



Benchmarking the living income of smallholder farming households in the Oromia region of Ethiopia

Asfaw Zewdu³, Tesfaye Letta³, Beyene Teklu¹, Melkamu Girma², Legesse Abate³, Akalu Teshome³ and Mirjam Schaap⁴

¹ Hawassa University

² Haramaya University

³ Stichting Wageningen Research Ethiopia

⁴ Wageningen Social and Economic Research

SWRE-RAISE-FS-working paper # 022

Benchmarking the living income of smallholder farming households in the Oromia region of Ethiopia

Asfaw Zewdu³, Tesfaye Letta³, Beyene Teklu¹, Melkamu Girma², Legesse Abate³, Akalu Teshome³ and Mirjam Schaap⁴

¹ Hawassa University

² Haramaya University

³ Stichting Wageningen Research Ethiopia

⁴ Wageningen Social and Economic Research

Resilient Agriculture for Inclusive and Sustainable Ethiopian Food Systems (RAISE FS)
Addis Ababa, June 2026

RAISE-FS is funded by the Embassy of the Kingdom of the Netherlands in Addis Ababa (grant number 4000004753).
RAISE-FS is a programme hosted by Stichting Wageningen Research Ethiopia

SWRE-RAISE-FS-working paper # 022

Citation: Zewdu A., Leta T., Teklu B., Girma M., Abate L., Teshome A. and Schaap M. (2026) Benchmarking the living income of smallholder farming households in the Oromia region of Ethiopia. Stichting Wageningen Research Ethiopia, Addis Ababa. SWRE-RAISE-FS-26-056

This study explores the critical issue of achieving a decent standard of living for rural households, focusing on the income benchmarks required to meet essential needs beyond basic food and housing. Conducted in the Ada'a, Babile, and Wolmera *woreda* of Ethiopia's Oromia region, this work is part of the Stichting Wageningen Research Ethiopia RAISE-FS project. The study has been enriched by the collaboration of local experts, development agents, and academic institutions, as well as the logistical and data-sharing support of regional agricultural offices.

Key words: living income, benchmarks, income, gap, Oromia, Ethiopia

This working paper can be downloaded for free at <https://doi.org/10.18174/710210>

© 2026 Stichting Wageningen Research Ethiopia. P.O. Box 88, 6700 AB Wageningen, The Netherlands.
T + 31 (0)317 48 68 00, E info.cdi@wur.nl, www.wur.eu.



The Stichting Wageningen research uses a Creative Commons Attribution 4.0 (Netherlands) licence for its reports.

The user may copy, distribute and transmit the work and create derivative works. Third-party material that has been used in the work and to which intellectual property rights apply may not be used without prior permission of the third party concerned. The user must specify the name as stated by the author or licence holder of the work, but not in such a way as to give the impression that the work of the user or the way in which the work has been used are being endorsed. The user may not use this work for commercial purposes.

Neither Stichting Wageningen Research, Hawassa University, Haramaya University nor the report authors accept any liability for any damage arising from the use of the results of this research or the application of the recommendations.

SWRE-RAISE-FS-working paper # 022

Photo cover: Andualem Tadesse

Contents

Preface	vii
List of abbreviations and acronyms	viii
Summary	x
Introduction	11
Materials and Methods	13
Description of the study area	13
Sampling design and study participants	14
Data collection	15
Assessing the living income benchmark	15
Reference household size and composition	16
Method for living income benchmark calculation	16
Food costs	16
Housing costs	17
Non-food non-housing costs	17
Healthcare costs	18
Education costs	18
Social duty costs	18
Total budget for the living income benchmark	18
Data analysis	18
Results	19
Reference Household Size and Composition	19
Costs per item of the living income benchmark	19
Diet composition and food costs	19
Housing costs	20
Non-food non-housing costs (NFNH) costs	21
Health care	21
Education	22
Other Nonfood Non-Housing (other NFNH)	23
Living income benchmark and income gap	24
Discussions	26
References	27

Preface

Rural households have engaged in various livelihood activities to enhance both the quantity and quality of life. The main sources of income for farmers include crop production, livestock rearing, and off-farm or non-farm activities. However, there is limited information available about decent living standards for household members in rural areas. A decent standard of living encompasses not only food and housing but also non-food, non-housing (NFNH) expenses, which include education, healthcare, social responsibilities, transportation, and more.

This study seeks to evaluate the living income benchmark required for households to achieve a decent standard of living. It employed focus group discussions (FGDs) conducted in the Ada'a, Babile, and Wolmera *woreda* of the Oromia region in Ethiopia. The living income benchmark plays a crucial role in estimating the income gap between what rural households earn and the amount needed for a decent living. The benchmark is established through various procedures aligned with different indicators of a decent standard of living.

The research received financial support from the Dutch Embassy in Ethiopia for the Resilient Agriculture for Inclusive and Sustainable Ethiopian Food Systems (RAISE-FS) project. It is being hosted by Stichting Wageningen Research Ethiopia, based in Addis Ababa, to transform the Ethiopian food system across three food system typologies.

The study would not have been possible without the collaboration of enumerators, *woreda* experts, development agents, and kebele administrators. Additionally, implementing partners such as Haramaya University, Bishoftu Agricultural Research Center, and Holeta Agricultural Research Center, along with scaling partners that include the Agriculture and Land Offices of Ada'a, Babile, and Wolmera, played significant roles in facilitating, sharing secondary data, and providing logistical support.

The study has a limited geographic scope. It focuses on three food system typologies and agro-ecologies, particularly within the already selected *woreda* for the RAISE-FS project, which considers commercial, food-insecure, and high-potential food system typologies. The findings will serve as valuable input for policymakers, researchers, scholars, and students in designing interventions, generating further information, improving living standards, and transforming food systems in rural areas.

Contact : info.swrethiopia@wur.nl

More information : www.raise-fs.org

List of abbreviations and acronyms

AME	Adult Male Equivalent
ETB	Ethiopian Birr
CSA	Central Statistical Agency
FAO	Food and Agriculture Organization of the United Nations
FGD	Focused Group Discussion
ha	Hectare
KII	Key Informant Interview
Km	Kilo meter
M.a.s.l.	Meter above sea level
mm	milli meter
IFAD	International Fund for Agricultural Development
ILO	International Labor Organization
IZINCG	International Zinc Nutrition Consultative Group
NBE	National Bank of Ethiopia
NFNH	Non-Food Non-Housing
NGO	Non-Governmental Organization
PPP	Purchasing Power Parity
RAISE-FS	Resilient Agriculture for Inclusive and Sustainable Ethiopian Food Systems
SPSS	Statistical Package for Social Sciences
SWRE	Stichting Wageningen Research Ethiopia
PPP/AME/day	Purchasing Power Parity per Adult Male Equivalent
PPP/RH/day	Purchasing Power Parity per Rural Household per Day
TLU	Topical Livestock Unit
WSER	Wageningen Social and Economic Research
WHO	World Health Organization
WUR	Wageningen University & Research

Summary

Various benchmarks are available to measure the income necessary to live a decent life, such as the extreme poverty line and the living wage. To assess the living income for rural households, we evaluated the previously published Living Income Methodology of East Africa for the three *woreda*, viz. Ada'a, Babile, and Wolmera of the Oromia region.

Several data collection methods, including focus group discussions (FGDs), key informant interviews (KIIs), and market surveys, were used. The living income benchmark is expressed as per adult male equivalent per day (AME/day), is focused on rural households and their immediate surroundings.

The living income benchmark for Ada'a *woreda* was 214.04 ETB (US\$9.66) PPP/AME/day, while it was 184.43 ETB (US\$8.32) PPP/AME/day for Babile *woreda* and 225.20 ETB (US\$10.16) PPP/AME/day for Wolmera *woreda* and 204.70 ETB (US\$9.24) for the three *woreda*.

The food cost accounted for the largest share of the living income benchmark, with the highest values in Babile, followed by Ada'a and Wolmera *woreda*. Costs related to housing, healthcare, transportation, clothing, communication, and social obligations were relatively higher for Wolmera and Ada'a *woreda* as compared to those of Babile *woreda*. Farmers in Wolmera and Ada'a *woreda*, given their proximity to Addis Ababa and Bishoftu cities respectively, use a wider range of housing materials, health facilities, transportation options, and communication infrastructure. The social obligation costs were significantly associated with community groups like *Mahiber* in Ada'a and Wolmera, which are lower in Babile.

Therefore, comparing the living income benchmarks is crucial for evaluating different farming systems and areas with varying market access, as each farming system influences food production and is shaped by agro-ecological, socio-cultural, and economic factors. Besides, the cost of goods is also affected by market access. Moreover, calculating the living income benchmark for a particular area will aid in assessing the living income gap, enabling household-level comparisons of real income against the living income benchmark.

Introduction

The living income concept has evolved from a living income wage to determine the affordability for workers and farmers of a decent standard of living for all members in the household. Ethiopia has designed a ten-year prosperity development plan to increase agricultural productivity towards reducing poverty, enhancing income, and improving the livelihoods of the smallholder farmers. To achieve this plan and promote sustainable livelihoods and rural development, it is of paramount importance to examine the current living standards of smallholder farmers, particularly their livelihood strategies and how they are far from a decent standard of living. In dealing with these aspects, the living income study tool contributes to knowing the actual income of smallholders required for a decent standard of living, including nutritious food, housing, healthcare, education, water, clothing, transportation, unplanned events, and other essential needs of the household for the right decisions. Ethiopia has committed to implementing all Sustainable Development Goals (SDGs), particularly it paves attention in ending poverty and hunger (UN, 2015).

The agriculture sector is primarily contributing to SDGs 1 and 2, on which 6.3 percent contributed to economic growth in 2022/23. Agriculture accounts for 32.1 percent of Gross Domestic Product (GDP), 81.7 percent generates exports, and 62.4 percent of employment in 2022/23 (NBE, 2024; World Bank, 2025). In rural areas, more than 95 percent of smallholders depend on agricultural production and are closely linked to the SDGs in enhancing food security, eradicating poverty, and generating employment opportunities (Otsuka, 2013). Despite this, there are various complex challenges affecting agricultural production to meet the decent living standards of the smallholder farmers. For instance, increased price of agricultural inputs, climate change, land shortage, limited agricultural extension services, lack of access to improved agricultural technologies, and socio-economic, political, infrastructural, and institutional drivers are affecting the potential production of the sector toward improving the living standard of the communities (Data et al., 2024; Rana et al., 2023). Ultimately, the complex challenges will not allow smallholder farmers in low-income countries to produce all the food required (Pawlak & Kołodziejczak, 2020).

Ethiopia, like many other emerging nations, has made notable strides in reducing poverty; however, approximately 24% of its population still lives below the poverty line (World Bank, 2024). In 2017, the Purchasing Power Parity (PPP) threshold for extreme or international poverty in low-income countries was set at 2.15 US dollars per capita per day (World Bank, 2022). This figure was revised to account for rising prices based on the national poverty thresholds in the world's 15 most disadvantaged economies (World Bank, 2022). The international poverty line has served as a key indicator to evaluate the effectiveness of poverty reduction efforts (Debebe & Zekarias, 2020). However, this measure is somewhat broad and fails to consider the specific contexts of different countries or regions. For wage earners, a more contextually relevant poverty measure, known as the living wage, was developed (Anker, 2008). The concept is relevant in the context of hired labor. However, since the poverty line indicator is applied at regional or national levels, utilizing the international poverty line as a measure is too generalized to accurately capture the diversity of rural farm households. Moreover, while the living wage indicator is often associated with commercial tea plantation regions, relying on the minimum wage rate may not be suitable for non-commercial agricultural settings. To address this gap, a new measure called living income benchmarking was introduced to assess a decent standard of living for smallholder farming households in East Africa (van de Ven et al., 2021).

Given that living wages are specifically applicable to employed populations, it is essential to apply living income benchmarking to self-employed communities, such as those involved in smallholder farming. The International Labor Organization (2022) also advocates for living income as opposed to a living wage to ensure that self-employed smallholder farmers can cover their basic needs through income generated from selling their goods and services in the marketplace. Living income benchmarking helps determine how much a typical household in a specific area needs to earn from all sources of income to attain a satisfactory standard of living. This approach allows for the comparison of living income benchmarks with total annual household incomes, ultimately facilitating the calculation of the living income gap within a region. Identifying this gap enables the development of targeted solutions aimed at bridging the living income shortfall.

A recent study conducted by van de Ven et al. (2021) introduced the concept of living income to establish a benchmark for the incomes of smallholder farmers in East Africa. This benchmark was deemed necessary due to the scarcity of indicators available to evaluate whether the income of farming households is sufficient to secure a decent standard of living (van de Ven et al., 2021). A living income is defined as the requisite

financial resources to provide an adequate quality of life for all household members, which is assessed by considering the costs associated with a nutritious diet, decent housing, and necessary non-food expenses, including clothing, transportation, healthcare, and education (Komives et al., 2015).

In contrast to the poverty line, a living income benchmark can be tailored to specific geographic locations and diverse social groups, thereby offering a more accurate reflection of the region's actual cost of living (Cruickshank and Bammann, 2024). This benchmark addresses the inquiry: "What amount must a typical household in a designated area earn from all income sources to attain a respectable standard of living?" (van de Ven et al., 2021). The response to this inquiry enables comparisons between living income benchmarks and the annual total income of agricultural households. It helps in calculating the living income gap and provides insights into the additional income required by farming households to achieve a living income (IDH, 2023; Oxfam International, 2021). The establishment of living income benchmarks for East Africa emerged from discussions concerning the suitability of using living wages to assess the income of self-employed households.

In alignment with this initiative, a Dutch Government-funded project, known as RAISE-FS, is focusing on the transformation of food systems. One of the project's objectives is to enhance the livelihoods of smallholder farmers across various food system typologies. To be able to monitor change, the project uses a living income approach. The initial step undertaken involved establishing a living income benchmark, followed by an assessment of the living income gap across three food system typologies in the Oromia region of Ethiopia. The project also aims to evaluate whether small-scale food producers in the intervention area are making progress in bridging the gap between their actual annual income and the established living income benchmark.

The three *woreda* which were purposively selected for this study were Ada'a, Babile, and Wolmera, and have been categorized into three different food system typologies. Ada'a *woreda* represents a commercial food system typology, while Babile *woreda* represents a food-insecure food system typology. Wolmera *woreda* represents a food-secure food system typology. The specific objectives of the study were:

- To determine the benchmark(s) for living income.
- To obtain insights on how benchmarks might vary across *woreda*.
- To know how many different benchmarks are needed to meaningfully report on living income gaps.

Materials and Methods

Description of the study area

Regarding geographic scope, this study was conducted in three *woreda* of the Oromia regional state of Ethiopia. The *woreda* were purposefully selected due to the fact that they are among the RAISE-FS project implementation *woreda*. These *woreda* were categorized into different food system typologies. For instance, Ada'a *woreda* is categorized into the commercial, Babile *woreda* is categorized into the food insecure, whereas Wolmera *woreda* is categorized as the food secure food systems typologies. Within each *woreda*, the actual income data was collected through a survey two *kebeles*. As shown in Figure 1 below, the *kebeles* where the surveys were conducted included: Akako and Denkaka (from Ada'a *woreda*), Bishan Babile and Erer Ibada (from Babile *woreda*), and Burkusame Geba Robi and Wolmera Choke (from Wolmera *woreda*). The detailed descriptions of these *woreda* are depicted in Table 1. The living income benchmark was calculated at the *woreda* level.

Table 1. Detailed description of the study areas ¹

Variables		Ada'a <i>woreda</i>	Babile <i>woreda</i>	Wolmera <i>woreda</i>
Number of <i>kebeles</i>	Rural	25	21	19
	Urban	0	2	1
Distance from Addis Ababa (km)		45	565	39
Borders	North	Gumbichu and Akaki <i>woreda</i>	Harari region	Mulo <i>woreda</i>
	East	Lume <i>woreda</i>	Gursum <i>woreda</i>	Shaggar City
	South	Dugda Bora <i>woreda</i>	Somalia region	Sebeta Awas <i>woreda</i>
	West	West Shewa Zone	Fadis <i>woreda</i>	Ejere <i>woreda</i>
Average altitude (m.a.s.l)		1731	1431	2590
Latitude		8° 35' N	8° 40' 1" N	8° 55' 37" N
Longitude		38° 55' E	42° 25' 1" E	38° 31' 19" E
Average annual rainfall (mm)		860	410-800	1069
Population size	Male	94,463	72,468	46,813
	Female	87,699	75,212	40,071
	Total	182,162	147,680	86,884
Agroecology (%)	Highland	3	0	61
	Midland	94	10	39
	Lowland	3	90	0
Cultivated land (ha)		49,467	30,234	48,796
Major crop produced		Teff, wheat, chickpea, barley, lentil	Sorghum, groundnut, maize, common bean, <i>khat</i> , etc.	Wheat, barley, teff, potato, faba bean, field pea
Major livestock reared		Cattle, sheep, goat, equines, poultry.	Cattle, goat, sheep, camels, equines, poultry	Cattle, sheep, equines, poultry, and beehives.

¹ Data obtained from Ada'a, Babile, and Wolmera Agriculture and Land Offices. Addition data were also obtained from their three respective Woreda Food System Profiles ([Ada'a Woreda Food System Profile](#), [Babile Woreda Food System Profile](#) and [Wolmera Woreda Food System Profile](#))

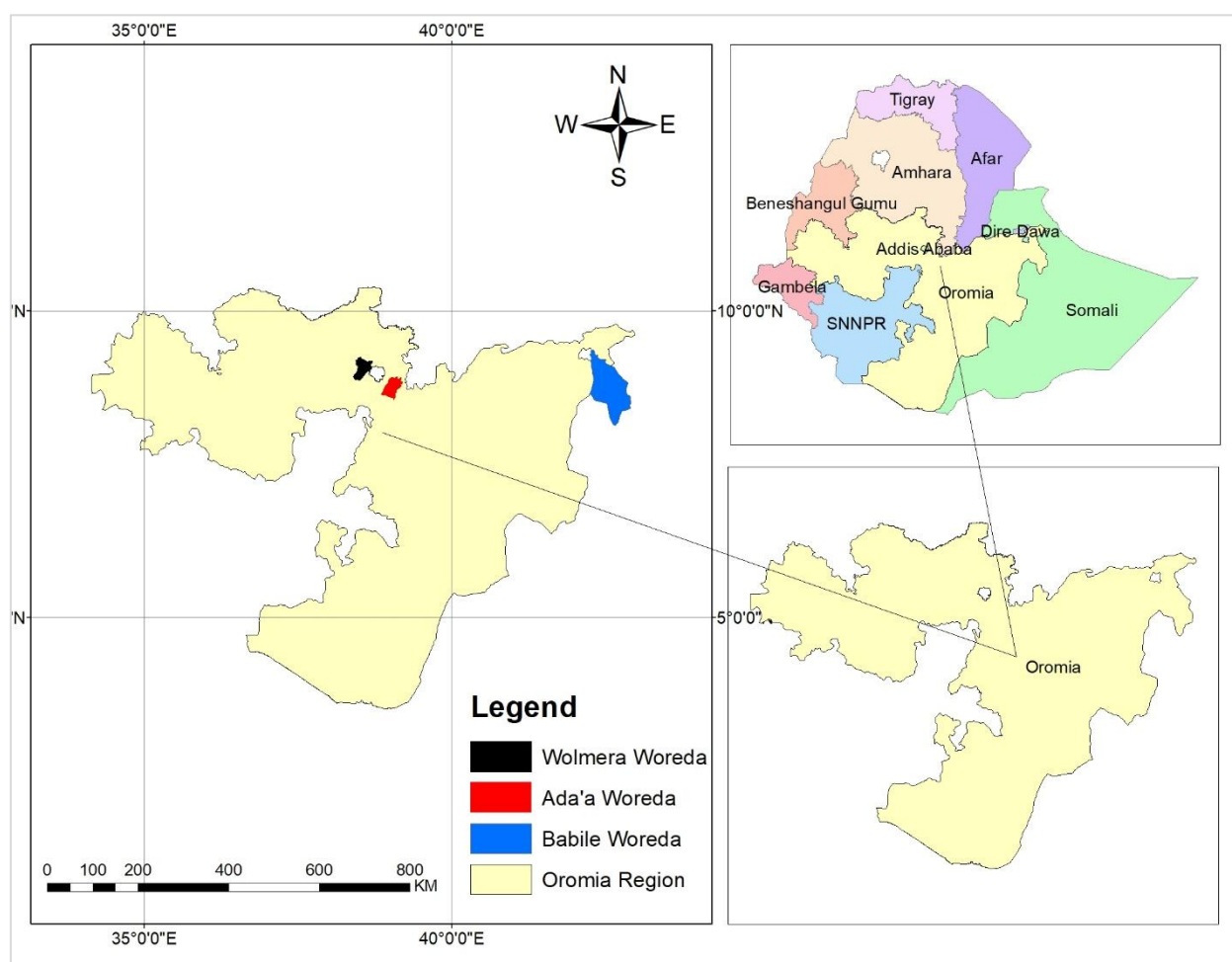


Figure 1. Map of the study areas

Sampling design and study participants

Different methods of data collection were employed to assess the living income benchmark. These include key informant interviews (KIIs), focus group discussions (FGDs), secondary data/reports, and participant household surveys. The data gathered from these sources were subsequently triangulated. The size and composition of the reference households were determined through a household survey that involved 363 respondents: 116 from Ada'a, 126 from Babile, and 121 from Wolmera *woreda*. While a total of 310 sample households participated in the baseline survey, the remaining 53 households were engaged in innovation piloting.

FGDs and KIIs were conducted to assess costs associated with housing, food, and non-food non-housing expenses (such as healthcare and education). Participants in these discussions were exclusively drawn from individuals who had participated in the baseline survey or who were involved in the RAISE-FS project interventions. Data related to costs of education, healthcare, and transportation were collected through KIIs and FGDs, and key stable food items were also identified using these data collection methods. The FGDs were conducted in three categories: one category comprised mixed groups of youth and adult/older males, as well as adult and youth females; the second category comprised solely female participants from various age groups; and the third category comprised male participants spanning different age groups. In total, six FGDs were conducted, each comprising 8-10 members.

Food prices for each of the three *woreda* were collected from June to July 2024 across multiple vendor locations, including central open-air markets and small shops in Bishoftu and Godino town for Ada'a *woreda*, while from the *woreda*'s capital town for Babile (Babile town) and Wolmera (Holeta town).

Data collection

For this study, the living income benchmark was calculated using the costs associated with basic decent housing, the cost of a nutritious yet low-cost diet, non-food costs (including education, healthcare, and transportation), and miscellaneous costs. The data on these costs were collected through FGDs, KIIs, and a market survey as mentioned above. As suggested by Van de Ven et al. (2021), the living income benchmark covers four primary expenditure categories such as food, housing, non-food non-housing (NFNH), social duty, and unforeseen expenses (Table 2). Food costs are comprised of the total expenses associated with a low-cost nutritious diet, along with miscellaneous food costs. The latter constitutes 16% of the low-cost nutritious diet costs and includes 10% for dietary variation, 2% for salt, spices, and condiments, and 4% for food waste (van de Ven et al., 2021). Housing costs encompass the value of an owner-occupied home, in addition to expenses related to utilities, maintenance, and taxes. NFNH costs cover essential health care and education, along with a margin for additional NFNH goods and services, which include clothing and footwear, household equipment, transportation, and communication.

Table 2: Criteria and variables for the living income benchmark

no	Criteria	variables
1	Food cost	Low-nutrient diet cost and miscellaneous costs*
2	Housing cost	Value of owner-occupied house, utilities, maintenance, and tax cost
3	Non-food and non-housing costs	Health care costs, education costs, and other non-health and non-education cost
4	Social duty (such as <i>Edir</i> , etc.)	<i>Edir</i> , festivals
5	Unforeseen costs**	Costs incurred unexpectedly

*Miscellaneous costs (16% of Low-cost nutritious diet costs) = $1.16 \times \text{Low-cost nutritious diet costs}$.

**Unforeseen costs (10% of Living income) = $(\text{Food costs} + \text{Housing costs} + \text{NFNH costs})/10$. Source: van de Ven et al. (2021)

Assessing the living income benchmark

A short list of guiding questions was used to estimate the living income benchmark (see Table 3). These questions are linked to the Living Income Survey, which includes data collection guidelines, and the Living Income Diet Tool. As indicated by van de Ven et al. (2021), both tools are utilized to rapidly benchmark the living income in a rural area transparently and consistently.

Table 3: Guiding questions to estimate the living income benchmark in a particular time and place

No	Guiding questions
1	<i>Reference household size and composition</i> What is the average number of adult males, adult females, and children (<18 years old) per household?
2	<i>Food costs</i> What are the cheapest and most consumed foods per food group, available at vendor locations where reference households commonly shop for cheap foods? For these foods: what is the current price (per kg or L)? For foods with strongly fluctuating prices within a year (>25%), what is the most common price throughout the year (per kg or L)?
3	<i>Housing costs</i> What are the local minimum standards for decent housing for a reference household, considering local standards in comparison to the international housing standards? What are the annual housing costs for a house that complies with these local minimum standards for decent housing?
4	<i>Health care costs</i> What are the costs of basic health care insurance? Which health care service types are (not) covered? What are the costs of health care services not covered by the basic insurance?

Education costs

- 5 How many years of education are officially counted for the completion of primary and lower secondary school?
What are the household out-of-pocket expenses per child for one year of public education at each of these education levels?

Reference household size and composition

The average household size and the composition of adult males, adult females, and children under 18 years of age is referred to as the reference household. To assess the role of agriculture in rural development and food security in less developed countries, the living income per adult male equivalent (AME) was calculated for rural families based on their energy requirements. In this unit of measurement, AME encompasses men, women, and children, which differs from assessments based solely on national statistics related to labor participation (Anker & Anker, 2017b). One AME requires 2,500 kcal per person per day, where females are equivalent to 0.82 AME (2,050 kcal/day) and children (ages 0–18) to 0.75 AME (1,875 kcal/day) (FAO/WHO/UNU, 2001a). This helps to easily calculate the living income necessary to meet the food and nutritional needs of households of varying sizes and compositions, including extended families.

Method for living income benchmark calculation

The following provides a detailed explanation of the methodology used to calculate the individual components of the living income benchmark, including food costs, housing costs, and non-food, non-housing expenses.

Food costs

Household energy requirements were estimated based on key demographic and physiological factors, including age, sex, body size, and physical activity level. This calculation followed a low-cost dietary model comprising 20 food items across 11 food groups, following the methodology proposed by Anker and Anker (2017b). To determine food costs, emphasis was placed on identifying the most affordable, nutritious diet, using the Women's Dietary Diversity Score (FAO, 2010) as a guiding framework. This approach ensures dietary diversity and supports a balanced, micronutrient-adequate intake. The analysis incorporated nine core food groups: starchy staples; vegetables; fruits; meat; fish and seafood; eggs; milk and dairy products; legumes, nuts, and seeds; and fats and oils.

First, a selection of inexpensive and commonly consumed foods was identified within each food group, based on availability across multiple local sources, including open-air markets and small village shops. To ensure sufficient options for the choice of a low-cost, nutritionally adequate diet, price data were collected for a minimum of three foods of acceptable quality per food group. Among these, two were the lowest-priced items (per kilogram or liter), and one was the most frequently consumed food. For each selected item, current market prices were gathered from 5 to 10 different vendor locations, depending on price variability. In cases where seasonal price fluctuations exceeded 25%, the common prices for each vendor were obtained and utilized in the analysis. Price adjustments were applied to food groups particularly affected by seasonality, namely, starchy staples, vegetables, and fruits. For both current and common prices, the median value was used in the cost calculations.

The Living Income Diet Tool was employed to determine the lowest-cost diet per AME that fulfills all dietary requirements for energy, carbohydrates, protein, fat, and a selection of micronutrients. This calculation was carried out based on the most prevalent deficiencies identified in lower-income countries as suggested by Beal et al. (2017) (see Table 4). The dietary requirements ensure that both females and males meet their minimum needs; for instance, the iron threshold is set adequately for women, resulting in a slightly higher level for males. It is assumed that food is distributed among household members based on their specific nutritional needs. Eventually, the food cost was calculated by considering the nutrient content of each food item and its price. The nutrient content of food was considered based on the composition of the raw purchased products, the average wastage factor for each food group (<https://ndb.nal.usda.gov>; <http://www.fao.org/infoods/infoods/tables-and-databases/en/>), and the average retention factor for each nutrient post-preparation (e.g., boiling, frying), as specified for ground according to (USDA, 2007).

Table 4: Nutritive Requirements in the Living Income Diet Tool

Dietary components	Required intake per AME	Unit	Sources/references
Energy	2,500 (2,400 – 2,600) ²	kcal/day	(FAO/WHO/UNU, 2001b)
Carbohydrate	≥ 344	g/day	(WHO/FAO, 2003)
Protein	≥ 63	g/day	(WHO/FAO, 2003)
Total lipid (fat)	≥ 42	g/day	(WHO/FAO, 2003)
Calcium, Ca	≥ 833	mg/day	(WHO/FAO, 2004)
Iron, Fe	≥ 36	mg/day	(IOM 2001)
Zinc, Zn	≥ 15	mg/day	(IZiNCG, 2004)
Vitamin A	≥ 99	IU/day	(WHO/FAO, 2004)
Vitamin C, total ascorbic acid	≥ 43	mg/day	(WHO/FAO, 2004)
Folate, DFE	≥ 320	µg/day	(WHO/FAO, 2004)
Thiamine	≥ 1.0	mg/day	(WHO/FAO, 2004)
Riboflavin	≥ 1.1	mg/day	(WHO/FAO, 2004)
Vitamin B	≥ 2.0	µg/day	(WHO/FAO, 2004)

In addition to the calculated food costs, a 4% adjustment was applied to account for food waste, reflecting the average for low-income countries as reported by FAO (2010). An additional 2% was included to cover the cost of essential non-nutrient items such as salt, spices, and condiments. Furthermore, a 10% margin was added to allow for dietary variation.

Housing costs

The benchmark for basic healthy housing was set based on internationally recognized standards, adapted to the context of the Oromia region in Ethiopia. This adaptation considered factors such as the availability of construction materials, local climate conditions, and the size and composition of the typical household. The housing standard assumes an expected service life of approximately 50 years without requiring major repairs, referred to as the 'expected service life' of the dwelling (van de Ven et al., 2021).

Housing cost estimation involved two main steps: (1) defining a minimum standard for basic healthy housing appropriate for a reference household in the study *woreda*, and (2) estimating the annual costs associated with a house meeting this standard. To assess prevailing housing conditions, a combination of secondary data sources, direct field observations, key informant interviews (KIIs), and focus group discussions (FGDs) was employed. The expected service life of houses was cross-validated through FGDs conducted in each study area.

Data for estimating the cost of a standard house were collected through multiple FGDs. Participants were asked to identify the criteria of a high-quality house, considering factors such as the type of walls, roofing, and flooring. Additionally, they were requested to provide estimates for: 1) the total construction costs, including all materials and labor, as well as the expected service life; 2) annual utility expenses, such as water, electricity, cooking fuel, heating, and lighting; 3) annual costs for routine maintenance and minor repairs; and 4) annual payments related to taxes, levies, fees, and insurance. Eventually, the costs of construction were distributed over the expected service life of the house.

Non-food non-housing costs

Non-food, non-housing (NFNH) expenditures encompass essential costs related to education, healthcare, and other basic needs, including clothing, footwear, transportation, and communication. Data on NFNH expenditures were collected through focus group discussions (FGDs) conducted with study participants. The sections below provide a detailed analysis of NFNH costs specifically associated with healthcare and education.

Healthcare costs

Healthcare costs were defined as the total annual out-of-pocket expenditures incurred by households for essential health services, taking into account the availability and accessibility of local healthcare facilities. Data on healthcare expenditures were collected using a mixed-methods approach, incorporating secondary data sources (such as patient records from local health facilities), key informant interviews (KIIs) with clinic staff and health extension workers, and focus group discussions (FGDs) with community members. During the FGDs, participants were asked to identify the most common diseases, estimate the average number of healthcare visits associated with these conditions, and report the typical cost per visit. To validate the information gathered through FGDs, consultations were conducted with local health extension workers in each kebele. In addition, data on the average annual number of healthcare visits per household were extracted from health facility records.

Education costs

Education costs refer to the total annual out-of-pocket expenses incurred by households to secure access to public primary and lower secondary education for all school-aged children within the reference household. According to UNESCO (2000), compulsory education typically begins between the ages of 5 and 7 and continues until ages 11 to 18, encompassing both primary and lower secondary levels. In Ethiopia, the national education structure comprises eight years of primary education (ages 7–14), followed by four years of secondary education (ages 14–18). This study focuses exclusively on public schools, based on the assumption that the majority of rural households enroll their children in government schools, which are expected to deliver education of sufficient quality.

Data on education-related expenditures were gathered through key informant interviews (KIIs) and focus group discussions (FGDs) with stakeholders, including local education experts and parents or guardians of school-aged children. Household expenditure estimates include only essential costs necessary for school attendance, such as school fees, uniforms or appropriate clothing, and learning materials (e.g., books and stationery). Total costs were calculated on a per-child basis and then annualized over 18 years to determine the average annual education cost per child.

Social duty costs

Social duty costs, encompassing costs related to *Edir*, *Mahiber*, and other community-based contributions aimed at fostering social cohesion, were assessed through focus group discussions.

Total budget for the living income benchmark

The total living income benchmark was calculated as the aggregate of estimated expenditures for food, housing, non-food non-housing (NFNH) needs, and social obligations per reference household. To account for unforeseen expenses, a contingency margin of 10% was added to the total estimated budget.

Data analysis

Data analysis was carried out using the Statistical Package for the Social Sciences (SPSS) version 27 and Microsoft Excel 2021. Descriptive statistics, such as means and percentages, were computed, and the results were summarized and presented using tables and graphical illustrations.

Results

Reference Household Size and Composition

Table 5 presents the size and composition of the Reference Household (RH) in the Ada'a, Babile, and Wolmera *woreda* of the Oromia Regional State, Ethiopia. The reference household size, expressed in Adult Male Equivalent (AME) units, was estimated at 4.43 AME in Ada'a, 5.29 AME in Babile, 4.24 AME in Wolmera, and overall, 4.67 AME. The composition is disaggregated by age and gender, showing the number of individuals per household, the AME assigned per individual, and the total AME per age and gender group.

Table 5: Reference household (RH) composition by age and gender in Ada'a, Babile, and Wolmera *woreda*

Age and gender group	Individuals/RH				AME/ individual	AME/age & gender group			
	Ada'a	Babile	Wolmera	Total		Ada'a	Babile	Wolmera	Total
Adults, male	1.75	1.13	1.43	1.43	1.00	1.75	1.13	1.43	1.43
Adults, female	1.57	1.17	1.58	1.44	0.82	1.29	0.96	1.29	1.18
Children (<18)	1.86	4.25	2.02	2.75	0.75	1.40	3.19	1.52	2.06
AME (Adult male equivalent) per reference household						4.43	5.29	4.24	4.67

Costs per item of the living income benchmark

Diet composition and food costs

Table 6 presents the composition and associated costs of a low-cost, nutritious diet calculated for Ada'a, Babile, and Wolmera *woreda*, with the living income diet tool based on locally available foods and market prices in AME. Wheat and sorghum emerged as the primary starchy staples consumed by smallholder households. In Ada'a and Wolmera, wheat was the predominant staple, while sorghum was mainly consumed in Babile. Faba beans, commonly prepared as *Shiro*, were widely consumed in Ada'a and Wolmera, whereas in Babile, haricot beans and fenugreek were incorporated into both *Shiro* and *wat*, reflecting local dietary preferences (Table 6).

Results of the Living Income Diet Tool show that the minimum costs for a nutritious diet were 85.77 ETB (US\$3.87) PPP/AME/day or 138,685.80 ETB (US\$6,257.60) PPP/RH/year for an Ada'a *woreda*. On the other hand, 111.18 ETB (US\$ 5.01) PPP/AME/day or 214,671.90 ETB (US\$ 9,673.56) PPP/RH/year for Babile and 84.12 ETB (US\$ 3.79) PPP/AME/day or 130,184.11 ETB (US\$ 5,865.40) PPP/RH/year were found to be the minimum costs for a nutritious diet for Wolmera *woreda*. Overall, the minimum costs for a nutritious diet in three *woreda* were 93.67 ETB (US\$ 4.23) or 159,665.20 ETB (US\$ 7,210.23) PPP/RH/year (see Table 5).

Commodity prices are collected from open markets, shops, and supermarkets in Bishoftu City and Godino for Ada'a *woreda*, Babile town for Babile *woreda*, and Holeta town for Wolmera *woreda*. The market survey results show that the most common prices throughout the year were used for kale and tomatoes because their current price differed by >25%, 29.8%, and 59.2%, respectively, from the most common price in Ada'a *woreda*. In Babile *woreda*, the most common prices for kale were used because their current prices were 40.9, which differed by >25%. Likewise, for Wolmera *woreda*, the most common prices for tomatoes and cow milk were used as the current price differed by >25%, 88.1%, and 27%, respectively. Read meat is not considered in the good food category despite consideration of the low-cost nutritious diet. To meet animal

source foods, milk and eggs were considered representing the animal source of food category based on the six-food group category of Ethiopian dietary guideline.

Table 6: Composition and costs for a low-cost nutritious diet calculated with the Living Income Diet Tool for the three woreda of the study area based on local market prices in AME

Food (sub)group	Food	Market price ² , ETB/kg	Calculated amount purchased g/AME/day	Calculated food costs 2023 ETB (US\$) PPP/AME/day
Ada'a				
Starchy foods	Wheat	58	350	20.30 (0.92)
Dark green leafy vegetables	Kale	32	20	0.64 (0.03)
Vitamin A-rich vegetables	Tomato	33	10	0.33 (0.01)
Other Fruits	Banana	55	200	11 (0.50)
	Avocado	49	100	4.9 (0.22)
Eggs	Chicken eggs	220	30	6.6 (0.30)
Legumes, nuts, and seeds	Faba bean	74	50	3.7 (0.17)
Milk	Cow milk	64	400	25.6 (1.15)
Oils and fats	Palm oil	174	5	0.87 (0.04)
Low-cost, nutritious diet costs				73.94 (3.34)
Miscellaneous food costs (16% of low-cost nutritious diet costs)				11.69 (0.52)
Total food costs ETB (US\$) PPP/AME/day				85.77 (3.87)
Babile				
Starchy foods	Sorghum	57	440	25.08 (1.13)
Vitamin A-rich vegetables	Kale	18	92	1.66 (0.07)
Other fruits	Banana	70	75	5.25 (0.24)
Eggs	Chicken eggs	240	130	31.20 (1.41)
Legumes, nuts, and seeds	Haricot bean	60	120	7.20 (0.32)
Milk	Cow milk	68	360	24.48 (1.10)
Oils and fats	Palm oil	195	5	0.98 (0.04)
Low-cost, nutritious diet costs				95.84 (4.32)
Miscellaneous food costs (16% of low-cost nutritious diet costs)				18.31 (0.83)
Total food costs ETB (US\$) PPP/AME/day				111.18 (5.01)
Wolmera				
Starchy staple	Wheat	63	350	22.05 (0.99)
Dark green leafy vegetable	Kale	50	20	1.00 (0.06)
Vitamin A-rich vegetables	Tomato	35	10	0.35 (0.01)
Other fruits	Banana	58	200	11.60 (0.52)
	Avocado	65	100	6.50 (0.29)
Eggs	Chicken eggs	200	30	6.00 (0.06)
Legumes, nuts, and seeds	Faba bean	59	50	2.95 (0.13)
Milk	Cow milk	53	400	21.20 (0.95)
Oils and fats	Palm oil	173	5	0.87 (0.04)
Low-cost, nutritious diet costs				72.52 (3.27)
Miscellaneous food costs (16% of low-cost nutritious diet costs)				11.6 (0.52)
Total food costs ETB (US\$) PPP/AME/day				84.12 (3.79)
Overall food costs ETB (US\$) PPP/AME/day				93.69 (4.23)

US\$1 PPP = 22.17 ETB in 2023 (Databank World Bank, 2023) <https://data.worldbank.org/indicator/PA.NUS.PPP/>;
Values in parentheses indicate US\$

Housing costs

Table 7 summarizes the estimated annual housing costs required to meet locally defined minimum standards for decent housing for a reference household (RH) in Ada'a, Babile, and Wolmera woreda of the Oromia Regional State, Ethiopia. According to focus group discussions conducted in the three woreda, the minimum acceptable housing standard for a reference household includes a total living area of at least 42 m², exceeding the 30 m² benchmark commonly used in international guidelines. This space typically comprises one living room and a minimum of two bedrooms. Toilets/bathrooms and kitchens may be located outside the main dwelling structure.

² Market prices were collected from 28-30 June 2024 for Ada'a woreda, 8-10 July 2024 for Babile woreda, and 03-05 July 2024 for Wolmera woreda.

In Ada'a *woreda*, the estimated annual housing cost per reference household was ETB (US\$ PPP) 29,184.06 (1,316.40). This includes construction costs (PPP 19,101.6 ETB (US\$861.6) over 45 years, in addition to routine maintenance, repairs, and utility expenses. Respondents estimated housing durability based on the types of construction materials used, such as stone, cement, baked bricks, wood, and corrugated iron sheets.

For Babile *woreda*, the annual housing cost was lower, estimated at ETB (US\$PPP) 26,027.77 (1,174.0). Construction costs were (12,444.44 ETB (US\$PPP 1,070) over 47.5 years, with the remainder attributed to maintenance, repairs, and utility costs. The relatively lower construction cost in Babile as compared to Ada'a and Wolmera *woreda* was attributed to the local availability of building materials, such as stone and sand, which reduced overall expenditure.

In contrast, Wolmera *woreda* recorded the highest annual housing cost for the reference household, totaling 37,625.00 ETB (US\$1,697.1). This includes construction costs of (PPP 17,500.00 ETB (US\$789.4) spread over 50 years. The higher costs in Wolmera are likely due to its proximity to Holeta town, which has influenced rural households to build more standardized, urban-style homes. Despite cost differences, taxes, levies, and house insurance were common across all three study areas.

Overall, estimated total housing costs were ETB (US\$PPP) 30,495.61 (1,395.18) in three *woreda*. This includes 16,348.67 ETB (US\$737.4 for the construction costs, 13,173.61 ETB (US\$549.2) for routine maintenance, and 1,423.33 ETB (US\$ 64.2) for utilities linked with water, electricity, and cooking fuel costs. Total housing costs per Adult Male Equivalent (AME) were calculated as 18.05 ETB (US\$0.81) for Ada'a, 16.82 ETB (US\$0.76) for Babile, 19.49 ETB (US\$0.88) for Wolmera, and 18.16 ETB (US\$0.82) for three *woreda*, reflecting both construction material usage and locational cost variations.

Table 7: Overview of estimated housing costs for a house complying with local minimum standards for decent housing for a reference household in rural areas of Ada'a, Babile, and Wolmera woreda of Oromia regional state in Ethiopia for 2024

Cost item	Ada'a	Babile	Wolmera	Total
ETB (US\$) PPP/RH/year				
Construction costs	19,101.56 (861.6)	12,444.44 (561.3)	17,500.00 (789.4)	16,348.67 (737.4)
Routine maintenance and repairs	9,062.50 (408.8)	12,083.33 (545.0)	18,375.00 (828.8)	13,173.61 (549.2)
Taxes, levies, fees, and house insurance	0	0	0	0
Utilities (water, electricity, cooking fuel)	1,020.00 (46.0)	1,500.00 (67.7)	1,750.00 (78.9)	1,423.33 (64.2)
Total housing costs	29,184.06 (1,316.4)	26,027.77 (1,174.0)	37,625.00 (1,697.1)	30,945.61 (1,395.8)
ETB (US\$) PPP/AME/day				
Total housing costs	18.05 (0.81)	16.82 (0.76)	19.49 (0.88)	18.16 (0.82)

Values in parentheses indicate US\$

Non-food non-housing costs (NFNH) costs

Health care

Table 8 presents the estimated annual healthcare costs per reference household in Ada'a, Babile, and Wolmera *woreda* of the Oromia Regional State, Ethiopia. In all three *woreda*, the public healthcare system includes basic medical facilities (dispensaries) available in each village. The government provides community-based health insurance that covers all public healthcare expenses for household members. This includes consultation with doctors, diagnostic laboratory services, and full treatment with medication for common illnesses such as malaria, typhoid fever, kidney disease, diabetes, hypertension, and gastric disorders.

Despite the insurance coverage, the rural communities face shortages of essential medicines in public health centers, particularly in Ada'a and Wolmera *woreda*. The total healthcare costs for Ada'a, Babile, and Wolmera were PPP 22,665 ETB (US\$1,022.3), 3,840 ETB (US\$173.2), and 44,460 ETB (US\$2,005.4), respectively (see Table 8). Overall, the total healthcare costs for three *woreda* were 23,655 ETB (US\$1,065). The average annual payment for healthcare insurance was PPP 960 ETB (US\$43.3) per household per year in both Babile and Wolmera, while PPP 1,065 ETB (US\$48.0) per household per year in Ada'a *woreda*.

Wolmera *woreda* recorded the highest healthcare expenditure, followed by Ada'a and Babile. Findings from focus group discussions (FGDs) indicated that residents in Wolmera frequently seek treatment for hypertension and kidney diseases, with many traveling biweekly to private facilities in Holeta town and Addis Ababa due to limited services at local public health centers. Similarly, residents in Ada'a visit private clinics in Chafe Donsa and Bishoftu—particularly for hypertension treatment once per month. The high cost of medicines and diagnostic services at private health institutions significantly contributes to the elevated healthcare costs in these areas.

In Babile, although the overall costs were lower, residents also rely on private pharmacies to obtain medicines due to shortages in public facilities. Additionally, for diagnostic imaging services such as X-ray, ultrasound, and CT scans, patients often travel to Harar city, as these services are not adequately available in local government health centers.

Total healthcare costs per Adult Male Equivalent (AME) were calculated as 14.02 ETB (US\$0.63) in Ada'a, 1.99 ETB (US\$0.09) in Babile, 28.73 ETB (US\$1.30) in Wolmera, and overall, 13.88 ETB (US\$0.63), reflecting both the frequency of private healthcare utilization and the availability of public services.

Table 8: Estimated health care costs per person (US\$ PPP) and per reference household (RH) per year for rural areas of Ada'a, Babile, and Wolmera woreda in Oromia regional state of Ethiopia, for 2024

Cost item	Ada'a	Babile	Wolmera	Total
ETB (US\$) PPP/RH/year				
Basic healthcare insurance	1,065 (48.0)	960 (43.3)	960 (43.3)	995 (44.9)
Examination, laboratory tests, and medicine	21,600 (974.3)	2,880 (129.9)	43,500 (1962.1)	22,660 (1,022.1)
Total healthcare costs	22,665 (1,022.3)	3,840 (173.2)	44,460 (2,005.4)	23,655 (1,065)
ETB (US\$) PPP/AME/day				
Total healthcare cost	14.02 (0.63)	1.99 (0.09)	28.73 (1.30)	13.88 (0.63)

Values in parentheses indicate US\$

Education

According to Table 9, the total annual education costs per child were highest in Ada'a *woreda* at 19,183 ETB (US\$865.3) PPP, followed by Babile at 6,240 ETB (US\$281.5) PPP, Wolmera at 12,290 ETB (US\$554.4) PPP, and overall, 14,082 ETB (635.2US\$). On a household basis, annual education costs amounted to 35,680 ETB (US\$1,609.4) PPP in Ada'a, 26,520 ETB (US\$1,196.2) PPP in Babile, 24,825 ETB (US\$1,119.8) PPP in Wolmera, and 29,008 (1,308.4US\$).

The relatively higher education costs in Ada'a *woreda* are primarily attributed to the substantial expenses for transportation and house rent, particularly for students in grades 9–12. In contrast, in Wolmera *woreda*, key informants noted that the government has begun providing free educational materials—such as notebooks and uniforms—for certain communities, contributing to lower household-level costs. In Babile *woreda*, the elevated total education costs per household and adult male equivalent (PPP/AME/day) are due to a higher average number of school-aged children per household compared to the other two *woreda*.

Table 9: The estimated education costs (ETB/US\$ PPP) for a reference household (RH) per year, in rural areas of Ada'a, Babile, and Wolmera woreda in the Oromia regional state of Ethiopia, for 2024

Cost item	Ada'a	Babile	Wolmera	Total	Unit
Primary school education (1-6)					
Fee	150 (6.8)	250 (11.3)	400 (18.0)	267 (12.0)	
Clothing	4,900 (221.0)	6,150 (277.4)	4,800 (216.5)	5,283 (238.3)	
Materials	2,145 (96.8)	2,505 (113.0)	1,470 (66.3)	2,040 (92.0)	
Transportation	0	0	0	0 (0)	
House rent	0	0	0	0 (0)	
Lower secondary education (7-8)					
Fee	150 (6.8)	500 (22.6)	400 (18.0)	350 (15.79)	
Clothing	4,900 (221.0)	4,600 (207.5)	4,500 (203.0)	4,667 (210.5)	
Materials	1,620 (73.1)	1,870 (84.3)	1,170 (52.8)	1553 (70.06)	
Transportation	0	0	0	0 (0)	
House rent	0	0	0	0 (0)	
Secondary Education (9-12)					
Fee	2,000 (90.2)	400 (18.0)	900 (40.6)	1,100 (49.6)	
Clothing	5,200 (234.6)	2,550 (115.0)	4,000 (180.4)	3,917 (176.7)	
Materials	1,245 (56.2)	1,485 (67.0)	1,195 (53.9)	1,308 (59.0)	
Transportation	6,620 (298.6)	6,210 (280.1)	5,990 (270.2)	6,273 (283.0)	
House rent	6,750 (304.5)	0	0	2,250 (101.5)	
Full costs per child	19,183 (865.3)	6,240 (281.5)	12,290 (554.4)	14,082 (635.2)	ETB (US\$) PPP/child
Average costs per child per year ³	1,065.7 (48.1)	346.7 (19.3)	682.8 (30.8)	782.3 (35.3)	ETB (US\$) PPP/child/year
Children per RH	1.86	4.25	2.02	2.06	Children/RH
Total education costs	35,680 (1,609)	26,520 (1,196.2)	24,825 (1,120)	29,008 (1,308)	ETB (US\$) PPP/RH/year
Total education costs	22.1 (1.0)	13.7 (0.62)	16.04 (0.72)	17.0 (0.77)	ETB (US\$) PPP/AME/day

Other Nonfood Non-Housing (other NFNH)

Households' transportation, communication, water, energy, family clothes, and social duties were considered as non-food non-housing costs. The total other NFNH costs were ETB 85,170 ETB (US\$3,841.7) PPP/RH/year for Ada'a; 43,105 ETB (US\$1,944.3) PPP/RH/year, and 83,990 ETB (US\$3,788.4) PPP/RH/year for Babile and Wolmera woreda, respectively (Table 10). The average NFNH costs were estimated at 70,755 ETB (US\$3,191.5) for three woreda. The highest costs were family clothes, 38,333.3 ETB (US\$1,729.1), followed by social duty, 14,175 ETB (US\$ 639.4), and transportation costs, 11,160 ETB (US\$503.4). While Wolmera had the highest transportation costs, 14,440 ETB (US\$649.5) PPP/RH/year followed by Ada'a 12,480 ETB (US\$562.9) PPP/RH/year, and Babile had the lowest costs, 6,600 ETB (US\$297.7) PPP/RH/year. In Babile, transportation costs were relatively low because the community had access to nearby markets, allowing them to purchase food items on foot, and sometimes spouses travelled once a month using a Bajaj and a vehicle. While in Ada'a and Wolmera, the transportation costs were higher due to there is high frequency of travel communities. Farmers traveled twice per week using Bajaj and 1.5 times per week using Bajaj and a vehicle in Wolmera and Ada'a, respectively.

The communication cost was relatively higher in Wolmera woreda as compared to the other remaining woreda, followed by Ada'a and Babile woreda, which were attributed to the community's ownership and access to more mobiles and network connectivity. Correspondingly, the households in Ada'a and Wolmera

³ Full costs per child for 12 years of education, divided by 18 years of parental financial responsibility.

woreda were paying more for clothing than the Babile woreda. In Ada'a, clothes were purchased 2 to 3 times in a year for children, while two times in Wolmera and Babile woreda. The adults purchased clothes once a year, which was uniform across all three woreda. The price of clothes in Babile was relatively lower than that of the Ada'a and Wolmera woreda. In all the woreda, it was found that adults purchased cheaper clothes for themselves as compared to their children. The social duty costs were also higher in Wolmera and Ada'a woreda, and these were associated with the cost of *Mahiber*⁴ and were not available in the Muslim communities of Babile woreda. *Edir (afooshaa)*, *buusaa gonofaa*, HIV, sports, school feedings, traditional court, road, etc., where social duty costs were paid by the society, as mentioned by FGDs in all three woreda.

Table 10: Annual Estimated Non-Food Non-Housing (NFNH) Costs (US\$ PPP) per Reference Household (RH) in Rural Areas of Ada'a, Babile, and Wolmera woreda in the Oromia regional state of Ethiopia, for 2024.

Cost item	Ada'a		Babile		Wolmera		Total	
ETB (US\$) PPP/RH/year								
Transportation of the HHs	12,480	(562.9)	6,600	(297.7)	14,400	(649.5)	11,160	(503.4)
Communication	6,600	(297.7)	2,280	(102.8)	6,960	(313.9)	5,280	(238.2)
Water	30	(1.4)	600	(27.1)	1,320	(59.5)	650	(29.3)
Energy	1,020	(46.0)	1,200	(54.1)	1,250	(56.4)	1,156.7	(52.2)
Family cloth	49,000	(2,210.2)	23,500	(1,060.0)	42,500	(1,917.0)	38,333.3	(1,729.1)
Social duty (payment for <i>edir/afosha</i> , <i>mahiber</i> , gifts, etc.)	16,040	(723.5)	8,925	(402.6)	17,560	(792.1)	14,175	(639.4)
Total other NFNH costs	85,170	(3,841.7)	43,105	(1,944.3)	83,990	(3,788.4)	70,755	(3,191.5)
ETB (US\$) PPP/AME/day								
Other NFNH costs	52.7	(2.38)	22.3	(1.01)	54.3	(2.45)	41.5	(0.21)

Living income benchmark and income gap

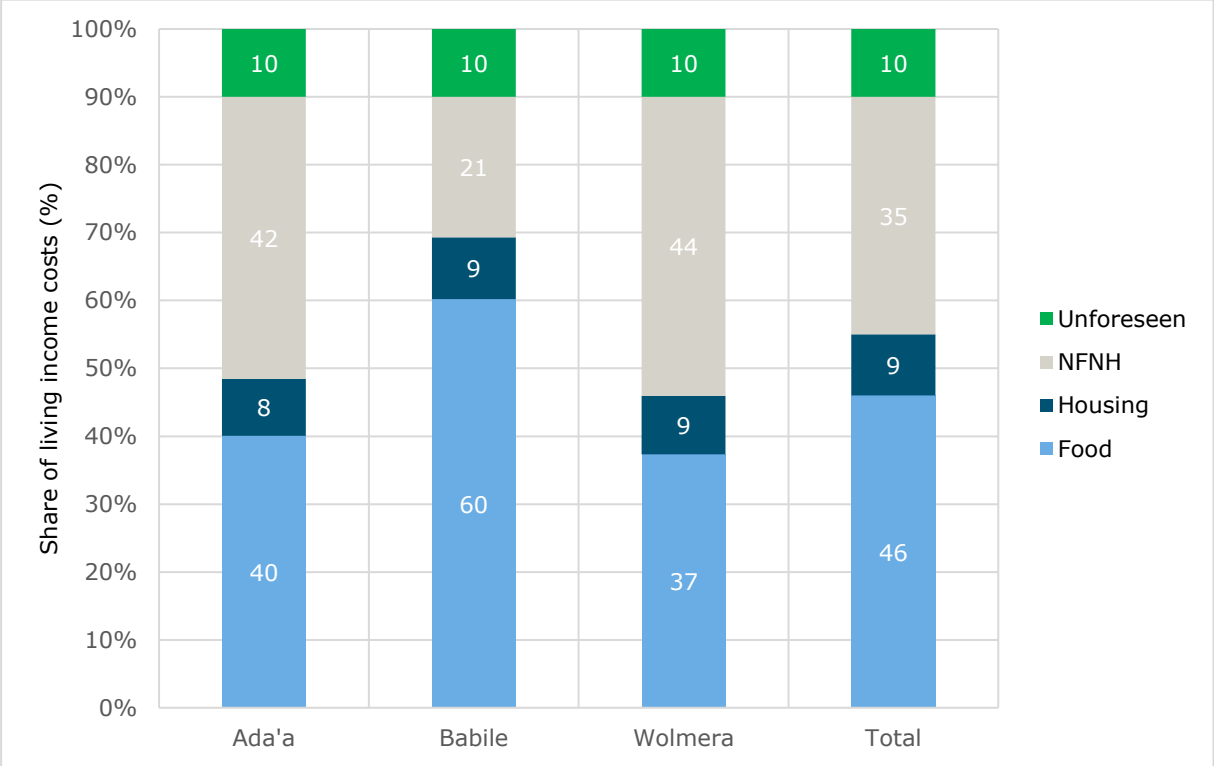
The total living income benchmark represents the sum of estimated costs for food, housing, non-food non-housing (NFNH) expenses, and social obligations/duty for a reference household, plus a margin for unforeseen events, typically added as a percentage to the calculated living income budget, which is 10%. Based on previously presented data, the estimated living income benchmark per adult male equivalent (AME) per day expressed in ETB (US\$) PPP is 214.04 ETB (US\$9.66) in Ada'a, 184.43 ETB (US\$8.32) in Babile, 225.20 ETB (US\$10.16) in Wolmera woreda, and overall, 204.70 ETB (US\$9.24) (Table 11). The living income benchmarks and the distribution of associated cost components are generally consistent across the three woreda. However, Babile woreda shows a slightly lower benchmark compared to those of Ada'a and Wolmera woreda.

Table 11: Estimated Living Income per Adult Male Equivalent (ETB and US\$ PPP per Day) for a Reference Household in Ada'a, Babile, and Wolmera woredas in the Oromia regional state of Ethiopia, for 2024

Cost item	Ada'a		Babile		Wolmera		Total	
US\$ PPP/AME/day								
Food	3.87	(40%)	5.01	(60%)	3.79	(37%)	4.23	(46%)
Housing	0.81	(8%)	0.76	(9%)	0.88	(9%)	0.82	(9%)
Health care	0.63	(7%)	0.09	(1%)	1.30	(13%)	0.63	(7%)
Education	1.00	(10%)	0.62	(7%)	0.72	(7%)	0.77	(8%)
Other NFNH	2.38	(25%)	1.01	(12%)	2.45	(24%)	1.87	(20%)
NFNH	4.01	(42%)	1.72	(21%)	4.47	(44%)	3.27	(35%)
Unforeseen	0.97	(10%)	0.83	(10%)	1.02	(10%)	0.92	(10%)
Total living income benchmark	9.66	(100)	8.32	(100%)	10.16	(100%)	9.24	100%)

⁴ *Mahiber* is practiced by Ethiopian Orthodox *Tewahido* church followers. It is traditionally a religious feasting association to commemorate various saints or angels. They prepare various foods and drinks to eat with religious leaders and members of associations.

The food cost accounts for 60% of the total living income in Babile *woreda*, followed by Ada’a (40%) and Wolmera (37%). The NFNH accounted for 44% of Wolmera *woreda*, followed by Ada’a (42%) and Babile (21%) *woreda* (Figure 2). The average food cost for three *woreda* was 46% of the total living income costs, followed



by NFNH cost (35%) and housing costs (9%).

Figure 2. Share of food, housing, NFNH, and unforeseen costs to the total living income.

Discussions

This study presents a comprehensive estimation of the living income benchmark for smallholder farming households in three distinct food system typologies within the Oromia region of Ethiopia, namely, Ada'a (commercial), Babile (food insecure), and Wolmera (food secure). The analysis reveals key insights into the cost structure required to attain a decent standard of living, measured per adult male equivalent (AME) per day in purchasing power parity (PPP).

The findings highlight that food costs represent the largest share of the living income benchmark across all *woreda*, accounting for 60% in Babile, followed by Ada'a (40%), Wolmera (37%), and 46% in three *woreda*. This aligns with broader national and regional trends, where food remains the most significant household expense, particularly in food-insecure areas, and in agreement with a previous study carried out by FAO et al. (2024). Ethiopia's cost of a healthy diet in 2023 accounted for 3.72 PPP US dollars per person per day. Similarly, Teklu et al. (2024) found that the cost of food in Babile *woreda* is comparable to that of the cost of food in the food-insecure *woreda* of Boloso Bombe in Southern Ethiopia. The higher share of food costs in Babile reflects less market integration and supports previous categorizations of Babile as a food-insecure *woreda*. Moreover, the findings were similar in terms of the food system typology of RAISE-FS project categorization of high potential, commercial, and food-insecure food system typologies. The project categorized Wolmera and Gumer *woreda* as high potential, Ada'a and Hawassa Zuria as commercial *woreda*, and Boloso Bombe and Babile as food-insecure *woreda*.

The variation in the type of commonly consumed food and its corresponding price was attributed to the variation in the share of food cost among the three *woreda* based on local market prices in AME (Table 6).

Housing costs are relatively comparable across the *woreda*, ranging from 8% to 9% of the living income benchmark. Nonetheless, construction costs were notably higher in Wolmera due to the high cost of labor and the use of expensive house construction materials. In contrast, Babile's housing expenditure was the lowest, attributable to locally sourced, cost-effective construction materials and simpler housing structures.

Non-food non-housing (NFNH) costs, including healthcare, education, clothing, transportation, and social obligations, varied substantially across the *woreda*. Wolmera recorded the highest NFNH costs (44% of the living income benchmark), driven by greater reliance on private healthcare and transportation services due to its proximity to urban centers like Holeta and Addis Ababa. Ada'a followed closely (42%), with higher clothing and transportation expenditures, while Babile (21%) had lower NFNH costs largely due to reduced mobility, limited access to services, and socio-cultural practices such as fewer social obligations (e.g., *mahiber*). In the region, the highest other NFNH costs incurred by the farmers belong to family clothes (54.2%), followed by social duty (15.8%) and transportation (20%).

Healthcare costs were notably high in Wolmera, due to frequent visits to private health institutions and specialized care, followed by Ada'a. Conversely, Babile had the lowest healthcare costs, despite facing medicine shortages, indicating limited healthcare access rather than lower need.

Education costs per household were highest in Babile, reflecting the large number of school-aged children per household. However, Ada'a exhibited higher per-child education expenditures, mainly due to transportation and accommodation costs for upper secondary students. Wolmera benefited from government support through the provision of school materials, reducing total education-related spending.

Overall, the analysis underscores the importance of local context, including food systems, market access, urban proximity, and cultural practices, in shaping household expenditure patterns. Despite small differences in the total living income benchmark values across the three *woreda*, the distribution of cost components varies significantly, with implications for poverty alleviation, policy targeting, and development interventions.

References

- Anker, R., 2008. Living wages around the world: A new methodology and internationally comparable estimates. *Int. Labour Rev.* 145, 309–338. <https://doi.org/10.1111/j.1564-913X.2006.tb00037.x>
- Anker, R., Anker, M., 2017. Living wage report Kenya with a focus on rural Mount Kenya area. Context provided in the horticulture industry (Series 1, report 10).
- Beal, T., Massiot, E., Arsenault, J.E., Smith, M.R., Hijmans, R.J., 2017. Global trends in dietary micronutrient supplies and estimated prevalence of inadequate intakes. *PloS One* 12, e0175554. <https://doi.org/10.1371/journal.pone.0175554>
- Datta, P., Behera, B., & Timsina, J. 2024. Achieving sustainable development through agriculture-forestry-livestock nexus in Bangladesh: Synergies and trade-offs. *Agricultural Systems*, 215, 103854.
- Cruickshank, D., Bammann, H., 2024. Brief assessment of the living income concept. Rome, FAO. <https://doi.org/10.4060/cd0148en>
- Debebe, S., Zekarias, E.H., 2020. Analysis of poverty, income inequality, and their effects on food insecurity in southern Ethiopia. *Agric. Food Secur.* 9, 16. <https://doi.org/10.1186/s40066-020-00269-3>
- FAO, 2010. Food and Agriculture Organization of the United Nations. Food and Agriculture Organization of the United Nations.
- FAO, IFAD, UNICEF, WFP, WHO, 2024. The State of Food Security and Nutrition in the World 2024 – Financing to end hunger, food insecurity and malnutrition in all its forms. Rome. <https://doi.org/10.4060/cd1254en>
- FAO/WHO/UNU, 2001a. Human energy requirements. Report of a joint FAO/WHO/UNU Expert consultation (Report of a joint FAO/WHO/UNU Expert consultation). Food and Nutrition Technical Report Series: FAO, Rome.
- FAO/WHO/UNU, 2001b. Human energy requirements. Report of a joint FAO/WHO/UNU expert consultation. Rome.
- IDH, 2023. Roadmap on Living Income (Newsletter). Netherlands.
- ILO, 2022. Setting adequate wages: the question of living wages. ILO Brief. Geneva, Switzerland. https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---travail/documents/briefingnote/wcms_857876.pdf
- IOM, 2001. Dietary reference intakes for vitamin A, vitamin K, arsenic, boron, chromium, copper, iodine, manganese, molybdenum, nickel, silicon, vanadium, and zinc. Institute of Medicine (US) panel on micronutrients. Washington, DC: National Academy Press.
- IZiNCG, 2004. Assessment of the risk of zinc deficiency in populations and options for its control. Food and Nutrition Bulletin. International Nutrition Foundation for the United Nations University, Tokyo, Japan. <https://doi.org/10.1177/15648265040251S204>
- Komives, K., Grunze, S., Krain, E., Tschanz, A., Daniels, S., Seville, D., 2015. Defining, calculating, and using a living income benchmark in the context of agricultural commodities. Discussion note, Working version May 2015
- NBE, 2024. Annual report of 2022/23. Addis Ababa, Ethiopia. <http://nbe.gov.et/wp-content/uploads/2025/02/Annual-Report-2022-2023.pdf>
- Otsuka, K., 2013. Food insecurity, income inequality, and the changing comparative advantage in world agriculture. *Agric. Econ.* 44, 7–18. <https://doi.org/10.1111/agec.12046>
- Oxfam International, 2021. Living income from right to reality. Oxfam GB for Oxfam International under. <https://doi.org/10.21201/2021.8212>
- Pawlak, K., Kołodziejczak, M., 2020. The Role of Agriculture in Ensuring Food Security in Developing Countries: Considerations in the Context of the Problem of Sustainable Food Production. *Sustainability* 12, 5488. <https://doi.org/10.3390/su12135488>
- Rana, M. M., Kiminami, L., Furuzawa, S. 2023. Factors influencing livelihood conditions of farmers in Bangladesh: empirical study introducing structural equation modeling analysis. *Asia-Pacific Journal of Regional Science*, 7(4), 1141-1168.

- Smyth, S.J., Phillips, P.W.B., Kerr, W.A., 2015. Food security and the evaluation of risk. *Glob. Food Secur.* 4, 16–23. <https://doi.org/10.1016/j.gfs.2014.08.001>
- Teklu B., Abate L., Teshome A., Glaser J., and Schaap M. 2024. Benchmarking the living income gap of smallholder farmers in southern Ethiopia. Stichting Wageningen Research Ethiopia, Addis Ababa. SWRE-RAISE-FS-24-027. <https://doi.org/10.18174/654532>
- UN, 2015. Transforming Our World: The 2030 Agenda for Sustainable Development. <https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf>
- UNESCO, 2000. The right to education: Towards education for all throughout life (World Education Report 2000). UNESCO.
- USDA, 2007. USDA table of nutrient retention factors (No release 6). Beltsville: Beltsville Human Nutrition Research Centre.
- van de Ven, G.W.J., de Valença, A., Marinus, W., de Jager, I., Descheemaeker, K.K.E., Hekman, W., Mellisse, B.T., Baijukya, F., Omari, M., Giller, K.E., 2021. Living income benchmarking of rural households in low-income countries. *Food Secur.* 13, 729–749. <https://doi.org/10.1007/s12571-020-01099-8>
- WHO/FAO, 2003. Joint WHO/FAO Expert Consultation on Diet, Nutrition and the Prevention of Chronic Diseases. Geneva.
- WHO/FAO, 2004. Vitamin and mineral requirements in human nutrition, Second edition., World Health Organization. Geneva. https://doi.org/92_4_154612_3
- World Bank, 2022. Fact Sheet: An Adjustment to Global Poverty Lines. World Bank, New York.
- World Bank, 2024. Macro Poverty Outlook for Ethiopia: April 2024 (English). Macro Poverty Outlook (MPO) Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/099505204052428596>
- World Bank, 2025. Employment in agriculture (% of total employment) Ethiopia. <https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS?locations=ET>



Resilient Agriculture for
Inclusive and Sustainable
Ethiopian Food Systems
(RAISE FS)

www.raise-fs.org

Stichting Wageningen
Research Ethiopia

www.wur.eu

Resilient Agriculture for Inclusive and Sustainable
Ethiopian Food Systems (RAISE-FS) is a four-year
program funded by the Dutch Embassy in Addis Ababa
and hosted by Stichting Wageningen Research Ethiopia
based in Addis Ababa, to bring about transformation in
the Ethiopian food system. RAISE-FS will develop and
implement a demand-driven and interdisciplinary
approach to Research for Food System Transformation
(R4FST) and as such contribute to the Government of
Ethiopia's transformational agenda.
