Regional adaptation of a living income benchmark

A methodology note for a simplified living income benchmarking approach, piloted in Uganda

WAGENINGEN UNIVERSITY & RESEARCH

Hanns R. Neumann Stiftung

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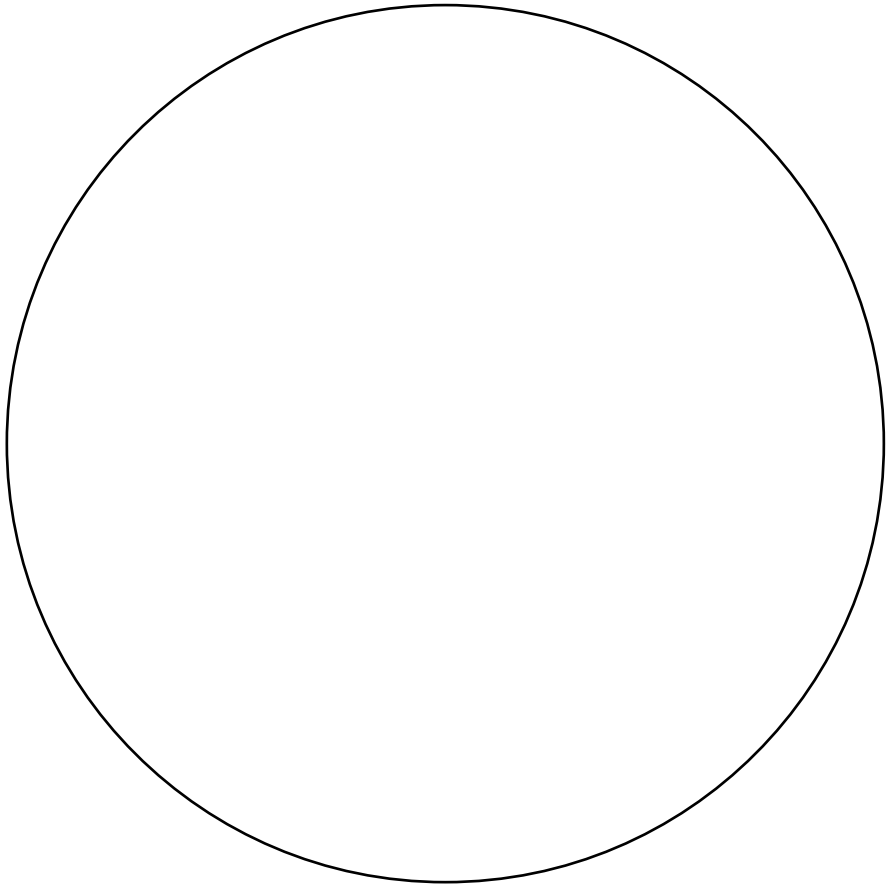

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This report presents a simple, scalable methodology for estimating regional living income benchmarks by extrapolating from existing benchmarks using local price differences in food and housing costs. Piloted in Uganda's coffee sector, the approach generated two extrapolated living income benchmarks for the Rakai district. The extrapolated benchmarks better captured regional cost of living in the district. A validation exercise using primary food price data demonstrated that the approach can approximate local food costs with reasonable accuracy. Because the methodology relies on existing benchmarks and publicly available price data, it provides a practical and low-cost approach for estimating living income benchmarks in areas where none currently exist. However, the findings also show that extrapolated estimates are highly dependent on the reference benchmark chosen and inherit the methodological assumptions embedded in the original studies. Further testing in contexts with greater dietary diversity and systematic stakeholder validation are recommended to strengthen the robustness and applicability of the approach.

Keywords: living income, living income benchmark, coffee, Uganda, farmer livelihoods

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Executive summary

Living income benchmarks are increasingly used by governments, companies, certification schemes, and development organisations to assess whether farming households earn enough to achieve a decent standard of living. However, the high cost and complexity of conducting benchmarking studies mean that at the subnational level, there are few benchmarks per country. This creates an important evidence gap, particularly in countries where the cost of living differs substantially between regions.

This methodology note presents a practical approach for estimating regional living income benchmarks by adapting existing benchmarks to new locations using price differences. Rather than conducting an entirely new benchmarking study for a region in focus, we have adjusted key components of an existing benchmark — food costs and housing costs — to reflect variation in regional living costs while preserving the original benchmark structure and assumptions. The approach is designed to be simple, scalable, and replicable, enabling organisations to generate indicative regional benchmarks at relatively low cost using publicly available data.

The methodology was developed and piloted in Uganda's coffee sector through a collaboration between Wageningen University & Research, HereWeGrow, and Hanns R. Neumann Stiftung. Rakai district was selected as the primary pilot area because of its relevance to coffee production, the absence of an existing benchmark, and the availability of suitable price data. Two existing rural Ugandan benchmarks served as reference points: the Global Living Wage Coalition benchmark for the Lake Victoria Basin, and Hänke's living income benchmark for the Rwenzori vanilla-producing region.

The proposed methodology consists of three sequential steps. First, an appropriate reference benchmark is selected based on methodological quality, transparency, and similarity to the target region to the extent possible. Second, regional price ratios for food and housing are calculated using publicly available household expenditure data and price data from the target region. Third, these price ratios are applied to adjust the food cost and housing cost components in the existing benchmark. The final benchmark therefore reflects regional differences in living costs while maintaining consistency with the methodological assumptions of the source benchmark.

To preserve simplicity and scalability, the approach intentionally retains several core assumptions from the original benchmark. The reference family size, model diet, housing costs, and non-food, non-housing (NFNH) cost-to-food cost ratio are taken directly from the original benchmark. Consequently, the adapted benchmark reflects only regional differences in living costs, rather than changes in consumption patterns or household characteristics.

The pilot demonstrated that the methodology captured meaningful regional variation in living costs between the original living income benchmark region and the pilot region (Rakai district). Both extrapolated benchmarks indicated substantially lower living costs in Rakai district than in their respective source regions, reflecting lower observed prices for most food items and housing. Relative to the original benchmarks, total living costs per household member were an estimated one-third lower when extrapolated from the Lake Victoria Basin benchmark, and nearly half as low when extrapolated from the Rwenzori benchmark. These findings are consistent with available socioeconomic evidence indicating that Rakai is a predominantly rural district characterised by relatively low housing costs and lower food prices.

To assess the robustness of the approach, the extrapolated food costs were validated using independently collected primary food price data from Rakai district. Results showed only limited differences between food costs estimated using publicly available secondary data and those derived from a primary survey, suggesting that secondary data can reliably approximate local food prices. This finding supports the use of publicly available datasets as a cost-

effective alternative to extensive primary data collection when adapting regional living income benchmarks.

An additional pilot conducted by Akvo further tested the methodology in Mityana district and the Mount Elgon region using primary food price data collected through a household survey. The methodology consistently captured expected differences in relative living costs across locations, with Mityana exhibiting higher estimated costs than Mount Elgon and Rakai. These results provide further evidence that the approach can identify meaningful regional variation while remaining operationally feasible.

At the same time, the study highlights several important methodological considerations. Most notably, the choice of reference benchmark substantially influences the resulting extrapolated benchmark. Although both Ugandan benchmarks used in this study were based on the Anker & Anker methodology, several methodological choices differed, particularly regarding the estimation of housing costs and NFNH costs. These differences were preserved during extrapolation, resulting in adapted benchmarks that remained substantially different even after adjusting for price differences. The findings therefore demonstrate that extrapolated benchmarks inherit not only the cost structure but also the methodological assumptions and potential biases of the original benchmark on which they are based.

Several limitations should be recognised. The methodology assumes similar diets, housing standards, family composition, and expenditure patterns across regions. These assumptions may not hold in countries with greater cultural, dietary, or socioeconomic diversity. In addition, the quality of the extrapolated benchmark depends on the availability and reliability of local food and housing price data. Housing price estimation remains particularly challenging in contexts where formal rental markets are limited, requiring the use of proxy measures that may reduce precision.

Despite these limitations, the study concludes that the proposed methodology offers a valuable and practical solution for organisations that require a regional living income benchmark where no benchmark exists. Compared with conducting a full benchmarking study, the approach substantially reduces costs while producing estimates that better reflect local living conditions than relying on national or distant regional benchmarks alone. As such, the approach can improve the accuracy of living income gap assessments, support monitoring and evaluation, and inform sustainability programs and decision-making.

Further validation of the methodology across a wider range of countries and commodities is recommended. Future applications should incorporate stakeholder validation to ensure adapted benchmarks accurately reflect local perceptions of a decent standard of living. Additional testing in countries with greater dietary diversity and more varied socioeconomic contexts would further strengthen confidence in the methodology and clarify the conditions under which it can be most effectively applied.

1 Introduction

1.1 Background

Given the increased attention paid to living incomes in both producing and consuming countries as a key metric for improving smallholder livelihoods in the coffee sector, and the heterogeneity of Ugandan smallholder coffee farmers in terms of their cost of living, Hanns R. Neumann Stiftung (HRNS) and HereWeGrow (HWG) commissioned Wageningen University & Research (WUR) to develop a simple, scalable methodology for estimating regional or district-level benchmarks. Living income benchmarks are measures of the income required for a household to achieve a decent standard of living in a specific geographic context. These benchmarks reflect the net income a household needs to earn to afford a decent standard of living. In this regard, they serve as reference values against which actual household incomes can be compared to assess the extent of the gap between current income and the benchmark, and to guide interventions aimed at closing that gap. As such, they are critical tools for sustainability programs, researchers, and monitoring and evaluation (M&E) specialists, particularly those working in agricultural sectors, such as coffee, where farmer incomes are often below living income levels.

1.2 Objective of this methodology note

The aim of this study was to design an easy-to-replicate and scalable approach for estimating living income benchmarks at the district or regional level in areas where no benchmark exists, by extrapolating from an existing benchmark. In doing so, we aimed to make the approach scalable and applicable to more disaggregated geographic levels, and extendable to other regions of interest. Benchmarks were derived from an existing living income benchmark for a given country without additional data collection.

To fulfil the criteria of replicability and scalability, we developed a methodological framework based on several assumptions that make the extrapolated living income benchmarks less precise than those obtained via original studies. Hence, these extrapolated benchmarks should not be viewed as substitutes for existing living income benchmarks. Rather, they serve as complementary tools to inform policy decisions, support project monitoring and evaluation, and guide project-level decision-making in areas that do not have a living income benchmark. In addition, they provide a useful high-level overview of region-by-region variations in the costs associated with achieving a decent standard of living in a country.

We piloted this method by estimating a living income benchmark for the Rakai district in Uganda based on two existing living income benchmarks in Uganda.

1.3 Document structure

In Chapter 2, we present the detailed methodological framework, outlining each step of the regional adaptation approach. Chapter 3 presents the results of the pilot, which extrapolated two benchmarks for the Rakai district. This chapter also includes findings from an additional test using primary food price data in Rakai provided by HWG, and a test conducted by Akvo, which involved collecting primary food price data and applying the approach in two other areas of Uganda — the Mt Elgon region and the Mityana district.[1] The report concludes with key takeaways and recommendations on how to further test and refine the approach.

[1] Akvo is a non-profit organisation that specialises in data collection and analysis in the water, agriculture and climate sectors. Akvo was hired by the Global Coffee Platform (GCP) in 2025 to collect data in specified locations, to establish a baseline for the GCP Collective Action in East Africa. More detail is provided in Section 3.5.

2 Methodological framework

2.1 Methodological approach

The approach developed by WUR for regional (or other relevant subnational unit) living income benchmarking is a price-based methodology that leverages an existing benchmark in a country as its foundation. It adjusts key cost components from the existing benchmark to reflect price differences between the original benchmarked location and the target district or region.[2] It does so by calculating price ratios between the two locations, maintaining the structure of the original benchmark — specifically, the defined cost categories of food, housing, and non-food, non-housing — while adjusting actual costs for housing and food. Costs are based on publicly available price data. Costs that fall under the third cost category, non-food non-housing (NFNH), are adjusted using a ratio derived from the original benchmark.

In this method, we assume that inputs related to the model diet (e.g., the quantity and types of food, the type and size of the family home) do not vary across regions. For instance, we assume that the same food items are consumed in each district.[3] Food costs in the model diet are based on a low-cost nutritious diet that meets World Health Organization (WHO) recommendations on calories, macronutrients, and micronutrients, and that is consistent with local food preferences, as defined by the Anker & Anker methodology. Adjusting the food items would require reassessment of the proposed diet and recalculation of its caloric, micronutrient, and macronutrient content, which would add complexity to the process of calculating a new benchmark. The same applies to housing costs: estimated costs to rent a decent house were based on existing studies, where housing has been carefully defined to meet established minimum standards. To keep the approach relatively simply, we also decided not to update the reference family size. First, doing so would require detailed analysis of family vs household concepts (e.g., where household data is available), as well as of urban-rural differences, fertility, child mortality, and other factors.[4] Secondly, changing the reference family size would require recalibrating the model diet and housing, since these costs depend on the assumed number of adults and children. This would involve additional analysis and significant time to adjust key components of the existing benchmark.

2.1.1 Key assumptions

We adopted several core assumptions to ensure methodological consistency with the original benchmarking studies, namely that:

- The model diet (food basket composition and quantities) is assumed to be the same as that used in the original study.
- The reference family size is assumed to be identical to that used in the original study.
- The ratio of NFNH costs to food costs is assumed to be consistent with the original study.
- Housing assumptions, utility costs, and other methodological parameters are assumed to be consistent with the original study.

Where there are methodological differences across established benchmarks, these differences have been preserved; the two existing benchmarks have neither been adjusted nor harmonised. Consequently, extrapolated benchmarks retain these underlying methodological differences.

[2] Please note that the target region must be within the same country as the region for which the existing living income benchmark was developed.

[3] This assumption is supported by the substantial overlap in model diet items across the two benchmarks. We acknowledge that this assumption may not hold in contexts with highly diverse regional diets or specific food preferences of workers in a studied sector. See Chapter 4 for further recommendations.

[4] For more information, refer to Chapter 12 in Anker, R. & Anker, M. (2017). *Living wages around the world: Manual for measurement*. Edward Elgar Publishing.

As a result, an extrapolated benchmark will reflect price differences only, with the underlying methodology consistent with that used for the existing benchmark on which it is based.

2.1.2 Limitations

Given that this approach adapts an existing living income benchmark, and does not represent a new living income or living wage benchmark study, the following limitations should be taken into consideration:

- The approach assumes identical consumption across regions given that the model diet is retained. This assumption is potentially problematic in countries with more dietary diversity.
- The approach assumes identical housing requirements across regions. There might be substantial differences in housing conditions, dwelling types, or other parameters, which are not accounted for.
- The approach inherits the methodological choices made in establishing the existing benchmark. Any assumptions, biases, or methodological weaknesses in the existing benchmark are automatically carried forward into the extrapolated benchmark. For example, if the NFNH cost-to-food cost ratio was estimated using a methodology that differs from the standard Anker & Anker methodology, these methodological choices will be reflected in the extrapolated benchmark.
- The approach depends on the availability of price data for both food and housing. As such, low-quality data can affect results. This limitation is particularly relevant for housing costs in many low-income countries, where rental data are often scarce or unavailable because many households live in owner-occupied family homes, or an informal housing arrangement. In such cases, housing cost estimates may rely on less-precise proxy measures.
- If district-level consumer price index (CPI) data are unavailable, the approach cannot account for local seasonality.

2.1.3 District used to pilot regional adaptation

We selected the Rakai district to estimate the district-level benchmark based on the following criteria: (1) the district should be relevant for both HRNS and HWG; (2) the district should not overlap with districts included in the two existing living income/wage benchmarking studies; and (3) price data should be available for the district. The Rakai district has coffee-producing communities. Hence, the benchmark is relevant for both organisations.

2.2 Step 1: Existing benchmark selection and review

In step 1 of the analysis, an appropriate existing living income benchmark is carefully selected and reviewed. At a minimum, the benchmark should meet the following criteria:

- The benchmark should be widely perceived as **reliable**. This implies that the benchmarking study followed a standardised and recognised methodology, such as the Anker & Anker methodology, and is accepted within the studied sector (i.e., floriculture in the case of the GLW benchmark, vanilla in the case of the Hänke benchmark).
- The benchmark should be for **a relevant population**. For example, when extrapolating a benchmark for a rural context, the benchmark on which to base the extrapolation on should also be for a rural context. This alignment will enable cost-of-living differences to be captured through price differences, and is important because key underlying assumptions, such as reference family size, consumption patterns, and the NFNH cost-to-food cost ratio, are unlikely to hold in peri-urban or urban settings.
- The methodology used in the benchmark must be **sufficiently transparent and detailed**. This includes clearly documented key parameters such as the reference family size, and a detailed breakdown of the costs and quantities of components within major categories such as food and housing. This information is necessary to conduct the extrapolation.
- If multiple benchmarks meet the above criteria, the selected living income benchmark should be from a region with **socio-economic characteristics that most closely resemble those of the region for which the benchmark will be extrapolated**.

Given that the analysis largely builds on and replicates the approach of the original benchmark, it is essential to document any assumptions made by the authors of the original study, as well as any methodological adjustments

applied. If certain results appear unusually high for specific categories, these features of the original methodology may help explain such outcomes.

2.3 Step 2: Computation of price ratios

Step 2 involves computing price ratios for each item in the food and housing categories, which will later be used to adjust the prices of these items in the existing benchmark. An example of this step (and Step 3) is in Appendix 1.

This step involves several intermediary steps:

1. **Identify an appropriate database** containing food and housing-related price data. The database should meet the following criteria:
   - Data should be **reasonably recent** and not outdated; as a general rule, datasets should be no older than five years.
   - The dataset should include **prices in both the original benchmarked region and the target region**, for the purpose of extrapolation. This is necessary because price ratios are computed using the item-level prices in the two regions.
   - The dataset should contain **a sufficient number of observations** per item per district, ideally at least 15, to ensure robust price estimates.
   - The dataset should provide **prices at the level of individual food items**. Specifically, if the benchmark diet includes bananas, chicken, and sweet potatoes, the dataset should contain these same items or, at minimum, comparable items for which similar regional price differences can be reasonably assumed.
   - The dataset should include **information on rental costs**,[5] preferably disaggregated by housing type or reported per square metre, **and utility costs** as defined in the existing benchmark. If such data are unavailable, an approximate estimate may be derived by normalising total rental expenditure and utility costs by household size.[6] However, this approach should be treated as a method of last resort as it relies on the implicit assumption that housing costs scale linearly with household size. In practice, housing costs are influenced by fixed structural characteristics (e.g., dwelling type, construction quality, access to utilities) and exhibit economies of scale, meaning that per-capita expenditure may not accurately reflect the cost of maintaining a dwelling that meets minimum decent living standards. Consequently, this method may bias housing cost estimates and reduce the overall precision and comparability of the adapted benchmark. Where this method is used, particularly in contexts where rental data are scarce, its limitations should be acknowledged in the reporting.

2. **Prepare price data**. This step involves the following:
   - **Convert price data into a common unit of quantity** to ensure comparability when computing price ratios. For non-standard units (e.g., heaps or bunches), country-specific conversion tables should be used where available. If such guidelines are not available, conversions may be derived from country studies dealing with food/housing price data and their conversion, or estimated following methods such as Smith & Subandoro (2007), which involves calculating the average quantity per local unit and deriving a conversion ratio relative to standard metric units (e.g., price per kilogram). All conversions should be carefully checked to ensure there are no large gaps, which may indicate a wrong conversion. Ideally, if assumptions are made about conversions, such as computation of the ratio mentioned above, the conversions should be validated with local stakeholders or through market spot checks. If after conversion some units consistently show outliers in the final values, we suggest removing the prices reported in these units.
   - **Adjust for seasonal price fluctuations** at the item level. Seasonal spikes can influence prices, which is why **primary price data** should be corrected for seasonality.[7] **Secondary price data**, as used in our pilot, can be from multiple months and years. In this scenario, we suggest **adjusting all prices to a common date** (last month and year of data collection) using CPI index values. Firstly, divide the CPI index value of the

[5] Note that rental data from rural areas are often scarce, especially in low- and middle-income countries where populations typically build or maintain their own homes rather than rent.

[6] While the Anker & Anker (2017) methodology uses a reference family size focused on immediate family members, we used the definition on household size from the dataset from which price data were obtained, the *National Panel Survey for Uganda (2019–2020)*. This survey defines household size as the number of usual members present in the household, which more accurately reflects housing needs.

[7] We recommend following the same process as provided in Anker, R. & Anker, M. (2017). *Living wages around the world: Manual for measurement*. Edward Elgar Publishing.

item at the date of the most recent observation in the dataset by the CPI index value at the month and year of data collection. Afterwards, adjust prices collected earlier by this ratio, so that they reflect the item's price at the latest date of data collection. Ideally, district-specific CPI trends should be used to correct for seasonal spikes per item. However, these are usually available at the national level only. Where this is the case, use the the same item-specific CPI trend nationwide. This enables computation of relative price differences, but does not capture district-level seasonal spikes.

- **Compute the average price per food item** for the target district/region and the location where the existing benchmark was calculated. Where there is large variance in observed prices, we recommend taking the median price.

3. **Compute price ratios**. Price ratios per item are computed as:

$$\frac{Average\ price\ per\ item\ in\ the\ target\ district/region}{Average\ price\ per\ item\ in\ the\ reference\ benchmark\ region}$$

2.4 Step 3: Extrapolation from an existing benchmark[8]

Food costs category: For each food item, multiply the price in the existing benchmark by the corresponding price ratio (as per Step 2.3). Then, sum the adjusted costs and apply any margins specified in the existing benchmark, such as for spices, condiments, waste, and food loss, or to allow for variety in the diet. If the price ratio for a given item is unavailable, we recommend using a proxy ratio from a comparable food item within the same food group, preferably one in a similar form (e.g., flour, fresh, or dried) with a similar intended use. The assumption of a similar price ratio can be tested by examining this ratio in districts where both items are available. Final costs are typically expressed per month for the reference family size.

Housing costs category: Multiply all costs related to housing, such as rental costs and utility costs (water, electricity, fuel, others), by the corresponding price ratio. Please note that water and electricity prices may be centrally set and may therefore not require adjustment. Then, sum all housing-related costs (rent and utilities). The final housing cost represents the adjusted monthly cost for the reference family size.

Non-food, non-housing (NFNH) costs category: As per the Anker & Anker methodology, non-food, non-housing (NFNH) costs are estimated using secondary household expenditure data. First, calculate the ratio of NFNH costs to food costs, and then apply this ratio to the cost of the model diet. This provides an estimate of NFNH costs. The methodology also includes context-specific validation and post-checks of this ratio.[9] For the purpose of extrapolating benchmarks in a simple and easily replicable way, we use the NFNH cost-to-food cost ratio from existing benchmarks and apply it to the adjusted food costs (see 'Food costs category') to derive updated NFNH costs. We do this even in cases where a living income/wage benchmark study uses a different approach, such as collecting primary data on NFNH components (e.g. transportation, education, healthcare). In these cases, we also calculate the ratio of these costs to food costs and apply this ratio to estimate extrapolated NFNH costs.

Total costs of living per reference family per month: In the final step, all cost components are summed. Under the Anker & Anker methodology, a 5% sustainability margin is then added to the total. If the benchmark being adjusted does not follow the Anker & Anker methodology and does not include this margin, it should not be added, as it may already be implicitly accounted for in other steps of the methodology used in the existing study.[10]

[8] Please ensure that the secondary price data used to calculate price ratios, or primary price data collected to replace values in the existing benchmark, are expressed in the same currency and correspond to the same reference year as the prices in the benchmark.

[9] For more details on how the NFNH ratio is calculated, see Chapter 7 in Anker, R. & Anker, M. (2017). *Living wages around the world: Manual for measurement*. Edward Elgar Publishing.

[10] Please note that that the use of living wage/income benchmarks estimated using the Anker & Anker methodology is highly recommended, as doing so can ensure the consistency and comparability of extrapolated benchmarks.

2.5 Updating extrapolated living income benchmarks

As is the case with living wage and living income benchmarks in general, we suggest updating the extrapolated living income benchmarks each year using CPI, to account for inflation. If the inflation rate is available for rural areas and the extrapolated benchmark was calculated for a rural area, we recommend using the rural inflation rate.

A more refined approach is to update the key cost components — food and housing — using category-specific inflation rates, if these are available. If a new living wage or income benchmarking study becomes available in a region or district with closer socio-economic and geographic characteristics to the target region or district, we recommend recalculating the extrapolated benchmark based on this new study. This is because closer socio-economic and geographic proximity improves the validity of key underlying assumptions used in the extrapolation (such as the model diet), leading to a more accurate and context-appropriate estimate.

3 Results

3.1 Reference benchmark selection and comparison

Upon reviewing available benchmarks for Uganda, we selected the following two to pilot the approach: the GLW Living Wage Benchmark for Rural Lake Victoria for the floriculture sector and Hänke's Living Income Benchmark in the Rwenzori region for the vanilla sector. We selected these benchmarks for several reasons: (1) both were estimated for rural areas; (2) both were estimated in regions where coffee production takes place; (3) both are methodologically comparable since they report using the Anker & Anker methodology; and (4) reports included sufficient detail for us to perform the adaptation; in other words, they provided a full breakdown of costs, including items considered, volumes, and prices or costs.

The GLW study reports a living income benchmark of 989,298 UGX[11] (€238) per month in 2019 for a reference family size of five. The living income benchmark estimated by Hänke for the vanilla sector in Western Uganda is substantially higher at 2,476,922 UGX (€597) per month for a family size of 6.6 (Table 1). When adjusted for inflation, the GLW study reports an updated benchmark for the floriculture sector in the Lake Victoria Basin of 1,248,713 UGX (€306.84) in 2025.[12] Adjusting for inflation, we find that the Rwenzori benchmark for the vanilla sector based on Hänke's study would correspond to approximately 3,126,423 UGX (€768.24) in 2025.[13] When the costs of living estimated for the two benchmarks are adjusted for family size, the costs in Hänke's report are substantially higher than those in the GLW report.

While both benchmarks followed the Anker & Anker approach to living wage benchmarking, several adjustments were detected in Hänke's report. Firstly, the NFNH costs were not estimated as a ratio between these costs and food. Rather, data were collected separately for each sub-category, such as education, healthcare, and transportation. The GLW study followed the Anker & Anker methodology by assessing the NFNH cost-to-food cost ratio through secondary data, with post-checks on these costs during validation. The approach to assessing housing costs also slightly differed between the two studies. In Hänke's study, housing costs were estimated through focus group discussions (FGDs), in which farmers who had recently built a house compliant with housing standards provided a rental equivalent for the house they built. It was noted that these were wealthier farmers, which might have biased the estimated rental equivalent. On the other hand, the GLW study authors conducted rounds of interviews with workers, contractors, and employers to determine rental costs in line with the established Anker & Anker methodology. Lastly, the vanilla benchmark had the value of self-consumed foods subtracted, which is in line with Fairtrade's Living Income Reference Price model but is not established in the Anker & Anker benchmarking methodology.

Fairtrade's living income reference price study for the coffee sector in Uganda (2022) also found that Hänke's study had the highest estimated cost of decent living among six studies reviewed, including another benchmark from the same region. We discuss why costs per cost category are higher in Rwenzori in the following sections. While these factors may partly reflect genuine cost-of-living differences, our extrapolation approach already adjusts for price-level variation across regions or districts. Nevertheless, when comparing the two extrapolated benchmarks to the Rakai district, the Hänke-extrapolated benchmark remains

[11] Monetary values expressed in Ugandan shillings were converted to euros using the 2019 annual average exchange rate (€1 = 4,148.59 UGX).

[12] Monetary values expressed in Ugandan shillings were converted to euros using the 2025 annual average exchange rate (€1 = 4,067,57 UGX).

[13] The GLW updates its benchmarks annually; however, these updates are provided only at the aggregate living income level and do not include revised cost breakdowns by category. To ensure internal consistency and comparability across cost components, we retain all prices at their original year of data collection. In this study, this corresponds to 2019 for both benchmarks. In contrast, Dr. Hänke's benchmark is not consistently adjusted for inflation.

Table 1 *Comparison of living costs in the GLW (2020) and Hänke (2019) reference benchmarks used for regional adaptation*

Cost categories	GLW benchmark for the floriculture sector in the Lake Victoria Basin (UGX, 2019)		Hänke benchmark for the vanilla sector in the Rwenzori region (UGX, 2019)		% difference between the Hänke and GLW benchmarks
	Cost per family	Cost per family member	Cost per family	Cost per family member	
Food costs	506,894 UGX	101,379 UGX	1,041,181 UGX	157,755 UGX	55%
Housing costs	135,000 UGX	27,000 UGX	625,000 UGX	94,697 UGX	250%
NFNH costs	242,295 UGX	48,459 UGX	691,807 UGX	104,819 UGX	116%
5% sustainability margin	47,109 UGX	9422 UGX	118,934 UGX	18,020 UGX	91%
Total costs per month for a reference family size	989,298 UGX		2,476,922 UGX		
Total living costs per month per family member	197,860 UGX		375,291 UGX		90%

about 90% higher than the GLW-extrapolated benchmark (Table 1). This suggests that the large gap cannot be explained by cost-of-living differences alone, but is also driven by the underlying methodological differences between the two studies as described above and discussed in more detail in the following sections.

3.2 Extrapolation of the two benchmarks[14]

Adjustments to the reference benchmarks were made based on price differences across the key cost categories of food and housing, as shown in Table 2. Price data were obtained from the Uganda National Panel Survey 2019-2020. To adjust prices for fluctuations, the CPI Index published by the Ugandan Bureau of Statistics was used. NFNH costs were estimated using the NFNH cost-to-food cost ratio from the existing benchmarks. While the GLW study followed the Anker & Anker methodology, deriving this ratio from secondary data and conducting post-checks and validation, Hänke's study calculated NFNH costs using primary data collected across individual components, such as transportation, education, health, and communication. For our test, we followed the former approach and also derived the NFNH cost-to-food cost ratio from Hänke's study[15] and applied it to the adjusted food costs to obtain extrapolated NFNH costs for the Rakai district.

Margins added to the food cost and sustainability margin were applied in line with the original benchmarks. In the GLW benchmark, food costs include a 14% margin for spices, condiments, waste, and food loss, while Hänke's study applied a 16% margin for salt, spices, condiments, spoilage and waste, and food variety. Both benchmarks also include a 5% sustainability margin applied to total costs (food, housing, NFNH) at the final stage. Final total extrapolated costs from the two benchmarks for the Rakai district were provided per reference family size per month as indicated in the existing studies (in the GLW study, the reference family size is five members; in the Hänke study, this value is 6.6 members).

[14] For an overview of food items per benchmark, see Appendix 1.

[15] We assume the same NFNH cost-to-food cost ratio when extrapolating both benchmarks to apply the same extrapolation methodology consistently. For more information on our assumptions and reasons behind this, refer to Section 2.1.1 and the 'Non-food, non-housing (NFNH) cost category' in Section 2.4.

Table 2 *Comparison of living costs in the extrapolated Rakai living income benchmarks against the GLW (2020) and Hänke (2019) reference benchmarks. The comparisons used costs in 2019 (the date of data collection for both benchmarks), in UGX*

Cost categories	GLW-extrapolated Rakai benchmark vs original GLW benchmark for the Lake Victoria Basin		Hänke-extrapolated Rakai benchmark vs original Hänke benchmark for the Rwenzori district	
	Difference	Explainer for the % difference	Difference	Explainer for the % difference
Food costs per household member per month	−25%	For 19/21 items, prices are on average lower in the Rakai district compared to the Lake Victoria region.	−34%	For 18/21 items, prices are on average lower in the Rakai district compared to the Rwenzori region.
Housing costs per household member per month	−53%	Influenced by substantially lower rental prices in Rakai.	−74.5%	Influenced by substantially lower rental prices in Rakai.
Non-food, non-housing (NFNH) costs per household member per month	−22%	Conditional on price reductions in the categories above.	−34%	Conditional on price reductions in the categories above.
5% margin per household member per month	−33%	Conditional on price reductions in the categories above.	−45%	Conditional on price reductions in the categories above.
Total living costs per household member per month	−33%	Conditional on price reductions in the categories above.	−45%	Conditional on price reductions in the categories above.

3.3 Comparing extrapolated benchmarks to existing benchmarks

Results from the pilot are presented in Table 2 and Table 3, disaggregated by cost category. Results are expressed per reference family size member to make them comparable since family sizes vary between the two studies. Table 2 provides a comparison of living costs between the extrapolated living income benchmarks and the reference living income benchmarks.

Overall, our two living income benchmark estimates based on the two existing benchmarks indicate substantially lower living costs in the Rakai district compared to the existing benchmarks, though the magnitudes of the differences differ between the two. Total living costs per household member per month are 33% lower in the GLW-based Rakai district extrapolation and 45% lower in the Hänke-based Rakai district extrapolation. Across both benchmarks, food costs are notably lower in Rakai, being 25% lower in the GLW-based extrapolation and 34% lower in the Hänke-based extrapolation. This is primarily driven by consistently lower prices for the majority of food items in the Rakai district compared to the Lake Victoria Basin and Rwenzori region: 19 out of 21 items cost less in Rakai than in the Lake Victoria Basin, and 18 out of 21 food items cost less in than Rakai than in Rwenzori (see Appendix 3 for an overview of price ratios per food item). Housing costs show the largest reductions, with declines of 53% (GLW) and 74.5% (Hänke). NFNH costs are also lower for Rakai than in the existing benchmarks, as they are estimated as a ratio of food costs. In other words, if food costs are lower in the extrapolated benchmarks and the ratio does not exceed 100%, NFNH costs will be proportionally lower.

Lower costs in Rakai are robust to available evidence. The district is said to be rural, with the majority of households dependent on subsistence farming (UBOS, 2017). Almost 70% of households do not have access to safe drinking water and about 80% are more than 5 km away from a health facility. About 30% of the population is illiterate (UBOS, 2017).

Within the Central region itself, Rakai has been reported as having the highest incidence of poverty. On the other hand, the Wakiso district, including Entebbe and suburban Kampala (areas coinciding with the GLW study site), has the lowest poverty rate in the Central region (UBOS, 2019). Little evidence is provided on the Rwenzori region or its constituting districts. While UBOS reports poverty rates in Western Uganda and its districts (UBOS, 2019), SHIFT's living income study (Mason & Weiss, 2020) notes a higher incidence of poverty than the national average.

Table 3 *Extrapolated living income benchmarks for the Rakai district and the percentage difference between them. The extrapolated benchmarks were based on reference benchmarks estimated by GLW (2020) and Hänke (2019)*

Cost categories	Extrapolated Rakai benchmarks		% difference between the extrapolated GLW and extrapolated Hänke benchmarks	Explainer for the % difference
	GLW extrapolation Reference family size: 5	Hänke extrapolation Reference family size: 6.6		
Food costs per household member per month	76,055 UGX	104,709 UGX	38%	Contextual: Climate change-related risks (erratic rains, droughts, landslides and mudslides) are damaging infrastructure and causing production challenges. These issues, combined with challenging farming conditions in highland areas and transportation constraints, are leading to higher food prices. Methodological: The model diet in the Hänke benchmark appears to be more expensive than in the GLW benchmark.
Housing costs per household member per month	12,799 UGX	24,146 UGX	89%	Contextual: No evidence that rental costs differ between the regions. Methodological: Costs in the Hänke benchmark amounted to 600,000 UGX/month, compared to 135,000 UGX/month in the GLW benchmark. Housing costs in the Hänke benchmark were estimated through FGDs with wealthier vanilla farmers. This contrasted with the GLW approach, which involved rounds of interviews with workers, employers, and constructors, and visits to rental properties.
Non-food, non-housing (NFNH) costs per household member per month	37,647 UGX	69,108 UGX	84%	Methodological: Hänke collected primary data on NFNH costs, whereas the GLW study authors followed the Anker & Anker approach to estimate NFNH costs, using the NFNH cost-to-food cost ratio. This resulted in a higher NFNH cost-to-food cost ratio in the Hänke study (66% vs 49.5%).
5% margin per household member per month	6,325 UGX	9,898 UGX	57%	Methodological: The margin was greater in the Hänke study due to higher costs in other categories.
Total living costs per family member per month	132,825 UGX	207,862 UGX	57%	
Total living costs for a reference family* per month	664,127 UGX	1,371,891 UGX	107%	

* Updated to 2025, the GLW-extrapolated Rakai living income benchmark would amount to 838,275 UGX, and the Hänke-extrapolated Rakai living income benchmark would amount to 1,731,630 UGX.

The lower food costs observed in the extrapolated Rakai benchmarks can be attributed to regional differences in food prices. Evidence from the *Uganda National Household Survey 2023/2024* (UBOS, 2025) indicates that households in the Eastern, Northern, and Western regions allocate a larger share of their household budget to food (49–53%) compared to those in the Central region and the urban area of Kampala (27–36%). This suggests that food likely costs more in Rwenzori than in Rakai. This can partly be explained by the challenging farming conditions in the highland areas of the Rwenzori region. These conditions may limit local food supply relative to other regions (Tumusiime, 2006). Food items for which farmers are not self-sufficient (e.g., fish, beef) are costly for households (Hänke, 2019). In addition, mountainous terrain creates transportation constraints, increasing food distribution costs (UBOS, 2018). More importantly, the Rwenzori region is affected by erratic weather patterns, such as prolonged droughts and unpredictable rains (Jassonge *et al.*, 2013), which in combination with mountainous terrain result in flash floods, landslides, and mudslides (Mazimwe *et al.*, 2026). Apart from property and infrastructure damage, these affect crop production and food security in the region (Jassonge *et al.*, 2013). Together, these factors likely contribute to the higher food prices in the original Hänke benchmark compared to the GLW benchmark (see Table 1).

On the contrary, rental prices in the Lake Victoria Basin tend to exceed typical rural averages, largely because districts such as Wakiso, Masaka, and Mukono are relatively more affluent and benefit from proximity to major urban centres (Khan & Buyinza, 2019). Lower housing costs in the Rakai district were therefore expected. We were unable to identify relevant information regarding rental or housing prices for the Rwenzori region or its districts.

Based on the evidence above, food should cost less in the Rakai district than in the Rwenzori region and the Lake Victoria Basin. Housing was also expected to cost less than in the Lake Victoria Basin. However, due to lack of evidence, we were unable to establish whether housing costs are lower in the Rakai district than in the Rwenzori region. A comparative analysis of living income benchmarks notes the cost of decent living is highest in the Rwenzori region, across both benchmarks available for this region (Fairtrade, 2022). It can therefore be assumed that the cost of living in the Rwenzori region exceeds that in the Rakai district, although we were unable to validate whether the magnitude — 45% lower in the Hänke-extrapolated Rakai benchmark than in the original Hänke benchmark for Rwenzori (see Table 2) — holds true, and whether this is driven by lower housing costs.

3.4 Comparing the extrapolated benchmarks for the Rakai district

A comparison of the two extrapolated Rakai benchmarks, one from the GLW study and the other from the Hänke study, is presented in Table 3. We find that after adjustments, the Hänke-extrapolated Rakai benchmark is substantially higher than the GLW-extrapolated benchmark. In the previous section, we validated that the Rakai benchmarks are lower than the two reference benchmarks. However, explaining why the cost of living is higher in the Rwenzori region than the Lake Victoria Basin is not straightforward.
In the Rakai benchmark extrapolated from Hänke, both housing costs and NFNH costs are almost twice as high per family member per month. We were unable to find evidence to substantiate the differences in housing prices between the Rwenzori region and the Lake Victoria Basin. We therefore assume the differences are driven by the methodology used to derive these housing costs. In Hänke's study, housing costs were determined through FGDs with a relatively affluent subset of farmers who had recently constructed homes that met the defined decent housing standard. In the GLW study, housing costs were estimated through rounds of interviews with workers, employers, and constructors, and visits to rental properties. Hänke's sampling approach may have therefore introduced an upward bias.

The difference in NFNH costs is driven by differences in the methods used in the reference living income benchmarks to estimate this category. In the GLW study, the authors applied the Anker & Anker approach using secondary data validated with post-checks. Hänke collected primary data for each NFNH component, including education, health, and transportation. This methodological difference resulted in a substantially higher NFNH cost-to-food cost ratio in Hänke's benchmark (66%) compared to the GLW benchmark (49.5%). Consequently, when applying the extrapolation approach, this higher ratio is directly carried over to the extrapolated benchmark.

After adjustments, food costs remain 38% higher in the Hänke-extrapolated Rakai benchmark compared to the GLW-extrapolated benchmark (see Table 3). This suggests that the model diet underlying the Hänke benchmark is inherently more expensive, and that adjusting for price differences will not guarantee equal food prices among estimates extrapolated from the two benchmarks. Overall, methodological differences between the benchmarks are likely driving the higher costs observed in the Hänke-extrapolated benchmark.

When assessing the distribution of cost categories across the two extrapolated benchmarks, a broadly similar pattern emerges (see Figure 1). In both cases, food accounts for the largest share of total costs, followed by NFNH items, and then housing. This distribution aligns with commonly observed expenditure patterns in comparable contexts, suggesting that despite differences in absolute cost levels, the overall structure of household spending remains consistent across the two benchmarks.

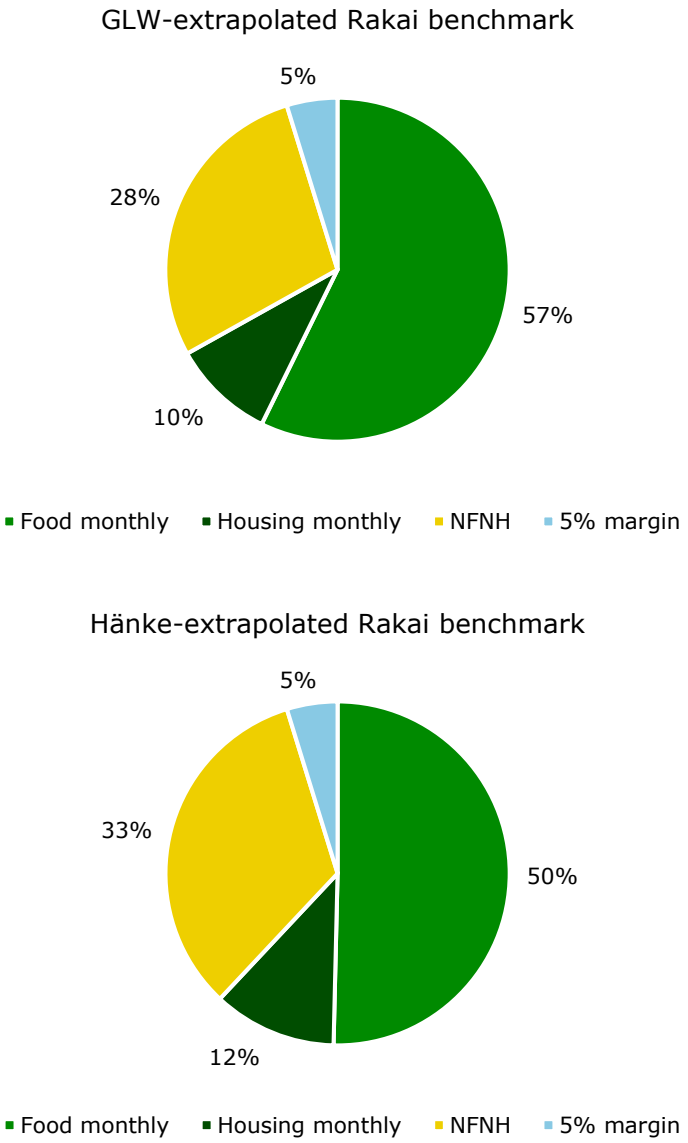


Figure 1 *Cost distribution of the GLW-extrapolated and Hänke-extrapolated benchmarks for the Rakai district*

3.5 Testing the approach using primary food price data for Rakai

HWG had access to food price data collected in the Rakai district in 2024 for a separate study. This data provided a valuable opportunity to assess whether total food costs extrapolated using secondary data (from the World Bank's *Living Standards Measurement Study* [LSMS] in this case) converged with those derived from primary data collection.

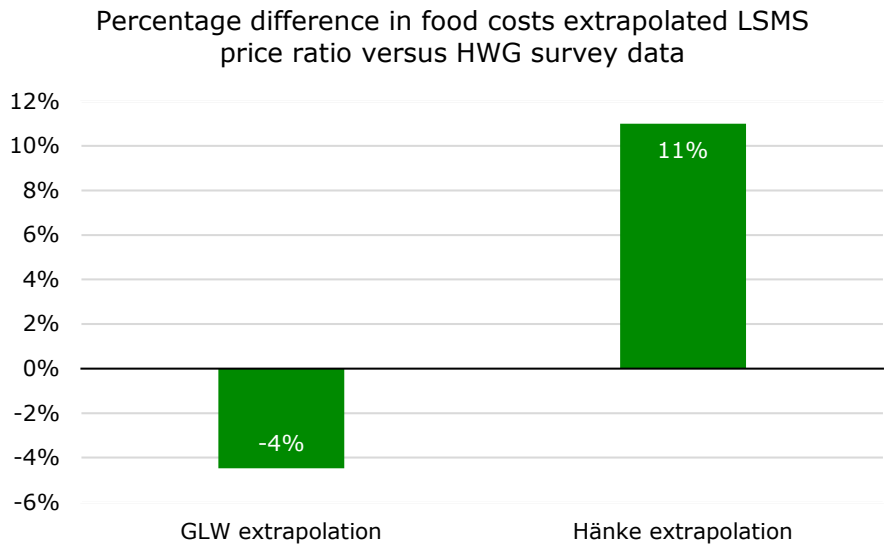


Figure 2 *Percentage difference in food costs per reference family member between the LSMS-based and HWG survey-based estimates*

The dataset had too few or no observations for five food items appearing in the Hänke model diet (mango, dodo, chicken, sorghum, millet) and two items appearing in the GLW model diet (green pepper, watermelon). For these items, extrapolated prices derived from LSMS food price ratios were used. For all other food items, prices in the existing benchmarks were replaced with the mean prices collected through the HWG survey, while retaining the quantities purchased (in grams) specified in the original benchmarks. For example, the GLW living wage benchmark report specifies a purchased quantity of 290 grams of maize flour at a cost of 2,050 UGX per kilogram. To determine what this would cost in the Rakai district, the purchased quantity was kept constant at 290 grams, while the original price was replaced with the mean price per kilogram of maize flour observed in the HWG survey data.

Food costs per household member are an estimated 4% lower using the GLW extrapolation and 11% higher using the Hänke extrapolation (see Figure 2). In the GLW benchmark, the lower costs are largely explained by differences in the prices of silver fish, cabbages, tomatoes, and bread. For the Hänke benchmark, the divergence between extrapolated and survey-based estimates is driven mainly by differences in the prices of fish, tomatoes, cassava, and cabbages.

The relatively small divergence of 4–5% between food costs estimated using LSMS-based extrapolation and those derived from primary survey data suggests that the secondary data-based approach is able to approximate local food costs with a reasonable degree of accuracy. This finding indicates that secondary data-derived food price ratios can serve as a practical and cost-effective alternative to primary price collection.

3.6 Akvo test of the approach on Mityana and Mount Elgon

During the study, an opportunity arose to test the approach by extrapolating the existing two benchmarks for the Mityana district and the Mount Elgon region (including Bududa, Bulambuli, Kapchorwa, and Namisindwa). A study conducted by the Global Coffee Platform (GCP) for the GCP Collective Action in East Africa included data collection in coffee-growing areas in the Mount Elgon region and

the Mityana district. Akvo[16] was hired by GCP to collect and analyse baseline data for the coffee sector in these locations, and it was agreed that we could use this data to further test the methodology. Concretely, this provided a useful setting to evaluate several aspects of the methodology: how the approach performs when primary data are used to adjust the food cost category; the time and resources required to collect food price data for existing model diets; and the consistency between household survey-based price estimates and market spot checks.

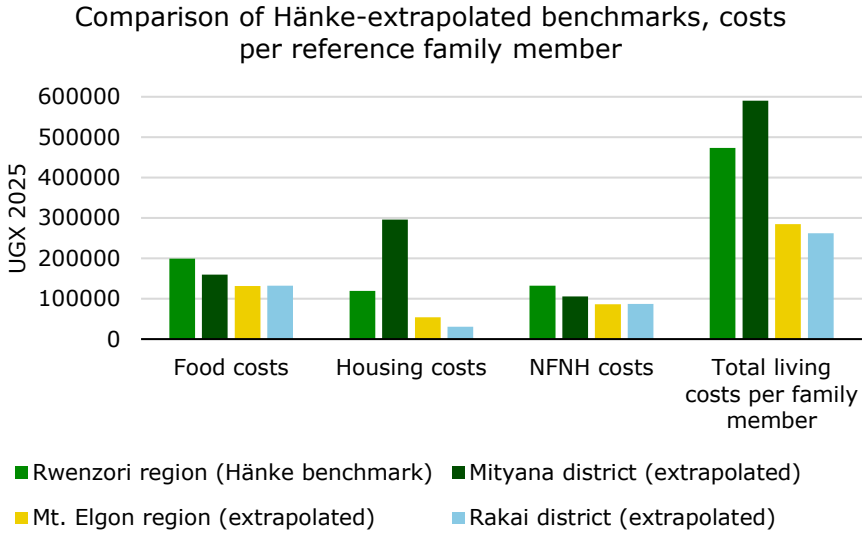
We prepared a short module on food prices and integrated it into the household survey. The module listed food items included in both benchmarks and asked respondents about food items they had purchased, with a seven-day recall period, and the price paid per unit of quantity. Since about 100 units of quantity are conventionally defined, we sought to constrain the list of units of quantity to those most commonly used, both standard and non-standard, to ensure ease of data collection and data cleaning.

After concluding data collection in September 2025, Akvo cleaned the food price data following the process described in Section 2. An additional step was required when extrapolating Hänke's benchmark. The benchmark report did not include purchased quantities in the model diet table, only edible grams, meaning that directly applying the collected prices would not yield an accurate cost estimate. To address this, we used edible portion factors (EFP) from Anker & Anker (2017) to convert edible quantities into purchased amounts. EFPs used per food item can be found in Appendix 2. These updated prices were then used to replace item-level food prices in the original benchmarks. For housing costs, Akvo applied price ratios for rent and utilities derived from secondary data. NFNH costs were estimated using the NFNH cost-to-food ratio. For some items, no price data was collected, or the reported prices showed too much variety, especially when converted to the common unit of quantity (see Appendix 4 for more details). For these cases, food price ratios derived from secondary data were used.

When examining the GLW-extrapolated benchmarks, food costs are higher in the Mityana district, while housing costs appear slightly lower. In contrast, for the Mount Elgon region, both food and housing costs are lower. The Hänke-extrapolated benchmarks display a broadly similar pattern: food costs in the Mityana district are somewhat higher, although housing costs in this district stand out as being substantially higher compared to other benchmarks. This is due to a price ratio calculation showing rental costs being substantially higher in Mityana compared to Rwenzori, while the price ratio between Mityana and the Lake Victoria Basin led to lower housing costs in Mityana. As described in previous chapters, higher housing costs in the Lake Victoria Basin would be expected. However, validating the substantially higher housing costs observed in Mityana compared to Rwenzori is beyond the scope of this report, and extrapolated benchmark validation is recommended as a next step.

Overall, the ranking of total costs remains consistent across approaches, with Mityana exhibiting the highest cost levels, followed by Mount Elgon and Rakai (see Figure 3). This consistency suggests that the methodology performs well in capturing relative differences in the cost of living across regions. However, it is important to note that the Hänke-extrapolated benchmarks consistently produce higher cost estimates across all categories and regions, even when primary data are used to adjust food costs. This further supports the conclusion that the observed differences are not primarily driven by variations in actual living costs, but rather by underlying methodological choices in how these costs are estimated.

[16] Akvo is a non-profit organisation that specializes in data collection and analysis in the water, agriculture and climate sectors. Information on the organisation can be found on its website.



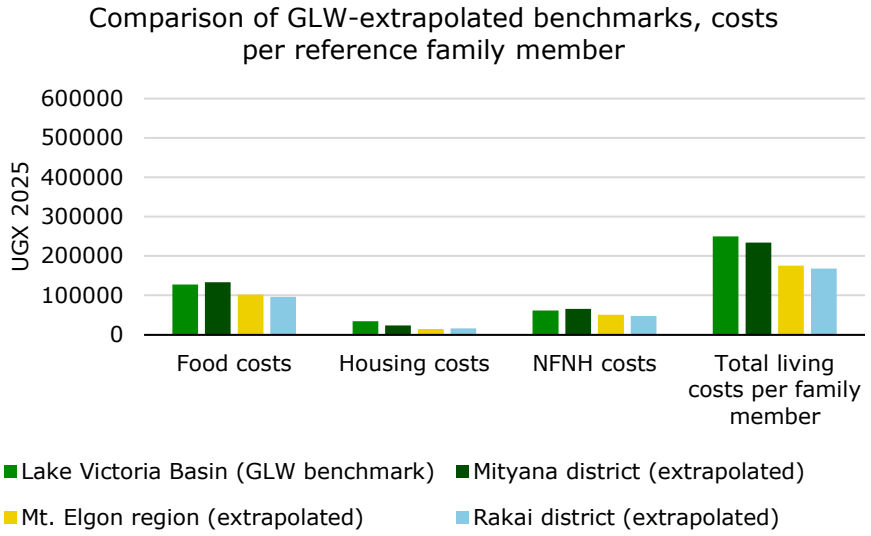


Figure 3 *Comparison of original and extrapolated benchmarks for costs per family member, obtained from the WUR and Akvo tests*

4 Key takeaways and recommendations

4.1 General takeaways and recommendations

The extrapolation appears to capture well the relative cost-of-living differences across districts or regions. If the extrapolated benchmark for a target region is lower than the original benchmark, our pilot confirms that living costs in the target region are indeed lower. Relying only on the original benchmark in such cases may overstate the living income benchmark for the target region and, consequently, overestimate the share of workers or farmers earning below the benchmark. Using the extrapolated benchmark alongside the original one can therefore more accurately indicate how many farmers or workers meet a benchmark that better reflects local conditions.

Extrapolation using secondary data appears to approximate local food costs with a reasonable degree of accuracy. A small validation exercise using HWG survey data on food prices collected in Rakai found only a limited divergence between food costs estimated using LSMS-derived price ratios and those calculated using primary survey data.

The choice of the reference living income benchmark strongly influences the extrapolated benchmark. The methodological decisions and weighting of each cost category in the estimation of the existing benchmark also determine its relative contribution to the extrapolated benchmark. While this may appear self-evident, it is important to explicitly recognise which benchmark is used as the reference point and how each cost category is constructed in that benchmark. To ensure comparability and to align benchmarking methodologies, we advise using a benchmark that was established using the Anker & Anker methodology, if one is available.

Regardless of the data source used, applying this approach is considerably less costly and more scalable than conducting a full living income benchmarking study. The tested approach is scalable and can be implemented without the need for primary data collection. The most time-consuming step is the initial data cleaning, particularly when working with secondary data, which requires familiarity with household expenditure datasets and the processing of price information. Where feasible, collecting primary data on food prices, as done in the Akvo test, can provide reliable estimates for the cost of a model diet in a specific area. In some cases, cleaning survey-based data may even be less time-intensive than deriving price ratios from national household expenditure data. Overall, regardless of the data source used, applying this approach is considerably less costly than conducting a full living income benchmark study. At the same time, it offers users a useful first indication of the cost-of-living differences across areas of interest, as highlighted above.

Extrapolated benchmarks require proper validation. This pilot focused on testing the methodology and did not include stakeholder validation. However, to ensure that the benchmarks accurately reflect the cost of a decent standard of living in a given area, such validation is essential. We therefore strongly recommend incorporating stakeholder validation in future applications of these benchmarks.

Further testing is needed to better assess the robustness of the approach. So far, the approach has been applied only using secondary data in only one district in a relatively small country, based on benchmarks that differ methodologically. Ideally, the approach should be tested in a context where two benchmarks exist for the same country and were developed using a consistent methodology (e.g., Anker & Anker). Extrapolating one benchmark to the other would allow for more rigorous evaluation of how closely the results align, and thus of the method's reliability. Alternatively, a good test would be to estimate benchmarks for all districts for which secondary data is available, and compare district-level findings with input from key stakeholders who could validate the observed differences in benchmarks.

Further testing is needed to assess the applicability of the approach in larger countries with greater dietary diversity. To date, the method has been tested in a context where there is considerable overlap in the food items included in the model diets. While this assumption already introduces some limitations, it becomes more problematic in countries with substantial regional variation in diets, such as India, where certain foods consumed in one area may not be produced or consumed in another. Applying the current approach in such contexts may therefore reduce the reliability of the extrapolated benchmarks. Testing the methodology in these settings would help strengthen both its robustness and validity.

In addition, sector-level validation would be valuable, particularly for communities with distinct dietary preferences. In such communities, relying on a model diet derived from another benchmark estimated for a different sector or commodity may be less representative, which could affect the accuracy of living income gap assessments for these groups.

4.2 Methodology-specific takeaways and recommendations

4.2.1 Food price data

Secondary price data for certain items are difficult to obtain, particularly for goods that are purchased infrequently (e.g., bought in bulk, making a seven-day recall period insufficient) **or commonly produced at home**. This challenge was observed both in our test and in the Akvo test (see Appendix 4 for detail on the number of observations). In both cases, items that are commonly consumed but also home-produced tended to have fewer recorded observations.

District-level seasonal price fluctuations may not always be adequately captured. Accurately accounting for such variation using secondary data would require CPI data disaggregated by both food item and district. In our pilot, this level of detail was not available, and it is likely that similar data constraints exist in many other countries. As a result, the approach currently captures only national-level variation in food prices. Ideally, district-specific CPI trends should be used to adjust for seasonal price fluctuations at the item level, thereby making the estimates more precise.

Converting non-standard units of measurement (heaps, bunches, local units) into standard units (grams or kilograms) can be challenging, particularly in contexts where conversion tables are not readily available. In such cases, conversion factors can be derived from existing studies that have undertaken similar adjustments, or by following established guidance, such as Smith & Subandoro (2007). After conversion, it is important to assess data quality. If a specific unit consistently produces outliers in the price per item, we recommend excluding observations reported in that unit. Where feasible, market spot checks can validate or refine conversion factors, especially for non-standard units that generate inconsistent results.

Surveys collecting primary food data should include pre-defined quantity units for each item to ensure consistent and comparable price reporting. If primary data on food prices are collected, it is advisable for answer options on units of quantity to be pre-filtered by food item to ensure consistency. For example, units appropriate for liquids (e.g., litres for milk) should not be selectable for solid goods (e.g., beans), as this can lead to reporting errors.

4.2.2 Housing price data

Secondary data on rental prices per housing type are limited. In contexts where renting is uncommon, as was the case in our pilot, obtaining reliable secondary data on rental costs is particularly challenging. To address this, we used national household expenditure data and derived per-capita rental costs by dividing reported rental expenditures by the number of household members. However, this approach relies on the implicit assumption that housing costs scale linearly with household size. In practice, housing costs are shaped by fixed structural characteristics, such as dwelling type, construction quality, and access to utilities, and tend to exhibit economies of scale. As a result, per-capita expenditure may not accurately reflect the cost of maintaining housing that meets minimum decent living standards. This introduces a risk of bias: in districts with larger average household sizes, rental costs may be

underestimated, while the opposite may occur in areas with smaller households. Despite these limitations, this approach can serve as a pragmatic solution where alternative data sources are unavailable and primary data collection is not feasible. In such cases, it is important that its limitations are explicitly acknowledged in the reporting.

4.2.3 Non-food, non-housing costs

The NFNH ratio from an existing benchmark should be reassessed when extrapolating benchmarks to areas with a different rural-urban population composition. For rural households, given coffee producers in the Rakai district largely represent a rural population, we assumed a comparable NFNH cost-to-food cost ratio. However, this ratio typically increases with higher household income levels and in more economically developed settings (Anker & Anker, 2017). Hence, different ratios are likely in rural, peri-urban and urban areas within the same country. Using an unadjusted ratio in a context with a different population structure may therefore lead to inaccurate estimates; adjustments or validation with local data are recommended.

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Appendix 1 Example calculation of price ratios and cost adjustment

Food item	Cost per food item as indicated in the GLW study (floriculture benchmark in the Lake Victoria Basin)[17]	Average price per food item in the Lake Victoria Basin, retrieved from the *Uganda National Panel Survey 2019-2020*[18]	Average price per food item in the Rakai district, retrieved from the *Uganda National Panel Survey 2019-2020*[19]	Rakai to Lake Victoria Basin price ratio per food item, retrieved from the *Uganda National Panel Survey 2019-2020*	Cost adjustment	Cost per food item in the GLW-extrapolated Rakai benchmark
Rice	61 UGX	3697.0565 UGX/kg	3986.2881 UGX/kg	1.078233	61 × 1.078233	66 UGX
Maize	588 UGX	2295.0550 UGX/kg	2238.3358 UGX/kg	0.975286	588 × 0.975286	574 UGX
Plantain	138 UGX	1103.8886 UGX/kg	383.0444 UGX/kg	0.3469955	138 × 0.3469955	48 UGX

[17] Costs per food item per purchased grams per person per day, as reported in the GLW study.

[18] Prices per food item from individual observations were firstly brought to the latest date of data collection. Price ratios were then calculated using prices expressed at the same price level, as explained in Section 2.3.

[19] Prices per food item from individual observations were firstly brought to the latest date of data collection. Price ratios were then calculated using prices expressed at the same price level, as explained in Section 2.3.

Appendix 2 Food item inventory and EFP

Food item	CEB01 matching code from the *Uganda National Panel Survey 2019-2020*	GLW benchmark	Hänke benchmark	Edible portion factor (EFP) used for Hänke benchmark food items	Notes
Rice	110	x			
Maize flour/posho	113	x	x	1	Form not specified in the Hänke study; we assume maize flour given the costs indicated in the study and the form, in which maize flour is commonly purchased.
Bread (wheat)	114	x			
Cassava	107	x	x	0.84	Not specified whether fresh or dry (flour) in either benchmark; in the GLW study, cassava appears in the same category as plantain, which has been mentioned as bought fresh; hence, the item code refers to fresh cassava, which contained the most price data in the available sample.
Sweet potato/yams	105	x	x	0.75	Sweet potato in the GLW study, yams in the Hänke study; used under the same item code since the Uganda dataset does not collect data on yams, only sweet potatoes. The EFP used in the Hänke study is therefore related to yams.
Plantain	101	x	x	0.65	Specified as matoke in the GLW study, not specified which plantain type in the Hänke study; since matoke is widely used as staple food in Uganda, we assumed matoke for the Hänke study as well and used the item code corresponding with prices for matoke.
Beans	141	x	x	1	Not specified in either study whether fresh or dry form; the GLW study mentions mainly dried beans are purchased; hence, we used prices indicated for beans (dried) corresponding to item code 141.
Groundnuts	144	x	x	1	Not specified in either study whether shelled or unshelled, or pounded or unpounded. Since price data is mostly indicated for groundnuts (pounded), we used the corresponding item code to calculate price ratios for this item.
Beef	117	x	x	0.92	
Silver fish (mukene)	1237	x			

Food item	CEB01 matching code from the *Uganda National Panel Survey 2019-2020*	GLW benchmark	Hänke benchmark	Edible portion factor (EFP) used for Hänke benchmark food items	Notes
Green leafy vegetables (cabbage)	137	x	x	0.8	Prices for cabbage were used in the GLW study as suggested in the report; the Hänke study included cassava leaves as the commonly consumed green leafy vegetable in the studied area. Since cassava leaves do not exist as a separate food item in the Uganda dataset, we used cabbage price data stored under item code 137.
Green pepper	164	x			
Onions	135	x	x	0.88	
Tomatoes	136	x	x	0.92	
Eggs	124	x	x	0.93	
Milk	125	x	x	1	
Banana	1311	x	x	0.64	In the GLW study under the fruit category. The report mentions that the small variety is preferred. Since most price data were available for sweet bananas (ndiizi), we used this item code to calculate price ratios for this item.
Watermelon	169	x			
Cooking oil	1271	x	x	1	Not specified whether refined or unrefined in either benchmark. Since most price data are available for refined cooking oil, we used prices corresponding with this item to calculate price ratios.
Tea	149	x			
Sugar	147	x			
Millet	1151		x	1	Not specified in the Hänke study whether in grains or flour. More price data is available for millet flour; hence we used the item code corresponding with millet flour to calculate price ratios.
Sorghum	116		x	1	Not specified in the Hänke study whether in grain or flour form. More price data is available for sorghum in grain form; hence we used the item code corresponding with sorghum grains to calculate price ratios.
Fresh tilapia fish	1221		x	0.85	Not specified in the Hänke study which fish type. Literature notes Nile tilapia[20] as the most commonly raised and consumed fish in this region, hence we used prices corresponding with fresh tilapia to calculate price ratios.
Chicken	121		x	0.85	
Dodo	138		x	0.8	
Mango	132		x	0.62	

[20] See Ssekyanzi *et al.* (2025) and Ssekyanzi *et al.* (2023)

Appendix 3 Price ratios for food and housing costs

CEB01[21]	Item	Rakai–Lake Victoria Basin ratio (GLW)[22]	Rakai–Rwenzori ratio (Hänke)[23]
Food			
101	Plantain (matoke)	0.346995	0.612075
105	Sweet potato	0.620996	0.517243
107	Cassava (fresh)	0.620996	0.517243
110	Rice	1.078233	1.148202
113	Maize flour/posho	0.975286	0.965519
114	Bread (wheat)	0.973231	1.00309
116	Sorghum (flour)	1.25361	1.351474
117	Beef	0.912434	0.965667
121	Chicken	0.912434	0.965667
124	Eggs	0.614484	0.483
125	Fresh milk	0.573019	0.634489
132	Mango	0.380286	0.355915
135	Onions	0.618054	0.729741
136	Tomato	0.904273	0.812537
137	Cabbage	0.481251	0.648918
138	Dodo	0.481251	0.648918
141	Beans (dry)	0.768441	0.940155
144	Ground nuts (pounded)	0.773	1.089663
164	Green pepper	0.904273	0.812537
169	Watermelon	0.380286	0.355915
1151	Millet (flour)	1.25361	1.351474
1221	Fresh tilapia fish	0.493624	0.813293
1237	Silver fish (mukene)	1.048948	1.692623

[21] Tea and sugar were excluded from the analysis due to a complete lack of price data for these items in the Uganda National Panel Survey. As they account for less than 3% of total food costs in the GLW benchmark, any potential price differences are expected to only marginally impact food cost estimates for the Rakai district. Therefore, we assumed unchanged prices for these items when extrapolating the GLW benchmark.

[22] Lake Victoria Basin prices are based on average prices per item in the Wakiso, Mpigi and Mukono districts, indicated as study sites of the GLW benchmark.

[23] Rwenzori prices are based on average prices per item in the Ntoroko and Kasese districts, indicated as study sites of the Hänke benchmark. Bundibuygo was another study site, however there are no observations for this district in the Uganda National Panel Survey data.

CEB01[21]	Item	Rakai–Lake Victoria Basin ratio (GLW)[22]	Rakai–Rwenzori ratio (Hänke)[23]
1271	Cooking oil (refined)	0.999541	0.724776
1311	Sweet bananas (ndiizi)	0.380286	0.355915
Housing[24]			
301	Rental costs per household member	0.032878	0.223944
308	Paraffin/kerosene	1.007693	1.191844
309	Charcoal	1.043746	1.338503

[24] Electricity and water prices are centralised in Uganda; hence, no price differences between districts can be observed. In the Hänke study, electricity costs are proxied by solar panel costs since this is a more common source of electricity; we therefore used the same prices for solar panels as indicated in the original study given that solar panels likely cost the same across the country.

Appendix 4 Akvo pilot test presentation[25]

[25] Original slides prepared by Akvo and published with their permission; please note a different inflation rate to bring existing benchmarks to the 2025 level was used in this presentation than is used in the main report text.

Context

Data from **September 2025,** collected as a part of GCP baseline data collections for country platforms.

This data was used to adjust **two LI benchmarks** namely the **GLWC** (2021) Living Wage for Rural Uganda Lake Victoria Basin and the **Hänke** (2019) Fairtrade's Living Income Reference Price for Vanilla from Uganda and Madagascar.

Benchmarks were adjusted for **two regions in Uganda**, (1) the robusta growing **Mityana** region and (2) arabica growing **Mt. Elgon** region. The data for the latter was collected in Kapchorwa, Namisindwa, Bududa and Bulambuli.

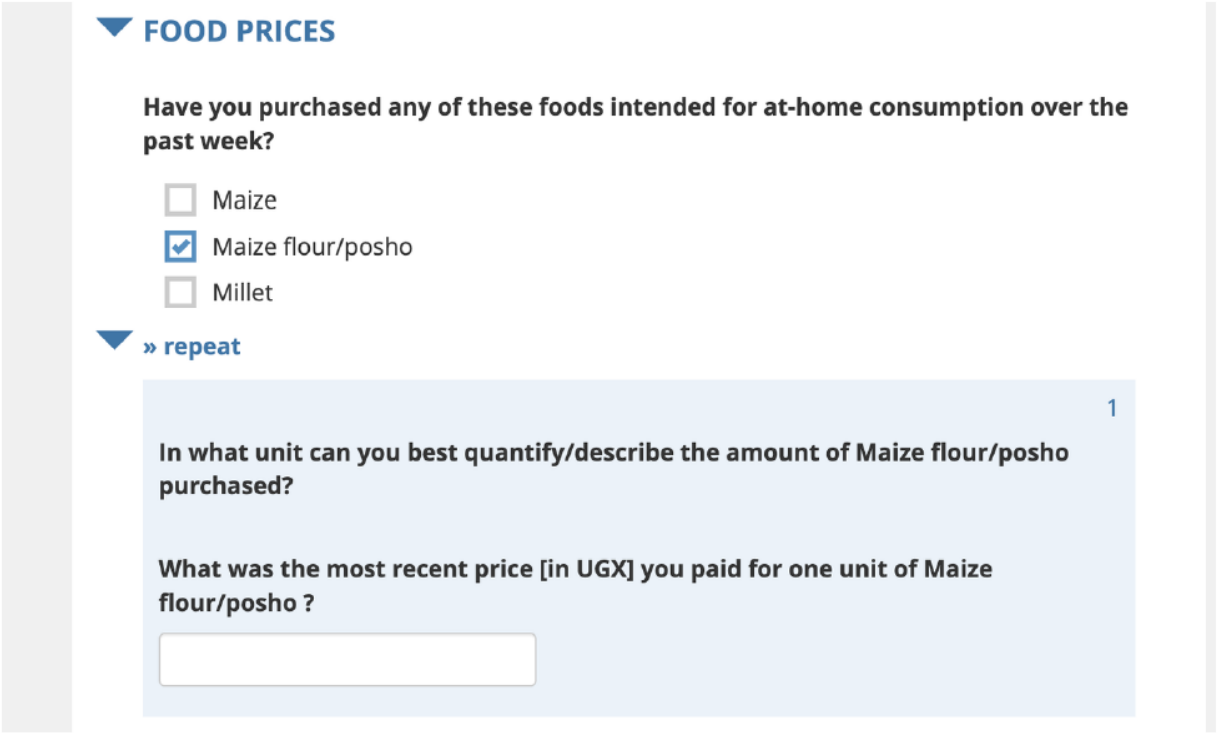
Resulting therefrom are four adjusted benchmarks:

1. Mityana benchmark based on GLWC
2. Mityana benchmark based on Hänke
3. Mt. Elgon benchmark based on GLWC
4. Mt. Elgon benchmark based on Hänke

Where are the farmers located?

The sample includes 342 farmers from five districts of Uganda: **Bududa, Bulambuli, Kapchorwa, Mityana and Namisindwa.**

Survey Setup



Apart from collecting data directly from farmers, our data collection coordinator also conducted **market spot-checks.**

A

Process: Data Cleaning

Data Cleaning

- visual data checks in Excel, ordering based on price, sanity checking
  - In some cases, the issues were clearly caused by incorrect measurement units (commonly gram instead of kilogram). **Where these could be clearly identified and corrected based on the rest of the data, we opted to do so.**
  - Other **significant outliers were removed fully** and not a part of the subsequent analysis.

Calculation of per kg price

- For simple units (e.g. packet 500g): direct conversion based on weight
- For pieces, bundles, heaps, baskets etc.: Based on conversion rates provided by WUR that are food specific

Outlier removal

- Removed all values further than 3sd away from the mean
- Done at a regional level (separately for Mityana and for Mt.Elgon)

Process: Number of Observations

The average food prices were derived in two ways:

- For food items, which were **reported by more than 20 farmers,** we have opted to calculate a **trimmed mean** (10%)
- For **the rest** of the food items we calculated a **regular mean.**

For foods where no data was collected, we have used the prices collected during the **market spot-checks.**

For some items, price data were entirely missing or there was a large mismatch of reported units and prices. For these items, we have:

- taken **benchmark reported prices**
- adjusted them for **inflation using CPI**
- used WUR provided **price difference ratios** between regions to approximate average price

Ratios were unavaliable for tea, meaning **we are using the original tea price from the individual benchmarks,** adjusted for inflation.

Food preference

One limitation of the methodology, is that adjusted benchmarks are based on the same food items as the original benchmarks. This means that **potential regional preferences may be overlooked.**

Overall, the **data shows similar trends in what farmers buy**, with the least common items and most common items being very similar between the two regions.

For two items, we observed a divergent trend, highligting the potential variation between regions.

On a larger scale, in countries with more diverse populations, this may become a more prominent limitation.

Limitations

1. **Data was collected at a single point in time** (September 2025), meaning it may reflect seasonal price spikes/drops. Prices have been adjusted using food-specific CPI values. However, data collection over longer periods of time would likely be more accurate.

2. **Survey set-up limitation:** we did not filter the answer options to be directly relevant to the pre-selected food item. This lead to large range of units being used, often ill-fitting (such as grams instead of kg, large range of packets/sackets etc., or litres for bread).

3. **Single Fish:** The two benchmarks mention two types of fish. This was not accounted for and the prices can currently reflect a wide variety of fish.

4. **Yams vs Sweet Potatoes:** The GLWC benchmark includes potatoes, Hänke includes yams. Our prices reflect sweet potatoes and have been used for both benchmarks.

5. **Small sample size:** some food items have a small number of reported observations. We have opted to keep these in to test the robustness of the methodology at a small sample size.

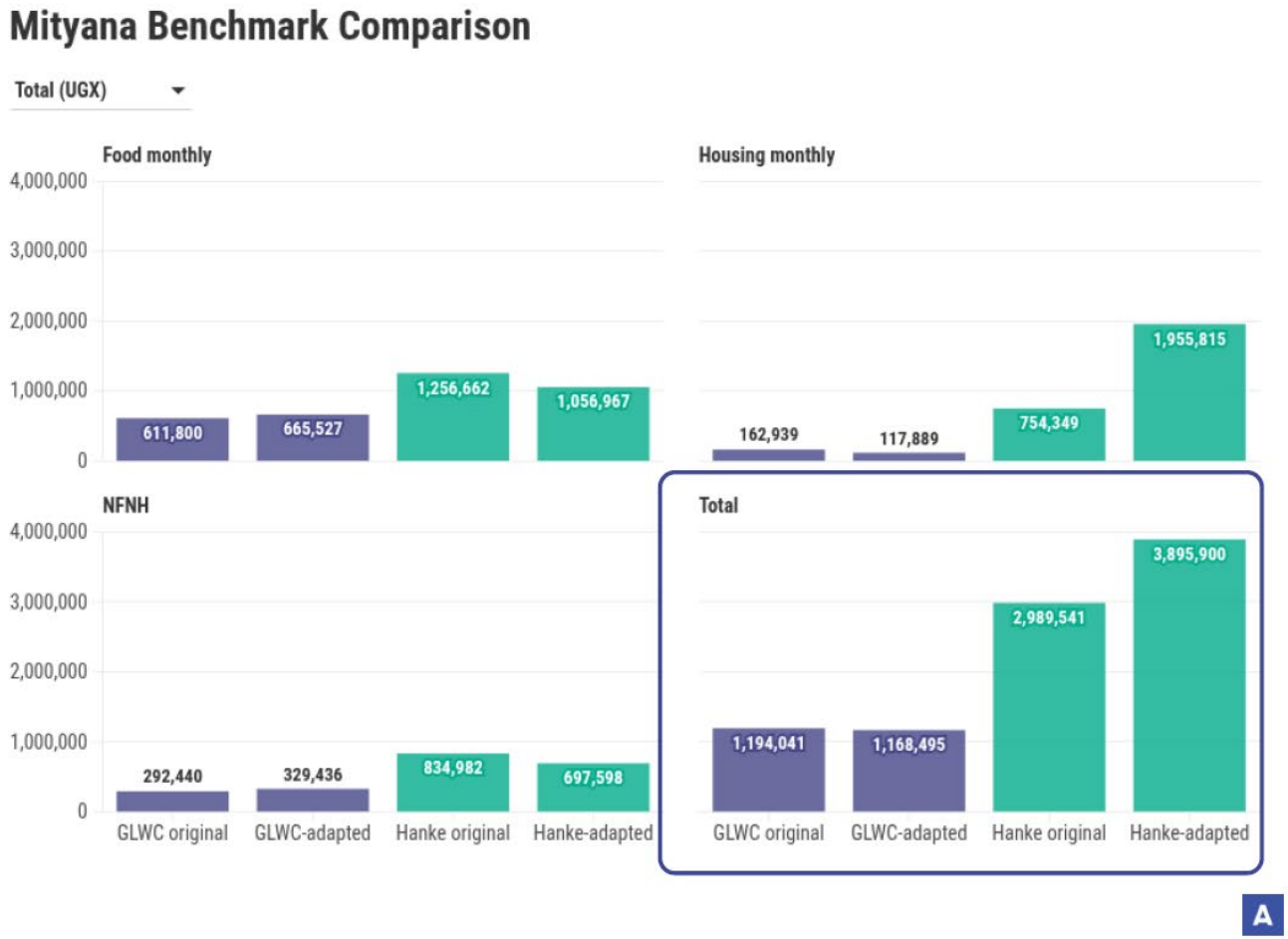
6. **Limited data cleaning**

Mityana Results

The visual on the right compares the original benchmarks, with the adapted Mityana regional benchmarks.

Intrestingly, food costs show the lowest overall change. The key driver in the differences between original and adapted benchmarks is the housing cost.

Housing costs are adjusted using average housing costs. Since Mityana housing costs are lower than in Lake Victoria (GLWC) and higher than in the Rwenzori region (Hänke), the adapted benchmarks further diverge.



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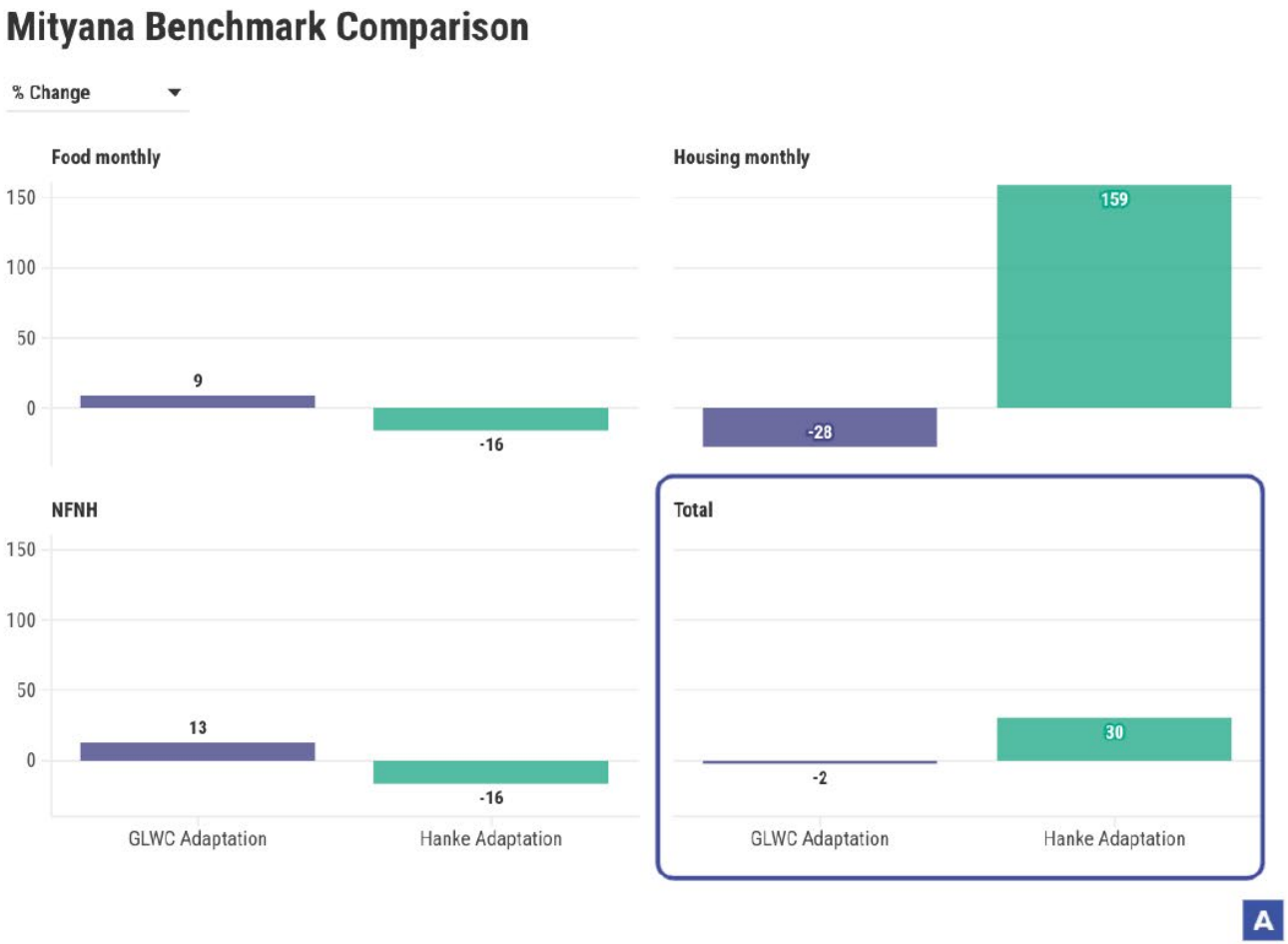
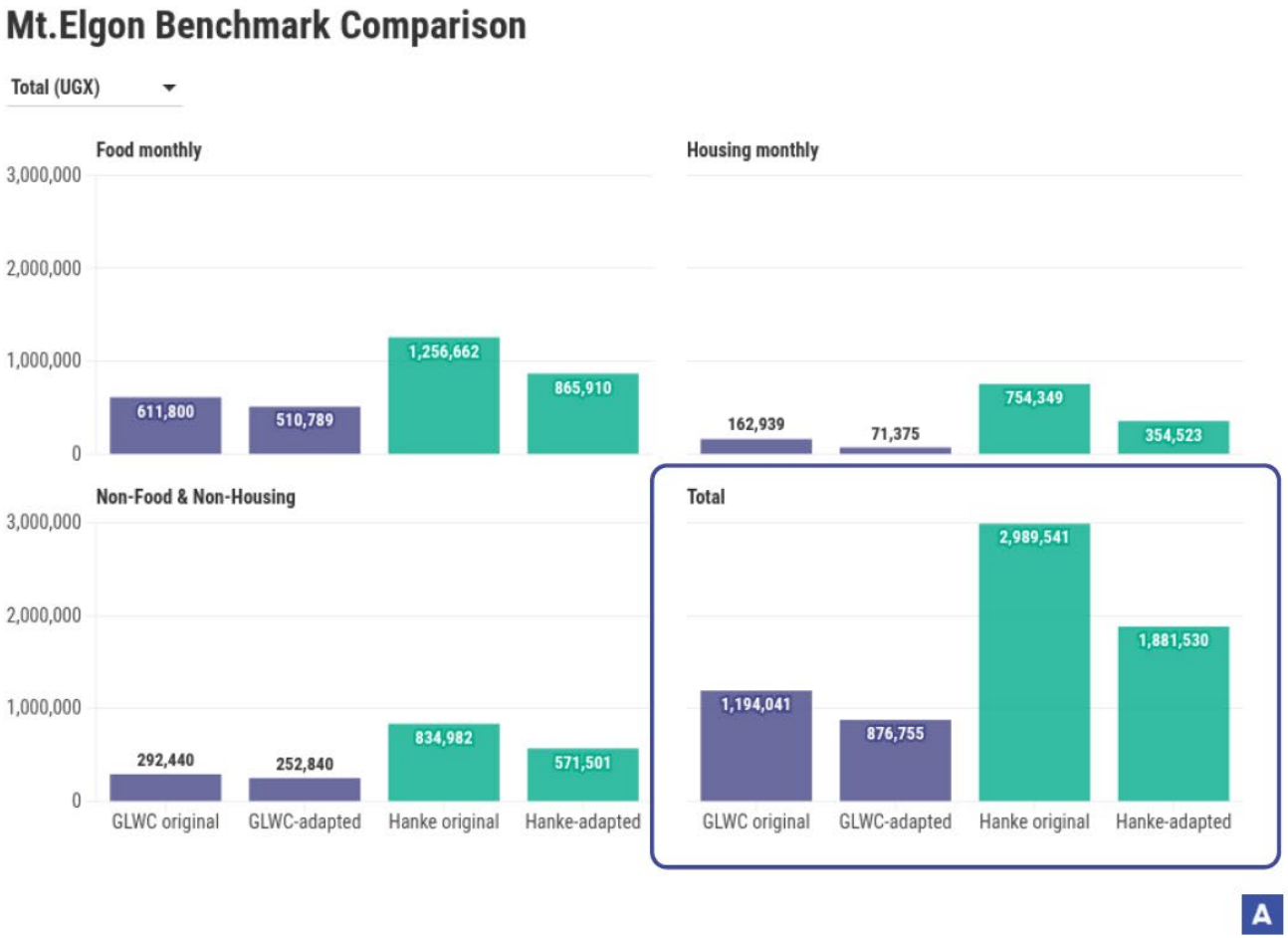


Mt.Elgon Results

Out of the regions considered in this analysis, Mt. Elgon appears to have the lowest costs across the board. Consequently, adaptations for both benchmarks, across all cost categories, lead to a decrease.

Housing costs are once again the most changed (% change). However, changes based on the collected food price data are more pronounced than in the case of Mityana. In the case of Hänke, the cost of food decreased by over a third.



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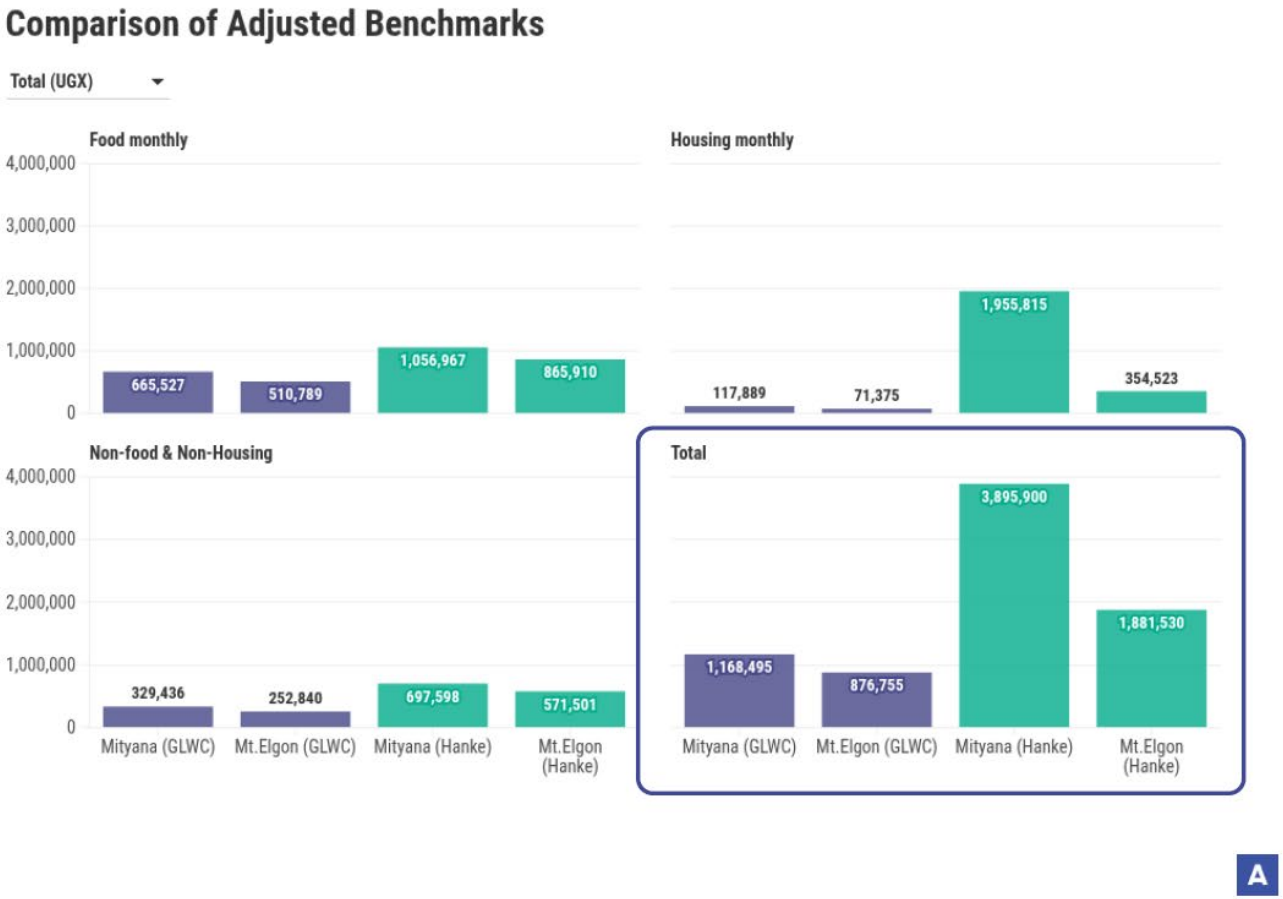
Comparative Results

Positively, a comparative evaluation of the two regions, reveals similar trends, regardless of which benchmark was used for adjustment. Mityana is the more expensive region in every cost category. Moreover, the ratio of Mityana food costs to Mt. Elgon is similar after adjustments (GLWC = 1.3, Hänke = 1.22).

However, this ratio shows greater differences when we compare the total adapted benchmarks. Based on GLWC adaptations, a basic but decent living in Mityana is 1.33 times more expensive than in Mt. Elgon. Hänke adapatations suggest its 2.07 times more expensive. This is mainly caused by housing cost adjustments.



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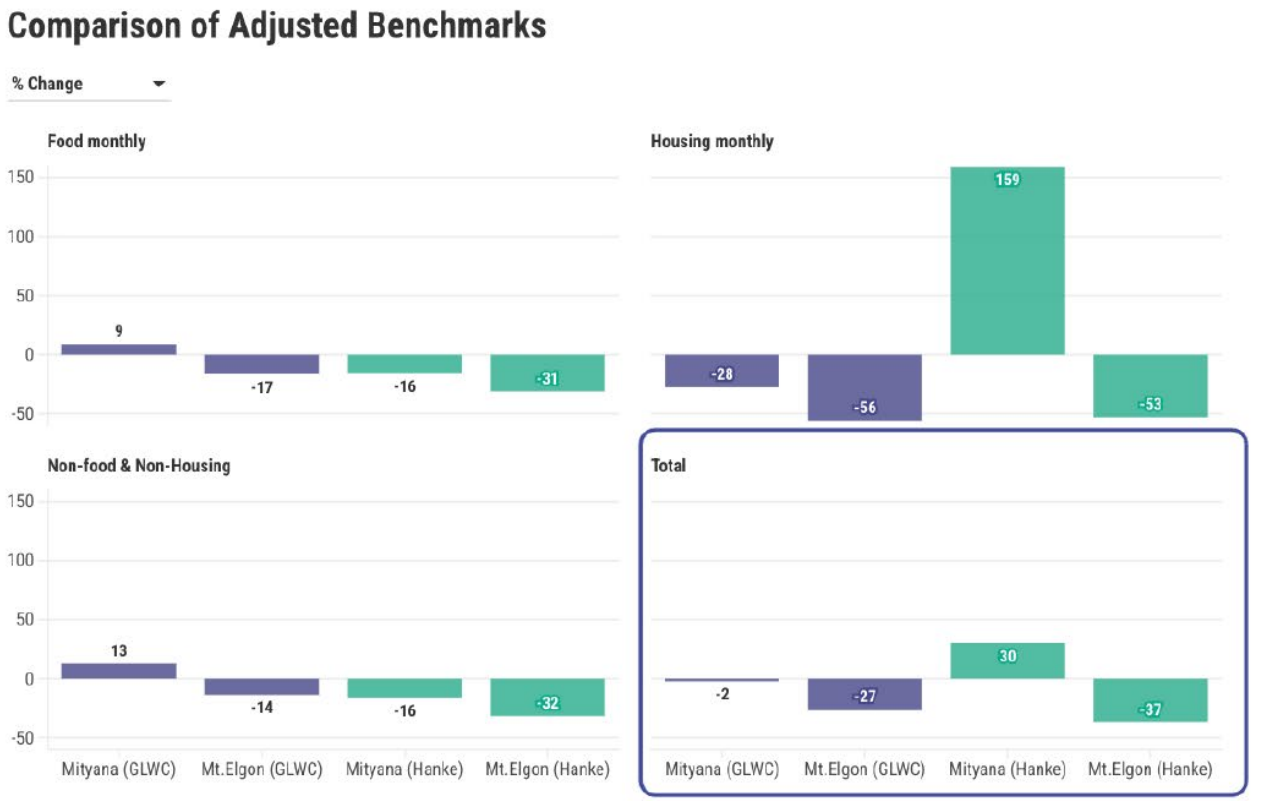

To explore the potential of nature to improve the quality of life

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