

Household wellbeing in rural Papua New Guinea

Analysis from the 2023 PNG Rural Household Survey

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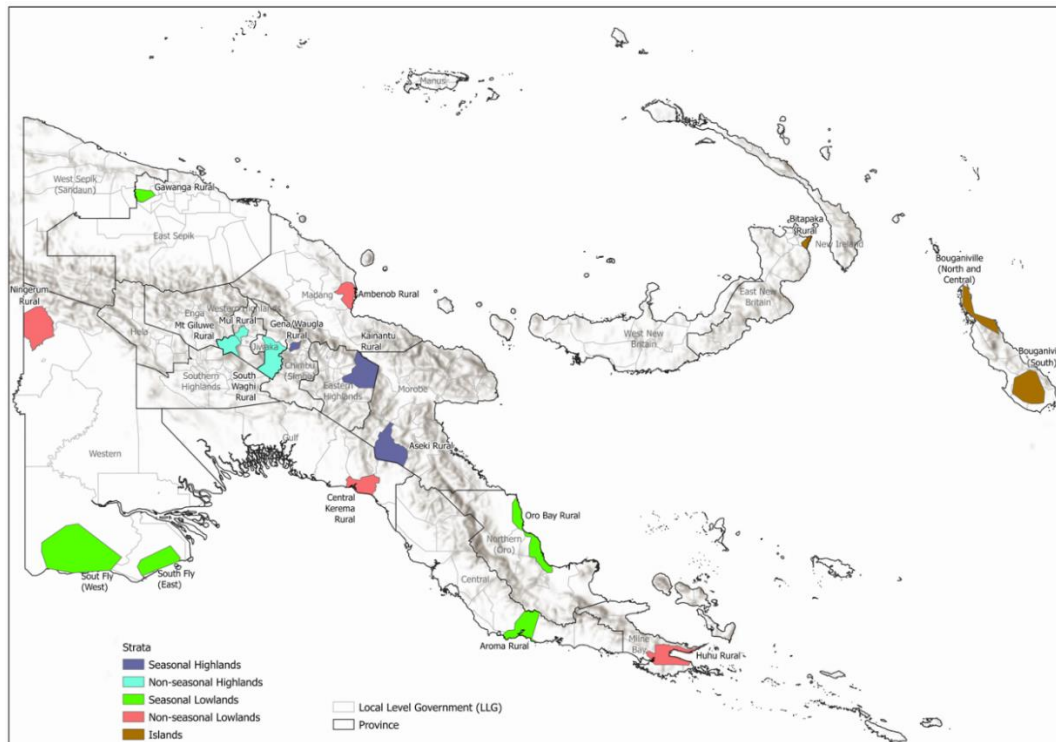
Key Messages

- ▶ The PNG 2023 Rural Household Survey collected detailed consumption and expenditure data, which allows the [first cost of basic needs poverty assessment since the 2009/10 Household Income Expenditure Survey](#). However, it is important to note that the survey is not nationally representative.
- ▶ 43% of sample individuals are estimated to be poor relative to the [standard cost of basic needs poverty lines](#) (poor is defined as those who live in households that do not have sufficient resources to acquire calorie adequate diets while also meeting basic non-food needs).
- ▶ 64% of sample individuals are estimated to be poor relative to the [healthy diet poverty lines](#) (poor is defined as those who live in households that do not have sufficient resources to meet healthy dietary guidelines while also meeting basic non-food needs).
- ▶ The healthy diet poverty line incorporates a higher share of nutrient dense food groups (vegetables, fruits, meat and fish, etc.) and thus is about 1/3 more costly than the standard poverty line.
- ▶ On average, households within the survey sample over-consume staples and fats compared to healthy guidelines and under-consume vegetables, fruits, animal source foods, and nuts/pulses.
- ▶ Smaller households and households with greater production assets (land and labor), education completion, market access, and income diversification (via non-farm businesses and migrant remittances) are associated with higher household consumption-expenditure (income proxy).
- ▶ Among households engaged in cash crop sales (i.e., cocoa, coffee, betelnut, horticulture) only cocoa farming households have significantly higher consumption-expenditure (income proxy).
- ▶ Targeted safety net and community asset building programs could reduce rural poverty by increasing agriculture productivity, supporting rural-urban market linkages, improving demand for rural goods, and incentivizing off-farm employment.
- ▶ Facilitating remittance transfers from migrants to rural households and facilitating access to primary education could improve rural incomes in the short and long term, respectively.

Data

Poverty and income analysis reported in this study are conducted using the PNG Rural Household Survey (PNG-RHS) implemented by the International Food Policy Research Institute (IFPRI). This survey of 2,699 rural households across 14 provinces gathered detailed food and non-food consumption and expenditure data between May and December 2023. To ensure that analyses from the survey could be generalizable and broadly applicable beyond the survey areas, we used elevation and rainfall seasonality to randomly select households from five agro-ecological zones (Figure 1). While the PNG-RHS is not statistically representative of all rural areas of PNG, it provides the most expansive quantitative update to rural welfare measurements in PNG in nearly 15 years.

Figure 1: 2023 PNG Rural Household Survey sample selection



Note: Administrative boundaries from National Statistical Office, Papua New Guinea; and hill shade from Environment System Research Institute (ESRI). **Source:** Created by authors.

Poverty lines

The cost of basic needs poverty methodology is the standard approach used to estimate poverty in low- and middle-income countries. The cost of basic needs poverty line aims to reflect the cost of a food basket associated with achieving good health (defined by a nutrition standard), along with the cost of other essential non-food needs required to attain a minimum standard of living (Ravallion, 1998). For the analysis discussed here, we calculate two poverty lines.¹

1. **The standard cost of basics needs poverty line** is calculated from a basket of foods and non-foods that households with income near the poverty line typically consume. In this approach, nutrition is satisfied by ensuring the food basket meets the calorie needs of a moderately active 30-year-old adult in PNG —2,432 calories per day.²

2. **The healthy diet poverty line** is an extension of the standard approach where the healthy diet food poverty line meets the 2,432-calorie requirement and the food basket is set to also meet specific food group thresholds that align with food group guidelines for good nutrition (Mahrt et al., 2022). We adapt Indonesia’s official dietary guidelines to PNG’s food environment to formulate a PNG-specific healthy diet nutrition standard (Ministry of Health of the Republic of Indonesia, 2014). This PNG healthy diet standard is defined for adults aged 30–49 (Figure 2).

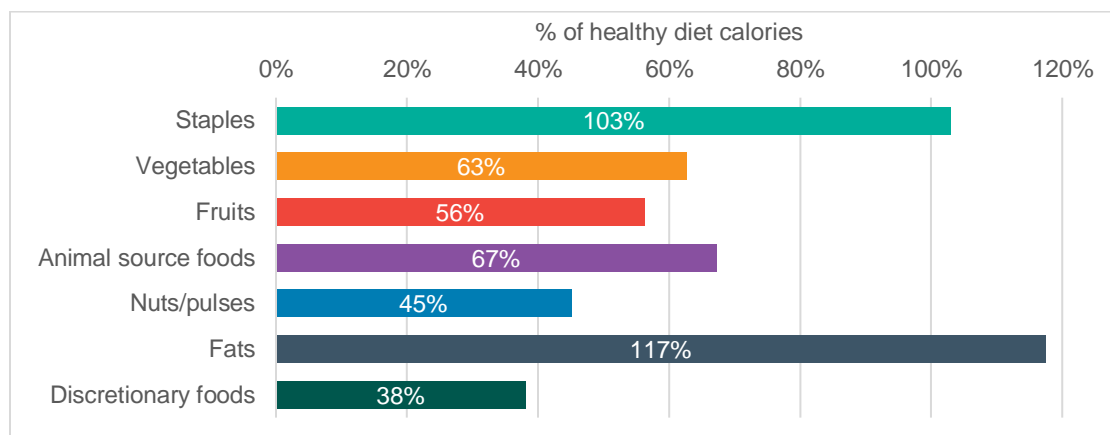
Figure 2: PNG healthy diet nutrition standard, calories per adult (aged 30-49 years) per day

Staples	Vegetables	Fruits	Animal source foods	Pulses/Nuts	Fats	Discretionary Foods
1072 kcal	88 kcal	125 kcal	180 kcal	240 kcal	250 kcal	100 kcal

Source: Adapted from the Indonesia food-based dietary guidelines (Ministry of Health of the Republic of Indonesia 2014) and authors’ calculations.

On average, households within the survey sample over-consume calories from staples and fats compared to healthy diet guidelines and consume about 2/3 or less of the recommended calories for vegetables, fruits, animal source foods, and nuts/pulses (Figure 3).

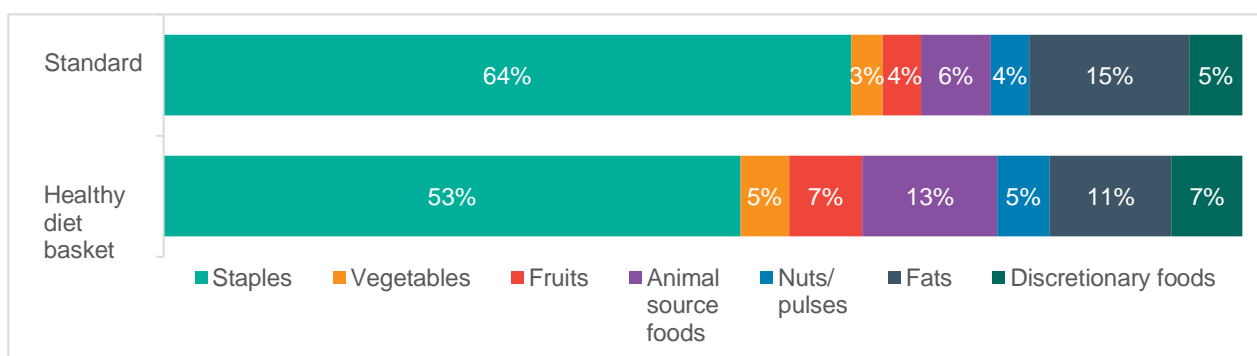
Figure 3: Percentage of healthy diet calorie recommendations for each food group consumed by sample households (per adult equivalent/day)³



Source: Authors’ calculations using the PNG-RHS (2023).

While both the standard and the healthy diet poverty lines are calculated using typical food consumption choices of households near the poverty line, the standard food poverty line is only aligned with the 2,432 calorie target, whereas the healthy diet poverty line is also aligned with defined food group thresholds (Figure 2). As a result, the healthy diet poverty line incorporates a higher share of nutrient dense food groups (vegetables, fruits, animal source foods, and nuts/pulses), which are relatively more expensive per calorie than staple foods and fats (Figure 4). Thus, on average, the healthy diet poverty line is about 1/3 more costly than the standard poverty line (Table1).

Figure 4: Calorie shares by food group of the standard and healthy diet food basket defined by the respective poverty lines



Source: Authors' calculations using the 2023 PNG-RHS and food composition tables (Dignan et al. (2004), Scott (2019), Shaheen et al. (2013), TKPI (2019), and USDA (2016)).

Table 1: Poverty lines, by agro-ecological zone (PGK/adult-equivalent/day)³

	Standard food poverty line	Healthy diet food poverty line	Standard total poverty line	Healthy diet total poverty line
Seasonal highlands	6.96	8.87	8.26	10.36
Non-seasonal highlands	6.69	8.62	7.99	10.09
Seasonal lowlands	5.90	8.00	6.99	9.35
Non-seasonal lowlands	6.23	9.46	7.43	11.06
Islands	6.32	9.09	7.85	10.93

Note: 1.00 US dollar = 3.60 PGK in August 2024 (IMF 2024). See Mahrt et al. (2025) for the utility consistent sub-national poverty line methodology. **Source:** Authors' calculations using PNG-RHS (2023).

Prevalence of poverty

Households are considered poor if their consumption-expenditure (income proxy) per adult equivalent falls below the poverty line.³ The prevalence of poverty is calculated as the share of sample individuals who live in poor households. About 43% of individuals in the sample are poor relative to standard cost of basic needs poverty lines. Approximately, 64% of sample individuals are considered poor relative to healthy diet poverty lines, reflecting the cost of more nutrient dense foods incorporated into the healthy diet poverty line threshold. This means that approximately 1/5 of sample individuals are not poor when using standard poverty line thresholds but live in households that lack the resources to secure a healthy diet without sacrificing basic non-food needs (are poor using the healthy diet poverty line thresholds).

The seasonal highlands agro-ecological zone has the highest share of sample individuals who are poor in terms of both standard (63%) and healthy diet (76%) poverty measurements. The standard poverty rate is similar in all other agro-ecological zones (about 40%). However, healthy diet poverty is higher in nonseasonal lowlands and islands (about 68%) compared to non-seasonal highlands and seasonal lowlands (about 57%). Two factors contribute to higher poverty rates in the seasonal highlands: (1) on average, households in the seasonal highlands have lower consumption-expenditure compared to households in other agro-ecological zones; and (2) relatively higher costs of staple and animal source foods in the seasonal highlands food baskets drive up both the standard and healthy diet poverty lines.

Table 2: Poverty headcounts and gaps, by agro-ecological zone

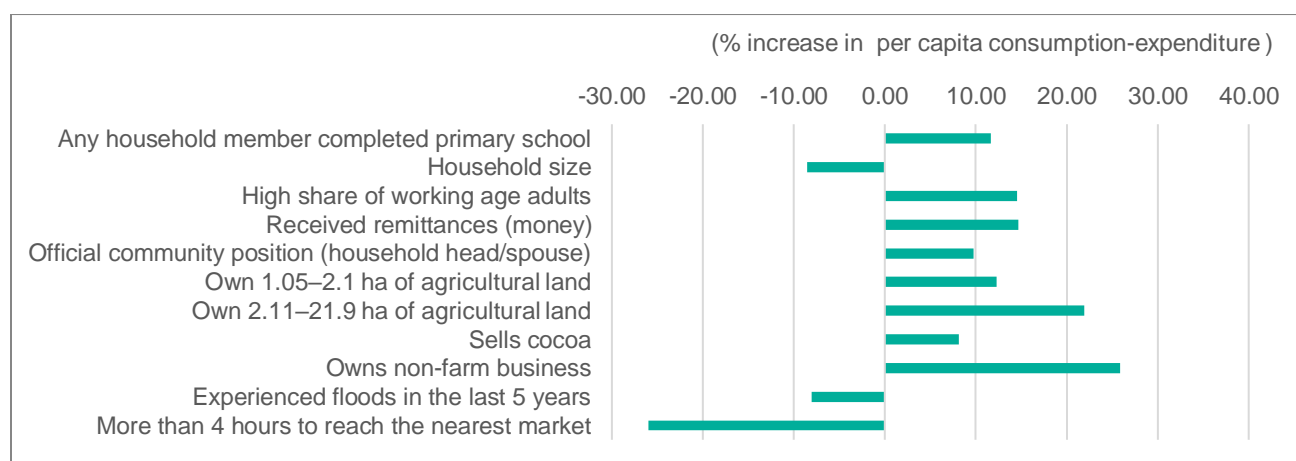
	Poverty headcount (% of sample population)		Poverty gap (%)	
	Standard poverty line	Healthy diet poverty line	Standard poverty line	Healthy diet poverty line
All households	43	64	15	25
Seasonal highlands	63	76	27	36
Non-seasonal highlands	40	57	12	19
Seasonal lowlands	39	58	13	22
Non-seasonal lowlands	39	67	11	25
Islands	42	69	13	25

Source: Authors’ calculations using PNG-RHS (2023).

Factors associated with household consumption-expenditure

To better understand household poverty, we explore a variety of household characteristics that are associated with per capita consumption-expenditure (income proxy) outcomes. Smaller households and households with greater production assets (land and labor), education completion, market access, and income diversification (via non-farm businesses and migrant remittances) are associated with higher household consumption-expenditure. Among households engaged in cash crop sales (i.e. cocoa, coffee, betelnut, horticulture) only cocoa farming households have significantly higher (8%) consumption-expenditure. Households who experienced flooding have about 8% lower consumption-expenditure compared to those who did not.

Figure 5: Factors associated with household per capita consumption-expenditure



Note: Figure displays statistically significant results of an ordinary least squares regression. Agriculture land ownership is compared to households that report owning less than 1.05 ha of land. Households above median share of working age adults have at least one working adult aged 16–64 per about 2 (1.66) household members. See Mahrt et al. (2025) for complete regression details. **Source:** Authors’ calculations using PNG-RHS (2023).

Policy recommendations

Household welfare in rural PNG is shaped by a complex set of factors that echo other global and diverse country case-studies (Pham et al. 2021; NSO and ICF 2019; Gibson 2012). As policymakers and the international development community increasingly prioritize nutrition outcomes, incorporating healthy diets into poverty measurements has important implications as to what it means to be poor. Particularly for PNG and other nations that are dependent on subsistence agriculture and low-cost food imports, the urgency of policies aimed to make healthy diets more accessible to poor households is critical (Global Nutrition Report, 2022).

The results from this analysis illustrate the need for policy interventions to be tailored to support local conditions. Our analysis suggests that facilitated access to a market is one of the most important indicators explaining greater household consumption-expenditure (income proxy). Households that live in remote areas (more than 4 hours from a market) are associated with 26 percent less consumption-expenditure compared to households that are within 2 hours of a market. Building and maintaining rural feeder roads and bridges that connect more remote populations to secondary and tertiary market centers would have significant impacts on rural welfare.

This analysis suggests that a pilot social safety net program in more remote (greater than 4 hours from a market) and flood prone areas, where household consumption-expenditure is significantly lower, may provide important insights on the most efficient mechanisms to build resilience among PNG's vulnerable population. Including a community asset building component (e.g., building and maintenance of rural feeder roads and bridges) in a social safety net program could be tested to understand how best to support rural-urban market linkages, improve demand for rural goods, and incentivize off-farm employment via development of specialized value chain products and services (e.g., packaging, handling, transport, etc.).

Understanding that a social safety net program requires significant resourcing (including financial, logistics and time), there are other opportunities to improve rural welfare within the country. Facilitating remittance transfers from migrants to rural households via electronic banking services and easing banking costs for rural households may increase remittance payments. In addition, facilitating access to primary education via reduced school fees and increasing school attendance via school feeding programs could provide greater income earning opportunities for better educated households, as well as (if designed properly) fill some of the nutrition gap demonstrated by the large share of individuals that live under the healthy diet poverty line presented in this paper.

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ENDNOTES

¹ See Mahrt et al. (2025) for the full poverty line methodology.

² We adopt the daily dietary energy needs by sex and age described in Mahrt et al. (2019) for Myanmar given similarities in BMI, weight and height data reported for PNG (Benjamin et al., 2007).

³ We calculate adult equivalency scales for each household member based on age and sex-specific daily dietary energy requirements relative to a reference adult (the average of moderately active 30-year-old males and females – 2,432 calories).

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