preanger Arabica coffee farmers in Bandung Regency.



Figure 1: Validation Workshop, 27 June 2024



Figure 2: Action Plan Workshop, 8 August 2024

¹ <https://www.ankerresearchinstitute.org/>

² <https://www.globallivingwage.org/>

Introduction

The SASCI+ project is designed to increase the sustainable production of agricultural commodities and strengthen downstream processing and market linkages. The aim of the project is to increase farmers' incomes and work towards closing the living income gap while ensuring sustainable and deforestation free production. In addition, this project aims to strengthen farmers' self-organization and the implementation of gender-sensitive sustainability concepts.

This report presents an analysis of the estimated living income and actual income of coffee farming families engaged in coffee production in Bandung Regency, West Java Province, Indonesia. Because living income estimates depend on specific locations, assessments apply only to the majority of families living in the study area.

The focus of this research is the West Java region, especially the Java Preanger region in Bandung district. This area is well known on the world market as a coffee producing area in Indonesia. The SASCI+ project here supports coffee farmers in increasing yields, increasing capacity to respond to climate change, and implementing sustainable agricultural practices.

Objectives of the Study

The aim of this study is to assess the income needed ensure that all families working in related industries have a decent life, which guarantees access to nutritious food, healthy housing, adequate health services, a decent level of education to be able to send their children to secondary school, and fulfill other basic human needs (i.e., “the living income”). Ensuring that a family reaches the living income can encourage development towards a just and prosperous society.

The Anker methodology³, used in this study, has also been widely used in many developing countries, not limited to Belize, Costa Rica, Brazil, Mexico, and Kenya (Voorend, Anker, & Anker, 2018)⁴, and recently GIZ promote its use in Indonesia, to measure the living income benchmark for coffee and cacao farmers. The living income estimate follows the Anker methodology not only because of its common usage in developing countries, but also because of its comprehensiveness, cost-effectiveness, and efficiency.⁵ This method does not measure the income received by farmers currently, but rather estimates the cost of a decent living standard to access living necessities that are not lower than the minimum standard.

Solutions may involve sustainable development initiatives and strategies, social safety nets, and fair wage policies to reduce the gap. The Anker method increases transparency, because the size of the “all other essential costs” bucket is much smaller and examined more thoroughly (and adjusted when necessary)

³ Anker, R., & Anker, M. (2017). *Living Wages Around the World: Manual for Measurement*: Edward Elgar Publishing. Retrieved from <https://www.elgaronline.com/view/9781786431455/9781786431455.xml>. doi:10.4337/9781786431462

⁴ [Voorend, K., Anker, R., & Anker, M. (2018). *Living Wages in Developing Countries: A Review of the Literature.*](<https://www.wiego.org/sites/default/files/publications/file/Voorend-Anker-Anker-Living-Wages-Developing-Countries-2018.pdf>)

⁵ Anker Methodology — Anker Research Institute. <https://www.ankerresearchinstitute.org/anker-methodology>.

than in typical approaches.⁶ It also better allows for different living wage estimates for rural and urban areas, as housing costs are usually the most important cause of differences in living costs. Moreover, the method is also analyzing the gap which helps policymakers, organizations, and communities identify obstacles.

Estimated living costs provide income information that can be used as a benchmark for farmers' income to meet standard criteria. The costs of achieving a living income can be compared with other measures of well-being (e.g., actual income, national and regional minimum wages, national and international poverty lines) so that it can be seen to what extent inequalities hinder the realization of a decent standard of living.

Living Income Concept

A living income is a family concept, introduced by the Anker method, and the idea is that it should support workers and their families at a decent standard of living; therefore, enabling them to become productive members capable of participating in their society.⁷

The Living Income Community of Practice (LiCoP) is an alliance founded by GIZ, ISEAL⁸, and the Sustainable Food Lab.⁹ Its mission is to improve smallholder incomes toward living income benchmarks and enabling smallholder farmers to achieve a decent standard of living.¹⁰ This goes beyond mere poverty alleviation by aiming for relatively comfortable lives. The community fosters collaboration, provides methods for measuring incomes, and identifies strategies to close income gaps.¹¹

According to LiCoP and ISEAL (as of 2024), the consensus definition of living income¹² is as follows:

A living income represents the income level required for a worker or producer to afford a decent standard of living for themselves and their dependents.

It covers essential needs such as food, housing, healthcare, education, and other basic necessities. Living income calculations consider local context, family size, and regional costs of living. The goal is to ensure that workers and producers earn enough to escape poverty and achieve a dignified life.

⁶ Anker, R., & Anker, M. (2017). Living Wages around the World: Manual for Measurement.

<https://www.wiego.org/sites/default/files/publications/file/Anker-Manual-Living-Wages-2017.pdf> provides detailed guidance on using the Anker methodology for living wage estimation.

⁷ Living Income Factsheet. https://assets-global.website-files.com/6162e71977132b31cd3ed4f1/660ff79546d1c6098a50379c_Living%20Income%20factsheet.pdf.

⁸ <https://www.isealalliance.org/about-iseal/our-work/living-income-community-practice>

⁹ Living Income Community of Practice - ISEAL Alliance. <https://www.isealalliance.org/about-iseal/our-work/living-income-community-practice>.

¹⁰ ISEAL collaborations | ISEAL Alliance. <https://www.isealalliance.org/about-iseal/our-work/iseal-collaborations>.

¹¹ Experts convene to discuss strategies to improve the ... - ISEAL Alliance. <https://www.isealalliance.org/sustainability-news/experts-convene-discuss-strategies-improve-living-income-farmers>.

¹² <https://www.isealalliance.org/about-iseal/our-work/living-income-community-practice>

A living income is a fair reward for the work they do. This is in accordance with the UN Universal Declaration of Human Rights and the Constitution of the International Labor Organization (ILO) as an intrinsic aspect of social justice.¹³

The Universal Declaration of Human Rights states that "everyone has the right to a standard of living adequate for the health and well-being of themselves and their families." This includes access to "food, clothing, housing, medical care, and necessary social services".¹⁴ Additionally, individuals have the right to security in situations such as unemployment, sickness, disability, widowhood, old age, or other lack of livelihood beyond their control.¹⁵ Ensuring living wages and incomes aligns with this fundamental right, promoting decent standards of living for workers and their families. The International Labor Organization (ILO) also recognizes living wages as essential for workers' well-being and advocates for their implementation through fair wage-setting processes.¹⁶ In the "Preamble of the ILO Constitution", ILO calls for the provision of "an adequate living wage" ¹⁷. This emphasizes the need to ensure fair compensation that allows workers and their families to maintain a decent standard of living.

In "1944 ILO Declaration of Philadelphia", also part of the ILO Constitution, advocates for "a just share of the fruits of progress to all" and "a minimum living wage to all employed and in need of such protection"¹⁸. It underscores the importance of equitable distribution of economic benefits and protection for workers. While in "The 2022 ILO Brief": The ILO has addressed the question of living wages in its brief entitled "Setting Adequate Wages: The Question of Living Wages". This document provides insights into estimating living wages and aligning them with ILO principles on wage setting.¹⁹ According to the Living Income Community of Practice (LiCoP),²⁰ a "living income" is defined as "the net annual income required for a household in a particular place to afford a decent standard of living for all members of that household",²¹ ²² seen in below visual.

It is equivalent to the cost of living for a household and is measured by comparing the living income benchmark with a farmer's actual income, earned by all adult household members from their own farm, as well as any other off-farm income sources. As the income received by producing agricultural commodities often falls far below the living income threshold, possibilities of income diversification are

¹³ Universal Declaration of Human Rights | United Nations. <https://www.un.org/en/about-us/universal-declaration-of-human-rights>.

¹⁴ Universal Declaration of Human Rights. https://www.ohchr.org/en/UDHR/Documents/UDHR_Translations/eng.pdf.

¹⁵ International Position Statement on LIVING WAGES AND LIVING INCOMES. <https://sustainability.aldisouthgroup.com/files/living-wages-and-living-incomes-position-statement>.

¹⁶ ILO Governing Body closes with decisions on living wages, strengthening <https://www.ilo.org/resource/news/gb/350/ilo-governing-body-closes-decisions-living-wages-strengthening-social>.

¹⁷ The question of living wages | International Labor Organization. <https://www.ilo.org/resource/question-living-wages>

¹⁸ ILO endorses living wages – here's what you need to know | World <https://www.weforum.org/agenda/2024/04/ilo-living-wage-explained/>. and in the Constitution of the International Labor Organization (ILO) as an intrinsic aspect of social justice.

¹⁹ ILO Governing Body closes with decisions on living wages, strengthening <https://www.ilo.org/resource/news/gb/350/ilo-governing-body-closes-decisions-living-wages-strengthening-social>.

²⁰ Living Income Community of Practice, <https://www.living-income.com/>

²¹ Brief assessment of the living income concept. <https://openknowledge.fao.org/bitstreams/6a0bb97c-c934-4c92-9d6e-7250052d7a5d/download>.

²² This definition is also used by the Accountability Framework initiative

often explored by farmers. This is taken into account in the potential household income (indicated in LICOP's diagram), in the off-farm income sources, which can include agricultural labour, paid work in a different sector, and transfers and remittances.²³

For companies directly employing farm labour, the concept of a living wage may be relevant. As living wage relates only to hired labour, it is often more relevant to talk about enabling a living income within commodity supply chains, as many producers are smallholders who are not employed, and therefore may not be paid a wage.²⁴

Anker Methodology

The method most widely used to estimate decent income is the Anker method which does not measure the income received by farmers, but rather estimates the cost of a decent standard of living to access living necessities that is not lower than the minimum standard. The “Anker Methodology”, developed by Richard and Martha Anker,²⁵ is considered the gold standard for estimating “living wages” and “living incomes” to cover the costs associated with a basic but decent life. This methodology has gained wide-spread acceptance and has been used to estimate living wages in rural, urban and semi-urban areas around the developing world.²⁶

Anker and Anker (2017) recommend assessing in the selected fieldwork area the costs of food, housing and utilities, other essential needs, as well as the need to safeguard against emergencies and unexpected events. The researchers were then asked to add the number of normal family members and a ratio indicating the probability that an adult in the reference family worked full time to cover these costs.

Basically, the Anker method evaluates various components, including:

- Food Costs: Based on a healthy, locally accepted diet.
- Housing and Utilities: Compliant with local standards of decency.
- Other Essential Needs: Such as healthcare, education, and transportation.
- Emergency Safeguards: Accounting for unexpected events.
- Family Size and Work Ratio: Considering the likelihood that adults work full-time to cover costs.

²³ https://assets-global.website-files.com/6162e71977132b31cd3ed4f1/660ff79546d1c6098a50379c_Living%20Income%20factsheet.pdf

²⁴ Living Income vs. Living Wage - Global Living Wage Coalition. <https://www.globallivingwage.org/about/living-income/>.

²⁵ Anker Methodology — Anker Research Institute. <https://www.ankerresearchinstitute.org/anker-methodology>.

²⁶ Anker Methodology — Anker Research Institute. <https://bing.com/search?q=Anker+method+for+estimating+decent+income>.

Food Costs

By aggregating local food prices based on worker input, realistic food prices are derived that mimic workers' food spending habits and preferences. In order to get a reasonable food price, consultant also carried out survey to local market and food vendors that close to the farmer's area.²⁷

When estimating food costs, especially for a living wage calculation, several factors come into play. The breakdown is as follows:

1. *Energy and Macronutrients*: The World Health Organization (WHO)²⁸ provides guidelines on energy (calories) and macronutrient distribution.²⁹ For young adults, the recommended percentage of calories from macronutrients is as follows^{30 31}:
 - Protein: 10–15%
 - Fat: 15–30%
 - Carbohydrates: 55–75%.

This diet model approach uses stricter nutritional standards than the current general approach, which only ensures an adequate number of calories.

2. *Local Food Preferences and Development Level*: Local food prices for the type, quality and quantity of food that workers typically purchase based on new data collection involving workers and key informants. However, a low-nutrient diet should still meet WHO recommendation³² while considering local food preferences. The diet's composition may vary based on cultural norms, available ingredients, and economic development.³³
3. *Micronutrients*³⁴: Micronutrients (vitamins and minerals) are critical for health, even though they are needed in small amounts. Deficiencies in micronutrients can lead to severe health conditions.³⁵

²⁷ Guidance manual on calculating and visualizing the income gap to a <https://thecosa.org/wp-content/uploads/2021/06/Guidance-on-Manual-Calculating-and-Visualizing-the-Income-Gap-to-a-Living-Income-Benchmark.pdf>.

²⁸ World Health Organization. (1989). Health principles of housing: World Health Organization.

²⁹ Guidance on Energy and Macronutrients across the Life Span. <https://www.nejm.org/doi/pdf/10.1056/NEJMra2214275>

³⁰ Breaking Down Food | NIH News in Health. <https://newsinhealth.nih.gov/2023/08/breaking-down-food>.

³¹ Macronutrients and Their Roles in Aging | SpringerLink. https://link.springer.com/chapter/10.1007/978-981-99-0534-8_8.

³² <https://www.who.int/health-topics/micronutrients>

³³ Calculate daily nutrient recommendations using the DRI Calculator <https://ods.od.nih.gov/HealthInformation/nutrientrecommendations.aspx>

³⁴ Micronutrients - World Health Organization (WHO). <https://www.who.int/health-topics/micronutrients>.

³⁵ Nutrient Recommendations and Databases - Office of Dietary Supplements <https://ods.od.nih.gov/HealthInformation/nutrientrecommendations.aspx>.

Housing and Utility Costs

Housing costs are estimated using international standards (UN-HABITAT). UN-Habitat recognizes housing as a fundamental human right.³⁶ Housing isn't just about roofs; it's an opportunity for better lives and a better future. Housing aims to ensure access to safe, secure, habitable, and affordable homes for all.

According to UN-HABITAT³⁷, housing is considered “affordable” when a household spends less than 30% of its income on housing-related expenses (e.g., rent or mortgage payments). Recent data indicates that around 80% of cities worldwide lack affordable housing options for half of their population³⁸.

When estimating housing costs, national standards of housing decency from the Central Bureau of Statistics (BPS) is taken into account.³⁹ These standards help ensure that housing is affordable, safe, and meets basic living requirements⁴⁰. Referring to the Central Bureau of Statistics (BPS), the concept of “national standards of housing decency”⁴¹ is based on broader research and data⁴². It covers:

1. *Affordability*: National standards often consider housing costs relative to household income. A decent home should be affordable, ensuring that households do not spend an excessive portion of their income on housing expenses.⁴³
2. *Physical Condition*: Decent housing should meet basic safety and habitability standards. This includes factors such as structural integrity, sanitation, ventilation, and access to utilities (water, electricity, sanitation facilities).⁴⁴
3. *Space and Privacy*: Standards may address minimum square footage per occupant, ensuring adequate living space. Privacy is also crucial, with considerations for the number of rooms and layout.
4. *Safety and Security*: Housing should protect occupants from environmental hazards, crime, and natural disasters. This includes fire safety, secure doors and windows, and neighbourhood safety.
5. *Accessibility*: Decent housing accommodates people with disabilities, ensuring accessibility features like ramps, wider doorways, and accessible bathrooms.

Result+ carried out a housing survey among target farmers using both the UN HABITAT and national standards of decency, and observed whether farmers’ residences are located outside slum and unsafe areas, have permanent walls, roofs that do not leak, and adequate ventilation; as well as available facilities

³⁶ Housing | UN-Habitat. <https://unhabitat.org/topic/housing>

³⁷ UN Habitat. (2013). State of the world's cities 2012/2013: Prosperity of cities: Routledge.

³⁸ THE GLOBAL HOUSING AFFORDABILITY CHALLENGE - UN-Habitat.

https://unhabitat.org/sites/default/files/2020/06/urban_data_digest_the_global_housing_affordability_challenge.pdf.

³⁹ BPS Jawa Barat. (2024). Propinsi Jawa Barat dalam angka 2024.

⁴⁰ Housing and Settlements Statistics 2022 - BPS-Statistics Indonesia.

<https://www.bps.go.id/en/publication/2023/08/31/8ff8b16e0646ae0e43a9925b/statistik-perumahan-dan-permukiman-2022.html>.

⁴¹ National Healthy Housing Standard | NCHH. <https://nchh.org/tools-and-data/housing-code-tools/national-healthy-housing-standard/>.

⁴² COMPILATION OF BASIC LAWS APPLICABLE TO THE DEPARTMENT OF HOUSING AND

<https://www.hud.gov/sites/dfiles/GC/documents/HUDBasicLaws2019-06.pdf>.

⁴³ National Healthy Housing Standard - NCHH. <https://nchh.org/resource-library/national-healthy-housing-standard.pdf>.

⁴⁴ Building Permits Survey (BPS) - Census.gov. <https://www.census.gov/construction/bps/>.

such as electricity, water, and a sanitary toilet facilities, and looked whether farmers having sufficient living space so parents can sleep separately from children.

Other Essential Needs

Other essential needs beyond housing play a crucial role in human well-being. It includes:

1. *Healthcare*: Access to quality healthcare services is essential. This includes preventive care, medical treatment, vaccinations, and mental health support. National standards often consider factors like healthcare infrastructure, availability of healthcare professionals, and affordability.
2. *Education*: Education is fundamental for personal development, economic growth, and social progress. Standards for education include access to schools, qualified teachers, relevant curriculum, and equitable opportunities.
3. *Transportation*: Reliable transportation enables people to access jobs, education, healthcare, and social services. Standards may address public transportation availability, road safety, and infrastructure.

Meeting these essential needs contributes to sustainable development and improved quality of life.

To get primary data on essential needs, Result+ carried out surveys to farmers, health clinics, schools and terminals. The consultants observed to what extends farmers have regularly conducted Preventive Care, such as: regular check-ups, vaccinations, and screenings that help prevent illnesses and detect health issues early. By visiting health clinics, consultants observed whether those facilities meet the national standards of accessible preventive services.

Emergency Safeguards

In the Anker methodology, a small margin is added to account for unexpected events and emergencies (such as illnesses or accidents), ensuring sustainability and preventing perpetual poverty traps.⁴⁵ While not explicitly labeled as "emergency safeguards", the methodology inherently considers unexpected events. By providing a decent standard of living, it implicitly accounts for emergencies like illnesses, accidents, or unforeseen expenses.

Result+ asked farmers on *budgeting and debt management*⁴⁶ to find out whether they have a regular budget to track their income and expenses. It also observed whether they consider having an emergency budget that outlines essential needs versus discretionary spending. Observing on control debt is important in this survey to find out farmers' efforts in minimizing high-interest credit balances that also may come from red-cherry collectors/traders as the common practice in the area is the trader provide debt as a kind of downpayment for their red cherry and this practice reduces farmers' opportunity to get a better price.

⁴⁵ Preparing for Unexpected Financial Emergencies: Strategies and <https://aaronhall.com/insights/preparing-for-unexpected-financial-emergencies-strategies-and-contingency-plans/>.

⁴⁶ 7 ways you can prepare for the Unexpected financial emergency. <https://www.greatoakadvisors.com/7-ways-you-can-prepare-for-the-unexpected-financial-emergency/>.

They also save funds for *unexpected events* such as the death of neighbors/relatives, weddings, circumcisions, Independence Day celebration, and other social events that require donations.⁴⁷ Some farmers also indicate they have an “emergency fund”. Some of them are also known to store important documents in a secure location in case of disaster events.

Family Size and Work Ratio

This methodology considers that *Family Size* can determine the results. Therefore, the living wage is calculated by dividing the cost of a basic life by the number of workers per family.⁴⁸ *The family size and the work ratio* (the proportion of adults working full-time) in covering household costs are factors that play a significant role in determining financial stability and meeting essential needs.⁴⁹

The number of family members directly impacts living expenses. Larger families typically have higher costs for food, housing, education, and healthcare. Family size influences the required income to maintain a decent standard of living. While the work ratio refers to the proportion of working adults within a household.⁵⁰ It affects the family's overall income. When more adults work full-time, the household can generate higher earnings, potentially covering expenses more effectively.

Calculation

Calculation that is used by Anker Methodology is the cost of this basic but decent life for a typical family is divided by the number of workers per family to arrive at the living wage or income.⁵¹ For practical reasons, the costs of all other necessities are estimated using an extrapolation method based on secondary household expenditure data. However, this was then “rechecked” to ensure that sufficient funds were available for health, education and transport services. This prevents extrapolation methods that mimic poor living conditions because they are based on currently observed expenditure

The total per capita cost for a basic but decent standard of living is then increased to reach the cost for a typical family size in the target region. A small margin is then added to cover unforeseen events and emergencies such as illness and accidents, to help ensure sustainability and avoid the trap of prolonged poverty. To arrive at a living wage estimate, the estimated total cost of a decent standard of living for a family is then costed based on the number of equivalent full-time workers per family in that location.

⁴⁷ How To Prepare for Financial Risks & Unexpected Events - Merrill Edge. <https://www.merrilledge.com/article/how-to-prepare-for-unexpected-financial-events>.

⁴⁸ THE WORK-TO-FAMILY CONFLICT: THEORIES AND MEASURES. <https://www.tpm.org/wp-content/uploads/2014/11/15.1.3.pdf>.

⁴⁹ Working Ratio: Meaning, Example, Limitations - Investopedia. <https://www.investopedia.com/terms/w/workingratio.asp>.

⁵⁰ Working Ratio Definition | LiveWell. <https://livewell.com/finance/working-ratio-definition/>.

⁵¹ ANKER LIVING WAGE AND LIVING INCOME REFERENCE VALUES FOR DEVELOPING <https://www.globallivingwage.org/wp-content/uploads/2020/07/Technical-description-of-reference-values-June-20-v1.pdf>

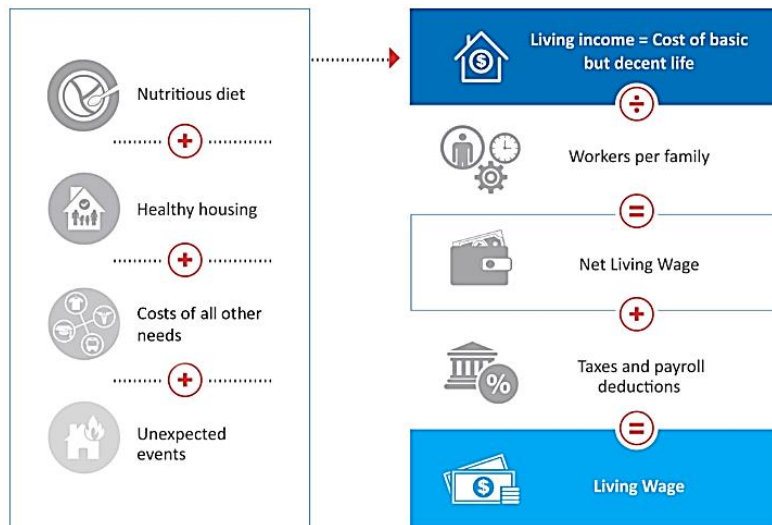


Figure 3. Methodology for estimation of living income and living wage⁵²

The figure above illustrates the step-by-step process of applying the calculation of the Anker method.

This methodology is a practical compromise between separately estimating cost of each expense families have, and the most common approach currently used for estimating living wage in developing countries, which uses just two expense groups (food costs based on a model diet and non-food costs based on secondary data).⁵³

Using normative standards for decent housing and estimating housing costs separately (not as part of non-food costs, as in typical methodologies) ensures that living income estimates enable farmers to afford decent housing. In contrast, typical methodologies rely on available expenditure data to estimate housing costs and so replicate current (often substandard) housing conditions.

Estimated living costs provide income information that can be used as a benchmark for farmers' income to meet standard criteria. The costs of obtaining a decent standard of living (i.e. 'decent income') can be compared with other measures of well-being (e.g. actual income, national and regional minimum wages, national and international poverty lines). So, we can find out how big the gap is, and we can analyze what aspects are hindering the realization of a decent standard of living.

Comparing estimated living costs with other income measures is also crucial for understanding the well-being of farmers and workers, as described below:

- *Living Costs Benchmark*: By estimating the cost of a decent standard of living, we establish a benchmark. This benchmark reflects the income needed to cover essential needs like food, housing, healthcare, and education.

⁵² <https://www.globallivingwage.org/about/anker-methodology/>

⁵³ Voorend, K., Anker, R., & Anker, M. (2018). Living Wages in Developing Countries: A Review of the Literature.](<https://www.wiego.org/sites/default/files/publications/file/Voorend-Anker-Anker-Living-Wages-Developing-Countries-2018.pdf>) offers insights into the application of living wage concepts across different countries.

- *Actual Income:* Comparing this benchmark with actual income reveals whether workers' earnings meet or fall short of the living costs. If the gap is significant, it highlights potential challenges.
- *Minimum Wages:* National and regional minimum wages serve as another reference point. If minimum wages are below the living costs, it indicates that workers may struggle to achieve a decent standard of living.
- *Poverty Lines:* Comparing living costs with national and international poverty lines helps identify whether workers are at risk of poverty. If their income falls below these thresholds, urgent action is needed.

This report, carried out by Result+ Consulting, presents estimates of the living income of coffee farming families engaged in coffee production in Bandung Regency, West Java Province, Indonesia. These living income estimates are location specific, therefore they only apply to the majority of families living in the study area.

Context of Coffee Farming in West Java

Coffee cultivation in Indonesia began during the Dutch colonial period in the late 1600s and early 1700s. The Dutch governor of Batavia (now Jakarta) received arabica coffee seedlings from Yemen in 1696. The first successful exports of coffee from Java to Europe occurred in 1711, with shipments reaching 2,000 pounds by 1717.

Indonesia was the first place outside of Arabia and Ethiopia where coffee was widely cultivated. Coffee, along with sugar and indigo, played a significant role in the exploitative colonial system known as "*Cultuurstelsel*," that was a Dutch government policy, in effect from 1830 to 1870 in the Dutch East Indies colony (now Indonesia). This policy requires that a portion of agricultural production be allocated to export crops. Among Indonesian historians, this policy is known as forced planting.⁵⁴ This system was also applied to coffee production in the Preanger region of West Java and other regions.^{55 56}

West Java remains an important center for coffee production in Indonesia.⁵⁷ Here are some key points:

- *Geography and Altitude:* Coffee farms in Java are situated at elevations ranging from 1,100 to 1,700 meters above sea level.
- *Farm Size:* Farms are generally small, typically spanning <1 to 3 hectares.
- *Processing Method:* Coffees from Java are often wet hulled (giling basah), a method popular due to economic considerations.⁵⁸
- *Varieties:* Popular coffee varieties in West Java include Pangalengan (Preangay), Garut, and Ciwidey. These coffees tend to be bright, with flavor notes of malts, nuts, and chocolate.
- *Arabica Dominance:* West Java is the fourth-largest Arabica coffee-producing region in Indonesia; Arabica coffee accounts for 59% of the total smallholder plantation area and 54% of the total smallholder production in the province⁵⁹. In Bandung Regency smallholders grow almost exclusively Arabica coffee.

In summary, West Java's coffee heritage is rich, shaped by historical trade, colonial influence, and the unique microclimates of the Sunda highlands. The region continues to contribute significantly to Indonesia's coffee industry.⁶⁰ Coffee is one of the most important commercial products in Indonesia. According to USDA Foreign Agricultural Service, Indonesia is the third largest coffee producing country in the world, after Brazil and Vietnam, and contributing 7% of the global coffee production (USDA, 2024).

⁵⁴ Culture System | Colonialism, Dutch East India Co. & Oppression. <https://www.britannica.com/event/Culture-System>.

⁵⁵ Coffee production in Indonesia - Wikipedia. https://en.wikipedia.org/wiki/Coffee_production_in_Indonesia.

⁵⁶ The Culture-System (Cultuurstelsel) | SpringerLink. https://link.springer.com/chapter/10.1007/978-94-017-6848-1_14.

⁵⁷ Indonesian Javanese Coffee Explained & Reviewed (With Photos). <https://www.clearlycoffee.com/indonesian-javanese-coffee-explained-reviewed-photos/>.

⁵⁸ West Java Blue Sunda Estate — Blue Lava Coffee Roasters. <https://www.bluelavacoffeeroasters.com/archives/java-blue-sunda>.

⁵⁹ Sustainability of Arabica coffee business in West Java, Indonesia: A <https://www.degruyter.com/document/doi/10.1515/opag-2022-0144/html?lang=en>.

⁶⁰ Coffee production in Indonesia - Wikipedia. https://en.wikipedia.org/wiki/Coffee_production_in_Indonesia.

Meanwhile for Indonesia, coffee contributed to its international trade worth USD 858.56 million or the volume at 387.26 million ton in 2021.⁶¹

Indonesia is among the world's top coffee-producing countries, contributing 5% of global coffee exports.⁶² The country produces both arabica and robusta coffee. Most of Indonesia's coffee bean production (between 80% and 90%) involves robusta coffee, which thrives at lower altitudes⁶³. The composition of production is dominated by robusta, known for its lower price compared to arabica⁴.

Indonesia's coffee industry employs approximately 1.77 million people.⁶⁴ Brazil is the largest force on the global coffee stage, producing both arabica and robusta beans. Indonesia ranks among the world's biggest arabica bean producers and is the third-largest robusta bean producer.⁶⁵ Indonesia's diverse coffee origins, employment opportunities, and significant contribution to global coffee exports make it a vital player in the coffee industry.⁶⁶

Coffee plantations in Indonesia are spread across the islands of Sumatra, Java, Sulawesi, Bali, Flores and Papua. The island of Java, especially West Java, used to be a major coffee production area which was famous since the Dutch colonial period, and was known as Java Preanger coffee. Indonesian coffee culture involves traditional brewing methods like “kopi tubruk” (boiled coffee) and “kopi tubruk manis” (sweetened boiled coffee). Coffee shops (“warung kopi”) serve as social hubs where people gather, chat, and enjoy coffee. Initiatives and Standards like Fair Trade and Rainforest Alliance have actively promoted sustainable practices and fair wages for farmers. Organizations like the International Coffee Organization (ICO) work on coffee-related issues globally.

West Java is a major coffee production area, however, many farmers, particularly smallholders are facing uncertainty for their farming practice and their livelihood since most of these farmers cultivated coffee in the state forest area (production forest, managed by the State-owned enterprise *Perum Perhutani*) and only got permit to manage the production land for two years and need to renew it again every other year. These smallholders usually do not have their own land for farming, and if they have usually the area is very low (under 1500 m²) which may not be enough for their living. Coffee farms are usually located in the higher altitude (more than 800 m above sea level) in which these altitude and location is suitable for vegetables farming. Hence, competition in land-use is inevitable. In order to sustain coffee production, a living income that supports decent life of smallholders need to be achieved. This study in coffee farmers

⁶¹ Pusat Data dan sistem Informasi Pertanian Indonesia. (2022). Analisis Kinerja Perdagangan Kopi Indonesia. Jakarta: Kementerian pertanian Indonesia. Retrieved from <https://satudata.pertanian.go.id/details/publikasi/450#:~:text=Kopi%20merupakan%20salah%20satu%20komoditas,2021%20mencapai%20USD%20825.865%20juta>

⁶² Coffee production in Indonesia - Wikipedia. https://en.wikipedia.org/wiki/Coffee_production_in_Indonesia.

⁶³ World Coffee Research | Indonesia. <https://worldcoffeeresearch.org/focus-countries/indonesia>.

⁶⁴ Indonesian Coffee Development Path: Production and International Trade. <https://journalajaees.com/index.php/AJAEES/article/view/2335>.

⁶⁵ Coffee Industry in Indonesia Report - Production & Export - Analysis <https://www.indonesia-investments.com/business/commodities/coffee/item186>.

⁶⁶ en.wikipedia.org. https://en.wikipedia.org/wiki/Coffee_production_in_Indonesia.

living income will be beneficial both for farmers and for stakeholders such as government, traders, and donor organizations.

On the other hand, Bandung Regency is famous for its garment industry, and many garment factories are scattered around the study area offering off-farm income opportunities. However, these factories usually only hire younger people (not older than 30 years old), who should have finished a degree or have enough skills to work formally.



Figure 4. Coffee products of Wanoja Cooperative, sub-district Ibun

The Study

Scope of the Study

The scope of work of the study includes:

- Task 1: To first design the research approach for both Living Income (LI) and Actual Income (AI) that in line with the Anker Methodology and GIZ tools.
- Task 2: to collect data through secondary data and subsequently conduct primary data collection (“field work”) based on the research approach that is developed in task 1.
- Task 3: to prepare an action plan for closing the gap between actual incomes and the Living Income Benchmark, including related to coffee farming and marketing, alternative farming incomes and potential other income sources as well as reduced cost of living.

This research was conducted in the rural area of Bandung Regency, West Java, where most of the farmers in the area grow coffee. Respondents for the survey numbered 98 people spread from Ciwidey District in the west to Cikancung District in the East. The number of respondents from each village is shown in the following figure.



Figure 5. Number of survey respondents in target villages

The number of samples taken depends on the number and ratio of farmers (and respective farm sizes) participating in the GIZ/SASCI+ program, the number of which varies in each location.

Table 1: Overview of respondents' number of program participants and the respondents' distribution

Sub-district	Village	LMDH	Total sample	sample (>2Ha)	sample (1-2 Ha)	sample (<1 Ha)
Pacet	Mandala Haji	Kop. Mandala wangi	19	0	1	18
Pacet	Sukarame	Girimukti	21	1	5	15
Cimaung	Campaka Mulya	Kop. Bukit Amanah	17	0	7	9
Pasir Jambu	Mekarsari	Mekarsari	10	1	10	4
Pasir Jambu	Pulosari	Mekarsari	1	0	1	0
Pasir Jambu	Cisondari	Cisondari	1	0	1	0
Pasir Jambu	Sugihmukti	Sugihmukti	8	0	5	3
Ciwidey	Lebakmuncang	Tambaggruyung	5	0	2	3
Ciwidey	Alamendah	Tambaggruyung	0	0	0	0
Cijapati	Mekarlaksana	Tani sari	4	1	2	1
Ibun	Laksana	Wanoja	4	0	3	1
Pacet	Cikawao-Banjaran	Girimukti	1	0	1	0
Pacet	Cinanggela	Pangauban	1	0	1	0
Pacet	Pangauban	Pangauban- pasir Mulya	2	0	1	1
6	13	Total	98	3	40	55

Field Work and Data Source

This research was conducted in the rural area of Bandung District, West Java in which most of the farmers in the area planted coffee. This study employed a mixed-method approach, that is:

A. Literature review

Desk review of secondary data was conducted on data and publications of the Indonesian Statistics Bureau (BPS)⁶⁷ to determine household reference size, to assess housing characteristics, to calculate non-food and non-housing (NFNH) costs, and to calculate the number of fulltime equivalent workers per family. The household reference size was calculated based on the total fertility rate, under-five mortality rates, and the distribution of households by size reported in the BPS Kab. Bandung (2023a)⁶⁸ Socio-Economic Survey (Survei Sosial Ekonomi Nasional – SUSENAS) and BPS Kab. Bandung (2022) on 2010 census for Bandung District, West Java Province.

The estimation of NFNH costs was based on SUSENAS 2022 data(BPS Kab. Bandung, 2023a). The number of full-time equivalent workers per family was estimated based on the data number of people at age over 15 years old who work as of April 2023 (BPS Kab. Bandung, 2023b). The research team also reviewed national and international standards for housing and publications on coffee production and producers in Bandung District, West Java Province. The reviewed documents were listed in the References section at the end of this report.

B. Key informant interviews

The team conducted a survey and interviewed 98 respondents spread across various villages, stretching from Ciwidey District to Cikancung District. All villages are located on mountain tops, and their plantations are separated from their homes because they are located on forestry land with terrain that is very difficult to reach.

The team also interviewed: Community Health Center officials to obtain information on health services and costs in the survey area; schoolteachers and parents to obtain information regarding access to education, quality, and costs; Bandung Regency Agriculture Officer to obtain information on coffee cultivation in the eastern region of Bandung Regency; local carpenters, construction material suppliers and housing developers to get information on housing cost estimates.

Field visits were also carried out to assess schools and health facilities in the village. Then, the team visited and interviewed food sellers at local markets in the sub-district, stall owners, and mobile vegetable traders to collect information about local food prices.

⁶⁷ BPS Pusat. (2023). Profil Kemiskinan di Indonesia Maret 2023. Retrieved 1 Juni 2024, 2024, from <https://www.bps.go.id/id/pressrelease/2023/07/17/2016/profil-kemiskinan-di-indonesia-maret-2023.html>.

⁶⁸ BPS Kab. Bandung. (2023b). Subjek tenaga kerja. Retrieved 24 May 2024, 2024, from <https://bandungkab.bps.go.id/subject/6/tenaga-kerja.html#subjekViewTab3>

C. Observation

Observations were made during the visit and photographs were taken so that readers could understand the conditions at the location, such as typical housing and local materials, toilets, number of rooms, windows, kitchen, etc. The team also paid attention to housing structure, living area, number of rooms, kitchen, cooking equipment, cooking fuel, clean water and electricity.



Figure 6. Coffee Seedlings in Laksana village



Figure 7. Drying Coffee activity in Laksana Village, Ibum Sub-district

Samples

Primary data is collected regarding diet and food prices, housing conditions and costs, access and costs of health and education services, and other living costs. To collect this data in six sample sub-districts, the research team conducted in-depth interviews with 12 farmers, representing the Cooperative and LMDH, interviewed 4 mobile food traders, 4 small grocery and vegetable shops (stalls & kiosks) and bought several vegetables and several basic necessities from them to find out the consumption price and consumption level of each item that is commonly consumed. To assess housing as well as other essential costs two builders, a housing developer staff member, a housing materials shop owner, a midwife and a community health center staff, two teachers, and a District Agriculture Service officer were interviewed.



Figure 8. Bukit Amanah Cooperative



Figure 9. Wanoja Cooperative

In addition, the research team also visited eight schools (4 elementary schools, 2 middle schools, 1 high school, and 1 vocational school) and village health centers (PUSKESDES- This health service is only available in remote villages) in 2 sub-districts.

Samples were selected purposively to represent the plantation area typically used by local farmers, which was grouped into planting areas under 1 hectare, 1-2 hectares, and above 2 hectares, then taken randomly

based on the ratio of plantation area. However, due to obstacles in finding farmers' locations, adjustments were made. The head of the LMDH (Forest Farmers Group) himself was not sure about the list of names we asked for, so snowball sampling was used, replacing the intended respondents, and new respondents were selected but still based on the classification above.

The survey locations cover six sub-districts in Bandung Regency, West Java Province, where the GIZ/SASCI+ program will be implemented together with smallholder coffee farmers. Bandung Regency has an area of 1,767.96 square kilometers and consists of 31 sub-districts. The research locations were in Pacet, Cimaung, Pasirjambu, Ciwidey, Ibun and Cikancung.

From the capital of Bandung Regency, Soreang, the closest sub-districts are Pasir Jambu District (11 km), Cimaung and Ciwidey (13 km), Ibun (38 km), Cikancung (49 km) and the furthest is Pacet District (51 km). Even though the distance from the city of Soreang is farthest, to cross the villages in Pacet, there are relatively good roads, and the road to the plantation can be accessed by motorbike in the dry season.



Figure 10. View of Sukarame village



Figure 11. Key Informant Interview

Data collection

The primary data collection process was carried out in two visits. The first visit was carried out to understand the location, recruit enumerators, and meet with stakeholders to get the support they needed. Then the team made several arrangements for further data collection. Field data collection was carried out on 12 – 23 May 2024 by conducting interviews and market surveys and collecting information regarding housing materials, carpenter and housing builder costs, health, education and communication costs. The data collection in the field was carried out by two researchers and supported by five local enumerators. Primary data collection and participants are presented in the following table:

Table 2: Participants of the Study

Data collection technique	Participants	Component of study	Remark
In-depth interviews	<ol style="list-style-type: none"> 1. Teacher (n=8 respondents) 2. Nurse (2) 3. Health center officer (2) 4. Posyandu Volunteer (4) 5. Building materials' owner (2) 6. Carpenter (2) 7. House-builder (2) 8. Developer staff (1) 9. Village Office staff (1) 10. Staff of Indo Cafco and JPLM (6) 11. Agriculture Office staff (2) 12. Middlemen (3) 13. Head of LMDH (4) 14. Staff of cooperatives (4) 15. Food vendors (12) 	<p>Access to education and health, consumption pattern,</p> <p>Cost of establishing a healthy house, material price of house, acceptable standard of housing</p> <p>Commodity price, supply chain, farmer's characteristics, coffee production, role of stakeholders</p> <p>Food price, consumption pattern,</p>	<p>Mainly aimed for living income benchmark</p>
Survey	Smallholder farmers (98)	Actual income, size of family, source of income, coffee and its farming practice.	This survey is mostly aimed for actual income assessment
Observation	Observing housing, public facility (village office, praying facility/ mosque, cooperative office), health center, school, market, kiosk, the cooperative office, private business in the vicinity of the study area such as factory, plantation, micro-enterprise.	Acceptable housing standard, public facility standard and access to health and education, economic activities, accessibility of public transport and most preferred mode of transport.	

Living Income of Coffee Farmer in West Java Estimation

Estimating Household Costs

The estimation of living income, based on the Anker Methodology, considers four elements that are of primary concerns in attaining a decent standard of living: (i) cost of a basic but nutritious diet; (ii) cost of a basic but adequate and healthy - according to specified standards - housing; (iii) costs of other essential items, such as procurement of health care, education, clothing, etc., which are referred to in this report as Non-Food and Non-Housing (NFNH) expenses; and (iv) a marginal supplement as a buffer to allow farmers and their families to tackle their vulnerability to contingencies, Anker method suggest 5% for this contingencies fund (Anker & Anker, 2017).

The costs of food and housing were determined based on primary data on food prices gathered during fieldwork, whereas the valuation of NFNH costs is based mainly on secondary data; although three expense items (i.e., health, education and transport) are subjected to “post-checks” based on the data collected during fieldwork to ensure that the costs gathered through the secondary data sources had not been underestimated. These costs were then aggregated to yield an estimate of the living expense for a basic but decent living standard.



Figure 12. Puskesmas (Health Center) Ciwidey

Typical Family Size

Living income is a family concept where income received should cover basic needs of all members of the family. Therefore, it is crucial to determine an appropriate family size for rural Indonesia in estimating a living income. We use a family size of 4 persons (two adults and 2 children) to estimate our living income for the Bandung District.

This family size is based on information on: (i) fertility rate and child mortality rate and the number of surviving children that women in rural Indonesia are now typically having; and (ii) average household size in rural Indonesia. This family size aligns with the average family members we found in the study which is average member of respondents is 3.8.

According to the 2017 Demographic and Health Survey (DHS), the total fertility rate (TFR) for rural Indonesia is around 2.6 with under-five child mortality rate of 33 per 1,000 births. This implies a family size of around 4.5. While according to BPS Bandung District (year 2020 survey) ratio the number of head of household and the number of its member in Bandung District or household size is 3,6. Thus, we decided to use a reference family size of 4 (2 adults and 2 children) which seems reasonable for our study location.

Estimating Healthy and Nutritious Food costs

Principles of Model Diet & The Model diet

This dietary model was developed based on the principles below, so that food costs for a family in a coffee rural area in West Java can be estimated:

- Nutritious is defined as food that is healthy and rich in macro and micro nutrients at an affordable price which ensures that a person has sufficient energy to carry out productive activities and maintain their health status. This eating pattern also considers the adequacy and balance of carbohydrates, protein, fat and essential minerals and vitamins.
- The relatively low cost of a healthy diet means it is not expensive for most Bandung people and delicious food is considered in the diet model, so it can reflect the ability of farmers to serve nutritious food to meet the minimum standards for a healthy diet on their tables.
- Considering the minimum percentage of calories from protein, fat and carbohydrates to meet WHO (2003)⁶⁹ and FAO; WHO; UNU (2001)⁷⁰ standards; especially protein, because protein-rich foods are relatively expensive. This study ensures that the percentage of calories that come from protein meets WHO minimum standards.
- Taking into account local food preferences, availability and costs, which means that the choice of certain types of food included in the diet model to represent each main food group is not always the food with the lowest price because these choices also take into account local preferences and availability as well as dietary patterns.

The following methodology was employed in creating a model diet. Schofield equation is employed to estimate body energy expenditure based on age, sex, average height and weight of people in Bandung District, and physical activity level for farmer. The body energy expenditure calculation estimated that farmers in Bandung district **spend about 2,392 calories per person**; under the assumption that the composition of the reference family is two adults and two children in which one adult perform vigorous physical activity.

This number of calories needed for farmer is consistent with the estimation of the official food poverty line for Indonesia (2,100 calories) and the result of SUSENAS Bandung District year 2022 that average daily consumption of people in Bandung district is 2,084 calories (BPS Kab. Bandung, 2023a). Since farmers usually have more vigor activity than the average person, the estimated amount of calory needed is higher.

First, a preliminary 'model diet' was developed by obtaining data from the BPS Kab. Bandung (2023a) on SUSENAS survey on food and nutrition in Bandung District, people of Bandung preference, and the information of edible grams of various food, calories and nutrition content was referred to the *Peraturan Menteri Kesehatan No 41 tentang Pedoman Gizi Seimbang* (Ministry of Health Regulation No 41 about

⁶⁹ WHO. (2003). Diet, Nutrition and the Prevention of Chronic Diseases. Geneva: WHO. Retrieved from https://iris.who.int/bitstream/handle/10665/42665/WHO_TRS_916.pdf;jsessionid=DB0

⁷⁰ FAO; WHO; UNU. (2001). Human Energy Requirements. Retrieved 20 June 2024, 2024, from <https://www.fao.org/3/y5686e/y5686e.pdf>.

balanced diet) and USDA data. The diet was then adjusted so that it fulfills the required number of calories indicated above (2,392 calories) by adjusting the quantity of each food item in the model diet. The distribution of food expenditure on each food group is then compared with the Bandung District household budget survey conducted in 2021.

Second, examination and adjusting the 'model diet' to enable it nutritionally meets with the WHO suggestion that at least 55% of the energy should come from carbohydrate, at least 10 % from protein, and 15 % came from fat for macronutrients composition and minimum 400 gram of vegetables and fruits, while having varieties of food (Kementerian Kesehatan RI, 2015)⁷¹; then it is converted into grams of foodstuffs. After that, the 'adjusted to nutrition balance model diet' is remodeled so it is relatively low cost for such a nutritious diet. Consumption habits, tradition, local food preference and availability are considered in each step of this modeling.

Source of carbohydrate is dominated by rice as it is the main staple food all over Java and consumed 3 times a day. However, volunteers at Posyandu (Integrated Service Posts) and health workers reported that people also consume flour in the form of noodles and fritters such as Bala-bala, cakue, etc. People also occasionally consume cassava or sweet potato as a snack. People in villages usually buy unpacked rice, so they can purchase at any kilogram they want.



Figure 33. Food stand at Majalaya market

As for Protein, most people in Bandung District prefer fish, either fresh fish or dried-salted fish (which is usually sea-fish) over meat for several reasons; Mostly because it is cheaper, and they can raise fish in their own pond. Fishponds can be easily found near their house and are usually used to raise tilapia, catfish and carp. Fish, particularly dried-salted fish such as anchovy, tuna and mackerel can be found at almost every food vendor at an affordable price.

Eggs are also considered as a good and affordable source of protein. Another source of protein from pulses are soybean (in the form of tempe and tofu), mungbean and red-kidney bean; and the most preferred source of vegetable protein is peanut. It is widely consumed in the form of peanut sauce for karedok. Beef is least consumed by most people, usually they consumed during feast such as Idul Fitri and Idul Adha.

⁷¹ Kementerian Kesehatan RI. (2015). Peraturan Menteri Kesehatan No 41 tentang Pedoman Gizi Seimbang. Jakarta: KEMENKES RI. Retrieved from <https://peraturan.bpk.go.id/Details/119080/permenkes-no-41-tahun-2014>

Meanwhile green leafy vegetables often consumed are water spinach, lettuce, mustard and sawi. Other vegetables of their preference are chayote, cabbage, long-beans, mung-bean sprout, tomatoes, carrot, and the favored one and their signature vegetables is leunca fruits (*Solanum nigrum*). Chilli is also important in preparing food in Bandung District. Fruits that are often consumed, low price and widely available are banana, papaya, and seasonal fruit such as oranges, watermelon, mango. Only banana is commonly grown by farmers and available all year long. Hence, Banana is used in the model diet, however other seasonal fruits such as mangosteen, longan, or custard apple are suggested since they are cheap during their respective harvest seasons.

Milk is not commonly consumed among older farmers; children are usually provided by milk supplement (powdered) when they are not breastfeeding. Milk is included in the model diet as it provides a source of calcium, regardless of farmer's habit in consuming less milk. However, kids need milk, and they consume it in the form of powdered milk which is also easy to get everywhere. Coffee is widely consumed as they can get it from their farm and palm oil is the most widely used for preparing food.



Figure 44. Food Street vendor in Pacet

Determining Food Price and Food Costs

Interviews, a survey, and representative buying of foodstuffs from kiosks, merchants at market, and mobile seller were conducted. The interview questions revolve around which items are most preferred, which are quickly sold out, the price and unit they sell, quantity available and price fluctuation. In some remote areas such as Cikawao village, mobile vendors only operate once a week.

Given the variation in prices from one place to another, the median price for each food item was calculated. For example, rice has varied quality and price at same amount of kilo; hence a median price is sought which reflects the price of commonly consumed rice by farmers. So does the price for fish, beef and vegetables. A least costly food item is chosen for the model diet, but at the same time also considering variety of food items, strong local preference and the nutritional intake, such as in the case of farmers preferring peanut sauce over *tempe* or tofu, the quantity of tofu or *tempe* is diminished and altered by peanut.

Most families in the study area purchase food items which can last for weeks from warung/kiosk (food street vendor), while for perishable food items people buy it from mobile vendor. We surveyed the price of all food items from vendors at market, as well as price they sell to mobile food vendors and how much the mobile food vendor will sell to their customers. Then an average price is determined for each food item. The model diet's cost is calculated by multiplying the quantity of purchased item (in kg) in the model diet and the price per kg.

The food item and its quantity, cost of established model diet is estimated at around **IDR 24,495** per person per day as presented here. Accordingly, a family of four need **IDR 2,949,433** to spend on food for 30 days (a month).

The composition of macronutrient is as follows:

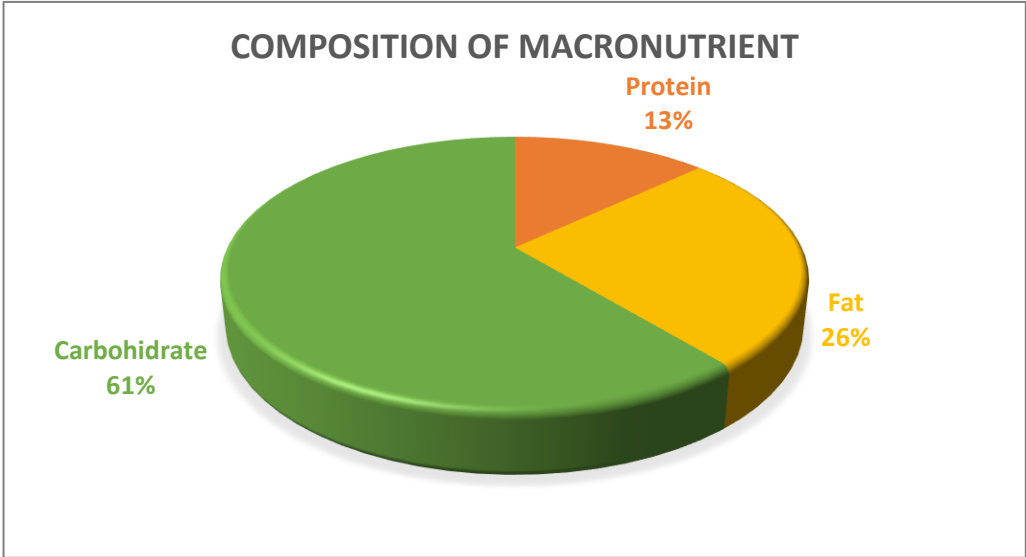


Figure 55. Macronutrients' composition in the model diet

Table 3: Model Diet and the Food Quantity and Price for a person a day

	FOOD ITEM	EDIBLE GRAMS	PURCHASED GRAMS	COST PER KILO	COST F * G
1.A Cereals and grains (for example: rice, wheat, maize)	Rice	492	492	14000.00	6889.41
	Flour (in the form balabala, cakue, etc)	50	50	12000.00	600.34
	Cassava	0	0	6000.00	0.00
1.B Prepared cereals (for example: bread and noodles)	Noodles	45	45	4000.000	180.00
2.A Roots and tubers (starchy) (for example: potato, cassava)	Sweet potato	120	150	6000.00	900.52
2.B Starchy fruit or vegetable (only for countries where important, e.g. plaintains)					
3. Pulses, legumes, beans (for example: legumes, beans, nuts)	Peanut	30	30	39000.00	1170.00
	Soybean (in the form tempe)	20	20	17000.00	340.00
4. Dairy (for example: milk, sour milk, yoghurt)	Powder milk	8	8	130000.00	1040.00
5. Eggs	Eggs	50	56	32000.00	1778.80
6. Meats & Fish (Maximum of 3 meats and 2 fish)	Fresh fish (mas/nila)	30	50	30500.00	1525.00
	Dried fish (Teri)	12	16	39000.00	624.00
	Chicken	10	14	40000.00	540.54
	Beef	0	0	130000.00	0.00
7.A Green leafy vegetables (GLV)	Water spinach	100	111	4000.00	444.44
	Lettuce/water gourd	100	118	3000.00	352.94
7.B Other vegetables	Chayote	100	111	3000.00	333.33
	Leunca (kind of local Solanum)	35	44	4000.00	175.10

8. Fruits	Banana or other fruits equal in price and grams	100	167	8000.00	1334.10
9. Oils & fats	Cooking oil	41	41	16000.00	656.00
10. Sugar	Sugar	30	30	18000.00	540.00
11. Nonalcoholic beverages (e.g. coffee or tea)	Coffee	12.0	12.0	100000.00	1200.00
12. Other	Chillis and ingredients for sambal	18	22.5	30000	675
Total cost of model diet excluding additional costs indicated below					21300.52
Percentage added for salt, spices, sauces, and condiments					2%
Percentage for spoilage & waste					3%
Percentage added for variety					10%
Total cost of model diet including additional costs indicated above					24495.28



Figure 16. Red cherry coffee processing



Figure 17. Sorting coffee beans in Sukarame village

Estimating Decent Housing costs

Healthy housing standards and acceptable housing in Bandung District

Housing costs for living income and living wage were estimated by either determining rent for an acceptable healthy house plus utility costs (water, electricity and cooking fuel) or the user cost value of an owned house conforming to our local healthy housing specified standards.

Adequate housing is recognized as part of the right to an adequate standard of living in the 1948 Universal Declaration of Human Rights and in the 1966 International Covenant on Economic, Social and Cultural Rights. It is also recognized in the ILO Recommendation No. 115 concerning Workers' Housing (1961), WHO Principles of Healthy Housing (World Health Organization, 1989), and UN Habitat (2013).

In addition, the Sustainable Development Goal (SDG) 11 related to housing specifies to “make cities and human settlements inclusive, safe, resilient and sustainable” with a specific target of “by 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums”(United Nations, 2015).⁷² Some salient aspects of standards covered in the different international and national covenants are presented in table below.

Table 4: Principles of housing standards in international and national agreements

Standard	UN Habitat	ILO	WHO	National (Ministry of Resettlement and Infrastructure ⁷³ 2002)	Locally acceptable housing
Sufficient living space		Persons per room and/or floor area	Persons per room	28-32 m ² bedrooms @ 3.00 x 3.00, public room 2.50 x 3.00, Bathroom + WC 1.50 x 1.20 m)	40-meter square (m ²) or above is considered sufficient for the family.
Durable structure (protection against elements)	√	√	√	√ (Roof: corrugated zinc or roof-tile)	Structure at least from wood or reinforced concrete structure.
Good condition and state of repair	√	√ ⁷⁴	√	√	
Toilette	√	√	√	√	
Physical safety	√	√	√	√ safety and security of building depends on	Wall made of wood or bricks,

⁷² United Nations. (2015). SDGS. Retrieved 1 May 2024, 2024, from <https://sdgs.un.org/goals>.

⁷³ The Ministry No 22 PERMEN/M/2008 defined acceptable healthy houses as structures that met the minimum requirements from health, safety and convenience perspectives, taking into account aspects such as living space 7.2 – 8 m² per capita, building materials, geology, local climate and local architecture, and local ways of life.

⁷⁴ Implication of ‘protection against heat, cold, damp’ (ILO Recommendation No. 155)

				foundation, walls (and building frame), roof and floor and humidity)	roof is corrugated zinc or roof tile. And the flooring is ceramic
Adequate ventilation	√	√	√	Minimum 5% of the floor area.	-
Adequate lighting	√	√	√	Direct sunlight to the room minimum for 1 hour every day.	99% of houses has access to electricity and has adequate windows
Safe food storage		√	√	-	-
Washing facilities	√	√	√	-	Washing facilities usually adjacent to well
Separation from animals	√	√	√	-	√ animal is fenced just nearby their housing
No site hazards	√ ⁷⁵	√	√		
Emergency service	√	√	√	√	

National standard also considered temperature and humidity which should be similar to human body's temperature and humidity. It is hard to tell whether housing in West Java passes the international standard, however most of houses in Bandung Regency, West Java seem to be able to pass national standards.

According to a housing survey in Bandung District in 2021 that 85 % of housing in Bandung has floor areas between 7.2 m² to 10 m² per capita (which means their living space is between 28.8 to 40 m² per family of 4; Roof: 90% of the roof is tile; Walls: 81% have brick walls, 8% have wooden walls, and 7% are made of bamboo or half-brick, half-bamboo walls 76% of toilets have proper septic tanks. One of MDGs goal is access to safe clean water, where in Bandung District 60 % of people used treated water, 22 % got clean water from well, and only 5 % facilitated by pipe.

The typical housing which we found during the study in Bandung has an area of around 40 m² and is made of brick walls with cement for the finishing. Most of the houses have tiled roofs and a few with corrugated zinc roofing, with the kitchen adjacent to their main house. Almost all of the houses have ceramic floor, and a bathroom equipped with a gooseneck toilet and. The typical house has living room, a dining room and at least has two bedrooms. Below are examples of typical houses found in the field.

⁷⁵ According to UN-Habitat the following locations should be considered as hazardous 'housing in geologically hazardous zones (landslide/earthquake and flood areas); housing on or under garbage mountains; housing around high-industrial pollution areas; housing around other unprotected high-risk zones (e.g. railroads, airports, energy transmission lines)'.



Figure 18. Typical housing in Pasir Jambu

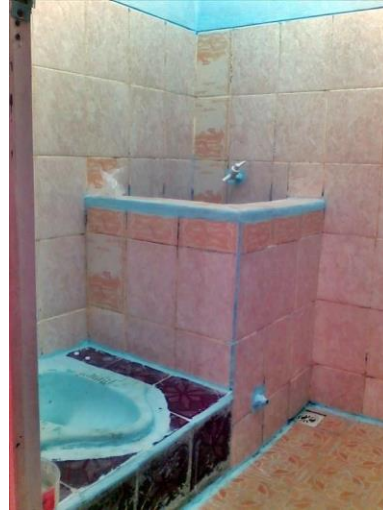


Figure 19. Typical toilet in Mandala Haji village



Figure 20. Typical housing in Pacet



Figure 21. Example of housing which is under District and Provincial standard



Figure 22. A group of houses usually owned by a big family (owned by grandparents and their children when they have a family)



Figure 23. Kitchen of farmers' family

Based on the international and national healthy housing standards presented above, the team then determined a set of housing components and minimum housing standard requirements and asked the farmers' opinions about these housing components, such as whether an area of 28.8 m² is acceptable for a family and many respondents answered “No” and found it sad. When asked about the size of their housing respondents said that 40 m² was considered sufficient (an average person's housing).

Anker's methodology requires a minimum of 48-60 m² of living space for upper-middle income countries like Indonesia. Therefore, the minimum standard for residential living space is set at 48 m². The final column in the table above shows specific aspects of local healthy housing standards that meet national and international standards. Therefore, acceptable housing standards for living income in West Java are as follows:

Table 5: Locally accepted housing standards for living income

No	Standard of	Locally accepted standard housing for Living income
1	Size of the house and living space (8-12 m ² per person)	48 m ²
2	Structure, having strong structure	Structure at least from wood or reinforced concrete structure.
3	Roofing	Tile roof, corrugated zinc/galvalume
4	Wall	Cement, Brick wall
5	Floor	Tile, ceramic
6	Window	Sufficient so the room does not need any light during the day, every bed-room should have window
7	Kitchen	Kitchen size varied at least 6 m ²
8	Toilette	has at least one gooseneck toilette and a bathroom
9	Clean-water source	Well, piping from springs
10	Cooking fuel	Mostly using gas, however some houses have dirty kitchen (using wood for cooking) which is often separated from main house and only for occasionally use.
11	Electricity	99 % of people has access to electricity, when the house has not gotten electricity, they usually get it from adjacent house/ family.

Determining Housing Costs

Typically, local house rentals are not found in the study area. There are several inns or guesthouse rentals in some village of study, but that does not reflect locally accepted standard housing in the living income estimation we develop. Accordingly, a user cost approach to estimate the rental equivalent value of owner-occupied housing is used in this study. This approach is used by government statistical offices and is recommended by the Anker Methodology for this condition. The approach uses:

- (1) construction cost of a house for our local healthy housing standard,
- (2) expected service life of the house, and
- (3) annual maintenance and repair costs as a percent of construction cost.

To obtain reliable and objective estimates for these three considerations, we solicited information from a contractor available in the study area, 2 local house builders, a housing material vendor, and others who have experience in constructing houses in rural Bandung District.



Figure 24. Local hardware store

We sought information from three house builders to estimate for constructing a house to the healthy housing standard described above. We also asked them about the expected service life of the house and its annual maintenance and repair costs.

Table 6: Estimation from local housing contractor, developer, and house builder for constructing a house at the established healthy housing standard

	Living space	Cost of Construction	Cost per sq. mt.	Annual Maintenance Cost
Respondent 1 - cement wall	30 m ²	IDR 118,000,000	3,933,333	3 %
Respondent 2 - cement wall	30 m ²	IDR 100,500,000	3,350,000	1%
Respondent 3- half ceramic	40 m ²	IDR 202,000,000	5,050,000	3%
Respondent 3 – cement wall	30 m ²	IDR 54,420,000	1,814,000	1 %
Respondent 4 - cement wall	30 m ²	IDR 99,000,000	3,300,000	1 %
Median			3,350,000	

Since the reported house construction costs are for houses of different sizes and qualities, adjustment is needed: (1) calculating cost per square meter of the houses, then, (2) Since most of the house in Bandung is cement wall, a cement wall is chosen as accepted standard of housing. Moreover, cement wall is cheaper than ceramic wall and is still acceptable for Bandung District standard. Finally, a median value of the price per meter square is sought (i.e., IDR 3,350,000). Therefore, an acceptable house with 48 square meters of living space will cost about IDR 160,800,000.

According to the developer that the house has 30 years for the service life, a monthly depreciation cost is calculated by dividing total establishment costs with 30 years of life service and 12 months; and figured out at around IDR 446,666. This figure is above the housing survey of BPS 2021 that the median of housing costs is IDR 318,699 monthly. This over in figure of housing costs might be due to an increase in material and labor costs over years.

In estimating the user cost value of a house costing IDR 160.8 million to develop a house; monthly maintenance costs and repair need to be factored in. This maintenance cost varied from 1% to 3 % and the average is 2 %, which in accordance with the 1-2% indicated in Anker and Anker (2017) as being typical, because people only need small repair and repainting after several years. This implies around IDR 8,933 per month for maintenance and repairs (i.e. IDR446,666 X 2%). Hence, the estimated cost of acceptable healthy housing is IDR 455,599 per month.

Determining Utility Costs

Most farmers in the study area subscribe to R.1/900 VA electricity plan with subsidy tariff per kilowatts (KWH). According to our in-depth interview, farmers spend on electricity at around IDR 50,000 monthly. Source of clean water is mainly well, hence no expenses for clean water, as for cooking, rural residents mainly use liquid petroleum gas (LPG) and sometimes firewood which can be collected in their garden. Farmers mostly use a 3 kg LPG can at IDR 23,000 per can; and farmers need around 2 cans monthly. So, farmers spend around IDR IDR 46,000. It is also needed to note that a 3 kg LPG can is subsidized by the government.

Overall Housing Costs

The estimation of the housing costs for households in Bandung District is IDR 551,599 monthly as summarized in the following table.

Table 7: Estimated Costs of Housing (IDR)

Housing costs	455,599
Cooking fuel	46,000
Electricity	50,000
Total	551,599

Estimating Non-Food Non-Housing Costs

The estimation of NFNH costs is determined by the ratio between NFNH expenditures and food expenditures and then multiplying this ratio by the cost of the model diet for the reference family. To estimate the NFNH/Food ratio, Household expenditure of BPS Bandung District 2021 data is utilized; and was done for households at the 40th percentile of the rural Bandung District household expenditure distribution as they should be out of poverty but not yet being affluent.

According to SUSENAS, it is important to note that in Bandung district tobacco constituted 8 % of all household expenditures, which in this living income study is not considered (taken out). To estimate a final NFNH to Food ratio, we moved from food to NFNH that portion of food eaten away from home that is attributable to the profit, services and other expenses in these meals. Assumption of 30% of the cost of meals away from home is for services, profit and other expenses in rural Bandung. Hence, the NFNH to Food ratio is established at 0.58.

Below is the percentage distribution of household expenditures for household at 40th percentile of the household expenditure distribution for rural Bandung District in 2021.

Table 8: 40th percentile Distribution of household expenditure (and adjustment when needed)

Expenditure group	Sub-group	% Total exp. in secondary data	Adjustment explanation	% After adjustment
FOOD	Total	57.0%		50.9%
	Food and non - alcoholic beverages	39.9%		39.9%
	Restaurants and food away from home transferred to NFNH	17.1%	30% transferred to NFNH	11.0%
HOUSING		19.5%		19.5%
NON-FOOD & NON-HOUSING(NFNH)		23.5%		29.5%
	Alcohol	0.0%		0.0%
	Clothing & footwear	2.8%		2.8%
	Household furnishings	0.8%		0.8%
	Education	2.2%		2.2%
	Healthcare	1.2%		1.2%
	Transportation	5.0%		5.0%
	Communication	2.8%		2.8%
	Recreation & culture	1.0%		1.0%
	Restaurants and food away from home 30% transferred from food		adjustment from 30% transferred from food	5.2%
	Ceremonies	0.5%		0.5%
	Miscellaneous goods and service	7.1%		8.0%
TOTAL NFNH				29.5%
NFNH/Food ratio		0.412		0.580

Initial NFNH costs are then estimated by multiplying this NFNH/Food ratio of 0.58 by the cost of the model diet estimated above. Accordingly, NFNH costs are estimated to be IDR 1,704,688 (this comes from 0.58 x IDR 2,949,433).

Post check on Education and Health

A post-scrutiny examination of education and health services was conducted with the aim of determining whether the funds included in the NFNH's initial estimates were sufficient, or whether additional funds were needed for these necessary expenditures in line with the protection of human rights to achieve

adequate standards of welfare. If necessary, adjustments to the initial NFNH estimates will be made to ensure that the 2021 SUSENAS secondary data that takes these items into account is adequate.

There are other items included in the NFNH – such as clothing and footwear, culture and recreation, and furniture and household appliances - which are not included in a possible post check adjustment, due to the very high effort required. Therefore, we hold that the information on household expenditures on these items provided in the SUSENAS 2021 data suggests a reasonable representation of their costs.

Thus, in conducting the post-checks, we start by estimating the amounts for these included in the preliminary NFNH estimate. This amount is calculated as follow:

Table 9: Initial Estimate of NFNH

	% of all household expenditures	% of NFNH Expenditure	Amount (IDR/month) in preliminary NFNH (IDR 1,776,849)
Education	2.2 %	$2.2/29.5 = 7.4$	126,988
Health care	1.2 %	$1.2/29.5 = 4.0$	69,266

Post check on Education

According to SUSENAS 2021, education expenses include school contribution/admission fee, tuition fee, the association of parents and teachers fee, books and stationery and tutoring costs. While cost of school uniform is covered under the clothing and footwear group. It is compulsory for Indonesian children to take 12 years of education program; however, in some areas of Indonesia children must attend school at least until Junior High School. This implies Education is free to Junior/Senior high school level at public school.

Education is provided free of charge at public schools. As most of farmers' children go to public school, they do not have to pay for tuition fees, but some paid for parent association fee and extracurricular activities such as scout in several school, which was around IDR 5,000 per child per month or IDR 10,000 per month for reference family of 2 school age children. Besides, the family usually send their children for reading and writing Quran session (Baca tulis Quran) out of their school activities; and for this they need to provide monthly donation which range around IDR 10,000 to 25,000 per child.

In addition, farmer households spent IDR 20,000 on books and stationery per month. Another expense is pocket money for children when they go to school/mosque for reading and writing Quran, this pocket money is between IDR 2,000-5,000 per children per day or IDR 52,000-130,000 monthly. The monthly expenditure estimated by our rapid post-check is then IDR 92,000 – 170,000 (IDR 40,000 + IDR52,000) for two children in school at the same time. The amount of preliminary NFNH estimation is IDR 129,988, which is in between value of the rapid post check. So, no additions to NFNH for education is necessary.

Post check on Health

Health care expenditure in SUSENAS 2021 includes the cost of inpatient and outpatient care in public healthcare/health centre (*Poskesdes/Puskesmas*), and cost of medicine and preventive services. Indonesia has adopted the universal health insurance organized by *BPJS Kesehatan* (Social Security Agency of

Healthcare), in which every Indonesian shall join the program and thus pay it in a monthly basis. Government provides this kind of insurance (3rd class) for free if they fall into very poor family category and is proposed by local government, meanwhile family out of this group should pay.

The service of this BPJS insurance and payment is classified into 3 groups (e.i. first class is IDR 150,000; 2nd class is IDR 100,000, and 3rd class is IDR 35,000/person/month and the last group is subsidized at IDR 7,000/person/month) and family can pick up one according to the family preference; the difference in this insurance class is the inpatient service in which these class represent eligibility of the room that can be occupied during inpatient at hospital (1st class eligible for 1st room, 2nd class eligible for 2nd room, and so on).

The majority of farmer families do not get the BPJS Kesehatan for free and are obligated to pay for the insurance for their family. Interviews with farmers indicate that visits to a public health center (*Puskesmas*) cost around IDR 8,000 and there is midwife/doctor providing private service, in which they charged around IDR 50,000 to IDR 100,000 per consultation including cost of medicine.

Assuming that each member of the family visits a health center 2 times a year for mild problems and one visit to doctor for a more serious illness), this works out to IDR 116,000 per person per year, or IDR 464,000 for the family of 4 persons per year – which is IDR 38,000 for the family per month. While second scenario, if the family choose to subscribe to BPJS Kesehatan insurance, they shall pay IDR 142,500 per month for the family. The estimation of health care costs at IDR 71,073 is in the ideal range healthcare costs of those two scenarios. Therefore, we did not make any adjustment to this amount.

Overall Non-food Non-housing costs (The estimation of the non-food non-housing expenses for households in Bandung District is IDR 1,704,688 (which comes from 58 % of food costs) monthly as summarized in the following table)

Table 10. Overall Non-food Non-housing costs

Sub-group	Percentage of NFNH after adjustment	IDR
Alcohol	0.00%	
Clothing & footwear	9.48%	161,621.20
Household furnishings	2.82%	48,070.30
Education	7.45%	126,988.09
Healthcare	4.06%	69,266.23
Transportation	16.93%	288,609.29
Communication	9.48%	161,621.20
Recreation & culture	3.39%	57,721.86
Restaurants and food away from home 30% transferred from food	17.61%	300,153.66
Ceremonies	1.69%	28,860.93
Miscellaneous goods and service	27.09%	461,774.86
Total NFNH	100.00%	1,704,687.62

Unforeseen Events

Large expenses and unexpected events can quickly plunge farmers and other people living at a decent standard into poverty and debt from which they may not recover. Therefore, when estimating living income, it is important to add a small margin to cover unexpected contingencies.

Anker's methodology recommends a 5% margin for emergencies and sustainability and this percentage has been used in many studies on living wages and living incomes around the world. The calculation is 5% of IDR 5,195,716 = **IDR 259,786** (USD 15.85 assuming 1 USD= IDR 16,389) per month for emergencies and sustainability.

Living Income for the average Family in Bandung Regency, West Java

Based on the collected data and calculations laid out above, the living income of family of 4 for Bandung District is estimated around **IDR 5,455,506**, as explained in the following table:

Table 10: Living Income of a Family of 4 People in Bandung District for 30 days/ a month

Cost Category	IDR	EUR (1 EUR = 17.530 IDR) ⁷⁶	USD (1 EUR = 16.389 IDR) ⁷⁶
Food for 4 members	2,939,433	167.68	179.35
Housing	551,599	31.47	33.66
NFNH	1,704,688	97.24	104.01
Margin for unforeseen events (+ 5%)	259,786	14.82	15.85
Monthly Living Income for 4 members	5,455,506	311.21	332.88

⁷⁶ Exchange rate provided by [InforEuro, the exchange rate of the Euro currency \(europa.eu\)](https://www.inforeuro.com/en/exchange-rate-of-the-euro-currency), retrieved on 18.07.2024

Actual Income

Samples and Data Source

To enable estimating the gap between living income and actual income, one must know the actual income of the coffee farmers, and getting actual income particularly for coffee farmers in Bandung District requires a considerable effort. However, this actual information of coffee farmers of Bandung District may also be used by key stakeholders such as the Government offices, coffee buyers, and international donor agencies to help improve income of the farmers so that coffee farmers and families can sustainably produce coffee and live their life decently.

The estimation on actual income mainly was obtained through survey by visiting coffee farmers at their homes and farm, asking farmers to fill in questionnaires and conducting in-depth interviews with selected farmers found during the survey, and observations to their farm and house. Since most coffee farming is already established and farmers could not recall their establishment costs nor its depreciation, secondary data on farm establishment costs from coffee farmers in Bandung district is employed to estimate the fixed costs.

The sample was selected purposively to represent diverse characteristics of coffee farmers in Bandung District; a hundred respondents were interviewed with the distribution: 5 farmers who works on ≥ 2 hectares, 40 farmers work on between 1 to 2 hectares, and 55 farmers work on piece of land less than 1 hectare. This ratio reflects the ~1000 farmers participating in the SASCI+ project.

The choice of location covers 6 sub-districts in the Bandung District, West Java province, where coffee production and smallholders are concentrated and where GIZ has close relationships with and access to coffee farming families. The Bandung District covers an area of 1,762.4 square kilometers and consists of 31 Sub-districts, where the capital of Bandung District located in Soreang sub-district(BPS Kab. Bandung, 2023a).

The 6 sub-districts chosen for field work were Pacet, Ibun, Cikancung, Pasir Jambu, Cimaung, and Ciwidey. The subdistricts and villages where this research was conducted are located in a mountainous area south of Bandung City between 800 to 1500 m above sea level. The closest research area to Soreang, the capital of Bandung Regency, is 13 km and the furthest is 60 km. Access to these sub-districts is quite steep, narrow and sometimes winding, making it prone to landslides. This fieldwork was complemented by an extensive review of available literature and statistics related to coffee production, especially Arabica coffee farming practices in West Java as a basis for analysis and reporting.

Characteristics of coffee farmers family in the study area

Of the total 98 respondents, the survey revealed that all respondents were already married and most of respondents are at productive age; in which 63 respondents are between 20 to 50 years old, 31 respondents are between 50 to 57 years, and only 4 respondents are over 57 years old.

Apart from the production forestry land, only 25 respondents have access to their own land (that is usually cultivated with vegetables) at under 1500 m², while 73 respondents do not have land and depend on

Perhutani land for coffee farming. This condition shows high dependency of the family to access to production forest.

All respondents have access to state forest area (under Perhutani management) where they cultivated coffee and other crops such as banana and fruits trees under the permit of Kulin KK (permit to work on that piece of land for two years; to be renewed every 2 years) and/or social forestry permit (period of the permit is 35 years). As many as 3 of the respondents work in the forest area on more than 2 hectares, 40 respondents work in the area between 1 to 2 hectares, and majority (55 out of 98 respondents) works in the area one hectare or less, in average the family managed 0.85 hectare.

In terms of proximity to coffee farms, 30 respondents stated they live 1 km or less from their farm, 43 are between 1 one to four kilometers, and 25 respondents live more than 4 km from their farms. According to the survey, the majority of the coffee trees are at the age of 5 to 13 years, with some replanting (<10%).

While 70 families had 4 or less family members, and 28 families had between 5-7 family members. Of all the respondent families they had at least 2 people working on the coffee plantations. And 46 families said they had family members working outside, such as become tea picker, teacher, shopkeeper, middlemen, ojek driver, or textile factory workers.



Figure 25. Garut Sheep (*Ovis aries*), a source of income from livestock

In term of livestock ownership, only 2 respondents raised cow, 16 raised Garut sheep (*Ovis aries*), which is a mixture of local sheep with capstaad sheep from South Africa and merino sheep from Australia; According to one of respondents who have sheep, said a family need to have about 20 sheeps to be able to provide enough manure for a hectare of coffee farm. While 10 families also have fishpond, but this pond is aimed for their own consumption only. Another source of income is government programs such as cash voucher program (*bantuan langsung tunai*), pre-working card (*Kartu prakerja*) and program *Keluarga Harapan* for poor family, and 7 respondents claimed to be beneficiaries one of these programs.

Speaking of credit, 45 respondents stated they have no debts/credit, while among the rest 53 respondents, 36 people have credit for consumption, 12 respondents have credit for consumption and working capital, while only 5 respondents have credit just for working capital.

Meanwhile, 57 % of respondents claimed to have loan to Bank, cooperatives and middlemen. Credit to middlemen usually given one or two months prior to coffee harvesting with no interest, just agreement between the parties to sell the cherry to the middlemen, while loan from bank and cooperative is incurring interest at 5 to 7 % per annum. This loan is majority used for consumption and renovating their house, and only 30 % of them claimed for coffee and other crops production or productive activities.

Data collection

The primary data on coffee production, farming practices, labor needed, coffee price, and other source of family income were collected using structured questionnaire(annexed).

Since the interview was conducted during coffee harvesting time, several farmers were interviewed in their farm which allows the enumerators to discuss their coffee plantation and observe their farm condition. Farmers were asked to recall their memories of last harvesting, such as production, price, labor and inputs they put on their farm.

Data analysis

The data was inputted to the prepared spreadsheet. The first step to generate estimation of actual income is to bring all data to be used to an equal timeframe and units. When the data is in monetary units such as coffee price and is differ from one location to another and adjustment is made, and so does for other variables such as labor, agricultural inputs, and other income source.

The actual income is calculated as mean actual income of respondents and is obtained from mean net on-farm income and mean net off- farm income plus mean other income (non-farm non labor).

$$\text{Total farmer income} = \text{Farm income net of variable costs total} - \text{Fixed costs} + \text{Other income (non-farm, non-labor)} + \text{Off-farm income (Impact Insitute, 2020)}^{77}$$

Total Net on-farm income

Net income of Coffee

Total Net on-farm income can be calculated by calculating the production value for the coffee as main crop, in which multiplication of total coffee harvesting in kg for the whole the year 2023 and the price during the harvesting. Based on data collected in the field the average annual production value for 2023 was estimated at IDR 33,784,894.

The production value was then reduced by variable costs, such as hired labor, agricultural inputs and transportation. In-house workers (labor) are not factored in this variable cost as it is hard for the farmer to count their working hours per day and the amount of days. Their work was often their estimation based on their memories of last year's production. Based on the collected sample, the variable costs are estimated at IDR 4,437,562.

The team could not get primary data on farm fixed costs such as farm establishment and its depreciation; thus, a research from Karyani, Djuwendah, Sadeli, Kirana, and Mutiarasari (2018)⁷⁸ on farm establishment costs, tools and its depreciation of coffee farmers in Bandung is employed to estimate the fixed costs. A reference check on fixed costs of Arabica coffee farm in several location is also conducted, such as

⁷⁷ Impact Insitute. (2020). Estimating farmer household income: LiCOP Institute.

⁷⁸ Karyani, T., Djuwendah, E., Sadeli, A. H., Kirana, S., & Mutiarasari, N. R. (2018). Research Article Arabica Coffee Agroindustry Cost Requirement Analysis at Margamulya Coffee Producers Cooperative. Asian J. Agric. Res, 12(1), 1-9.

researches by Heryana, Sudarma, and Putra (2016)⁷⁹ on Arabica coffee farmer feasibility in Bali and Liana, Prasmatiwi, and Abidin (2022)⁸⁰ in Lampung province. Then, the figure is inflated according to the inflation the years (2019 to 2023) using inflation rate from World Bank (2024).⁸¹

Based on Porter costs analysis conducted by Karyani et al. (2018), the coffee establishment and its depreciation, tools and supporting activities during unproductive period for Bandung is IDR 3,918 per coffee tree in 2018. This figure then inflated to year 2023 at 10.7% for the period (World Bank, 2024), which resulted to IDR 4,333 per coffee trees, which can be divided into IDR 1,000 per sapling, compost and labor for planting is IDR 1,652, maintenance until year 3 (pre-productive period) is IDR 1,482 and tools is IDR 99. Given the average plot size of 0.84 ha and average amount of coffee trees per plot of around 1911 in the sample, the mean establishment costs and depreciation for the average farmer's plot is IDR 8,281,924. Since the average farmer works in the forest area, another fixed cost is land rent or crop-sharing paid to Perhutani which is at around IDR 700,000 per hectare; hence the mean land rent or crop-sharing for the area of 0.84 hectare is IDR 587,357. So, the fixed cost is estimated at IDR 8,869,282.

The third step is the subtraction of fixed costs on coffee production; hence, the mean net on farm income from coffee is IDR 20,478,054 annually. It is also important to note that the price of coffee lately is considered as beneficial for farmers to sustain their coffee business, which is the price of cherry at farmers level is at IDR 11,000 – 13,000 per kg in 2023.

Mean Net on-farm income_{coffee} = (mean production value of coffee – mean variable costs of coffee) - mean fixed costs

= (IDR 33,784,898 – IDR 4,437,562) - IDR 8,869,282

= IDR 20,478,054

The figure below shows most of respondents (~82%) make a living from coffee at below thirty million rupiah annually.

⁷⁹ Heryana, I. P. A., Sudarma, I. M., & Putra, I. (2016). Perbandingan Pendapatan antara Usahatani Kopi dan Usahatani Jeruk di Desa Serai Kecamatan Kintamani Kabupaten Bangli. *Journal of Agribusiness and Agritourism*, 5(1), 1-9.

⁸⁰ Liana, T. A. P., Prasmatiwi, F. E., & Abidin, Z. (2022). Kelayakan Finansial Usahatani Kopi Arabika di Kecamatan Way Ratai Kabupaten Pesawaran. *Journal of Food System and Agribusiness*, 12-24.

⁸¹ World Bank. (2024). Data World Bank: Country Indonesia. Retrieved 1 June 2024, 2024, from <https://data.worldbank.org/country/indonesia>.

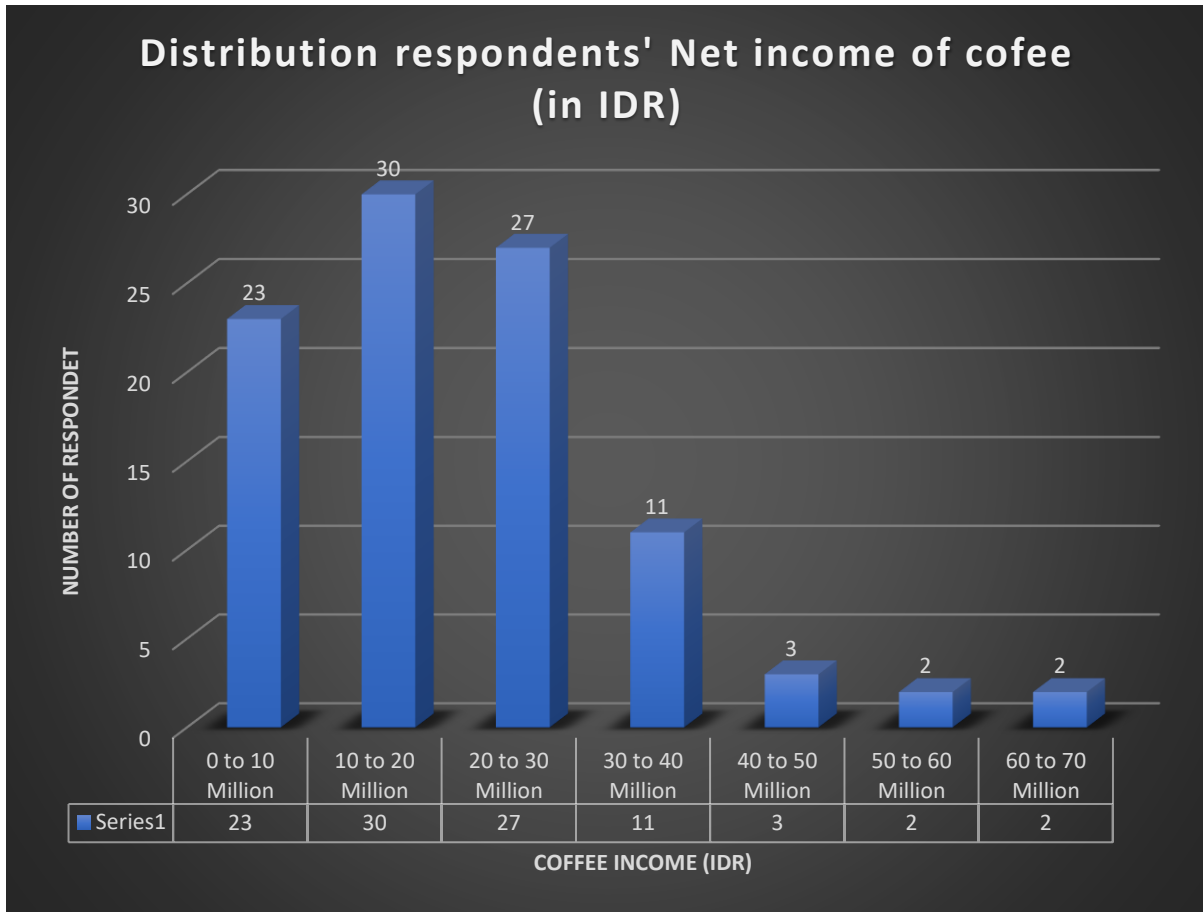


Figure 26: Distribution of respondents and their income from coffee

Net on farm income other than coffee

The calculation of other on-farm income from other sources, such as other crops, apiaries, and livestock raised on the farm are following the formula for coffee/ main crop for a year. The mean of net income from other crops in a year and livestock in a year is used to get mean net on-farm income for coffee farmers in Bandung district. The second and third crops are usually vegetables, meanwhile the third crop usually comes from fruit trees such as Banana, Avocado and Petai. Livestock income is mainly generated from sheep and fish, and a few from cattle. Hence,

$$\begin{aligned}
 \text{Total net on-farm income} &= (\text{Net on-farm income}_{\text{coffee}}) + (\text{Net on-farm income}_{\text{other crops}}) + \\
 &(\text{Net on-farm income}_{\text{Livestock}}). \\
 &= \text{IDR } 20,478,054 + \text{IDR } 2,244,134 + \text{IDR } 1,566,785 \\
 &= \text{IDR } 24,288,973 \text{ annually}
 \end{aligned}$$

The mean of net on-farm income of coffee arabica farmers in Bandung District annually is IDR 24,288,973 and the median value of net on-farm income is IDR 18,094,504 (IDR 17,194,504+IDR900,000).

Net off-Farm income

Net off-Farm income in Bandung is mainly sourced from family members who work at factory such as garment and small-scale industry or sell their labor to their neighbors during vegetables planting and maintenance, being ojek drivers, doing business or family donations. The net off-farm income is calculated by gross salary reduced by worker's insurance fee (BPJS Tenaga kerja) as much as 2 % of their salary, then multiplying their net salary to 12 (converted to annual income). According to the survey 50 % of coffee farmers' family have at least one family member who works off-farm, in which 14 out of 100 respondents said that their family member works at a factory nearby. The monthly salary for factory workers ranges from IDR 1,800,000 to 3,508,000. The mean annual off-farm income is estimated at IDR 9,760,438 and the median value of annual off-farm income is five million Indonesian rupiah.

Credit

People usually got loan from Banks, Cooperatives, and middlemen. Banks and cooperatives loan usually apply interest at 5-7 % annually. While middlemen usually gave loan with no interest with agreement farmers would sell their cherry to the middlemen at reasonable price. In a sense it can be seen as an advance payment for farmers one or two months prior to the harvesting time. The purpose of the credit is mainly for consumption, however 10 percent of the respondents who took credit claimed to use the money for productive purpose such as buy fertilizers and for other crops planting. The loan ranged from IDR ~200,000 – 10,000,000. The average loan for consumption in a year is IDR 989,796.

Mean Actual Income

The mean annual income of coffee then calculated followed the formula developed by Impact Insitute (2020) where Total farmer income = Farm income net of variable costs_{total} - Fixed costs (mean: loan for consumption) + Off-farm income; where credit or loan can be considered as other fixed costs that should be paid, hence the estimated actual income is:

$$\begin{aligned} AI &= \text{net On-farm Income} - \text{Credit} + \text{net off-farm income} \\ &= \text{IDR } 24,288,973 - 989,796 + 9,760,438 \\ &= \text{IDR } 33,059,615 \text{ annually} \\ &= \text{ICR } 2,754,968 \text{ monthly} \end{aligned}$$

The mean annual income is at IDR 33,059,615 or IDR 2,754,968 monthly, while the median value of annual income is at IDR 28,837,545 or IDR 2,403,129 per month. The chart below shows that two thirds of farmers income is generated by coffee, while other on-farm activities only contributed ten percent, which showing high dependency to coffee to make a living. Other crops such as vegetables contribute significantly to household income only in some areas of the sample region. Although off-farm activities such as become factory labor or shopkeeper created almost one third of their income, the possibility to get hired is low as the industry usually preferred younger workers (below 30 years old) and garment factory nearby often favored female worker over male one.

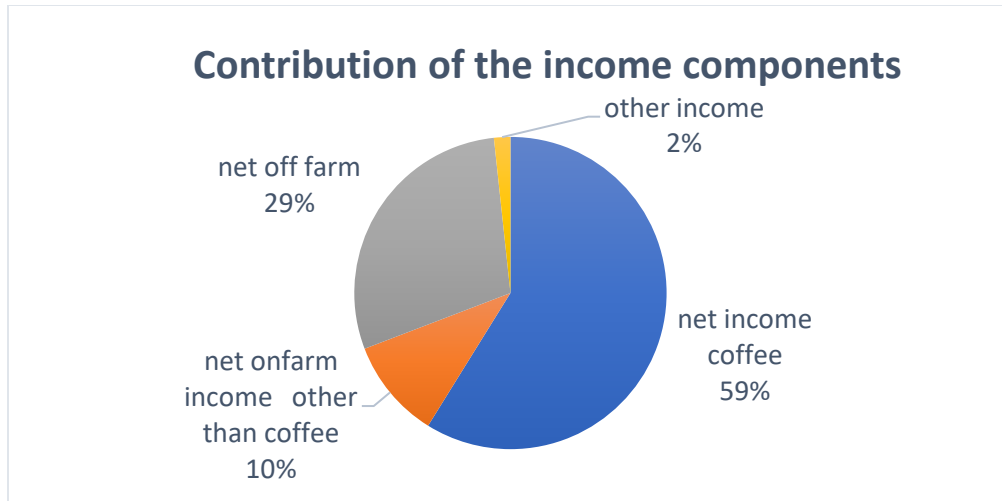


Figure 67: Estimation and contribution of source of income to the total income of coffee farmers

Gap Analysis: Living Income vs Actual Income

To further analyse the gap between Actual Income and the Living Income Benchmark, both data need to be compared. Further discussions are needed in multi-stakeholder settings, to identify which income items can be increased, as well as which cost items can be reduced, in order to cover the shortfall in Actual Income to Living Income.

Family Income Ladder

In analyzing the gap, we have to be careful and take into account several existing measurements. It must be compatible in terms of time frame, currency, units of measurement, and household size. Because the time frame for actual income here is annually, while the time frame in living income is monthly. Thus, actual income will be converted into monthly income divided by 12 months, and then converted into USD using the Purchasing Power Parity (PPP) conversion factor developed by the World Bank (2020)⁸² to enable international comparisons, such as with the World Bank poverty line. The World Bank PPP poverty line with internationally comparable dollar purchasing power parity for Indonesia during 2023 is IDR 4,850,740 for a month (World Bank, 2024). Since the actual income was calculating the harvest season of May-August 2023, so other standards such as local wages standard and the World Bank poverty line will also use the data year 2023.

The findings of this study identify that the Living Income for coffee farmers in Bandung Regency, West Java Province is estimated at around IDR 5,455,506 (USD 332.88 at an exchange rate of 1 USD = IDR 16,389) per reference farmer family size. While the study also estimates that mean Actual Income was IDR 2,754,968 (USD 168.10). Therefore, using mean of net income of coffee arabica farmers there is a gap of IDR 2,700,538 compared to Living Income which is actual income is almost a half of the living income.

⁸² (Committee on Sustainability Assessment and KIT Royal Tropical Institute, World Bank, 2020)

Referring to the statistical data, it is known that the Regional Minimum Wage for Bandung Regency is IDR 3,492,466.00 (BPS Kab. Bandung, 2022). This means that the actual income of coffee farmers in Bandung Regency is below the minimum wage.

Meanwhile compared with the World Bank poverty line of IDR 4,696,613.00, it can be said that coffee farmers in Bandung Regency are way below the poverty line. But if it compared with the poverty line set by the Indonesian Government for the year of study which is at IDR 550,458 per capita per month (BPS Pusat, 2023) or IDR 2,201,832 per month for a reference family, then coffee farmers in Bandung Regency are already quite high above the Government's poverty line.

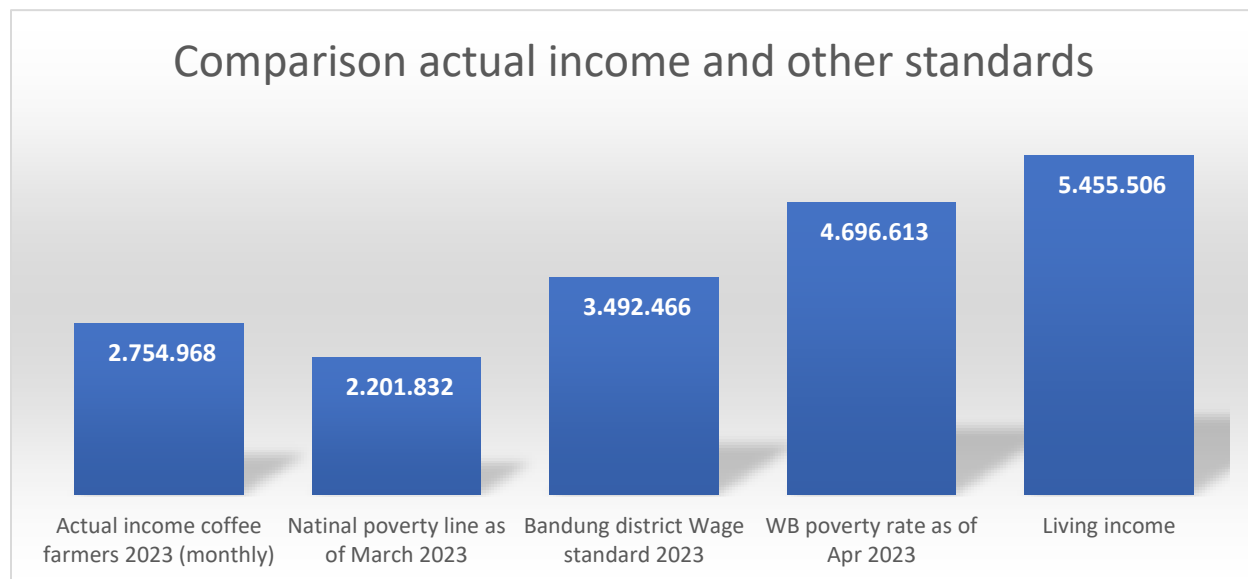


Figure 28: Actual Income Gap to Various Standards

Gap of the Mean Actual Income to the Living Income Benchmark

It can be inferred that the prevailing income of coffee farmers in Bandung is around half of the living income benchmark; and there is gap that needs to be closed. Several opportunities might be considered among coffee stakeholders to close the gap.

From the Actual Income equation above, it can be concluded that all sources of income contribute to increasing income. However, this study reveals that coffee contributes 59 percent to farmers' income, so increasing coffee farming will have a significant impact on farmers' income. Although income from other activities, outside coffee farming, can also be encouraged to contribute to increasing income.

Increasing coffee productivity in the study area currently ranging at 1.5 ton/Ha to 4,5 ton/Ha of cherry can be a strategy to close the income gap. Assistance to farmers in good agricultural practices, including coffee and other crop/livestock practices, and how to cope with climate change is paramount. Due to climate impacts such as high precipitation in the last year, quite many coffee trees become sick and could not produce red cherry well. Besides, many farmers claimed that they try to lend money for coffee or other crops' production and, however, often banks cannot provide loans as the farmers do not have collateral.

Off farm activities could be seen as another opportunity to close the gap, post-harvest treatment of coffee might become an option. Even more so, under the current boom of coffee shops in Bandung. Strengthening cooperatives and including more farmers in them might be another opportunity.

A discussion among stakeholder is paramount to provide best solution for the improvement of farmers' living as well as sustaining coffee production in West Java; hence, the recommendation is providing equal opportunity for the stakeholders including farmers to discuss the condition and develop an action plan.



Figure 29. Coffee tree flower



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Annex 1: Questionnaire for Actual Income

HH code:

PLEASE COMPLETE THIS SECTION BEFORE STARTING THE INTERVIEW

Date:

Surveyor:

Phone:

Hello, my name is [.....]. I work for [GIZ SASCI+]. We are working with [PT INDOCAFCO] and want to interview coffee farmers in this region. Learning more about coffee farming and the income you make in this region will help learn what can improve coffee farming or associated conditions. This interview will take between one and two hours and ask questions about coffee production, the farmer's household life and the actual income generated through household activities. Answers will ALWAYS be kept confidential. We would like to interview you [Sir/Madam.....]

You don't have to participate if you don't want to. Do you have questions about participation? Are you willing to participate?

(interviewed) Farmer Name:

Gender: 1. Male/ 2. Female

Age:

Address (hamlet, village, sub-district, district):

Phone number:

Head of household: Male head Female head of household

1. Where the survey is carried out: on agricultural land/at the farmer's house.
2. Does the farmer live on his farm? Yes/No → if 'Yes' go to number 3, if 'No' go to number 4.
3. How many minutes does it usually take a farmer to get from the farmer's house to the most important land on the farm using the transportation method farmers usually use? (minute, by)
4. What month and year is the final coffee harvest finished?
5. How many years has the farmer been producing coffee?

A. HOUSEHOLD

Name	Age	Gender	Education	relationship to Head of household	Did he work on a coffee plantation during the last harvest season (Y/N)	Does s/he have another job outside the coffee plantation? (Y/N)

B. FARMING LAND

Farming land is all land owned by EVERY household member (i) Owned (with or without ownership certificate), (ii) Has use rights (ownership, transferred customary land, land reform certificate, etc.), (iii) Owns land with all use arrangements with third parties (loan, lease), (iv) Used as a sharecropper.

6. How many hectares of land do you own?

Status of land	Area (Ha)	Coffee plantation area	Fruit trees, timber and/or other useful trees	Annual plants/semi-annual plants (perennial plants)	Type of planting: Monoculture/intercropping (specify other plants, maximum 5 plants)
Owned farm (kebun sendiri)					
Social forestry (HKm)					
Sharecropper (kebun bagihasil)					
Total					

C. COFFEE

C.1. Regions and Characteristics of Coffee

7. How much coffee land did the plantation have at the END of the last production year?

FARM & LAND CONDITION	Number of trees			% Lifespan of coffee plants		
	ARABICA	ROBUSTA	OTHERS	0-3 yo	3-20 ⁸³ yo	>20 yo
F1 (mostly flat, sloping, steep)						
F2 (mostly flat, sloping, steep)						
F3						

8. Have you rehabilitated your coffee garden/plantings in the last 2 years? Y/N how many trees?

.....

C.2 Coffee Production

9. How much coffee did the farm harvested in TOTAL in the last production year?

Harvest	Arabica (kg)	Robusta (kg)	Other (kg)
Green beans			
Red cherries			

c.3 Coffee Sales & Consumption

10. Do you processed the beans/cherries before selling to the market? Y/N → if yes, what did you do?

Peel/wash` Dry Roast Grind

11. How many coffee sales did this household produce in the last production year?

Coffee sold	Arabica (kg)	Robusta (kg)	Price per kg (Rp)	Buyer
Green beans				
Red cherries				
Dried cherries				
Roasted/grinded				

12. Can you estimate the yield of coffee consumed by your family [not sold to the market] in kg?

C.4 Transportation cost for one harvesting period

⁸³ According to Indonesian Research Center for Coffee and Cocoa, productive age of coffee plantation is 3-20 years old.

13. How many kilometers is the farm from the most important sales point? km
14. How is coffee transported from the plantation to the buyer?
- Household members transport coffee.
 - Households pay transportation costs
 - Paid through price reduction.
15. How much does it cost a household to transport its coffee? Rp.... Per harvest...total Rp....

C.5 Land management

16. How much did you pay for land rent/land tax/sharing profit annually?
17. Did the plantation grow nitrogen-fixing plants on coffee grounds in the last production year? Y/N
18. Did the coffee plantation use natural or synthetic fertilizers in the last production year?
19. Can you mention fertilizer & how much you used on your farm in the last production year as well as herbicides (if any)?

Name of Fertilizer and herbicide	Quantity (kg/litre)	Application area (Hectares)	Price/kg or litre ⁸⁴	Subsidized price (if any)
1.				
2.				
3.				

C.6 Pest & Disease Control

20. What types of pesticides are used in agriculture and when?
- After identifying the pest, apply pesticides that target the pest at the appropriate time in the pest's life cycle to permanently reduce the population.
 - Apply pesticides that can kill a wide range of pests on a predetermined schedule.
21. 3. Apply pesticides targeted at specific pests on a predetermined schedule. What types of pesticides & how much did the farm use in the last production year?

Name of pesticide used	Amount used (kg or liters)	Method of use ⁸⁵	Number of times used	Cost paid for pesticide	Total cost of pesticide use

C.7 Labor & Machineries

⁸⁴ It should be noted whether the fertilizer is subsidized or not and so does the price.

⁸⁵ The application method may to all coffee plant in the area or by spraying each 'sick' coffee plant.

22. Is there anyone (household members or relatives or paid workers) working in the activities below and how much time was allocated in the last production year?

Activities	Based on machine/manual		Work period (what days and months)	Amount paid to rent the machine (Rp)	What is the average salary per day for this activity?	Does the payment amount include meals?	What is the TOTAL amount paid (labor only)?
	Machine Rental (days/hours)	Number of people					
Nursing							
Field preparation							
Planting/grafting							
Pest & disease control							
Fertilization							
Weeding							
Pruning							
Harvesting							
Post-harvest handling							
Other plants							

D. Other crops

W. 23. Name the crops harvested by the household (other than coffee) in the last harvest?

Plant Name	Planted area (ha) ⁸⁶	Production costs (Rp)	Amount harvested (kg)	Price per unit/kg	Total sales in the last harvest year (Rp)

⁸⁶ Please note down when the crops are intercropped.

E. Livestock & Animal Husbandry

24. Do you have on your farm?

- a. Cow:
- b. Goats and sheep:
- c. Poultry (chicken, duck, goose):
- d. Fish:
- e. Bee:

25. Can you provide an estimate of livestock costs and sales during the last production year?

Animals	Number of Animals at the beginning of the production year?	Amount at the END of the production year	How much labor costs to manage... (Rp)	How much input is spent on feed/vaccines etc. (Rp)	Total costs	What is the price..... on the market (Rp)
A	b	c	e	F	g=e+f	H
Cows						
Goat/sheep						
Poultry						
Fish						
Beehive (honey harvested)						
Horse						

F. Non-Farm Income & Business

26. Is there any household that works off-farm (teacher, lawyer, construction worker, working at the municipality, etc)? please list name, their occupation, and the monthly salary.

- a..... occupation..... Salary.....
- b..... Occupation..... Salary.....

27. Does any household member run a business, besides managing a coffee farm? What kind of business?
28. Approximately, how much was earned after paying for expenses for a year period?

G. Credit

29. Did the household have a loan (in cash or in kind) from other party below in the last production year?
- a. Exporter, processor
 - b. Local buyers
 - c. Personal lender
 - d. Input providers
 - e. Banks/cooperatives
 - f. Government programs
 - g. Other

30. What was the purpose of the loan?
- a. Regular coffee production activities
 - b. Investment in coffee production equipment (wetmill, tractor, etc.)
 - c. Cultivation of other crops
 - d. Investment in other non-agricultural business
 - e. Consumption / regular expenses.
 - f. Investment in house-infrastructure.
 - g. Education
 - h. Others

31. How much was requested?
32. How long is the period of credit requested?
33. Approximately, what was the interest rate in % per annum?

H. Transfers, Remittances and Incentives

34. In the last production year, did any household members receive remittances? Can you name the amount?

.....

35. Did the household receive financial assistance from private or government sources in the last production year? Can you name the amount?

.....

36. Does the household receive money/goods/assistance from government programs? How much happened? For what period?

.....

I. Challenge

37. Based on your experience and knowledge, what do you think is the most challenging aspect of producing coffee sustainably, I mean so that you and your colleagues can continue this business in the future?

.....

.....

Thank you for your cooperation and I hope this interview can provide benefits for both farmers and stakeholders.

Annex 2: State-of-the-Art

In the context of research, “state-of-the-art” refers to the highest level of development or advancement achieved in a particular field, technique, or scientific domain at a specific time.⁸⁷ The state of the art represents the best-known methodology or approach currently available.⁸⁸ It encompasses the most advanced techniques, technologies, or practices those researchers and practitioners use. Demonstrating the state of the art is crucial in research and development. It highlights the novelty of your results or project by comparing them to the existing best practices or solutions.⁸⁹

There is a breakthrough in the field of research, because research like this has never been carried out in West Java province

- (1) There are several researches on the living standards of coffee farmers in Indonesia using the Living Income, Actual Income or Farmer Exchange Rate methods, however these studies rarely compare the different standard and farmers’ income. This research tries to present Gap analysis on Living income and actual income for coffee farmers in Bandung District. This enriched other studies that were conducted (e.g., Aceh and Lampung) as well as studies for other crops such as cocoa.
- (2) This study combines research on Living Income and Actual Income, so that we can find out the extent of the gap that exists. Based on this, strategies and action plans can be prepared.
- (3) This study shows that the living income benchmark measurement is more significant in measuring farmer welfare standards, compared to the farmer exchange rate standard currently being used by the Indonesian Government
- (4) This study on living income benchmarks, as a recommendation stated by the Central Bureau of Statistics (BPS) during the Validation Workshop in Soreang, West Java (27 May 2024), can be continued with further research by combining it with farmers' exchange rates. BPS is ready to collaborate with GIZ in further study efforts.

West Java Farmer’s Exchange Rate (*Nilai Tukar Petani*)

In the explanation above, we have explained the Living Income Benchmark and Actual Income. Meanwhile, it is known that the Indonesian Government prefers to use the Farmer Exchange Rate (NTP) standard⁹⁰. An explanation of NTP is as follows.

Farmer Exchange Rate (NTP), according to BPS, is the ratio between the price index received by farmers and the price index paid by farmers⁹¹. In percentage terms, NTP is an indicator to see the level of purchasing power of farmers in rural areas. In simple terms, NTP describes how well farmers can gain

⁸⁷ State of the art - Wikipedia. https://en.wikipedia.org/wiki/State_of_the_art.

⁸⁸ What is the state of the art and what does it allow. <https://www.infinitiaresearch.com/en/news/what-is-the-state-of-the-art-and-what-does-it-allow/>.

⁸⁹ How to write/represent the state-of-the-art analysis in a research paper?. <https://academia.stackexchange.com/questions/117314/how-to-write-represent-the-state-of-the-art-analysis-in-a-research-paper>.

⁹⁰ Badan Pusat Statistik Provinsi Jawa Barat. <https://jabar.bps.go.id/subject/22/nilai-tukar-petani.html>.

⁹¹ Statistik Nilai Tukar Petani 2023 - Badan Pusat Statistik.

<https://www.bps.go.id/id/publication/2024/04/23/d49e2636396e0b8311a2b53b/statistik-nilai-tukar-petani-2023.html>.

profits from the production of agricultural commodities compared to the amount of their expenditure on consumption and production. So, the higher the NTP, the better the competitiveness of agricultural products compared to other products. The NTP, which compares the price index received by farmers (It) to the price index paid by farmers (Ib), indicates farmers' profitability. If the NTP is more than 100, farmers experience a profit or surplus, as production prices increase more than consumption prices. If the NTP is equal to 100, farmers' profitability is comparable to their expenses, and if it is less than 100, farmers experience.⁹²

NTP describes the comparison between the price index received by farmers (It) and the price index paid by farmers (Ib). If the NTP is more than 100, it means farmers experience a surplus, where production prices increase more than the increase in consumption prices.⁹³

In December 2023, NTP for farmers in West Java reached 113.86 or an increase of 1.20 percent (on a 2018 basis = 100)⁹⁴. While in January 2024, NTP in West Java reached 113.97 or an increase of 0.10 percent.⁹⁵ But no record specifically for coffee farmers. But Jawa Barat Farmer's Exchange Rate in October 2021 dropped to 97.93.⁹⁶

This means, in October 2021, farmers in West Java have a lower level of purchasing power compared to 2018, as the base year (=100). The amount of their expenditure on consumption and production is compared to the profits obtained from the production of agricultural commodities. This also means that they are increasingly less prosperous.

However, the concept of farmer's exchange rates (NTP) in the context of coffee farmers is also essential. Exchange rates play a crucial role in determining the income that coffee growers receive. Some key points are:

1. The REAL Coffee Price: Exchange Rates in Green Coffee:
 - Coffee farmers' income can increase even as the "C-Price" (what roasters pay) decreases⁹⁷.
 - The C-Price is only part of the story for most coffee farmers worldwide. The other critical factor is the "exchange rate".
 - Fluctuations in exchange rates impact the price at which farmers can sell their coffee and the profit they earn until the next harvest.⁹⁸

⁹² Nilai tukar petani - Wikipedia bahasa Indonesia, ensiklopedia bebas. https://id.wikipedia.org/wiki/Nilai_tukar_petani.

⁹³ NILAI TUKAR PETANI : KONSEP, PENGUKURAN DAN RELEVANSINYA ... - Neliti. <https://media.neliti.com/media/publications/70352-ID-nilai-tukar-petani-konsep-pengukuran-dan.pdf>.

⁹⁴ Nilai Tukar Petani Jawa Barat Desember 2023 sebesar 113,86 atau naik 1 <https://jabar.beta.bps.go.id/id/pressrelease/2024/01/02/1111/nilai-tukar-petani-jawa-barat-desember-2023-sebesar-113-86-atau-naik-1-20-persen--2018---100-.html>.

⁹⁵ Nilai Tukar Petani Jawa Barat Januari 2024 sebesar 113,97 atau naik 0 <https://jabar.beta.bps.go.id/id/pressrelease/2024/02/01/1112/nilai-tukar-petani-jawa-barat-januari-2024-sebesar-113-97-atau-naik-0-10-persen.html>.

⁹⁶ <https://subangkab.beta.bps.go.id/en/pressrelease/2021/11/01/151/jawa-barat-farmers-exchange-rate-in-october-2021-at-97-93-or-an-increase-of-1-21-percent--2018---100-.html>.

⁹⁷ How much does the farmer get per cup of coffee? <https://43factory.coffee/en/news/how-much-does-the-farmer-get-per-cup-of-coffee/>.

⁹⁸ Coffee Economics with Karl: Currencies and Exchange Rates. <https://dailycoffeenews.com/2020/05/15/coffee-economics-with-karl-currencies-and-exchange-rates/>.

2. Coffee Farmer Price Volatility:

- Most farmers' income depends on the New York C-Price (KC) future contract and the exchange rate between USD and their home currency.
- These two factors fluctuate independently and combine to dictate the price at which coffee farming families sell their produce.
- Understanding fixed differentials, floating C-Prices, and exchange rates is essential for farmers' bottom lines.⁹⁹

3. Exchange Rate Risk Exposure in Coffee:

- Variable exchange rates create risk exposure for supply chain actors.
- Purchasing in one currency and selling in another expose's traders to currency fluctuations.¹⁰⁰
- Hedging strategies and instruments help manage this risk.¹⁰¹ Remember that exchange rates significantly impact coffee farmers' livelihoods.

Comparison between the AI, LI and NTP methods

Actual Income and Living Income	Farmer's Exchange Rate (NTP)
<ul style="list-style-type: none"> • Measuring the level of welfare of farming households 	<ul style="list-style-type: none"> • Measuring the level of purchasing power of farming households
<ul style="list-style-type: none"> • Indicators that allow someone to quickly get an indication of the extent of the problem in an area 	<ul style="list-style-type: none"> • Measuring the ability to exchange products sold by farmers with products needed by farmers for production and household consumption
<ul style="list-style-type: none"> • Indicators that enable stakeholders to get a good indication of the magnitude of the problems faced by farming households in general. 	<ul style="list-style-type: none"> • Showing the level of competitiveness of agricultural products compared to other products as a basis for product specialization efforts and improving the quality of agricultural products.
<ul style="list-style-type: none"> • These are absolute numbers 	<ul style="list-style-type: none"> • This is the index/proxy number

Source: Authors' analysis

⁹⁹ Coffee Farmer Income: How Much Does the Average Coffee Farmer Earn <https://dmcoffee.blog/how-much-does-the-average-coffee-farmer-earn/>.

¹⁰⁰ Coffee Impact Report - 2021 – Fairtrade America. <https://www.fairtradeamerica.org/why-fairtrade/global-impact/reports-trends/coffee-impact-report-2021/>.

¹⁰¹ Coffee Economics with Karl: Currencies and Exchange Rates. <https://dailycoffeenews.com/2020/05/15/coffee-economics-with-karl-currencies-and-exchange-rates/>.