LIVING INCOME REPORT

(with Living Wage Annex)

RURAL CENTRAL SULAWESI, INDONESIA

(with focus on cocoa producing areas)

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ABSTRACT

This report estimated a living income for rural Central Sulawesi, a major cocoa producing area in Indonesia. The living income is defined as the income required by a typical size family - in this case a family of 4 (2 adults and 2 children) - to attain a basic but decent standard of living. The report was commissioned by Deutsche Gesellschaft-fur- Internationale Zusammenarbeit (GIZ) GmbH and the Cocoa Sustainable Partnership (CSP). The estimation process utilizes the Anker Methodology which determines the costs of the necessary items required for decent living, i.e., nutritious and balanced diet, healthy and safe housing, non-food-non-housing (NFNH) items, and contingency expenses. The findings of the report suggest a living income for rural Central Sulawesi of IDR 5,026,527 (equivalent to USD 335) per month for the reference family size. This estimate is 23% higher than the World Bank poverty line for an upper-middle income country which Indonesia became in 2023. It is 31% higher than the family income at the minimum wage for Sigi district in Central Sulawesi and more than twice family income at the government's rural Central Sulawesi poverty line.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

SECTION I. INTRODUCTION

1. BACKGROUND

This report estimates a living income for families in rural Central Sulawesi, Indonesia where the production of cocoa is important. As the living income estimate is location specific, the valuation applies to all families living in the area.

What do we mean by the term "living income"?

> *Living Income is 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. (Living Income Community of Practice)*

The objective of living income is to ensure that all working households have a decent life, the sort that ensures access to nutritious food, healthy housing, adequate health services, a decent level of education through secondary school for children, and other basic needs of human existence and thus, promote the development of just society. Living income is a family concept, and based on the idea is that it should not just support workers, but also their families at a basic but decent standard of living and thus, enable them to be productive members participating actively in the social and cultural life of their respective societies. Those in poverty, and falling below a decent standard of living, will suffer the failings that come from intolerable destitution and insecurity – an incapacity to function, an inability to take risks and a tendency to drift into one or other social illnesses. From this perspective, living income would not only benefit workers and their households, but also society at large.

Living income is included in the United Nations' Universal Declaration of Human Rights and the International Labour Organization's (ILO) Constitution as an intrinsic aspect of social justice.

The study uses the Anker Methodology developed by Richard Anker and Martha Anker which is widely recognized as the gold standard for measuring living wages (LW) and living incomes (LI). To date, the application of the Anker Methodology by the Anker Research Institute has produced over 80 internationally comparable LW and LI estimates in a host of sectors and developing countries. The Anker Methodology estimates the cost of a basic but decent standard of living for workers and producers/farmers and their families. Living income denotes a "decent" remuneration that enables the self-employed, such as farmers, a net income (i.e., sales revenue minus production costs and statutory deductions) that provides a decent standard of living for themselves and their families.

The Anker Methodology (Anker and Anker, 2017) estimates living income, adhering to a decent standard of living guided by international standards, through which families are able to access the necessities of life at decency level. Among other, these necessities include having nutritious foods, being able to live in healthy housing conditions, have access to adequate health care and education services through secondary school, meet transportation needs, are able to clothe themselves adequately, enjoy a basic degree of leisure, etc.

The Anker Methodology does not measure the prevailing incomes received by farmers and others, but instead it estimates the cost of a basic but decent standard of living. It constitutes benchmark net earnings after expenses that farmers need to meet the decency standards criterion. The cost of a decent standard of living (i.e., 'living income') can subsequently be compared with other income measures (e.g., prevailing income level, minimum wage level, poverty line) to assess gaps that might impede the realization of a desired state of existence.

1.1   Living Income Estimate

Our estimate of a living income for rural Central Sulawesi, is **IDR 5,026,527 (equivalent to USD 335)** per month for a reference family size of 4 persons. This estimate is much higher than family income at the government poverty line for rural Central Sulawesi (IDR 2,102,660), and considerably higher than what a family with 1.60 full-time working members would earn at Sigi's minimum wage (IDR 3,849,090) and the World Bank's upper middle income country poverty line of 6.85 PPP per day for a family of four (IDR 4,090,625). These gaps are not due to the estimated living income being too high or overly generous. Our living income uses conservative assumptions to estimate living costs reflecting a basic but decent living standard. For example, our living income allows for nutritious food items that cost less. This report provides a detailed explanation of how our living income was estimated by keeping a balance between scientific rigor and simplification of the procedure so that all readers and stakeholders can understand the estimate and methodology.

1.2 Context

The cocoa bean is one of the most important agricultural exports of Indonesia. The main locations of cocoa production are Sulawesi (Central, Southeast, West and South Sulawesi), and Sumatra (Lampung, North Sumatra and West Sumatra). The island of Sulawesi is, by

far, the major producer of the cocoa bean and contributed 59.4% of total cocoa production in 2020 (BPS, 2020). See Figure 1 below.

Figure 1 Indonesian cocoa producing areas
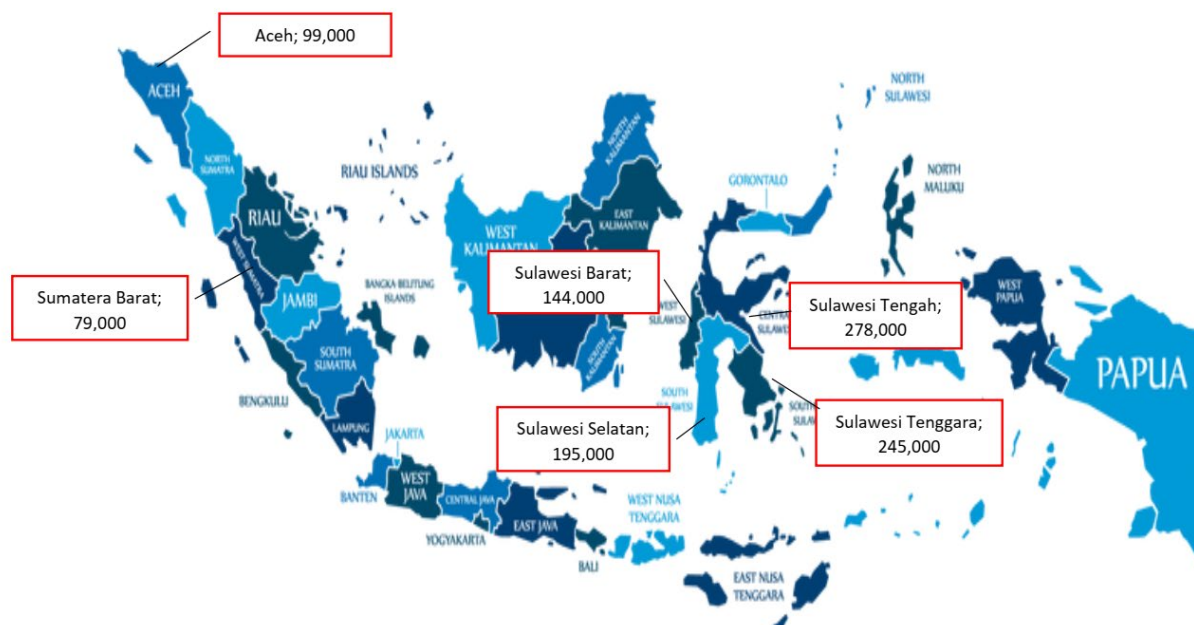
Source: reproduced from (BPS, 2020; 17).

This report estimates living income of farmers in Indonesia in rural Central Sulawesi where large concentrations of cocoa production and smallholders are located. The living income is estimated for the *Kabupaten* (regency) Sigi with primary data collected in four *Kecamatan* (districts) within Sigi (i.e., Kulawi, Dolo, Palolo and Nokilalaki).

2. FIELDWORK AND DATA SOURCES

Coming up with a living income estimate requires considerable effort. This is done not only in light of the importance of cocoa in Indonesia but also for the possible use of this report by key stakeholders like the Government, buyers, brands, international donor agencies to help improve income of farmers and others and especially cocoa farmers and families so that they can live decently. Given that the estimate is location specific rather than sector-specific, the living income assessed here applies to all households in the area, whether they are involved in the production of cocoa or not. However, from the very outset, it should be pointed out that our living income is an estimate of the cost of living that would allow households to lead a decent life and does not include the costs that farmers incur with

regard to production, i.e., costs of inputs such as, fertilizers, pesticide, hired labor, maintenance of land, water, fuel for machinery, etc.

Using the Anker Methodology, all essential components of living income are estimated separately by collecting a variety of data using a mix of quantitative and qualitative data and approaches and triangulating all of this information to arrive at reasonable estimates. The primary data collected included the following: (i) visiting cocoa farmers at their homes and conducting discussions with the families in Kulawi, Dolo, Palolo and Nokilalaki, where key issues were discussed revolved around land size, family size, dietary patterns, and living expense; (ii) observing and assessing housing conditions of farming families that included examination of living space (i.e., number of square meters and number of rooms), and availability and standard of necessary amenities such as latrines, kitchen facilities, material used for constructing the building/structure, and condition of the building; (iii) exploring rental housing market and determining the costs of construction to get a better understanding of the housing expenditures that households have to incur; (iv) surveying food prices in places where the farmers – and their families – normally purchase their food to establish local food prices; and (v) establishing the households' cost and access to health and educational facilities. The fieldwork was complemented with an extensive review of available literature and use of mostly government statistics related to household consumption and expenditure and demography used in the analysis presented in this report.

Figure 2 Map of Sulawesi

Source: https://map-bms.wikipedia.org/wiki/Sulawesi
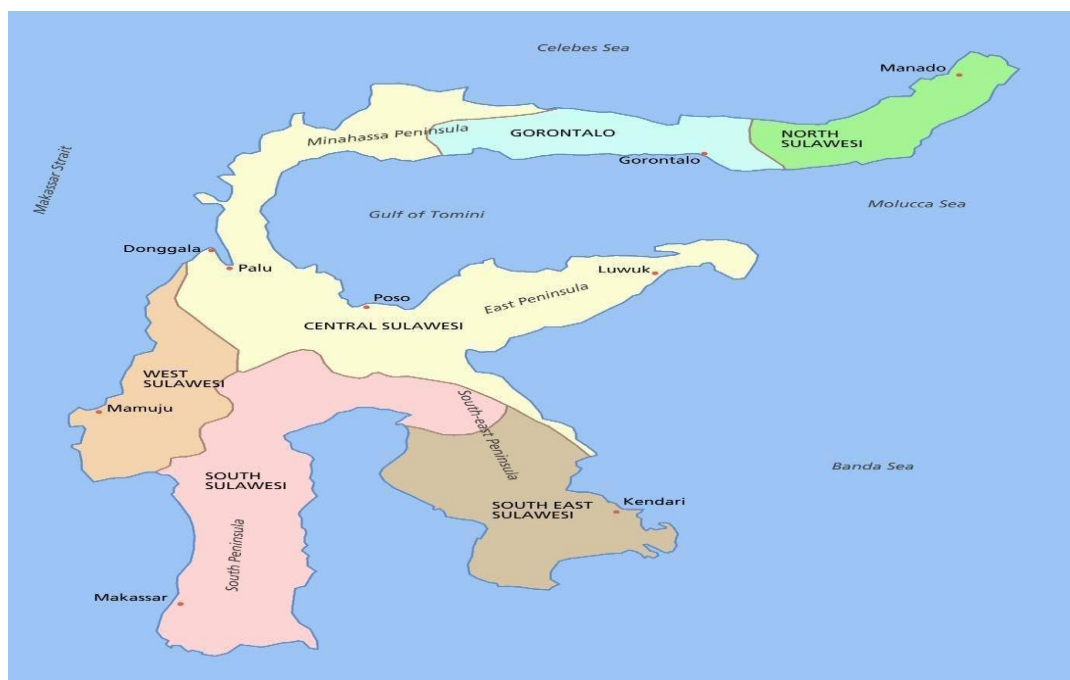
2.1 Study Areas for Primary Data Collection

The study areas were selected purposively to represent diverse characteristics of cocoa farming areas in Central Sulawesi. The study locations covered 4 districts in the Sigi regency, Central Sulawesi province, Indonesia, where cocoa production and smallholders are concentrated and where the GIZ has close relationships with and access to cocoa farming families. The Sigi regency covers an area of 5,196 square kilometers and consists of 16 districts. The 5 districts chosen for fieldwork were Kulawi, Sigi Biromaru, Palolo, Dolo and Nokilalaki. The capital city of Sigi regency is Bora located in the Sigi Biromaru district. The distance from Sigi Biromaru to Palolo and Nokilalaki is around 25 km and 35 km respectively, while the distance between Sigi Biromaru and Kulawi is 62 km. In addition, while from Sigi Biromaru district or Palu city (i.e. capital city of Central Sulawesi province), there is a good access road to Palolo and Nokilalaki, there are some sections of the road between Sigi Biromaru and Kulawi that are damaged due to landslides and flash floods and were difficult to traverse.

Figure 3 Map of Sigi Regency

Source: https ://www.kulawi.com/id/peta-kulawi

2.2 Data Collection

The primary data collected on local food prices, housing costs, school costs, and health care costs were collected with the assistance of local enumerators.

The research team also collected mostly qualitative data from cocoa farming families in Kulawi in 2 *Desa* (village); Marena and Poleroa Makuhi. Similarly in Palolo, the research team visited farmers in 2 villages: Rahmat and Sentuwu. Meanwhile in Nokilalaki, farmers in Bulili village were interviewed. Since it proved impossible to do interviews in Sigi Biromaru, the research team collected data in Dolo district, which is not very far from Sigi Biromaru, with farmers in Maku village. In total, this mostly qualitative data was collected from 78 cocoa farmers of which 30 were in Kulawi, 10 in Dolo, 30 in Palolo and 8 in Nokilalaki.

In addition, local helpers from Olam and JB Cocoa assisted the research team in Kulawi and Dolo to visit the farmers and families in their places of residence. This provided opportunities for the research team to ask and observe the prevailing standard of housing of these households. The data collection took place between 12 to 20 May 2022 and then again from 15 to 28 October 2022. In May 2022, information was collected to determine the preferences and lifestyle of farming communities in the cocoa producing region. This also focused on public sector provisions with respect to health, education and other services. In October 2022, information was collected on food prices, housing costs, health care costs, and schooling costs.

3. CONTEXT

3.1 Cocoa Smallholders in Indonesia

In 2020, cocoa farming in Indonesia covered 1.5 million hectares yielding 720.6 thousand ton of the cocoa crop (Figure 4).

Figure 4 Production area and yield of cocoa in Indonesia

	2016	2017	2018	2019	2020
■ Area (ha)	1,720,773	1,653,116	1,611,014	1,560,945	1,508,956
■ Production (ton)	658,399	585,246	767,280	734,795	720,660
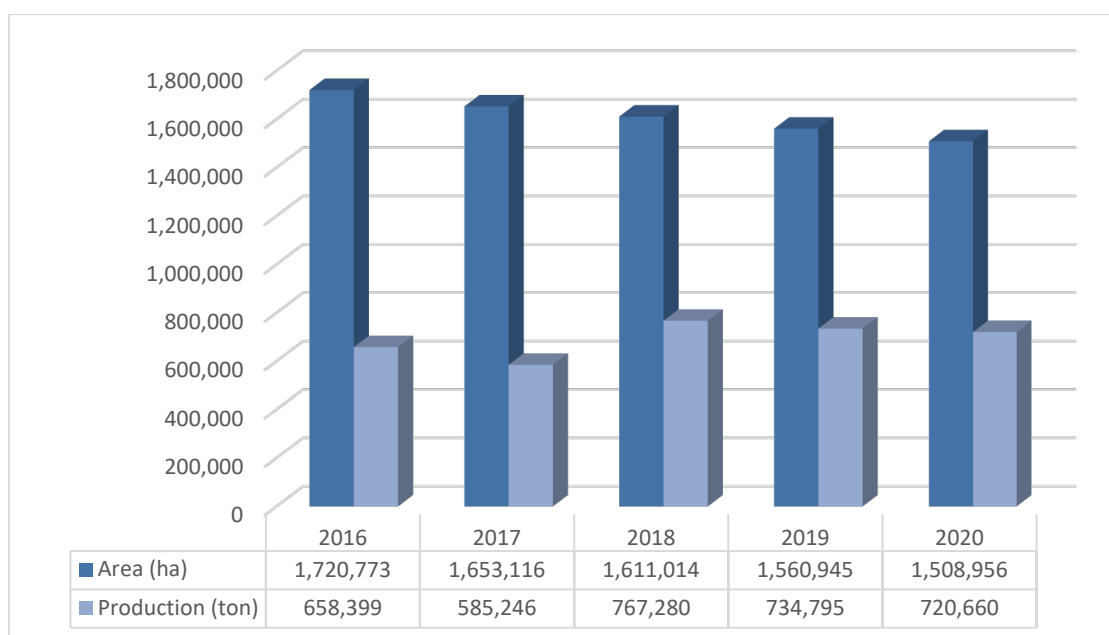
Source: Reproduced from (BPS, 2020; 9).

Almost all (99%) of total cocoa farming is carried out by small-scale farmers who manage production with traditional methods (Figure 5).

Figure 5 Contribution of smallholders, large private estates and state-owned estates to cocoa production
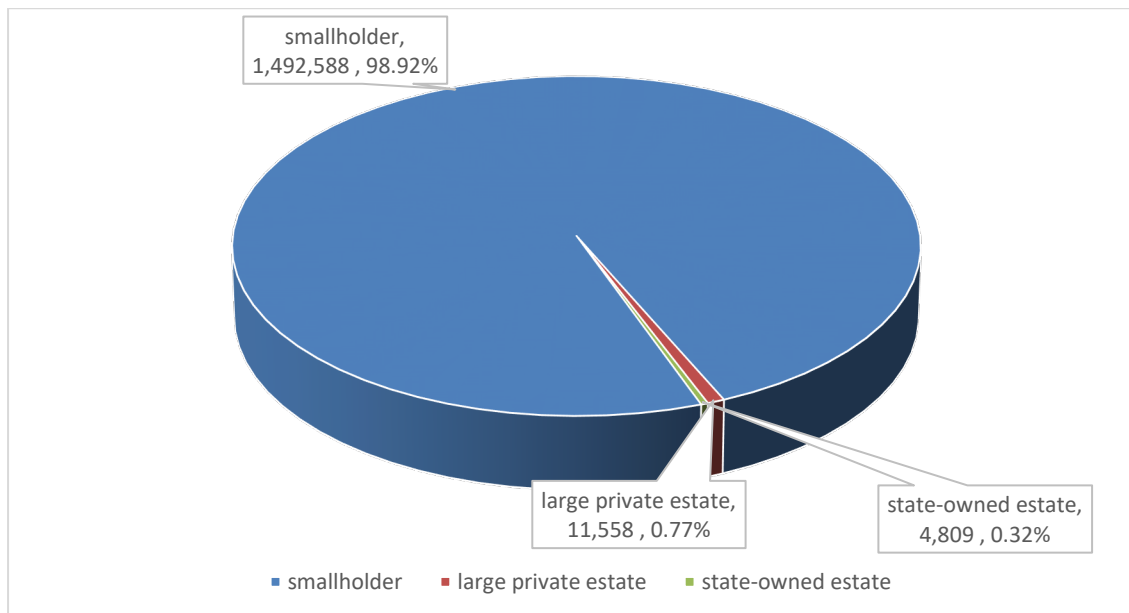
Central Sulawesi province has the largest cocoa estates and production (Figure 6). The province covers 278.3 thousand hectares, which constitutes 18.4% of total cocoa area of Indonesia and produced 128.6 thousand tons of cocoa in 2020 that contributed 17.8% of total national production. Cocoa plays an important role for farmers and villages in Sigi and some villages in Sigi are currently designated by the Government of Indonesia as centers for organic cocoa development (Kemenko Ekonomi, 2021).

Figure 6 Cocoa production and productivity per province in Indonesia
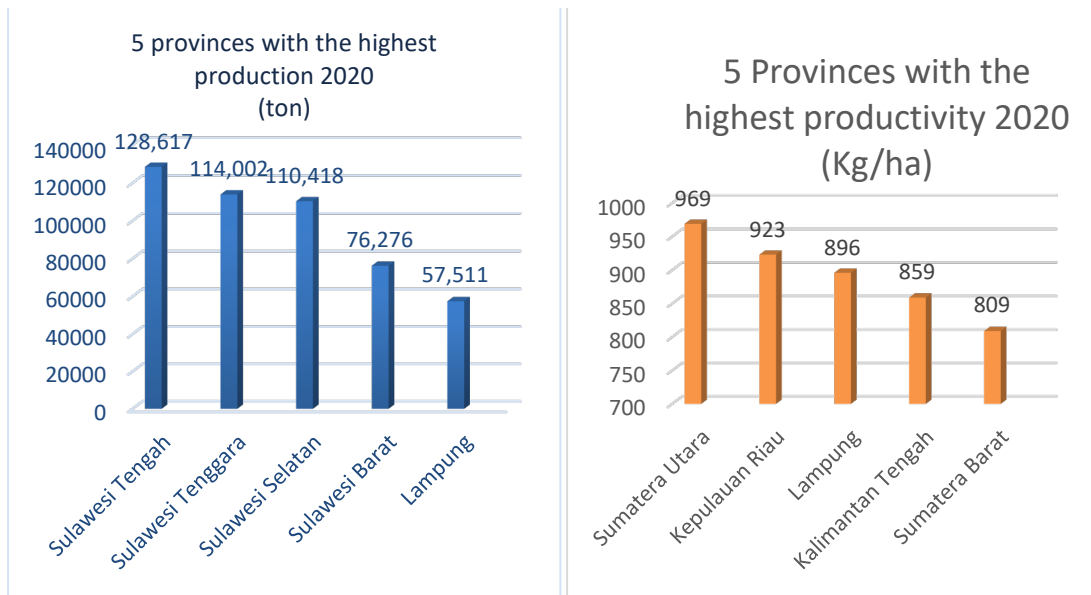
Source: BPS, 2020; 17.

Nevertheless, cocoa production in Central Sulawesi does not figure in the top five of highest productivity per hectare areas in Indonesia (i.e., North Sumatra, Riau, Lampung, Central Kalimantan and West Sumatra). The average yield in Central Sulawesi is only 462.2 kg/ha, which is half of the average yields determined for the top-five high productivity areas. Over the last five years, the area covered under plantation of cocoa and its yield has declined due to the aging of cocoa trees, most of which were planted between the 1990s and 2000s, and the deadly disease that recently caused fruit-rot of the crop. This decline in yield was confirmed by the farmers when the research team visited them during the fieldwork. Some farmers had cut down the old cocoa trees and had replaced them with other crops (e.g., corn, avocado, durian, paddy and palm oil). Others replanted cocoa with new seed. Nevertheless, the farmers are struggling in the transition period since their lower income makes it difficult for them to recover. Consequently, this has had an influence on their consumption patterns; for instance, they consume fish less frequently and have taken to consuming smaller fish and dried fish with lower prices.

3.2 Low Productivity and Quality

The two biggest challenges of cocoa farming in Indonesia are low productivity and low quality. These are essentially caused by traditional farming methods that characterize smallholder farming. Small-scale cocoa farmers generally lack knowledge of better technologies related to cocoa plantation management and bean processing. The majority of the farmers generally, still use local seed sources which are susceptible to disease and have low productivity, lack of maintenance and are also not well versed in cultivation

management, especially pruning, and controlling pests and plant diseases. To date, Indonesian cocoa farmers have only been directed to produce dry, fermented cocoa beans that are sold to milling companies and further processed into intermediate products such as chocolate paste, cocoa powder, and cocoa butter. The earnings of the cocoa farmers are only with respect to the added value from the sale of dry cocoa beans they harvest.

4. ESTIMATING A LIVING INCOME FOR RURAL CENTRAL SULAWESI

The estimation of the living income, based on the Anker Methodology, considers four elements that are of primary concern 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 workers and their families to tackle their vulnerability to contingencies.

The costs of food and housing are determined from primary data gathered during fieldwork, whereas the NFNH costs are determined mainly based on secondary data; though two expense items (i.e., health care and, education) are subjected to "post-checks" using primary data collected during fieldwork to ensure that the costs arrived based on the secondary data sources are not underestimates of the needs. These costs are then aggregated, and a small margin is added for unexpected events and emergencies to yield an estimate of the living income for a basic but decent living standard, a graphical representation of which is presented below.

Figure 7 Estimation of Living Income
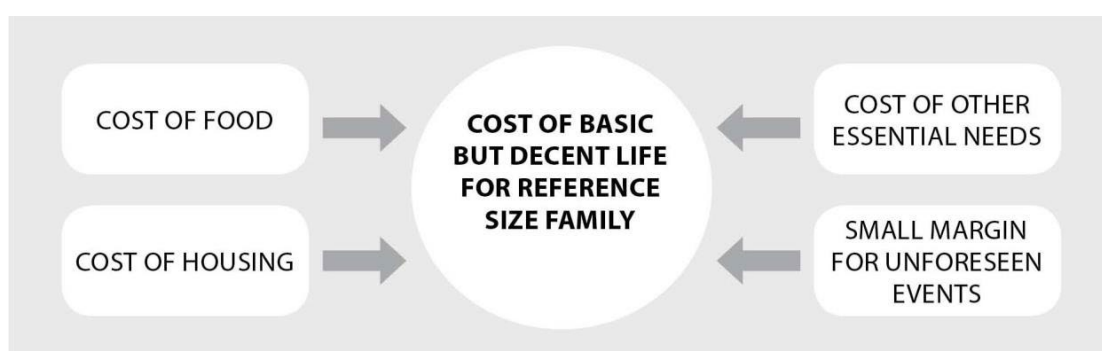
SECTION II: ESTIMATING HOUSEHOLD LIVING COSTS

To reiterate, the process followed in the estimation of the living income required both deskwork and fieldwork, i.e., analysis of secondary data and collection and analysis of primary data. The deskwork involved a literature review and compilation of tables, as developed from analyses of various Indonesia statistical data sets, which included: *Pengeluarang untuk Konsumsi Penduduk Indonesia per Provinsi* (Consumption Expense of Population of Indonesia by Province) 2021, Indonesia Demographic and Health Survey 2017, *Kabupaten Sigi dalam Angka* (Sigi Regency in Figures) 2020, *Keadaan Angkatan Kerja di Kabupaten Sigi* (Labor Force Situation in Sigi Regency) 2020.

The secondary data analysis required:

Developing a preliminary model diet that is nutritious and consistent with human needs, local food preferences, local food prices, and development level. The model diet was then adjusted later with information gathered from fieldwork on food prices and food availability.

- Determining a typical reference family size needing to be supported.

- Establishing a local healthy housing standard; and calculating the non-food & non-housing (NFNH) to food expense ratio based on secondary data on household expenditures.

5. ESTIMATING FOOD COSTS

The costs of food for a living income for rural families in Central Sulawesi was estimated using a low-cost nutritious model diet for a family of 4 persons (2 adults and 2 children) that is consistent with local food preferences, food availability and relative food prices. Focus group discussions with farmers helped to identify the foods generally consumed and a survey of food prices in the local food markets where the farming families normally shop helped to determine local food prices.

5.1 General Principles of the Model Diet

The following general principles are used to establish the model diet to estimate food costs for living income for rural Central Sulawesi. Our model diet needs to be:

1) Nutritious (i.e., meet WHO recommendations not only sufficient calories but also acceptable quantities of proteins, fats, carbohydrates, and fruits and vegetables) to ensure that farmers and families have sufficient energy to enable them to work productively and ensures their healthy status.

2) Relatively low in cost for a nutritious diet. This approach means that relatively inexpensive foods (e.g., medium quality white rice vs specialty brown rice) are included in the model diet in order to reflect the cost consciousness of farmers in purchasing food while maintaining nutritional standards.

3) Percentage of calories coming from proteins meets WHO/FAO minimum requirements and is consistent with Indonesia's level of economic development.

4) Considers local food preferences, local food availability and local food costs. This, at times, means that the choice of specific food items included in the model diet to represent each major food group is not always the least expensive food item.

5.2 Main Food Items included in the Model Diet

The model diet we used has 2,363 calories per person based on the Schofield equations recommended by WHO (see Anker and Anker 2017). We used the following information to determine the number of calories required: (i) average height of adults in Indonesia; (ii) healthy body mass index (BMI) of 21; (iii) size and composition of the reference family of 2 adults and 2 children; and (iv) assumption that one adult has vigorous physical activity in performing farming activities, while the other adult and children are characterized by moderate physical activity levels.

We started by examining food consumption according to the 2021 National Social and Economic Survey (SUSENAS) – *Badan Pusat Statistik* (BPS) – for rural Central Sulawesi

province. In the next step, we adjusted these quantities so that our model diet meets the WHO recommendations for macronutrients (proteins, fats, and carbohydrates) and quantities of oil and sugar and fruits and vegetables to ensure sufficient micronutrients and minerals and not too much oil and sugar (WHO, 2003). Lastly, we adjusted this nutritious diet so that it is low in cost by taking into consideration relative food prices and Indonesia's level of development. The percentages of calories in our model diet are 12.4% from proteins, 23.5% from fats and 64.2% from carbohydrates. The 350 edible grams of pulses (in form of tofu, tempeh and peanuts), and fruits and vegetables included in the model diet to provide a variety of micronutrients and minerals.

Figure 8 Percentage Distribution of Macronutrients in Model Diet
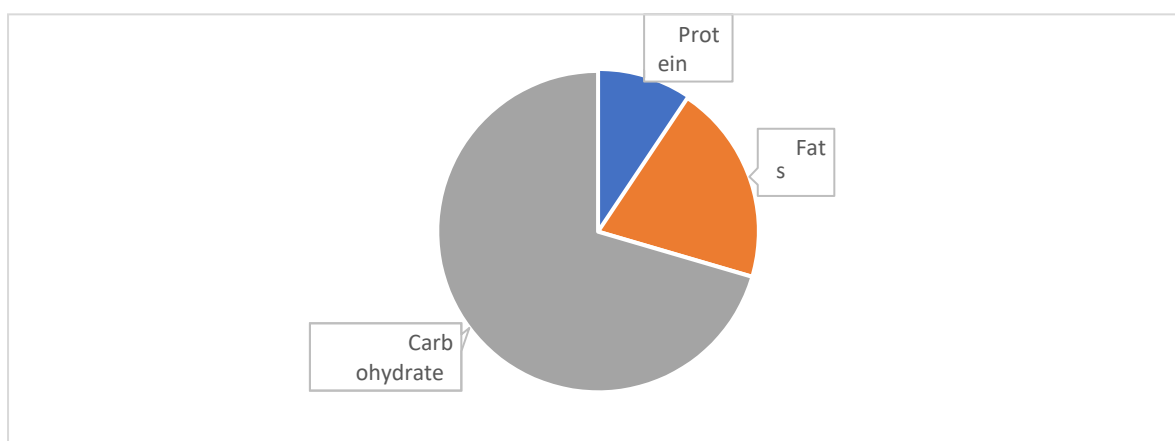
Food expenditure in our model diet is IDR 21,058 per person per day and IDR 2,562,057 per month for the reference family's total monthly food expenditure.

5.3 Determining Food Costs

To estimate the cost of the model diet, the research team was assisted by local enumerators to collect food prices from places where farmers and their families typically shop for food. It is noted that the farming families mostly purchased food items (particularly the perishable goods including vegetables and fish) from open markets and also, to a lesser extent, from mobile vendors travelling between districts and villages and local small shops within the villages. The open markets are held on designated days of the week in different villages in the Sigi-Biromaru, Dolo, Palolo, Poso and Nokilalaki districts of the Sigi regency but not in Kulawi. In Kulawi, the farmers and families rely, in the main, on mobile vendors and small shops that sell similar items to the open markets to meet their daily needs.

The 'open markets' are relatively large and besides retailing food items also sell other household goods, such as clothes and footwear. During the fieldwork the research team collected data on food prices in the open markets of Biromaru in Sigi-Biromaru sub-division, Bobo, Makmur, Moutou and Rahmat in Palolo, Dongi-Dongi in Poso, Kamarora in

Nokilalaki and Rakyat in Dolo sub-districts. Information on food prices was collected from multiple vendors; two to three in each market. Some markets, such as in the Palolo district, which are in close proximity to one another (within a distance of 10 kms), allows families to access food items on days other than the one when the market is held in their local precinct. In Nokilalaki, the Kamarora market is held only on Sunday and after that the locals rely on mobile vendors and local shops for their comestibles. The families living in Sigi-Biromaru and Dolo districts can access each other's markets but lying close to Palu - the major urban center in Central Sulawesi - they can also access retail establishments on the outskirts of the city.

Based on our observation during the fieldwork, we found that the farming families preferred to shop at the local markets rather than purchase food from mobile vendors. The mobile vendors play an important role in catering, to families living in relatively remote areas, selling mostly perishable items like vegetables, fish, tofu, tempeh and fruits, while small local shops sell mostly packaged consumer goods such as rice, flour, noodle, eggs, rice, milk, coffee, sugar, toothpaste, soaps, and over the counter (OTC) medicines. We observed that the mobile vendors and small local shops complemented each other in food provisioning for the daily needs of farmers and families in villages.

In light of this, information on food prices was also solicited from 12 small local shops and mobile vendors. In this way, we were able to get a fairly good idea about variations of food prices between the different retailers and between villages.

Figure 9 Pictures of mobile vendors and a small shop

The mobile vendors normally bring food items from Palu city to the villages, which are the focus of our study. In Kulawi, which is at a considerable distance from Palu, the access roads are not good, the mobile vendors (using a car) sell vegetables and other items only once a week. While in the other sub-districts, mobile vendors (using a motorbike) travel and sell food items to farmers in the different villages every day. The mobile vendors travel not only between villages in the same sub-district but also between sub-districts. The prices of food items sold in Palolo and Nokilalaki were noted to be similar and not diverging greatly. In contrast, the price of food items was higher in Kulawi, reflecting higher transportation costs.

Given the variation in prices, we calculated the median price for each food item. For each food group, less costly items were included in our model diet to keep the living income model diet at relatively low cost. However, in certain cases when local food preferences were strong, a preferred food variety was taken in place of a lower cost variety. For example, rice is the main source of energy for rural families. There are different qualities of white rice

that affect the price per kilogram. Some farmers also consume brown/red rice that is classified as a specialty rice. The specialty rice is more expensive than white rice and consumed mostly for health reasons. To keep the living wage model diet at low cost, we include medium quality rice for general consumption.

Similarly, fish is a very important part of the diet in Sulawesi. Fish, one of the most important sources of protein, is cooked and eaten with *Dabu-Dabu* (a fresh salsa, made with a mix of shallot, chili, tomato and lime) and rice. Dried fish is less expensive per calorie than fresh fish and widely consumed by the population. Therefore, we included some dried fish in the diet. However, we also included fresh fish each day in the model diet as it is preferred. Among the fish sold, sea bass (i.e., *bandeng*), tuna (i.e., *cakalang*) and mackerel (i.e., *lajang*) are important saltwater fish, while tilapia and carp (*Ikan mas*) come from freshwater sources, such as rivers and mountain streams. The price of different saltwater fish is relatively similar to one another per kilogram, but less expensive than the freshwater fish. Therefore, sea bass, tuna and mackerel are included in the living income model diet because they are widely sold and more preferably consumed by farmers and families. In this way, while local food preferences are not ignored, the cost of the model diet is kept low, and estimated by using the prices that farmers and their families actually pay for different foods.

Figure 10 Saltwater fish and live chicken

It is noted that the mobile vendors and small local shops sell vegetables, fish and chicken not by weight, but in packets or units. For instance, fish might be sold for IDR 20,000 per fish packet, while its weight is dependent on size and type of fish. Water spinach and spinach are often sold for IDR 2,000 per bunch, while eggplant is often sold at IDR 1,000 per piece. Tofu and tempeh are also sold by piece and per packet, that usually cost IDR 5,000 consisting of differing units (i.e., number) and size. Consequently, we weighed several average sized pieces or packets at each venue and took the average weight to calculate price per kilo. We also asked the farming families about the costs of various food items they purchased as a way of confirming the prices per piece. Families provided information on the prices they paid per piece rather than per kilogram. For example, a pumpkin seller would normally sell his merchandise by quoting a standard price per piece, but the pieces

Figure 11 Food items sold by packet

could – and did – vary somewhat in terms of weight. Some haggling might bring the price down if there was an observable appreciable difference in size. Finally, we also confirmed the costs incurred when buying from mobile vendors and local shops and subsequently converted these to price per kilogram for the different food items.

Some vegetables (e.g., water cress, long bean, eggplant) and fruits (e.g., banana, papaya) frequently consumed by farmers and families are not always purchased from mobile vendors, but instead they are plucked from their own garden and/or farmland. We used the market price, as an imputed price, for these self-produced and consumed food items.

Figure 12 Self-produced food items

Our model diet, shown in Table 1, includes:

A lot of rice (353 grams per day) since rice is the main staple of an Indonesian diet, especially for farmers who require energy.

- 14 grams of egg noodles

- 26 edible grams of plantains

- 26 edible grams of sweet potato

- 35 edible grams of tofu

- 35 edible grams of tempeh

- 14 edible grams of peanut

- 11 grams of powdered milk. This provides for only 1 cup of milk for children ages 2-5 because of the high cost of milk. Note that calcium is also obtained from eating dried fish, because the entire fish is eaten including the bones.

- 25 edible grams of egg. This is equivalent to 4 eggs per week.

- 85 edible grams of various sea water fish (i.e., sea bass, mackerel, tuna). This is equivalent to 1 fresh fish meal per day.

- 18 edible grams of various dried fish. This is equivalent to 3 dried fish meals per week.

- 36 edible grams of chicken. This is equivalent to 3 chicken meals per week.

- 267 edible grams of vegetable and fruits

- 18 edible grams of coconut. This is equivalent to 2 coconuts per week per family.

- 34 grams of cooking oil.

- 30 grams of sugar. This amount of sugar is the maximum recommended by WHO.

- 2 cups of coffee per day for adults.

- 8% is added to food cost for chilis and cayenne pepper as well as for spices, salt, condiments and sauces. This percentage is consistent with the actual percentage of food expenditure for these in rural Central Sulawesi according to SUSENAS data.

- 4% is added for minimal spoilage and waste.

- 13% is added to allow for additional variety.

Table 1 Model diet and food cost (in IDR) per person per day using food prices observed in open markets and from peddlers and local small shop, October 2022

Food items	Purchase dgrams	Edible grams	Cost per kg	Cost	Comments
Rice	353	353	10,000	3,533	Rice is the main staple of Indonesia. It provides 54% of calories in the model diet
Egg noodles	14	14	20,000	280	
Sweet potato	26	36	5,066	183	
Plantain	26	40	3,783	150	
Milk (powdered)	11	11	148,148	1,646	Equivalent to 1 cup of liquid milk per day for children ages 2-5
Egg	29	25	30,581	874	4 eggs per week.
Fresh fish	142	85	25,000	3,542	Variety of seawater fish (tuna, sea bass, mackerel). 1 fish meal per day.
Dried fish	18	18	40,000	729	Variety of dried fish.
Chicken	54	36	27,273	1,461	Chicken least expensive meat.
Tofu	35	35	8,620	302	

Food items	Purchase dgrams	Edible grams	Cost per kg	Cost	Comments
Tempeh	35	35	21,645	758	Fermented soybean
Peanuts, shelled	14	14	30,000	405	Sprinkled on dishes
Water. spinach	37	33	13,067	484	
Spinach	46	33	13,779	638	
Cabbage	42	33	5,498	229	
Tomato	37	33	4,000	146	
Pumpkin	48	33	3,333	159	
Papaya	54	33	5,000	269	
Banana	52	33	7,083	369	
Watermelon	64	33	7,831	502	
Cooking oil	34	34	17,824	606	Palm oil
Sugar	30	30	14,000	420	Maximum recommended by WHO
Coconut	18	34	3,571	123	
Coffee	7	7	80,000	560	2 cups per day for adults
Total				**IDR 16,846**	
Total (including additional miscellaneous costs) [a]				**IDR 21,058**	

Notes: [a] Miscellaneous additional miscellaneous costs include: (i) 4% for minimal spoilage and waste; (ii) 8% for spices, condiments and sauces as well as for chillis and cayenne pepper in keeping with observed percentages according to SUSENAS data, and (iii) 13% for additional variety.

The per person cost of our model diet is determined to be IDR 21,058. This implies an expenditure of IDR 2,562,057 per month for our reference size family of 4 persons.

6. HOUSING COSTS

6.1 Local Healthy Housing Standard

Housing costs for living income are estimated by determining either 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 plus utility costs. 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), World Health Organization Principles of Healthy Housing (1989), and UN-Habitat (2009, 2013). Some salient aspects of standards covered in the different international instruments are presented in Table 2.

Table 2 Housing standards principles in international conventions and recommendations

Principles			
Standard	International Covenant on Economic, Social and Cultural Rights	ILO recommendation No. 115 concerning workers' housing	WHO healthy housing
Safe water[b]	√	√	√
Sanitation/toilet & sewage disposal[b]	√	√	√
Sufficient living space	√	Persons per room and/or floor area	Persons per room
Durable structure (protection against elements)[b]	√	√	√
Good condition and state of repair	√[e]	√[f]	√
Physical safety	√	√	

Principles			
Standard	International Covenant on Economic, Social and Cultural Rights	ILO recommendation No. 115 concerning workers' housing	WHO healthy housing
Adequate ventilation	√	√	√
Adequate lighting	√	√	√
Safe food storage	√	√	
Washing facilities	√	√	√
Separation from animals	√	√	
No site hazards [b, c]	Drainage, pollution	Earthquake	Many[d]
Refuse/solid waste disposal	√	√	√
Emergency services	√	√	
Protection from elements	√e	√f	√

Notes:

[a] UN-Habitat urban slum housing definition is not included in this table, because it includes only five elements: 'inadequate access to safe water; inadequate access to sanitation and other infrastructure; poor structural quality of housing; overcrowding; insecure residential statuses in addition to security of tenure'.

[b] Element included in UN-Habitat definition of urban slum housing.

[c] 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)' (UN-Habitat, 2003, p. 12).

[d] WHO indicates the following site hazards: earthquakes, hurricanes, wind, noise, pollution, floods, and landslides.

[e] Implied by 'protection from cold, damp, heat, rain, wind or other threats to health, structural hazards, and disease vectors' (International Covenant on Economic, Social, and Cultural Rights, 1966).

[F] Implied by 'protection against heat, cold, damp' (ILO Recommendation No. 155).

In addition to international standards guidelines, the Government of Indonesia enacted its own recommendations for healthy small house construction under the authority of the Ministry of Resettlement and Regional Infrastructure (Menkimpraswil, 2002). The Ministry 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, building materials, geology, local climate and local architecture, and local ways of life. The guidelines indicated between 28.8 sq. mts. and 30 sq. mts. of living space for a family of four. Table 3 describes what acceptable accommodation would look like.

Table 3 Healthy house construction, size and characteristics of Government standard

House size	Rooms	Building construction
28.8 m^2		Window/door: wood frames Roof frame: wood/corrugated zinc
	2 bedrooms @ 3.00 mt. x 3.00 mt.	
	Multipurpose room 2.50 x 3.00 mt.	
	Bathroom + WC 1.50 x 1.20 mt.	
36 m^2	2 bedrooms @ 3.00 x 3.00 mt.	
	Children's bedroom 3.00 x 3.00 mt.	
	Front room 2.50 x 3.00 mt.	
	Living room 3.00 x 3.00 mt.	
	Bathroom + WC. 1.50 x 1.20 mt.	

The health, safety and convenience of a house is influenced by lighting, ventilation, temperature and humidity in the room. Government requirements are shown in Table 4.

Table 4 Government requirements of lighting, ventilation, room temperature and humidity of healthy house

Aspect	Requirements
Lighting	Direct sunlight can enter the room for at least 1 (one) hour every day. Effective light can be obtained from 08.00 to16.00.
Ventilation	Minimum ventilation 5% (five percent) of the floor area room.
Room temperature and humidity	Temperature and humidity of the room similar to the normal temperature of the human body.

The safety and security of a building depends on foundation, walls (and building frame), roof and floor; while other parts such as the ceiling, gutters and other, constitute the aesthetics of the building structure.

The above international and national standards of healthy housing can be used to estimate the cost of local healthy housing. However, common standards, even in term of national standards cannot be of much help in establishing what would pass as a strict norm in diverse conditions – particularly the rural-urban divide - that is ubiquitous in Indonesia. The ministerial regulation acknowledges the diverse local conditions. Thus, the regulation also provides for alternative types of housing that can be chosen for particular provinces. For instance, alternative types of houses in Central Sulawesi are stilt wood houses, wood houses, half wood-half brick houses, and brick houses.

Table 5 indicates current housing conditions in rural and urban Central Sulawesi based on the BPS's (2020a) survey. The last column in Table 5 indicates the specific aspects of our local healthy housing standard that meets national and international standards. Note that at least 48 square meters of living space is required in keeping with the Anker Methodology requirement for an upper-middle income country such as Indonesia.

Table 5 Housing conditions in Central Sulawesi in 2020 and our local housing standard

	Urban (%)	Rural (%)	Acceptable Rural Living Income Housing Standard
Size			
< 7.2 m² per person	10.09	12.22	48 sq. mt.
< 10 m² per person	22.61	24.39	
Roof			
Concrete	1.88	0.42	Corrugated zinc or better.
Rooftile	2.07	1.86	
Zinc	94.13	89.03	Bamboo/straw not acceptable.
Asbestos	0.12	0.64	
Wood	0.12	0.08	
Bamboo/straw/others	1.69	7.97	
Floor			
Marble/granite	2.41	0.93	Cement, ceramic, tiles, wood, marble.
Ceramic	44.18	13.95	
Parquet/vinyl/carpet	0.75	0.25	
Tiles/terrazzo	9.24	9.01	Earth not acceptable.
Wood plank	7.93	13.50	
Cement/brick	35.12	57.60	
Earth	0.29	3.00	
Bamboo	0.07	1.75	

	Urban (%)	Rural (%)	Acceptable Rural Living Income Housing Standard
Wall			
Cement/stone/brick	75.13	55.45	Cement/stone/brick and wood plank.
Plastering bamboo/wire	0.03	0.36	
Wood plank	23.30	41.11	
Webbing bamboo	0.00	1.03	Webbing bamboo and bamboo not acceptable
Wood stem	0.15	0.39	
Bamboo stem	1.39	1.66	.
Lighting source			
Electricity-PLN	99.81	89.90	Electricity
Electricity-non-PLN (e.g. solar energy)	0.09	5.92	
No electricity	0.10	4.17	
Water source			
Branded bottled/gallon water	3.79	0.44	Acceptable: Bottled water, piped water, well, and protected spring.
Non-branded bottled water	71.93	26.13	
Piped into dwelling or yard	9.40	8.03	Unacceptable: Rainwater, surface water, unprotected source not acceptable
Borehole/pumped well	11.98	15.00	
Protected well	0.48	10.04	
Unprotected well	0.07	4.21	
Protected spring	2.01	23.48	

	Urban (%)	Rural (%)	Acceptable Rural Living Income Housing Standard
Unprotected spring	0.10	3.40	
Surface water	0.24	8.76	
Rainwater	0.01	0.44	
Toilet facility			
Goose neck toilet	97.82	94.27	Goose neck toilet acceptable.
Pit latrine with slab	0.39	0.67	
Pit latrine without slab	0.00	1.50	
Open pit	1.79	3.55	Pit latrine, open pit not acceptable.
Slum area	**4.35**	**14.73**	Not located in slum area
Cooking fuel			
LPG 3 kg	67.99	47.05	LPG and wood fuel
LPG 12 kg	6.24	0.71	
Wood fuel	6.17	44.56	
Kerosene	8.83	4.13	
Others	9.61	3.33	
Not cooking at home	1.16	0.23	

6.2 Observations on local housing based on visits to homes of local farmers

Most of the cocoa farmers we visited live along the access road to a village, while their cocoa groves were often located at some distance from their homes. The farmers rely mainly on a motorbike to travel from their homes to their groves, given the unavailability of public transport. All the farming families we visited live in owned houses, and this was typical for the study area as it was difficult to find rented accommodation around the villages. Figure 13 shows the house construction observed during the fieldwork.

Figure 13 Different housing construction

From the fieldwork, it was determined that a typical farmer's house, on average, encompassed an area of 42 square meters with 2 bedrooms, living room, kitchen and bathroom with a squat gooseneck toilet. Material used in building construction varied between houses, i.e., with walls being made of wood, brick, or half wood-half brick while the floor was either cement or ceramic. For example, in Dolo most houses were built with brick walls, whereas most houses in Kulawi had walls which were half wood-half brick. It should be pointed out that the regency lies on the Palu-Koro plate, where earthquakes of varying magnitudes are a frequent occurrence. After Central Sulawesi was hit by an earthquake

Figure 14 A newly constructed house in Kulawi

and a massive tsunami in 2018, some farmers rebuilt their collapsed homes using half wood-half brick, particularly for the walls.

Based on our observation, most of houses we visited were of acceptable standard, excluding size, and only a few were found to be unsatisfactorily constructed. For example, Figure 15 shows an unacceptable standard due to the aging wood plank that would affect safety and security of the dwellers. This unacceptable standard was acknowledged by the farmer who is planning to rebuild the house using concrete/brick.

Figure 15 Unacceptable housing

6.3 Rental costs for basic acceptable housing

The rental cost of an acceptable house is used to estimate housing cost whenever it is possible to determine typical rents for such houses. When it is not possible to establish a rental cost, because almost all families such as in rural Central Sulawesi reside in a self-owned house, we estimate the rental equivalent value using the user cost approach.

We were able to visit one rented house in Kulawi district which was leased by a corporation to serve as its office from a relatively wealthy local resident. The house had acceptable building construction (e.g., brick wall, cement floor, good ventilation and light) and had 120 square meters of living space. It consisted of a guest reception area, a spacious living room, kitchen, bathroom and 4 bedrooms. The Corporation paid a rent of IDR 12 million per year. Clearly, the size and quality of this house was significantly more than a typical house of farming families (i.e., 42 square meters with 2 bedrooms) and our standard of 48 square meters. Extrapolating the rent per square meter from this observation, the estimated rental housing cost for Kulawi at our local housing standard of 48 square meters was calculated at IDR 400,000 per month (i.e., $(48 \ m^2/120 \ m^2)$ x IND 12 million per year).

Figure 16 A rented house in Kulawi

In Nokilalaki, the research team stayed in a homestead that rented a bedroom daily or annually. The house was of an acceptable standard (e.g., brick wall, ceramic floor, good ventilation and light) and consisted of a guest reception area, spacious living room, kitchen, bathroom and 4 bedrooms. In addition, the rented house was fully furnished. During the visit, 1 bedroom was rented by a migrant teacher who taught in a primary school at village of Bulili. The rent was INDR 4 million/year/bedroom. Calculating for a typical 2-bedroom house, the housing rent in Nokilalaki was calculated to be IDR 8 million per year

or IDR 666,667 per month. In Palolo, the research team could not find a rented house; nevertheless, Palolo and Nokilalaki are neighboring sub-regencies, only 3.6 kms. apart.

Figure 17 A rented house in Nokilalaki

Figure 18 A newly built house in Dolo

6.4 Estimating housing costs for owner occupied houses

As hardly any rentals were noted in the study area, we used the user cost approach to estimate the rental equivalent value of owner-occupied housing. This approach is used by government statistical offices and is recommended by the Anker Methodology in such circumstances. The approach uses the: (i) construction cost of a house built to our local healthy housing standard; (ii) expected service life expectancy of the house; and (iii) annual maintenance and repair costs as a percentage of construction cost.

To get reliable and objective estimates for these three factors, we solicited information from architects, contractors, engineers and others who have experience in constructing houses in rural Central Sulawesi. We sought information from eight such people and asked them to submit estimates for constructing a house conforming to our healthy housing standard. We also asked them about the expected service life of such a house and typical annual maintenance and repair costs for such a house. Their responses are presented in table 6.

Table 6 Quotes received from local building contractors, engineers and architects for constructing a house at our healthy housing standard

Respondent	Living space	Cost of Construction	Cost per sq. mt. in IDR	Annual Maintenance Cost
Respondent 1	48m²	IDR 115,000,000	2,395,833	2% – 3 %
Respondent 2	45m²	IDR 65,000,000	1,444,444	10%
Respondent 3- cement walls	36m²	IDR 54,000,000	1,500,000	5%
Respondent 3 - well-joined wood walls	36m²	IDR 35,000,000	972,222	5%
Respondent 4 – cement walls	36m²	IDR 80,000,000	2,222,222	3%
Respondent 4 – well joined wood walls	36m²	IDR 65,000,000	1,805,556	3%
Respondent 5 – cement walls	36m²	IDR 50,000,000	1,388,889	5%–15%
Respondent 5- well joined wood walls	36m²	IDR 35,000,000	972,222	5%–15%
Respondent 6 – cement walls	36m²	IDR 100,000,000	2,777,778	5%-10%
Respondent 6 – well joined wood walls	36m²	IDR 80,000,000	2,222,222	5%-10%

Respondent 7 – cement walls	45m^2	IDR 78,000,000	1,733,333	10%
Respondent 7 - well joined wood walls	45m^2	IDR 65,000,000	1,444,444	10%
Respondent 8	42m^2	IDR 34,000,000	2,395,833	10%

Notes: 1) Those quoting an area of 36 m^2 referred to the Ministerial Decree of Kimpraswil Number 403/KPTS/M/2002 that specified a minimum area of 36 m^2 to be utilized by a maximum of 4 inhabitants. If the dwelling is to be inhabited by more than 4 people, then the living space must be supplemented by an area of 9 m^2 per person.

Since reported house construction costs are for houses of different sizes and qualities, we: (i) calculated cost per square meter of acceptable houses in Table 6, and (ii) used the cost per square meter for acceptable houses with well-joined wood walls rather than houses with cement walls, because they are less expensive yet still acceptable. Thus, we used reported cost for a well-joined wood walled house when a builder indicated this and used 75% of the cost of a cement walled house for builders who only indicated the cost of a cement walled house (because well-joined wood wall houses are approximately 75% of the cost of a cement walled house according to the 4 builders who indicated the cost of both types of houses). This indicates a median cost per square meter of approximately IDR 1,462,000 excluding the unusually expensive house from respondent 6. Therefore, an acceptable house with 48 square meters of living space costs would cost approximately IDR 70 million. Given that builders indicated around 30 years for the service life of these houses, this implies a monthly depreciation cost of around IDR 195,000 (i.e., approximately 70,000,000/30/12).

To estimate the user cost value of a house costing IDR 70 million to construct, it is necessary to also estimate monthly maintenance and repair costs. This varied from 2-3% to 10% according to builders and was 7.5% on average. This is much more than the 1-2% indicated in Anker and Anker (2017) as being typical. This high percent perhaps may have to do with geological vulnerability of the study area being on an earthquake fault line. Given this unusually high reported percentage, we decided to be conservative relative to what builder indicated and use 5% for annual maintenance costs. This implies around IDR 292,000 per month for maintenance and repairs (i.e., approximately 70,000,000 x .05/12).

Taking depreciation costs and maintenance costs together, we estimate the user cost of acceptable healthy housing as IDR 487,000 per month.

6.5 Estimating utility costs

The housing costs need to take into account not only monthly expenditure on housing but also costs of essential utilities like electricity, cooking fuel, and water. Based on interviews and observations during fieldwork, it was established that normally farming families had access to electricity and piped clean water.

Most farmers in the study area subscribe to R.1/450 VA electricity plan. This government plan subsidies electricity with a lower tariff per kilowatts (KWH). On average, we found that farmers spend around IDR 80,000 per month for electricity. For clean water, some farmers in Kulawi pay a monthly fee for maintenance and repairs to the Drinking Water Supply System (*Sistem Penyediaan Air Minum*-SPAM) provided by the government, while in other villages, farmers are not charged the fee. Therefore, the cost of drinking water is minor in the study area. We found in our fieldwork that this cost averaged only around IDR 1,000 per month. For cooking, rural residents use a mix of liquid petroleum gas (LPG) and firewood. Firewood is collected from the garden and nearby forest or purchased, and it is mostly used to cook food that requires a large amount of time and boiling water for drinking. We learned that farmers typically use a 3 kg LPG gas bottle. The ceiling retail price (*HET*) of a 3 kg LPG gas bottle is set by the Governor of Central Sulawesi. The ceiling retail price of LPG is dependent on the distance between supply point and LPG station and is between IDR 18,000 and IDR 29,000 per bottle (or around IDR 25,000 on average). Most of the farmers we spoke to needed 2 bottles of LPG per month and this implies a cost of around IDR 50,000 (i.e., 2 x IDR 25,000 per LPG bottle) per month for LPG. We increased this to IDR 70,000 to take into consideration the value of the time it takes to collect firewood in the forests. Thus, our rapid fieldwork indicates somewhere around IDR 151,000 per month for utilities.

Our rapid assessment estimate of utility costs per month of IDR 151,000 is less than what is indicated using SUSENAS household expenditure data for 2021 for rural Central Sulawesi for households at the 40th percentile of the expenditure distribution. These SUSENAS data indicate that utility costs per month are equal to around 40% of rental value, which implies around IDR 195,000 for utilities given our estimate of the user cost value of local healthy housing of IDR 487,000. In light of this, we decided to use a compromise of IDR 175,000 for utility costs. One reason for the difference between what we found in our fieldwork and SUSENAS values is that firewood costs are much higher in the SUSENAS household survey data.

6.6 Summary of Housing Costs

Our estimate of the housing costs for farmers and other families is IDR 662,000 (IDR 487,000 for rental equivalent plus IDR 175,000 for utilities) per month.

7. NON-FOOD AND NON-HOUSING COSTS

Non-food and non-housing (NFNH) items reflect basic household needs other than food and housing such as for clothing and footwear, health care, education, transport, household furnishings and equipment, recreation, alcohol, communications, insurance, service part of eating out, etc. These are needed to procure a decent standard of life.

We estimate NFNH costs by first estimating the ratio between NFNH expenditures and food expenditures and then multiplying this ratio by the cost of our model diet for our reference family. To estimate the NFNH/Food ratio, we use recent household expenditure data for rural Central Sulawesi from the 2021 Indonesia National Social Economic Survey (SUSENAS) conducted by the Government of Indonesia's Bureau of Statistics (BPS). We do this for households at the 40th percentile of the rural Central Sulawesi household expenditure distribution because such households should be out of poverty but also far from being affluent.

Table 7 indicates the distribution of household expenditures for 2021 more or less according to the international classification of household expenditure for households at the 40th percentile of the household expenditure distribution in rural Central Sulawesi after excluding expenditure for tobacco. Tobacco is excluded in table 9.1, because the Anker Methodology does not consider tobacco to be necessary for decency. However, it is worth noting that this causes a dilemma because tobacco is such an important expenditure in Indonesia with 9.3% of all household expenditures in rural Central Sulawesi being for tobacco. Indeed, Indonesia has the second highest prevalence rate of cigarette consumption (and by far the highest prevalence rate for men) among 43 countries according to OECD.[1] This means that since tobacco is addictive, it is likely that tobacco consumption will continue regardless of its negative health, and as a result it is possible, and even likely, that too little may be left over from our living income estimate for decency.

Using the SUSENAS classification of household expenditures, such households spent 53.7% on food, 18.2% on housing, and 28.1% on NFNH. The ratio of NFNH to Food expense is thus 0.64. 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. We assume that 30% of the cost of meals away from home is for services, profit and other expenses. Subsequently, the NFNH to Food ratio is established as 0.61.

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[1] OECD Library. OECD indicators. Health at a glance: Smoking among adults. accessed November 20, 2023.

Initial NFNH costs are then estimated by multiplying this NFNH/Food ratio by the cost of the model diet estimated earlier. **Accordingly, preliminary NFNH costs are estimated to be IDR 1,562,855 (i.e., 0.61 x IDR 2,562,057).**

Table 7 Percentage distribution of household expenditures for household at 40th percentile of the household expenditure distribution for rural Central Sulawesi in 2021

Major expenditure group	Sub major expenditure group	% total exp. in secondary data	Adjustment explanation	% After adjustment
FOOD		**53.7**		**50.7**
	Food and non-alcoholic beverages	43.8		43.8
	Restaurants and food away from home	9.9	30% transferred to NFNH	6.9
HOUSING		**18.2**		**18.2**
NON-FOOD & NON-HOUSING (NFNH)				
Alcohol		0.1	No adjustment	0.1
Clothing & footwear		2.8	No adjustment	2.8
Household furnishings		0.8	No adjustment	0.8
Education		2.0	No adjustment	2.0
Health care		1.4	No adjustment	1.4

Major expenditure group	Sub major expenditure group	% total exp. in secondary data	Adjustment explanation	% After adjustment
Transportation		6.6	No adjustment	6.6
Communication		3.5	No adjustment	3.5
Recreation &culture		0.5	No adjustment	0.5
Restaurants and food away from home			30% transferred from food	3.0
Ceremonies		0.9	No adjustment	0.9
Miscellaneous goods and services		9.5	No adjustment	9.5
TOTAL NFNH		**28.1**		**31.1**
NFNH/Food ratio		**0.64**		**0.61**

Note: According to SUSSENAS 2021 data, 9.3% of all household expenditures in rural Central Sulawesi is for tobacco. Tobacco expenditure is excluded in this table, as it is not considered a necessary expense in the Anker Methodology.

7.1 Post-checks on education and health care

We carried out post-checks on health care and education to determine whether sufficient funds are included in the preliminary NFNH estimate for these, or whether additional funds are required for these necessary expenditures which the Anker Methodology and most of the world consider to be human rights. Commensurate adjustments would then be made if necessary to the preliminary NFNH estimate to ensure that the amounts included in our living wage and living income estimates do not underestimate the cost of these human rights. There are other items included in the NFNH – such as clothing and footwear, communications and recreation, and furniture and household appliances - which are not submitted to a possible post-check adjustment. The underlying assumption being that

these items of expenditure, though important in their own right, are not as crucial for a basic and decent life and therefore, we consider that the information on household expenditures on these items for households out of poverty provided in the SUSENAS 2021 data suggests a justifiable representation of their costs. Thus, in carrying out the following post-checks, we start by estimating the amounts for these included in the preliminary NFNH estimate. These amounts are indicated in Table 8.

Table 8 Health care and education amounts included in preliminary NFNH estimate

	% of all household expenditures	**% of NFNH Expenditure**	**Amount (IDR/month) in preliminary NFNH (IDR 1,562,855)**
Health care	1.4	1.4/31.1=4.4	70,354
Education	2.0	2.0/31.1=6.9	100,505

In conducting the post-checks, we compared the amounts in table 8 against the information collected from households in our fieldwork to see if any adjustment is necessary.

7.2 Health Care Post-check

Health care expenditure in SUSENAS 2021 includes the cost of inpatient and outpatient care in public health care/health center (*Poskesdes*/*Puskesmas*), public and private hospitals. It also covers the cost of medicine and preventive services. Since 2014, Indonesia has adopted the universal health coverage organized by *Badan Penyelenggara Jaminan Sosial (BPJS) Kesehatan* (Social Security Agency of Health care). Every resident in Indonesia is mandated to participate in BPJS *Kesehatan* and pay contributions that secure eligibility (BPJS Kesehatan, 2020). There are two groups of BPJS's participants: 1) *Penerima Bantuan Iuran* (PBI) that is residents that receive assistance from the government (for disability and the poor) and to whom health care services are provided free of charge; and 2) *Bukan Penerima Bantuan Iuran* (BPBI) that is residents who do not receive any assistance and must pay a monthly fee to be covered by health care services. The BPBI includes self-employed persons (including farmers) who can select class of health care services (class 1, class 2 and class 3). The monthly fee for class 1 is IDR 150,000/person/month, for class 2 it is IDR 100,000/person/month, and for class 3 it is IDR 35,000/person/month or USD 2.33 after

getting a government subsidy of IDR 7,000/person/month. The majority of farmers and their families do not fall into the PBI and are obliged to pay for the health care insurance. This would also be so for families earning a living income. However, the amount that households spend on health insurance is included in the miscellaneous expenditure group in the SUSENAS household expenditure classification – so we do not include mandatory health insurance costs in the health care post-check.

Our interviews with farmers indicate that visits to a public health center (*Puskesmas*) in village cost around IDR 20,000 for common illness (e.g., fever, flu), while visits for chronic problems, such as stomach inflammation, results in charges of around IDR 50,000. This cost includes consultation and medicine. Assuming that each member of the family visits a health center 3 times a year (twice for routine visits and once for a more serious illness), this works out to IDR 90,000 per person per year for health care, or IDR 360,000 for the family of 4 persons per year – which is IDR 30,000 for the family per month. This is less than the IDR 70,354 included for health care in our preliminary NFNH estimate on the assumption that class 3 health insurance is acceptable. Therefore, we did not make any post-check adjustment for health care.

7.3 Education post-check

Education expenditure in SUSENAS 2021 includes school development school contribution/admission fee, tuition fee, the association of parents and teachers (*Persatuan Orang tua Murid dan Guru* - POMG) fee, books and stationery cost and non-formal education cost. Meanwhile, the cost of school uniforms is covered under the clothing and footwear expenditure group. In Indonesia, all citizens must undertake twelve (12) years of compulsory schooling, which consists of six years in primary school and six years at the secondary level. Education is provided free of charge at public schools. Interviews with farmers indicated that their children are largely going to public primary and secondary schools around the villages. They do not have to pay for tuition fees, but some paid for POMG fee in particular schools, which was around IDR 2,000 per child per month or IDR 4,000 per month for reference family of 2 school age children. In addition, farmer households told us that they spend IDR 16,625 on books and stationery per month. Although parents provide pocket money for children to buy prepared foods and beverages (e.g., snacks, juice) sold around the schools (which is between IDR 1,000-2,000 per children per day or IDR 20,000-40,000 per month per child in school), this reduces the cost of preparing meals at home. The monthly expenditure estimated by our rapid post–check is then lower than the amount included for education in our preliminary NFNH estimate of IDR 100,505. Therefore, the amount included for education in the preliminary NFNH estimate is sufficient, and so no addition to NFNH for education is necessary.

8. PROVISION FOR UNEXPECTED EVENTS TO ENSURE SUSTAINABILITY

Since large unforeseen expense and events can quickly throw farmers and others living at a decent standard into poverty and debt from which they may not be able to recover, it is prudent when estimating a living income to add a small margin to cover for contingencies. There are many unexpected events faced by rural families such as illnesses, accidents, natural disasters, etc. The Anker Methodology recommends a 5% margin for emergencies and sustainability, and this percent has been used in many living wage and living income studies in other countries. This percentage implies a provision of IDR 239,346 for emergencies and sustainability.

SECTION III: LIVING INCOME FOR FARMING FAMILIES IN RURAL CENTRAL SULAWESI

9. FAMILY SIZE NEEDING TO BE SUPPORTED BY LIVING INCOME

Living income is a family concept. Income needed should cover basic needs of all members of the family. It is, therefore, necessary to determine an appropriate family size for rural Central Sulawesi, when estimating a living income. We use a family size of 4 persons (two adults and 2 children) to estimate our living income for the regency of Sigi and rural Central Sulawesi. This family size is based on information on: (i) total fertility rate and child mortality rate and thus the number of surviving children that women in rural Central Sulawesi are now typically having; and (ii) average household size in Central Sulawesi.

The information on total fertility rate (TFR), and the under-5 mortality rate (U5MR) was gleaned from three sources: (i) the report of the Demographic and Health Survey (DHS) of 2017; (ii) the Population Census of Central Sulawesi 2020; and (iii) the BPS publication "Sigi in Numbers" (*Sigi dalam Angka*). Given that the DHS provides information for the whole of Indonesia while the other two publications are more targeted to the region, the information in the latter were given precedence in the calculation of the reference family size.

The 2017 DHS puts the average household size in rural Indonesia at 3.8, while the 2020 BPS publication indicates an average household size of 4.0 for Central Sulawesi.

The Population Census report for Central Sulawesi gives a total fertility rate of 2.32 for Central Sulawesi with the U5MR being 33 per 1,000 births. This implies a surviving number of children of slightly over 2 and so an average family size of slightly more than 4.

On the basis of this information on the number of surviving children per woman and average household size, we decided to use a reference family size of 4 (2 adults and 2 children) which seems reasonable for our study location. This family size is also consistent with data collected during our fieldwork where the average household size of the families we visited was found to be approximately 4.0.

SECTION IV: ESTIMATING GAPS BETWEEN LIVING AND PREVAILING INCOME

10. FAMILY INCOME LADDER

This section indicates how our estimated living income compares with other important comparators such as the Indonesia poverty line, the World Bank poverty lines for lower-middle income country and upper-middle income countries since Indonesia only became an upper-middle income country in 2023, prevailing household income in the regency, and what family income would be if working family members earned the regency minimum wage. For 2022, the poverty line for rural Central Sulawesi waş IDR 525,665 per person per month or IDR 2,102,660 per month for our reference family of 4 persons. The World Bank 6.85 PPP international poverty line in comparable purchasing power parity dollars for an upper-middle income countries was IDR 4,099,625.[2] Meanwhile, the minimum wage of Sigi regency was IDR 2,390,739 in 2022, which implies a family income of IDR 3,825,181 if 1.60 family members earn the minimum wage.

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[2] Purchasing power parity (PPP) factor is the number of units of a country's currency required to buy the same amounts of goods and services in the domestic market as U.S. dollar would buy in the United States. It was 5,067 in 2021.

Table 9 Rural Central Sulawesi Living Income Ladder (IDR per month), 2022
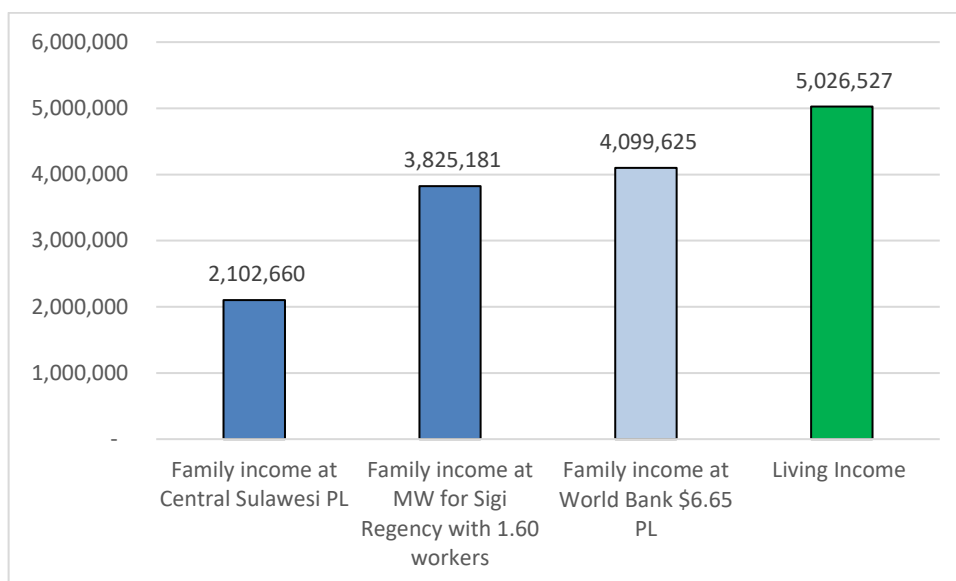
These comparisons are captured in Figure 9 that graphically compares our living income to other family income benchmarks. It shows that our living income is higher than all of the other comparators. It is more than double the family income at the rural Central Sulawesi poverty line, 31% higher than the income that a typical family with 1.60[3] workers would earn at Sigi regency's minimum wage, and 23% higher than the World Bank's 6.85 PPP per day poverty line for an upper-middle income country such as Indonesia. These differences are notable despite the cautious way in which we have estimated the household living income for rural Central Sulawesi.

11. CONCLUSION

This report has estimated a living income for rural Central Sulawesi of IDR 5,026,855 (USD 335) for a typical size family of 4 (two adults and 2 children). This was estimated using conservative assumptions that would none-the-less allow residents of rural Central Sulawesi – including its many cocoa farmers and their families - to attain a basic but decent standard of living. This living income allows for a low-cost nutritious diet that meets WHO and FAO recommendations, healthy housing that meets minimum international and national principles and standards, access to adequate health care, and education of

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[3] See the Annex for the calculation of number of full-time working members in the household.

children through secondary school as well and all other needs at an acceptable and decent level of existence based on current norms and expectations.

Details of the living income estimate for rural Central Sulawesi are provided in Table 10. Table 11 provides some of the key assumptions used. These tables provide a synopsis of the estimation process. How each cost was estimated has been explained in the relevant sections of the paper. Thus, for example, the cost of our model diet was estimated by including acceptable cheaper and nutritious food items, such as medium quality white rice instead of premium or specialty rice; water spinach, spinach, cabbage, tomato, and pumpkin for vegetables; and banana, papaya and watermelon for fruits. This model diet was at the same time also sensitive to only including food items that are widely consumed by and palatable to the inhabitants of the area. Similarly, the estimation of housing costs was done for owner-occupied housing at our healthy housing standard which was based on recommendations of international organizations and the ministerial regulation (i.e., *Keputusan Menteri Permukiman dan Prasarana Wilayan No. 403/KPTS/M/2002*) to ensure that dwellings and associated necessities of life conform to a prescribed basic quality standard.

Our living income is 31% higher than the family income if its members earned the minimum wage and 23% higher than family income at the World Bank poverty line for an upper-middle income country such as Indonesia.

It is clear that bridging the gap to the living income, for all farming households in rural Central Sulawesi, including for cocoa farmers, is a matter to be taken up by all of the actors in the value chain, procurement and retail. Government too, has a certain responsibility in this matter through the provision of necessary and adequate social policies to reduce the cost of living as well as providing technical assistance to farmers. As a starter, the government could consider supporting farmers in replanting the cocoa trees by providing quality seeds and good agriculture practices (GAP). We believe that any effort in this direction is better than no effort at all. Any effort – or efforts - that work toward creating good agriculture business would be advantageous for farmers and families because this is required as a basic feature of well-being.

Table 10 Summary calculations of living Income for rural Central Sulawesi, 2022

	IDR	USD
PART I: FAMILY EXPENDITURE		
Food cost per month for reference family (1)	**2,562,057**	**170**
• Food cost per person per day	21,058	1.40
Housing costs per month (2)	**662,000**	**44**
• Rent equivalent per month for acceptable housing	487,000	32
• Utility costs per month	175,000	12
Non-food non-housing (NFNH) costs per month taking into consideration post-check adjustments (3)	**1,562,855**	**104**
• Preliminary estimate of NFNH costs per month	1,562,855	104
• Health care post-adjustment check	0	
• Education post adjustment check	0	
Additional amount (5%) for sustainability and emergencies (4)	239,346	16
TOTAL LIVING COSTS (LIVING INCOME) PER MONTH FOR BASIC BUT DECENT LIVING STANDARD FOR REFERENCE FAMILY SIZE (5) **(5=1+2+3+4)**	**5,026,257**	**335**

Table 11 Key values and assumptions

Key Values and Assumptions	
Study date	October 2022
Exchange rate of Indonesian Rupiah to USD	15,000
Number of full-time workers per couple	1.60
Reference family size	4
Preliminary NFNH to Food ratio	0.61

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ANNEX: ESTIMATING LIVING WAGE

To reiterate, living income - being a family concept - is the amount that is needed per month over the year to allow a household to procure for itself the basic necessities of life that would allow all family members within it to have a basic but 'decent' standard of living. As mentioned in this report, this decent standard of living includes a multitude of factors ranging from adequacy of nutritious food, healthy housing, access to proper health care, education for children through secondary school, and many other items that would allow a functionality reflecting basic decency accorded to all citizens.

The estimate of a living income in rural Central Sulawesi was determined in this report to be **IDR 5,026,257 (equivalent to USD 335)** per month for a reference family size of 4 persons. The reference family size was established through an analysis of data on total fertility rates, child mortality rates and average household size. The main sources of this information were the Demographic Health Survey (DHS) of 2017, the Population Census, Central Sulawesi Supplement (Sensus Penduduk 2020; Provinsi Sulawesi Tengah), and the BPS publication 'Sigi in Numbers' (Sigi dalam Angka).

Although it is accepted that a vast majority of the households in rural Central Sulawesi rely on farming pursuits for their livelihoods, it cannot be taken for granted that farming is the only source of income. Social differentiation in the rural areas would suggest that farms differ by size and it may be that some farms fall below a size threshold of landholding that would allow them to generate a living income. Under the circumstances, many farm families have to rely on wage income, either to supplement earnings from farm produce or as a principal source of remuneration. In addition, many rural households do not own land and so have to rely to a large extent on wage labor for their income.

The living income estimate allows us to determine a living wage. However, to do this we first have to calculate the number of full-time working members in the reference family.

Number of Full-time Equivalent Workers in Family Providing Support

It is appropriate to expect that more than one adult in a family provides financial support through work. The number of full-time working adults in our reference family is calculated using the following formula:

$$Probability\ of\ full-time\ equivalent\ work\ per\ person\ ages\ 25-59$$
$$= (LFPR\ for\ ages\ 25-59) \times (1.0 - Unemployment\ rate\ for\ ages\ 25-59) \times (1.0 - (Part-time\ employment\ rate/2))$$

This may be explained as follows. The number of full-time equivalent workers per household is based on age and sex specific data for rural Central Sulawesi province on: (i) labor force participation rates (LFPR); (ii) unemployment rates; and (iii) number of hours worked to determine the extent of part-time employment. This information is gleaned from the Indonesian Bureau of Statistics (BPS) publications *Keadaan Pekerja Provinsi Sulawesi Tengah 2022* (Worker Conditions Central Sulawesi Province) and *Indikator Ketenagakerjaan; Provinci Sulawesi Tengah* (Employment Indicators; Central Sulawesi Province) August 2020 and provided in the table below. The labor force participation rates for men and women aged 25 to 59 years were calculated and the average LFPR for a couple in rural Central Sulawesi was determined to be 73.2%. Similarly, the open unemployment rate in the rural areas of the province for age group 25-59 years old was 3.1% in 2020, and the part-time employment rate (less than 35 hours per week) was 32.0%. Using the rates noted above and indicated in the table below, we estimated that the number of full-time equivalent workers in our reference family in rural Central Sulawesi is 1.60, where one adult in the family is a full-time year around worker.

Table A1. Estimate of number of full-time equivalent workers in reference family in rural Central Sulawesi

Variable	Total
LFPR	73.2%
Open unemployment rate	3.1%
Part-time employment rate (% of employed working less than 35 hours per week)	32.0%
Estimated percentage of prime age adults working full-time = LFPR × (1-unemployment rate/100) × (1- (Part-time employment rate/100/2))	0.732 x (1 - 0.031) x (1 - [0.32 x 0.5]) = 0.596
Number of full-time equivalent workers per family	1 + 0.60 = 1.60

Source: BPS, *Worker Conditions; Central Sulawesi Province 2022 and* BPS, *Employment Indicators; Central Sulawesi Province 2020*.

Thus, we use 1.60 full-time equivalent workers per household to estimate our living wage for rural Central Sulawesi. The net living wage for a basic but decent existence for a family

is then estimated by dividing the estimated living income by the number of full-time equivalent workers in the reference family. Applying the formula given above, ***the net living wage per worker in rural Central Sulawesi is calculated as IDR 3,141,411 ($209).*** This should be understood as the necessary take-home pay for a worker and less than the gross wage necessary, which includes income taxes and other mandatory payroll deductions.

Mandatory payroll deductions and income tax and gross living wage

There are five elements of mandatory deductions[4] for payroll processing in Central Sulawesi, which are indicated below:

i.   *Income tax* is levied at a progressive rate and is 5% of gross wage starting from salaried income of IDR 60 million per month;

ii.   *Pension fund* annuity for employees is 1% of gross wage;

iii.   *Social security* contributions are deducted at 2% of gross wage;

iv.   *Health insurance* is levied at 1% of gross wage; and

v.   *Housing fund* is levied at 2.5% of gross pay.

Given that no income tax is levied as gross living wage falls below the IDR 60 million threshold and the taking into account other mandatory payroll deductions that amount to IDR 218,387, ***the gross living wage is IDR 3,359,717 ($224)***. Counterposed to this living wage is the minimum wage for Central Sulawesi[5] which was IDR 2,390,739 ($159) as of October 2022, which reveals our estimated living wage (gross) to be 41% higher.

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[4] Payroll in Indonesia https://www.usemultiplier.com/indonesia/payroll. Also see: Payroll and Benefits Guide: Indonesia, https://www.papayaglobal.com/countrypedia/country/indonesia/

[5] *Guide to Indonesia's minimum wage by region*

https://www.humanresourcesonline.net/guide-to-indonesia-s-minimum-wage-by-region-2022