Living Income Report

Rural Ghana

Cocoa growing areas of Ashanti, Central, Eastern, and Western Regions

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Photos courtesy of University of Ghana

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EXECUTIVE SUMMARY

[Forthcoming following validation workshop.]

About the Authors

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Technical Committee and advisors: Martha and Richard Anker, Jessi Grillo (Rainforest Alliance); Kristin Komives (ISEAL); Michelle Bhattacharyya (Global Living Wage Coalition); Friedel Huetz-Adams (Suedwind Institut).

Steering Committee: Jean-Yves Couloud (CARE); Ywe Franken (Cargill); Carla Veldhuyzen (Fairtrade International); Leonie Brühlmann (Lindt Cocoa Foundation); Bilal Bawany (Mars Wrigley Confectionery); Noura Hanna, Rainforest Alliance (Utz); Antonie Fountain (VOICE Network); and Edwin Afari (World Cocoa Foundation).

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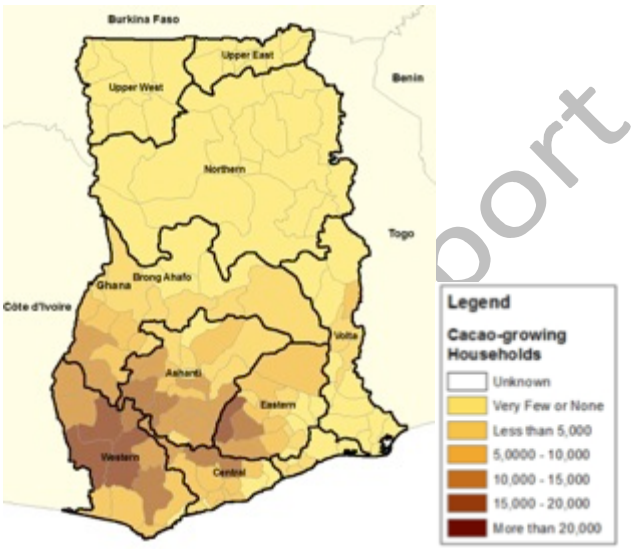
SECTION I: INTRODUCTION

1. BACKGROUND

This report estimates a living income benchmark for rural areas of Ghana where cocoa is produced. The benchmark is the estimated cost of a basic but decent standard of living in March 2018. It covers a relatively wide geographical area in the south of Ghana, including parts of Ashanti, Central, Eastern, and Western Regions. Two other regions where cocoa is produced - Volta and Brong-Ahafo Regions - were not included in the scope, as cocoa production is low or declining in those areas.

Figure 1: Cocoa growing areas of Ghana



Source: 2017, Schreyer, F and Bunn, C. CIAT

The living income estimate is based on a study of costs of living in cocoa growing areas. The study used the comprehensive methodology developed by Martha Anker and Richard Anker to estimate living wage benchmarks for waged workers[1], adapted to the context of smallholder farming. The Anker methodology has gained widespread acceptance among diverse stakeholders globally and has been used to estimate living wages in rural, urban, and peri-urban areas in many different locations, including rural Southern Malawi, peri-urban flower growing regions of Kenya, Central Dhaka and surrounding satellite cities in Bangladesh, the Minas Gerais Region of Brazil, the Ziway region in Ethiopia, urban and rural Sialkot in Pakistan, rural Dominican Republic, and the Western Cape

[1] Anker and Anker 2017; Anker, 2006a, 2006b, 2011.

Province in South Africa. Most of these studies have been commissioned by the Global Living Wage Coalition (GLWC) which is a partnership between various sustainability standards systems[2], the ISEAL Alliance and Richard Anker and Martha Anker.

Building on experience on farmer livelihoods issues and the momentum of the global dialogue on living wages, ISEAL, GIZ and Sustainable Food Lab founded the Living Income Community of Practice. The Community brings together standards, businesses, government bodies, NGOs, finance and producer groups to support activities focused on improving smallholder incomes, and enabling farmers to achieve a decent standard of living. It fosters learning and collaboration to: provide methods and guidance on measuring and reporting on current and living incomes, and help understand the gap between these; identify and discuss strategies to help actors take actions that can contribute to closing income gaps.

This study in Ghana, and a sister study in Cote d'Ivoire, were commissioned by the Community of Practice to establish credible, robust living income benchmarks for critical cocoa growing regions in the two countries, through transparent research that is supported by key actors in the cocoa sector. The study was made possible through financial and logistical support from Cargill, Fairtrade International, GIZ, Lindt Cocoa Foundation, Mars and Rainforest Alliance(UTZ)[3], with additional logistical support provided by the World Cocoa Foundation (WCF) in Accra. A Steering Committee comprised of industry, farmer organizations and civil society[4] provided oversight and commented on draft findings, while a Technical Committee of methodology experts[5] provided technical backstopping and recommendations on key methodological questions and decisions. The findings were shared with stakeholders in the Ghanaian cocoa sector in a series of two workshops in February and July of 2018. (ADD DETAILS IN FINAL VERSION) and all comments have been taken into consideration in finalizing this report.

2. LIVING INCOME ESTIMATE

Our estimate of a living income in rural cocoa growing areas of Ghana (Ashanti, Central, Eastern, and Western Regions) is GHS 1,473 ($331[6]) per month.

This is the net income required for a decent standard of living for a typical family of two adults and three children. The estimate is based on actual costs of living at a basic standard of decency, and indicates the amount of profit from all sources of household income (i.e. minus business expenses) that would be necessary to cover living expenses for the family. The breakdown of costs is summarized in Table 1.

Table 1: Breakdown of Living Income estimate for family of 2 adults and 3 children in rural cocoa growing regions of Ghana (Ashanti, Central, Eastern and Western Regions)

Item	GHS	USD
Food costs per month	757	170
Housing costs per month	206	46
Non-food non-housing costs per month	439	99

[2] Fairtrade International, Forest Stewardship Council (FSC), GoodWeave International, Rainforest Alliance (RA), Social Accountability International (SAI), Sustainable Agriculture Network (SAN), and UTZ. www.globallivingwage.org
[3] Now merged with Rainforest Alliance.
[4] Jean-Yves Couloud (CARE); Ywe Franken (Cargill); Carla Veldhuyzen (Fairtrade Int); Leonie Brühlmann (Lindt Cocoa Foundation); Bilal Bawany (Mars); Noura Hanna (RA Utz); Antonie Fountain (VOICE Network); and Edwin Afari (WCF)
[5] Martha Anker, Richard Anker, Jessica Grillo (Rainforest Alliance), and Kristen Komives (ISEAL).
[6] Exchange rate for 1 March 2018 (midway through primary data collection) was 1 USD to GHS 4.45.

Item	GHS	USD
Additional 5% for sustainability and emergencies	70	16
Total costs per month for basic but decent living standard for family of 2 adults and 3 children	**1473**	**331**

Source: The Authors

It is important to emphasize that the living income estimate is a conservative figure based on minimum standards for decency in the local context, taking into account international conventions and standards in the 21st century. The rest of this report provides a detailed description of how the living income benchmark was estimated, including sources of data and calculations used for arriving at the estimate. The report is detailed because it is critical that stakeholders consider the estimate to be credible and representative of costs in cocoa growing areas of Ghana, regardless of whether or not smallholder households are able to earn this income now or in the near future. Transparency is also important because one tenet of the Anker methodology is that stakeholders and others should be able to query assumptions and calculations that went into the living income estimate, to help ensure that the estimate is as reasonable as possible and receives as wide an acceptance as possible. Transparency will also help the ongoing process of stakeholder dialogue in relation to income improvements in the Ghanaian cocoa sector.

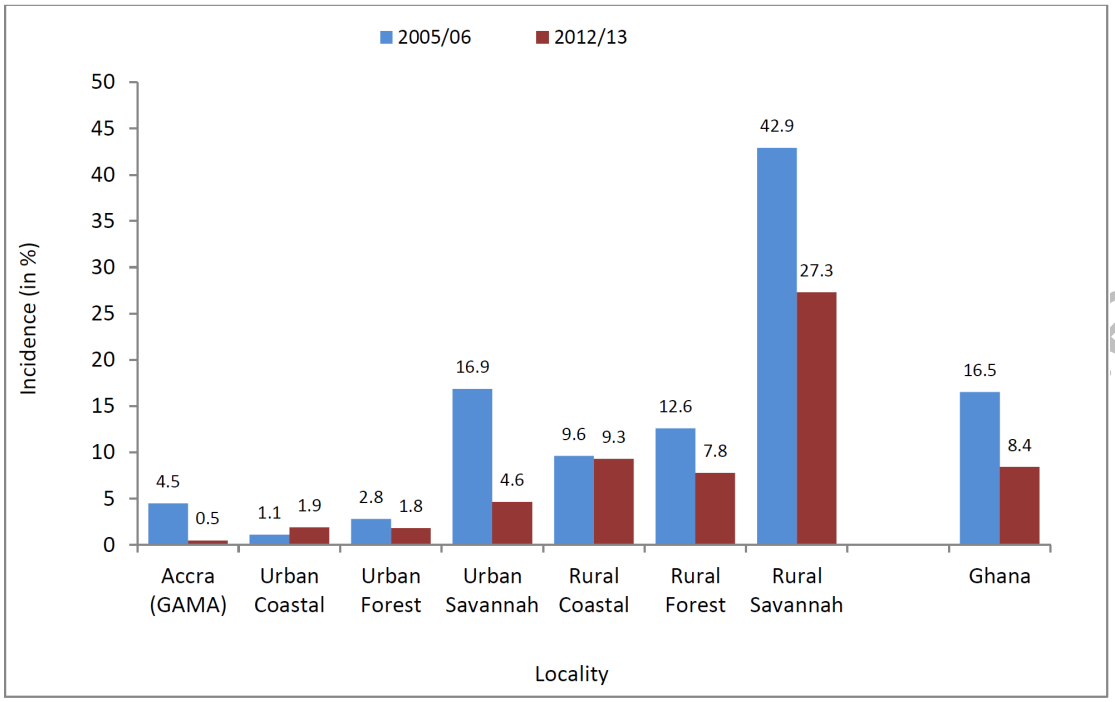
3. CONTEXT

3.1 Ghana as a lower middle-income country with high levels of rural poverty, and high inflation

Ghana sits on the west coast of Africa between Ivory Coast and Togo. It has a population of 27.4 million people, of which just under half are located in rural areas[7]. Following a period of strong growth, it gained 'lower middle income' status in 2010, with GNI per capita reaching $1,380 in 2016[8]. The national poverty level fell from 56.5% in 1992 to 24.2% in 2013, with extreme poverty down to 8.4%.[9] However, inequality is on the rise and poverty remains prevalent in many areas - particularly rural areas and in the north of Ghana (see Figures 2 and 3). In 2012/13 the rural population comprised 50% of the population but accounted for 78% of those in poverty.[10]

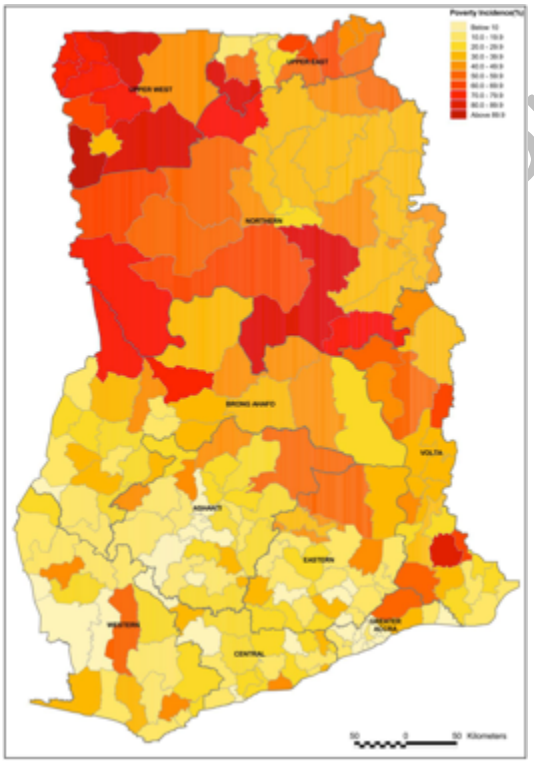
[7] CIA World Fact Book: https://www.cia.gov/library/publications/the-world-factbook/geos/gh.html.
[8] World Bank Development Indicators: http://data.worldbank.org/country/ghana.
[9] Cooke *et al*. (2016).
[10] Ibid.

Figure 2: Extreme poverty incidence in Ghana by locality



Source: Ghana Statistical Service, 2014a.

Figure 3: Distribution of poverty in Ghana



Source: Ghana Statistical Service, 2015.

Living standards in Ghana have improved markedly over the past two decades, with government investments in social services and infrastructure enabling Ghana to achieve several Millennium

Development Goal targets: halving extreme poverty (MDG 1A), halving the proportion of the population without access to safe water (MDG 7B), universal primary education (MDG 2A), and gender parity in primary school (MDG 3).[11] However, progress has been slower in relation to achieving full and productive employment (MDG 1B), equal share of women in non-agricultural employment and women's involvement in governance (MDG 3), reducing child mortality (MDG 4) and reducing maternal mortality (MDG 5). Primary and secondary education is in theory free, including Senior High School since 2017. In reality sending children to school involves significant costs (for uniforms, school supplies, exam fees, etc.), and 11% of rural households' cash expenditure is spent on education.[12] This affects attendance, particularly at secondary level, with only around half of secondary school age children enrolled in school.[13] Health statistics also indicate that Ghana has a long way to go in development terms; for example, malaria causes 8% of all deaths[14] and almost 6% of children die before their fifth birthday[15]. A National Health Insurance System (NHIS) was established in 2003, funded by a 2.5% Value Added Tax, 2.5% of Social Security and National Insurance Trust (SSNIT) contributions, and out of pocket premiums for non-SSNIT contributors. However, enrolment in NHIS has stagnated at around 50% of the population, and even groups exempt from contributions (such as children, pregnant women, people over 70, and the extreme poor) do not always enroll in, or renew their membership annually for, the scheme.[16] This leaves many people either paying for private health services or simply not accessing health care on a regular basis.

High levels of inflation in Ghana also affect standards of living, with increases in earnings often not keeping up with the rising cost of food and services. The annual inflation rate averaged 17% from 1998 to 2017; at the time of the study (March 2018) it stood at 10.4%.[17] Inflation for non-food goods and services has been particularly high in recent years, with hikes of 89% in water fees and 59% in electricity costs prompting a public outcry in late 2015.[18]

3.2 Importance of the cocoa sector to Ghana's economy

[Forthcoming following validation workshop]

4. CONCEPT AND DEFINITION OF A LIVING INCOME[19]

The concept of a living income is based on the idea that families should not just earn enough to cover their basic subsistence and survival (i.e. poverty alleviation), they should be able to afford a decent standard of living, and to participate in social and cultural life. The following definition has been agreed by the Living Income Community of Practice:

> *"A living income is the net annual income required for a family in a particular place to afford a decent standard of living for all members of that family. Elements of a decent*

[11] NDPC and UNDP (2015).
[12] Ghana Living Standards Survey Round 6 (GSS, 2014b). As this survey was carried out in 2012-2013, it does reflect the reduced cost of Senior High School since 2017 - see section 9.2 for more on this.
[13] Net enrollment in secondary education was 52% in 2016 according to UNESCO, http://uis.unesco.org/country/GH.
[14] Increasing to 20% of deaths in children under 5 years (WHO, 2015, http://www.who.int/gho/countries/gha.pdf?ua=1)
[15] 2016 figure, World Bank development indicators, https://data.worldbank.org/indicator/SH.DYN.MORT?locations=GH.
[16] Agyepong *et al*. (2016). The cost and inconvenience of the annual renewal process has been found to be a major factor limiting uptake, alongside other factors including quality and responsiveness of service providers.
[17] http://www.tradingeconomics.com/ghana/inflation-cpi.
[18] http://uk.reuters.com/article/ghana-utilities-hike-idUKL8N13W4GW20151207.
[19] This section and others related to the concept and principles of living income are based on materials produced by the Living Income Community of Practice, particularly Grillo (2018), the Ankers' book on measuring living wages (2017), and living wage benchmark reports authored by the Ankers.

> *standard of living include: food, water, housing, education, healthcare, transport, clothing, and other essential needs including provision for unexpected events."*

The net annual family income is the total amount of income earned by family members over the course of a year – including cash and non-cash income (e.g. food produced by family members for their own consumption) – minus the costs associated with earning that income. It includes income from all sources, including remittances and social protection transfers.

The living income concept is aligned with that of living wages, which is not a new or radical idea. In 1776 Adam Smith wrote, "No society can surely be flourishing and happy, of which far greater part of the members are poor and miserable. It is equity besides that they who feed, clothe and lodge the whole body of the people should have such a share of the produce of their own labour as to be themselves well fed, clothed and lodged." Pope Leo XIII in a Papal encyclical *Rerum Novarum* (1891) stated, "Remuneration must be enough to support the wage earner in reasonable and frugal comfort. If through necessity, or fear of worse evil, the workman accepts harder conditions because an employer or contractor will give no better, he is the victim of fraud and injustice." American President Franklin D. Roosevelt wrote in 1933 that "Liberty requires opportunity to make a living – a living decent according to the standard of the time, a living which gives men not only enough to live on but something to live for." The International Labour Organization Constitution (1919) states that "Peace and harmony in the world requires provision of an adequate living wage", and United Nations' Universal Declaration of Human Rights (1948) states that "Everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity."[20]

The difference between a living wage estimate and a living income estimate is that the former states how much a full time waged worker needs to earn in a particular job, while the latter sets a minimum income benchmark for the family as a whole, including all sources of income. The living income concept has been developed specifically with smallholder farming households in mind, recognizing that they often have multiple sources of income (on-farm and off-farm) and that establishing benchmarks for individuals or specific livelihood activities may be more difficult. This necessitates a somewhat different approach to establishing the gap between actual incomes and a living wage/income, but the methodology for calculating the cost of living for a typical family is effectively the same.

5. HOW A LIVING INCOME IS ESTIMATED

5.1 Principles and basic approach for estimating a living income

The Living Income Community of Practice has drawn on the Anker living wage methodology to arrive at guiding principles for estimating a living income. According to these principles, the **cost of a decent standard of living** should be:

- A **normative concept**: The purpose is not to provide the situation of each individual person, but to be used as a reference for typical families in a particular place.
- **Globally applicable**: International minimum standards guide the estimation of cost of living components.
- **Locally adapted**: In making choices about the acceptable application of the methodology, those affected by the benchmark should be at the centre. This means that considerations should be locally adapted to cultural norms and conditions while meeting international basic decency standards.

[20] See Anker (2011) for how other historical figures, international bodies, NGOs, governments and others describe the concept of a living wage.

- **Income-source agnostic**: The cost of a decent standard of living for a family of a certain size is the same for all families of that size in that particular place irrespective of what their livelihood activities look like.
- **Reflective of annual needs**: The cost of a decent standard of living should reflect the family's needs during an average year, not an annualized estimate of the family's total costs over a lifetime (e.g. inclusive of old age, etc). The one exception to this would be to account for some degree of savings to absorb variations in costs that are common to all types of families and that normally occur only once every few years (e.g. marriages, funerals).
- **Based on market prices**: Costs are estimated based on obtaining goods and services in the market, even if in practice families may obtain some goods from their own farms or businesses.
- **Recognizable**: The decisions made to establish a cost of living estimate should be transparent and understandable by those conducting research or using the benchmark.
- **Replicable and practical**: The approach and judgments taken to estimate costs of living should be replicable and practical.
- **Aligning with the Anker Methodology on Living Wage:** To the extent possible, the living income methodology will align with the Anker Methodology on living wage as outlined in *Living Wages Around the World: Manual for Measurement (2017)*.

As indicated above, the **living income estimate is for a typically-sized nuclear family in a particular place**. The size and composition of a 'typical' family is based on national statistics for the location(s) covered by the living income estimate. The rationale for using the nuclear family as the reference unit rather than the 'household' is that households often *exclude* family members who have migrated for work or education, and/or *include* people who do not pool their income (both relatives and non-relatives). In contrast, the living income concept is based on the idea of a single economic unit with shared income, and the principle that family members should be able to live together without the need to migrate. However, household is often used as the unit of measure in income surveys, which complicates matters when it comes to calculating the gap between actual incomes and a living income benchmark. As such, it is sometimes necessary to make adjustments either to the living income benchmark, or to the income data, for the specific purpose of calculating the gap. The latter is only possible if income data can be disaggregated by household member and information on pooling of resources is available. Making adjustments on the living income estimate side is somewhat more straightforward, as it involves creating a second benchmark for the 'typical' household size and composition according to the income survey. This is what has been done in this report in order to assess the living income gap in the Ghana cocoa sector using data from a recent survey by the Royal Tropical Institute among cocoa growing households (see Section 13).

Figure 4 illustrates the four factors that contribute to a decent living as defined globally, allowing for certain adjustments based on local conditions. Living costs are estimated by summing up separate estimates of cost for a low cost nutritious diet, basic decent healthy housing, education of children through secondary school, decent health care, transportation, and all other necessary expenses such as for clothing, furniture, recreation, personal care, etc. A small margin above this total cost of a basic but decent lifestyle is then added to provide for unforeseen events such as illnesses and accidents, or special occasions like marriage or funerals, to help ensure that common unplanned events do not easily throw households into poverty.

Figure 4: Components of a basic but decent life for a family

5.2 Geographical scope and data collection sites for the living income estimate

Cocoa is grown in 6 of the 10 administrative regions in Ghana: Ashanti, Brong Ahafo, Central, Eastern, Volta and Western. Table 2 shows the volumes of cocoa purchased by COCOBOD from each region in the 2015/2016 season. More than half of all cocoa came from Western Region, with Ashanti being the next most important region, accounting for around a sixth of total volumes. The remaining cocoa was evenly split between Central, Eastern and Brong Ahafo, with Volta producing a negligible amount. Production in Brong Ahafo is reportedly on the decline due to changing agro-ecological conditions linked to climate change. On this basis, Volta and Brong Ahafo regions were not included in the scope of the living income estimate.

Table 2: Distribution of COCOBOD cocoa purchases by administrative region (2015/16)

Region	COCOBOD purchases (MT)	% of total
Western	415,302	53.3%
Ashanti	133,462	17.4%
Central	75,870	9.8%
Eastern	75,787	9.7%
Brong Ahafo	74,943	9.6%
Volta	2,680	0.4%

Source: COCOBOD[21]

Living income estimates are based on a combination of primary and secondary data relevant to the geographical area in scope. The Anker methodology requires that primary data are collected in locations that are typical of the larger geographical area so that the living income estimate can be considered representative of the area as a whole. Analysis by Ghana's Statistical Service (GSS) suggests that there is some variation in costs across the administrative regions where cocoa is produced (see Figure 5), although the extent and direction of variation is unclear when it comes to cocoa growing areas specifically. As such, primary data was collected in all four cocoa regions, with one Cocoa District[22] purposively selected from each region to: (i) focus on Cocoa Districts with high levels of cocoa production; (ii) include a variety of factors known to affect costs of living (see Table 3).

[21] https://cocobod.gh/weakly_purchase.php
[22] COCOBOD organizes its services around 7 regions and 67 Cocoa Districts. These are similar to, but not exactly the same as, Ghana's national administrative regions and districts. Western Region is split by COCOBOD into Western North and Western South, with Western South including some parts of Central Region. Typically one Cocoa District will cover a geographical area which includes several administrative districts.

Figure 5: Regional cost of living indices

Region	Price index	Food	Non-food
Western	1.0260	0.9977	1.0566
Central	0.9883	0.9596	1.0276
Greater Accra	1.0000	1.0000	1.0000
Volta	0.9998	0.9576	1.0591
Eastern	0.9757	0.9574	1.0052
Ashanti	0.9963	0.9161	1.0792
Brong Ahafo	0.9792	0.9534	1.0140
Northern	0.9799	0.9811	0.9920
Upper East	0.9366	0.9082	0.9952
Upper West	0.9591	0.9399	0.9919

Source: Computed from the Ghana Living Standards Survey, 2012/13 and monthly regional CPI

Source: Ghana Statistical Service, 2014a.

Table 3: Selection of Cocoa Districts for primary data collection

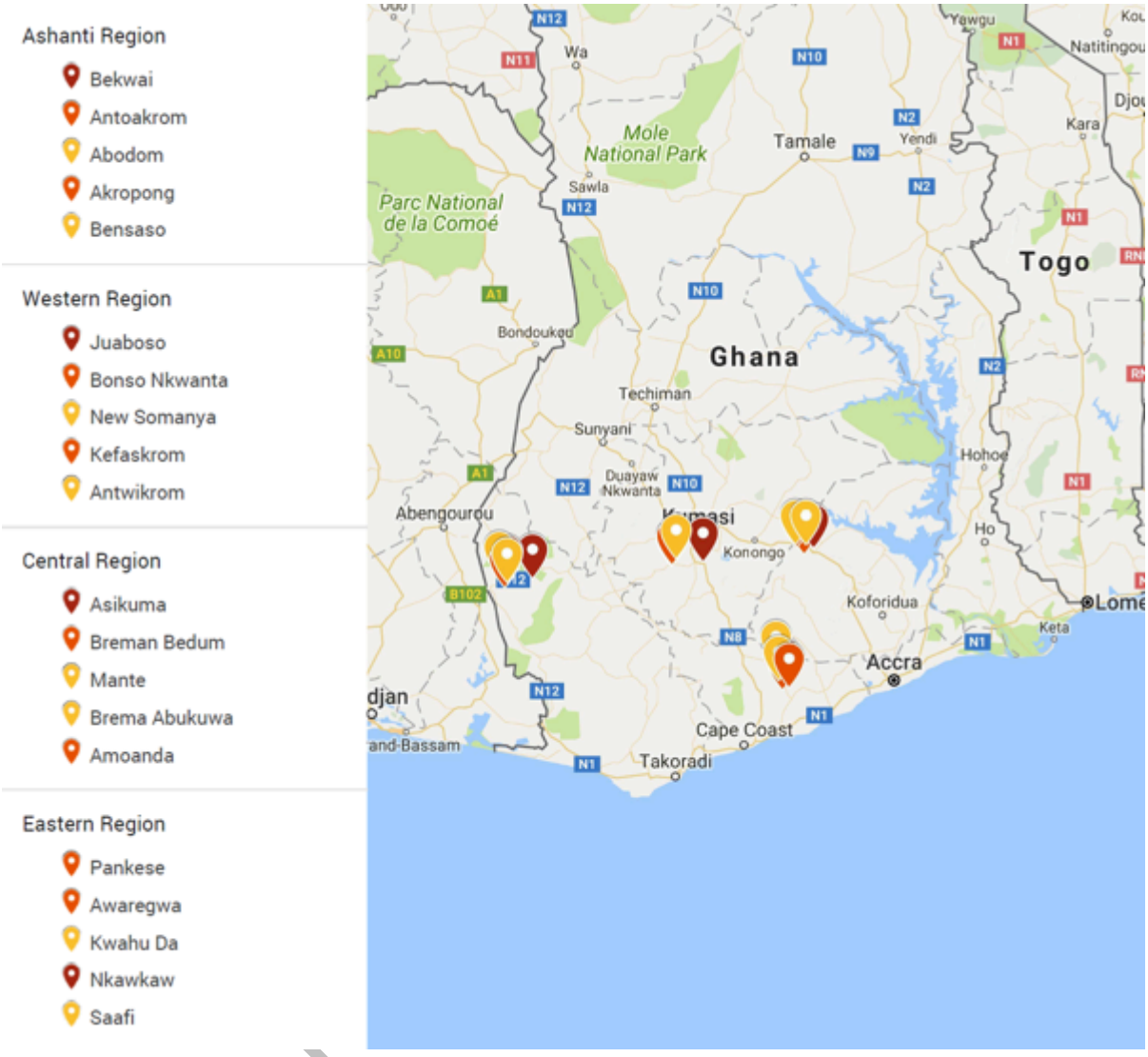
Region	Selected Cocoa District	COCOBOD purchases 2015/2016 (MT)	Poverty incidence[23]	Proximity to major city	Presence of *galamsey*[24]
Ashanti	Antoakrom	12,948	9.6%	Yes	Yes
Central	Asikuma	10,201	24.0%	No	No
Eastern	Nkawkaw	10,963	18.2%	Somewhat	Yes
Western	Bonso Nkwanta	24,764	13.9%	No	No

Cocoa Districts are divided into 'Communities' which include a varying number of towns, villages and hamlets in a geographically defined area. Typically a Community has one small town surrounded by a number of villages, which in turn are surrounded by hamlets and individual farms. There are cocoa farmers living in all of these different types of location. The research team worked with COCOBOD's district level staff to purposively select two small towns/large villages and two smaller villages per Cocoa District, spread across two to three Communities. In addition, some data was collected from larger towns in the vicinity of these small towns and villages, as farming households use markets, hospitals and/or secondary schools in these larger towns. The map below shows all locations where primary data was collected.

[23] The main administrative district associated with each Cocoa District was used as the reference point for the poverty incidence. Poverty headcounts for each administrative districts were taken from Ghana Statistical Service's Poverty Mapping Report (2015).

[24] Galamsey is the local term for small scale and artisanal mining, which has increasingly been taken up in cocoa growing regions of Ghana, and which is thought to push up costs of living as well as the cost of hired labour.

Figure 6: Primary data collection sites



5.3 Sources of data

The living income estimate is based to a substantial extent on secondary data from high quality studies undertaken by GSS, multilateral institutions (e.g. WHO, UNICEF) and research bodies. Key sources of national level statistics included: Round 6 of the Ghana Living Standards Survey (GLSS 6), carried out in 2012 to 2013; the 2010 Population and Housing Census (PHC); the 2014 Ghana Demographic and Health Survey (GDHS); and the 2011 Multiple Indicator Cluster Survey (MICS). These studies provide detailed information on household expenditure, standards of living, and education and health care services, broken down by urban and rural areas and by region. This information was complemented with thematic studies at country or regional level which provided additional contextual information and statistics, such as the FAO's nutritional profile for Ghana and UN-Habitat's housing profile.

Primary data collection was undertaken for the purposes of gathering up-to-date information related to costs for a nutritious diet and decent housing in the specific context of cocoa growing areas. Information was also gathered to cross check secondary data on education and health care expenditure, to ensure that the amounts allowed for these in the living income estimate are sufficient.

This involved gathering food price data from multiple markets, stores and street traders; visiting a range of residential areas to find out about housing costs; and talking to staff in schools and health care professionals in hospitals, clinics, pharmacies and chemical stores. This data collection was guided by focus group discussions with cocoa farmers in each Cocoa District about where they live and shop, what kinds of food they prefer, and their use of health and education services. The fieldwork took place from 14 February to 17 March 2018, involving the lead researcher plus a fieldwork supervisor and two research assistants from the Department of Agricultural Economics and Agribusiness at the University of Ghana.

SECTION II: COST OF A BASIC BUT DECENT LIFE IN COCOA GROWING REGIONS OF GHANA

6. FOOD COSTS

The cost of food was estimated using local food prices and a low cost nutritious model diet for Ghana for a reference family size of 5 persons (2 adults and 3 children)[25]. **The estimated cost of the model diet was GHS 4.98 ($1.12) per person per day**. This implies GHS 757 ($170) per month per family. Full details on how this estimate was arrived at are provided below.

6.1 General principles of model diet

The following general principles were used to establish the model diet that we used to estimate food costs for cocoa growing regions. Our model diet needed to be:

1) **Nutritious** (i.e. meets WHO recommendations as regards having sufficient calories as well as acceptable quantities of proteins, fats, carbohydrates, and fruits and vegetables) to help ensure that families have enough to eat and can be healthy.
2) **Relatively low in cost for a nutritious diet**. This approach means that relatively inexpensive foods are included in the model diet in order to reflect how cost conscious families shop for food while maintaining nutritional standards.
3) **Consistent with Ghana's development level**. For this reason, our model diet includes a relatively low (but nutritionally acceptable) percentage of calories from proteins since proteins are expensive per calorie. At the same time, percent of calories from proteins meets WHO/FAO minimum requirements.
4) **Consistent with local food preferences, local food availability and local food costs**. For this reason our model diet includes considerable amounts of cassava, maize, plantain, and dried fish, which are low cost foods which are eaten regularly in cocoa growing areas, as well as smaller amounts of more expensive but nevertheless popular foods, such as rice, bread and tomatoes.

6.2 Model diet

The model diet we used to estimate a living income for cocoa growing regions is shown in Table 4. It was developed through an iterative process, starting with Ghana's Ministry of Health Dietary and Physical Activity Guidelines (2009). Adjustments were made to bring the diet more in line with actual consumption[26] using GLSS 6 data on food expenditure, FAO's Food Balance Sheet[27] and Nutrition Country Profile[28], research reports with information on food consumption and nutrition in southern areas of Ghana[29], research on food crops grown by rural households in cocoa growing regions[30], and information from focus group discussions with cocoa farmers. Further adjustments were made to ensure that the diet provides recommended amounts of macronutrients (protein, fat, carbohydrate) and micro nutrients and minerals. The final set of adjustments were based on taking into consideration food costs in cocoa growing regions, to arrive at a nutritious but affordable diet for smallholder farming families.

[25] In Section III of this report, an explanation is given for how the reference family size was calculated.
[26] Dietary guidelines typically do not give much consideration to food costs, and can therefore be more expensive than is warranted for estimating a living wage. Using data on actual consumption of different kinds of foods helps to adjust for this as well as takes into consideration food preferences.
[27] See: http://ghana.opendataforafrica.org/bbyzsob/ghana-fao-stat-food-nutrition-and-food-security.
[28] FAO (2009).
[29] Frimpong (2013), Osei-Asare (2013), Nti (2008).
[30] KIT, 2018

Our model diet has 2294 calories. This was based on Schofield equations[31] that are widely used to estimate calorie needs based on age, sex, height[32] and activity level[33], and the size and composition of our reference family. We assume that one adult in the family has a heavy physical activity level and one has a moderate physical activity level, taking into account the types of paid and unpaid work and other activities that adults in cocoa growing areas engage in on a daily basis (e.g. farming, marketing, petty trade, household chores, collecting water, preparing food, etc.).[34] Percentages of calories from protein (11.7%), fats (24.3%) and carbohydrates (63.9%) meet minimum WHO/FAO standards for a nutritious diet. The 326 grams of fruit, vegetables and legumes included in the diet helps to provide a variety of micronutrients and minerals, while also taking into account the relatively high cost of such foods and that achieving the WHO/FAO daily recommended level of 400 grams per day is unrealistic for a lower middle income country like Ghana.[35]

Our model diet includes:

- High quantities of cassava and maize as they are inexpensive sources of calories and central to the Ghanaian diet in cocoa growing regions, for example as *fufu, banku, kenkey, gari* and *koko*.
- Small quantity of rice, enough for around two large servings per week, as it is popular but relatively expensive.
- Around two slices of bread per day, even though it is relatively expensive, as this reflects typical consumption among cocoa farming households.
- Moderate amount of plantain and cocoyam (or yam), as they are inexpensive, commonly grown alongside cocoa, and used widely in *fufu* and as side dishes.
- Enough meat and fish for at least one serving per day, but mainly in the form of dried, salted or smoked fish as this is the cheapest source of animal protein.
- A small amount of milk (½ cup per day for children and ¼ cup per day for adults).
- 2 eggs per week, in line with dietary guidelines.
- Small amounts of groundnuts and cowpeas as they are good sources of protein but typically not eaten daily.
- The least costly vegetables available locally, with the exception of tomatoes which are included due to their use in most Ghanaian soups and stews, and cocoyam leaves, which are used to make the popular *kontomire* stew and are a good source of micronutrients.

[31] See: https://en.wikipedia.org/wiki/Schofield_equation.
[32] Average height for adult women in Ghana was taken from Subramanian et al. (2011). A standard ratio of 1 to 1.08 for adult female to adult male heights was used to arrive at the height for Ghanaian men.
[33] This is in line with the daily calorie requirements for adults and children used by the Ghana Statistical Service, cited in Frimpong (2013), namely 2900 calories for adults, 2250 for children 6-17 years, and 1150 for children under 6 years. Assuming a reference family of 2 adults, 2 children aged 6-17 and 1 child aged under 6, this gives an average of 2290 calories per household member.
[34] Usually both men and women in cocoa farming households in Ghana are involved in non-mechanized farming. This is usually assumed to be heavy physical activity, with high energy consumption. However, a recent study in northern Ghana using modern technology to measure activity levels suggests that men and women in smallholder farming households may in reality spend more time on moderate and light activities than on heavy activities (Zanello et al., 2017). As such, the calorie requirement calculations for the model diet were based on a conservative estimate of one adult with heavy and one adult with moderate physical activity levels.
[35] See Anker and Anker (2017) for a full discussion of this topic. They recommend 300g of fruit, vegetables and legumes per day in low income countries, and an additional 25g per day for each increase in the level of development, with 400g only for high income countries. Ghana is a lower middle income country, which implies a recommendation of 325g of fruit, vegetables and legumes.

- The least costly fruit available year round, namely oranges. Other fruits such as mangoes and papaya are eaten when in season, but were scarce at the time of the fieldwork so it was not possible to establish a representative price for them.
- 30 grams of oil for cooking, which is quite high but realistic for the Ghanaian cuisine. Palm oil was selected, as the most frequently used cooking oil in the study area.
- A standard amount of sugar (6 teaspoons per day) for sweetening food and drinks.
- One cup of Milo per week. This is the most popular hot drink among cocoa farmers, but it is expensive and therefore not affordable on a daily basis.

It should be noted that the amount of milk included falls well short of recommended guidelines for good nutrition, particularly for young children and pregnant women[36], but is deemed realistic given fresh milk is not available locally and powdered milk is very expensive. The reduced quantity is also justified by the fact that dried fish are frequently consumed whole including bones (as very small fish), which provides an alternative source of calcium. Even so, milk represents close to 12% of the cost of the model diet.

To allow families some variation in what they eat, including occasional consumption of high cost foods, 10% was added to the cost of the model diet. An additional 2% was added to cover spices and condiments, such as garlic, ginger, chilli, salt and stock cubes, all of which are used for making soups and stews. Finally, 3% was added to account for spoilage and wastage, which is a conservative amount given that cocoa farming households rarely have a fridge.

Table 4: Model diet and estimated food cost per person per day for rural cocoa growing areas (Ashanti, Central, Eastern and Western Regions), March 2018 using local food prices where cocoa farmers shop

Food items [a]	Edible grams [b, c, d, e]	Purchased grams	Cost per kg [f] (GHS)	Cost [g] (GHS)	Comments (Diet is for average person in family of 5. Portions for adults are bigger than for children.)
Maize	218	218	1.53	0.33	Maize provides 27% of calories. Cost based on price of corn dough.
Rice	28	28	4.83	0.14	Small amount as expensive. Mix of local and imported varieties, as all types consumed.
Bread	50	50	5.50	0.28	2 slices per day. Cost based on mix of sugar bread, tea bread and butter bread.
Cassava	249	297	0.55	0.16	Cassava provides 17% of calories.
Cocoyam	46	57	1.59	0.09	Cocoyam and yam are interchangeable. Used price of cocoyam as lower than yam.
Plantain	90	138	1.07	0.15	Approx. ½ medium size finger per day.
Groundnuts	21	21	7.99	0.17	Enough groundnut paste for 2 soups per week. May be replaced with whole groundnuts.
Beans	17	17	4.86	0.08	Cowpeas are most common beans, typically eaten 1-3 times a week.
Milk	13	13	45.28	0.59	½ cup per day for children, ¼ cup for adults. Used powdered as fresh not available.
Eggs	14	16	12.05	0.19	2 eggs per week.

[36] Ghana's Ministry of Health Dietary and Physical Activity Guidelines (2009) recommend two to four servings of milk per day for adults and children. This is in line with nutritional guidelines worldwide (see Anker, 2017).

Dried, salted fish	21	21	19.30	0.41	5 servings per week. Dried, salted and smoked fish are a good source of nutrients, cheaper than fresh fish or meat, and typically eaten most days.
Fresh fish and poultry	12 12	20 18	9.05 12.59	0.18 0.23	1 serving fresh fish (kpala or salmon) and 1 serving fresh chicken (thighs) per week.
Vegetables:					
Cabbage	50	63	2.20	0.14	Cabbage was least expensive vegetable at time of survey, so higher quantity included.
Cocoyam leaves	15	19	4.52	0.08	Tomatoes and cocoyam leaves relatively expensive but important for Ghanaian cuisine. Included lower quantities and some tomato paste to reduce cost.
Tomatoes (fresh/ paste [h])	25 7	27 7	4.73 9.79	0.13 0.07	
Onions	35	38	3.14	0.12	Onions also used daily in Ghanaian cuisine.
Garden eggs	35	43	3.92	0.17	Garden eggs and okra used interchangeably; used garden eggs as cheaper at time of survey.
Fruit	100	137	1.04	0.14	Cost based on oranges, as the least expensive fruit year round.
Cooking oil	30	30	8.03	0.24	Cost for palm oil, the most frequently used cooking oil.
Sugar	30	30	5.18	0.16	7 teaspoons of white sugar per day.
Non alcoholic beverages (Milo)	3	3	28.64	0.09	Milo consumed more frequently than tea and coffee. Allowed only 1 cup of Milo a week given high cost.
Sub-total cost per person per day (GHS)				4.33	
Total with 15% added for misc. costs [I] (GHS)				**4.98**	
Total cost per person per day in USD [J]				**1.12**	

Source: The Authors

Notes:

[a] Specific food item(s) used to represent each food group are the lowest cost food item(s) per edible gram found in the market survey, taking into account the local cuisine and cocoa farmer preferences to ensure acceptability of the model diet. [b] Edible (consumed) quantity differs from purchased quantity for foods with inedible parts, such as fruits and vegetables with inedible stem or skin, egg with shell, or fish with head, tail and scales. The percentage edible for each purchased food is taken from the FAO's West African Food Composition Table (2012). [c] Number of calories, proteins, carbohydrates and fats per 100 grams for each food item are estimated using the values reported in the FAO source noted above, supplemented by the United States Department of Agriculture (USDA) online nutritional values database (www.ndb.nal.usda.gov/ndb/foods). For corn dough the nutritional values were based on a ratio of 80% corn flour to 20% water. [d] In addition to having a sufficient number of calories (2294), our model diet meets WHO recommendations for proteins (10-15% of all calories), fats (15-30% of all calories) and carbohydrates (less than 75% of all calories). Approximately 12% of calories in the model diet are from proteins, 24% are from fats and oils, and 64% are from carbohydrates. [e] Calories required by adult males, adult females and children were calculated using Schofield equations recommended by WHO/FAO, taking into account adult height, levels of physical activity for adults and children. The average number of calories required per person for our reference family of 5 was calculated, giving an average of 2294 per person. [f] Cost per kilo is based on prices observed in venues where cocoa farmers shop (markets, container stores, table top stores, etc). [g] Cost for each food item was calculated by multiplying purchased quantity (not edible grams) by cost per kilo. [h] 7 grams of tomato paste is equivalent to 28 edible grams of fresh tomatoes. [i] 2% was added to food cost for salt, chilli, garlic, ginger, other spices and stock cubes which are widely used in the local cuisine. This is in line with the percentage of household expenditure which is allocated to 'spices' in the Ghana Living Standards Survey Round 4 (the last survey which gave a separate figure for spices); 3% added as a conservative estimate of wastage and spoilage; 10% added to allow for variety in the diet and occasional consumption of higher value food items. [j] Exchange rate used to convert Ghana Cedis to USD was 4.45, the official exchange rate for 1 March 2018 (midway through primary data collection) according to https://www.oanda.com/fx-for-business/historical-rates.

6.3 Food prices

To estimate the cost of our model diet, we collected food prices from places where cocoa farmers typically shop for each food item, so that the cost is based on what they actually pay. Although cocoa farming households produce much of their own food, the living income estimate is for a particular geographical area, not a specific livelihood activity, and therefore the cost of food is based on market prices. Cocoa farmers anyway told us that they need to purchase even common food crops like cassava, maize, plantain and cocoyam at certain times of the year. They said they buy all food items locally in the villages and small towns close to where they live, only buying in large markets in nearby towns or cities when they are going there anyway to sell their produce or, in the case of traders, to buy goods to sell. As such, we focused the data collection on villages and small towns, but also collected prices in one large town per Cocoa District to see how they compared with local prices.

In total we collected over 2,000 prices from 380 different vendors. This included vendors in open air markets (all food items), container stores and table top stores (food crops, dry goods, bread, processed fish, eggs), cold stores selling fresh fish and meat, and home-based and itinerant sellers (food crops, eggs, processed fish, bread). We found that average prices in large towns were lower[37] for a few items (processed fish, fresh chicken, oranges) but higher for others, notably common food crops (cassava, plantain, cocoyam, garden eggs). We decided to exclude the prices from large towns as: (i) there are relatively few food items which are cheaper in large towns, and they are not items which can be bought in bulk for storage; (ii) this more closely reflects the way cocoa farming households shop for food.

As can be seen in the photos below, vendors in Ghana often sell foods pre-packaged into small plastic bags or containers. Even when selling food loose, they do not sell by weight - rather they sell by quantity, such as five tomatoes for GHS 2, or three onions for GHS 1. This meant that we had to weigh typical quantities of food which families purchase (including small, medium and large quantities) and then calculate the average cost per kilo. We used an electronic scale for doing this. We also had to collect prices from several vendors in each market, as there is variation in the quantity sold at each price. For example, one vendor may sell four large garden eggs for GHS 1, while another may sell six small garden eggs for the same price. For some food items we also collected prices for different qualities or varieties, such as different varieties of rice and different brands of tomato paste. This enabled us to base costs on the least expensive acceptable variety/brand of each food item.

Figure 7: Examples of the types of food vendors where prices were collected

Open market in large town

Container store in small town

[37] At least 10% difference.


Small open market in village


Itinerant trader in village

Food prices were rigorously analysed to arrive at a representative price per edible gram for each food item in the model diet. This involved calculating average prices across vendors, based on the lowest cost per kilo for each vendor. Interestingly, it was often not cheaper to buy larger quantities of food, such as bigger jars of groundnut paste, larger bottles of palm oil, or higher quantities of dried fish. Even buying a 5kg sack of imported perfumed rice was not consistently cheaper than buying the same type of rice by the cup. Sometimes the smallest quantity of a product, such as a 'tie' of powdered milk or sugar, was actually the cheapest per gram. This is likely to be a result of both vendors and buyers not being conscious of the weight of goods and the relationship between weight and price. As such, we focused on identifying the cheapest price per kilo across all quantities sold by each vendor, rather than excluding very small or very large quantities.

6.4 Adjustment of food prices for seasonality

The price of food, particularly fresh food, is often greatly affected by seasonality of agricultural production. A World Bank analysis of wholesale food prices for a subset of the food items in our model diet indicated particularly high seasonality in prices in Ghana for maize, plantain, tomatoes and oranges, and some seasonality for rice, cassava and cowpeas.[38] As such, it was necessary to check the extent to which prices we collected in February/March are representative of average prices across the year. For this we used food price data collected in large markets by the Ministry of Food and Agriculture (MoFA) each month, isolating data for the four regions of the study and comparing March prices with mean prices for 2015 to 2017. The average deviation from the trend for 22 food items in the model diet is presented in Table 5, highlighting commodities with March prices greater than 2 percentage points above the seasonal trend.

Table 5: Percentage deviation of 3-year seasonal prices (March prices) from trend mean for 2015-2017, by region (>2% deviation highlighted)

Food item	Ashanti	Central	Eastern	Western
Rice - Local	-2.077	-2.077	na	-0.652
Rice - Imported	0.163	0.256	-1.190	-3.354
Maize dough	0.565	-1.205	0.000	0.186
Bread - sugar	-0.173	-0.028	-0.173	0.088
Frozen chicken	-0.954	-2.870	-0.239	-0.414
Fresh fish - Kpala	-0.393	-0.572	-0.693	-0.276
Dried fish - Koobi	0.065	-0.140	0.168	-2.059
Powdered milk	0.000	-5.263	-1.796	-1.923
Palm oil (red oil)	0.000	0.000	0.000	2.564

[38] Gilbert *et al*. (2016).

Plantain (green)	-0.072	-0.236	-0.404	0.315
Oranges	0.457	1.149	-0.864	-1.170
Groundnuts (shelled)	-0.650	-0.331	0.138	0.266
Cocoyam leaves	-0.895	0.897	0.707	0.683
Garden eggs	0.042	1.138	2.564	-0.619
Onions	0.536	-0.369	0.938	-0.369
Tomatoes (fresh)	1.405	1.493	0.963	-3.457
Tomato paste	6.667	0.717	0.323	-0.043
White beans (cowpea)	0.422	-0.235	-0.632	0.000
Cassava (fresh)	-0.886	-1.079	-0.704	-1.075
Cocoyam	0.301	0.301	0.301	0.827
Granulated sugar	0.941	-1.646	-1.802	0.662
Cocoa with milk powder (Milo)	-0.678	-2.655	-4.203	-1.303

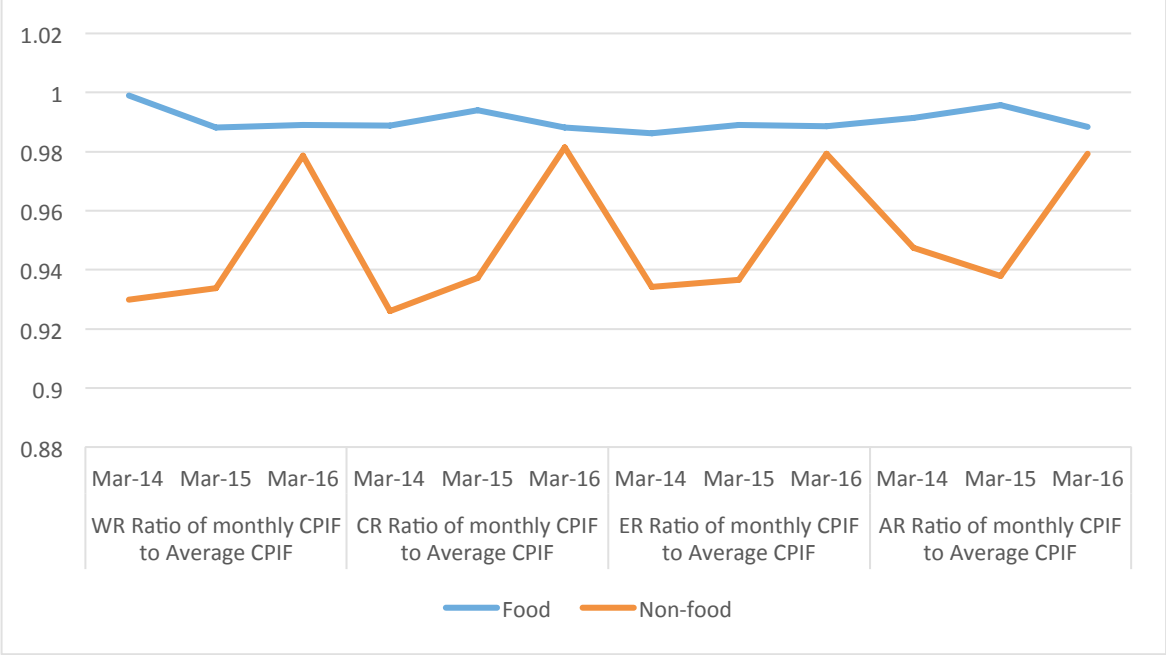
Source: Authors' calculations using MoFA data on food retail prices

The analysis found that prices in the month of March are close to average annual prices for most commodities (i.e. mean deviance for 2015-2017 is under 2%). Although there are some commodities where the deviance is more than 2%, there is little consistency across regions, i.e. for some regions the March price is higher than average for the year while for others it is lower than the average. The only commodities which suggest a relatively persistent difference were the following:

- Garden eggs are 0.1% to 2.6% higher in 3 regions, but 0.6% lower in the other region (Western).
- Tomatoes are 1% to 1.5% higher in 3 regions, but 3.5% lower in the other region (Western).
- Powdered milk is 0% to 5.2% lower for March than for the year in all regions.
- Milo is 0.7% to 4.2% lower for March than for the year in all regions.

Although garden eggs and tomatoes show some seasonal variation for March, this is not consistent or very large, and does not justify making any adjustments to the representative food prices collected in the living income survey. Seasonal deviations for processed goods - powdered milk and Milo - are more consistent across regions, but still relatively small. To extend the analysis, the Consumer Price Index (food and non food) for March of each year was compared to the mean for the year for 2014, 2015 and 2016 (see Figure 8). This suggests that March food prices are in general slightly lower than the average for the year, due to the effects of inflation, which may account for the difference. Given that in most regions the difference is anyway below 2%, there is no strong case for making adjustments to the local food prices for milk and Milo.

Figure 8: Ratio of the month of March of Food and Non-Food CPI to average in the year, 2014-2016



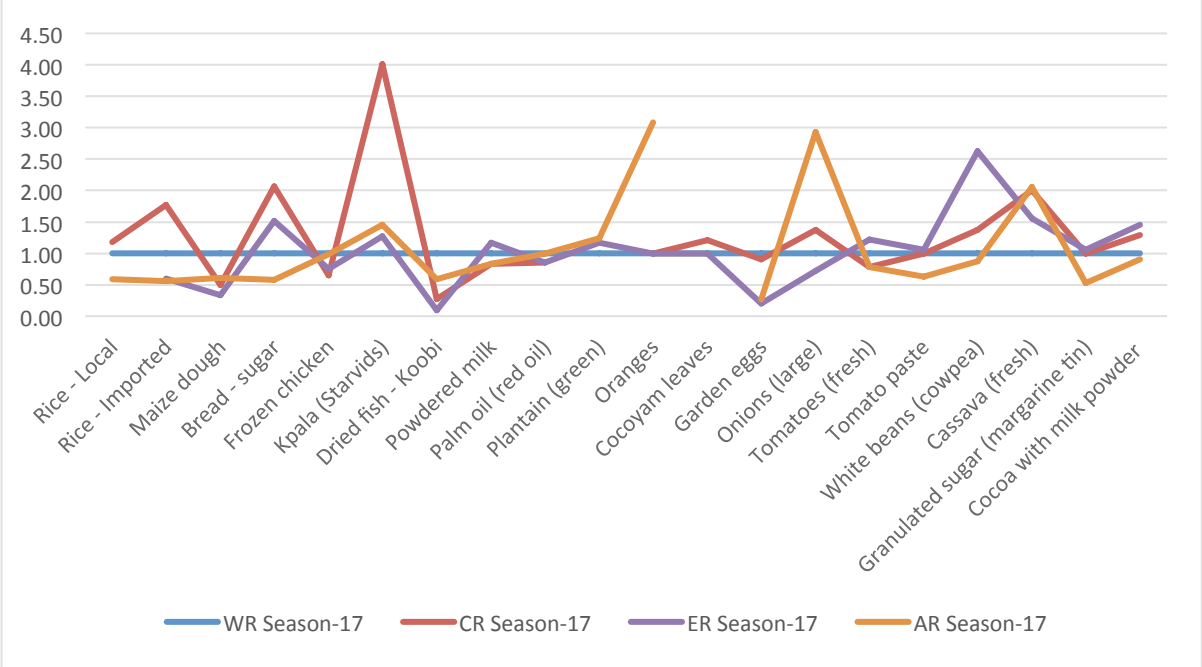
Source: Authors' calculations using GSS data on Consumer Price Index

6.5 Analysis of regional differences in food prices

The cost of living for our typical cocoa farming family may vary depending on where they live. The question for the living income analysis is whether this variation is significant enough to require different living income estimates in different regions of cocoa production. Food accounts for the majority of household expenditure in rural areas of Ghana[39], and is the basis for calculating non-food non-housing costs in the living income methodology. Analysis of regional differences in food prices was therefore used to answer this question, using MoFA's regional food price data for 2012-2017. This showed significant price differences between regions for many commodities, but little consistency in the pattern of variation. The same is true for the food prices collected for the living income study in February/March 2018, although in general these prices are more similar across regions than the MoFA prices for March each year.[40] In addition, the pattern of regional variation in annual mean prices using MoFA data does not match the pattern for the living income study February/March 2018 prices. These trends are illustrated in Figures 9 and 10, which show the regional cost of individual food items compared to Western Region as the base (using MoFA and living income datasets respectively). This lack of consistency in regional food price variation makes it hard to establish possible differences in the cost of the model diet across regions.

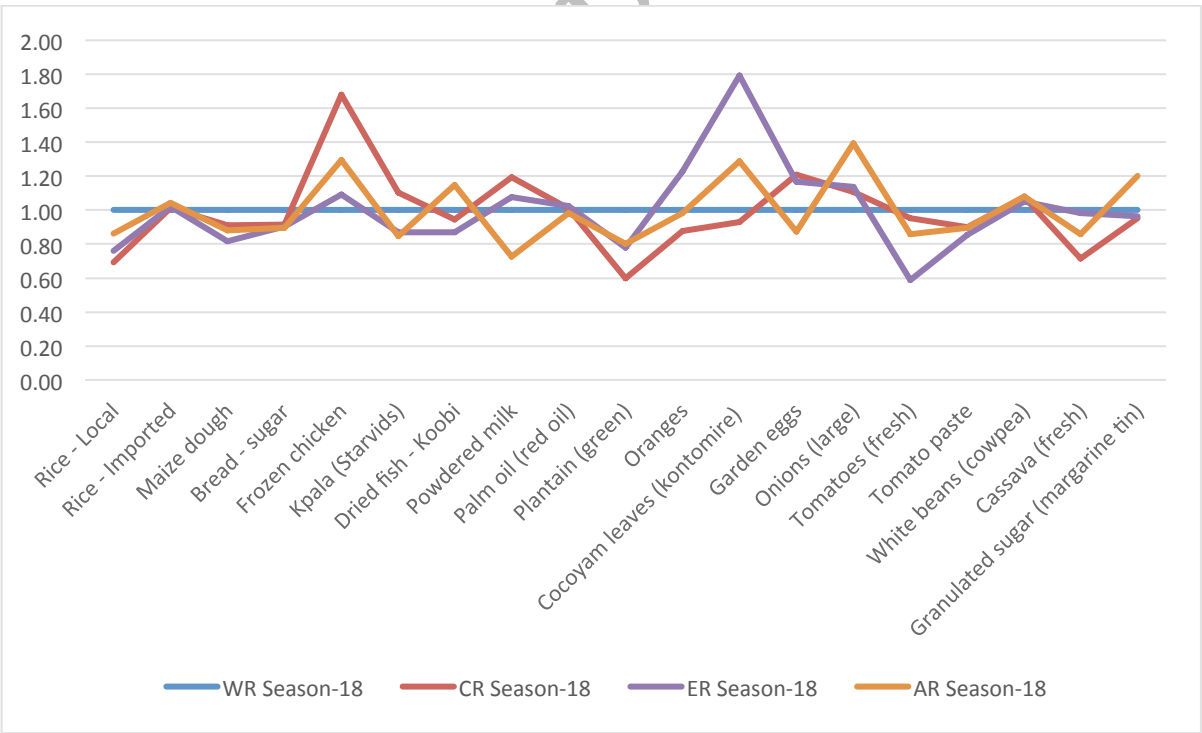
[39] According to GLSS 6, 54% of household expenditure is on food in rural forest zones (the agro-ecological region for cocoa production).
[40] This may be a reflection of the way representative prices are calculated using the Anker methodology (i.e. selecting the lowest price per vendor, and calculating trimmed means across vendors).

Figure 9: Relative food price index for MoFA March 2017 in Western, Central, Eastern and Ashanti Regions (Western Region = 1)



Source: Authors' calculation based on MoFA March 2017 prices

Figure 10: Relative food price index for Living Income Study February/March 2018 in Western, Central, Eastern, and Ashanti Regions (Western Region = 1)



Source: Authors' calculation based on Living Income Study February/March 2018 prices

We also computed a non-weighted aggregate mean price for each region. MoFA March 2017 data indicate that Eastern region appears to be relatively food cheap (4% lower than Western region), followed by Western Region, with Ashanti and Central Region relatively more expensive. The living income data suggest a similar pattern, but with Ashanti and Central Regions reversed. However, commodities with particularly strong variations have a marked effect on the aggregate mean. When these commodities are excluded from the calculation, the regional pattern changes and there is less consistency between the MoFA and living income data.

Overall, we did not find evidence suggesting a consistent difference in the cost of food between regions where cocoa is produced. As such, we do not consider it necessary to develop more than one living income estimate for cocoa growing regions.

7. HOUSING COSTS

The Anker methodology differs from the approach usually used to measure living wages/incomes and poverty lines where all non-food costs including housing costs are estimated in one go. Instead the Anker methodology estimates the cost of decent housing separately from other non-food costs. This yields a more accurate living income estimate, particularly where housing conditions are poor at present, as well as in countries where the cost of owner occupied housing is considered to be zero in household expenditure statistics[41].

Housing costs for our living income were estimated by summing the cost of: (i) rental of a basic acceptable dwelling; (ii) utility costs (electricity, other lighting, water, cooking fuel). **We estimated housing costs in cocoa growing areas to be GHS 206 ($46) per month for a family of 2 adults and 3 children**, comprised of GHS 82 ($18) for rent and GHS 124 ($28) for electricity and other lighting, water, and cooking fuel. We assumed that landlords pay the cost of routine repairs and maintenance. Details on how we arrived at the estimate are given below.

Our estimate for housing equates to 14% of the living income estimate. This is considerably higher than the 8% for housing indicated in the GLSS 6 household expenditure data for rural forest areas. The difference is likely to be due to the shortage of acceptable housing in Ghana currently, as described below, which artificially holds the cost of housing down.

7.1 Standard for basic acceptable housing

Adequate housing is considered a right according to the international community, as set out in Article 25 of the 1948 Universal Declaration of Human Rights: "Everyone has the right to a standard of living adequate for health and well-being for himself and for his family, including food, clothing, housing and medical care and necessary social services." This is recognized by the government of Ghana in the 2015 National Housing Policy (p.11):

> *"The right to an adequate standard of living is of central importance for the enjoyment of all economic, social and cultural rights. The right to housing applies to everyone irrespective of gender. Government shall take whatever steps necessary for achieving the full realization of the right to adequate housing."*

International and national standards are based around the following principles for adequate housing:

- Durable structure;
- Sufficient living space;
- Access to safe water;

[41] This is not the case in GLSS 6, which inputs the value of owner occupied housing using rental costs for similar properties.

- Access to sanitary toilet and washing facilities;
- Adequate lighting;
- Adequate ventilation;
- Adequate food storage;
- Separation from animal quarters;
- Protection from cold, damp, heat, rain, wind or other threats to health, structural hazards and disease vectors.

In Ghana there is currently a severe shortage of housing, leading to widespread over-crowding - nearly half of households in Ghana occupy a single room (56% in rural forest areas)[42]. The quality of construction is also poor, particularly in rural areas - 50% of dwellings in rural forest areas are constructed from non-durable materials (earth or mud brick walls) compared to 10% in urban areas.[43] Access to safe water is good - 78% of rural forest households have access to improved sources of water, but sanitation remains a major problem with 54% of households either having to use public toilets, which are often shared by a large number of people and in poor condition, or having no access to toilet facilities at all (i.e. they use the bush, beach or field).[44]

There are several factors underlying the lack of adequate housing in Ghana, including: (i) population growth alongside rapid urbanization, with the proportion of the population living in urban areas increasing from 35% in 1984 to 52% in 2010; (ii) housing has never been a large component of government economic planning, with past governments successively failing to get a housing policy off the ground[45], which means that as well as having insufficient housing stock, building codes and standards are outdated and there are no effective regulatory and monitoring mechanisms for housing; (iii) a legacy of rent controls and low income levels among the populace limit private sector investment in housing (for rent or for sale); (iv) various supply side limitations including land cost and accessibility, lack of access to credit, and high cost of building materials.[46] The dominance of customary land tenure in Ghana, operated through chiefs and family heads, is another limiting factor as it is not secure enough to attract bank lending. Most formal sector housing built in recent years has been oriented towards the growing middle classes, with the majority of new dwellings built 'informally' by individuals in collaboration with small-scale, local contractors on land obtained from traditional leaders. Although there is critical need for public and private investment in low cost, decent quality housing, these factors mean there are insufficient incentives at present.

Part of the living income concept is that families should be able to afford decent and healthy housing, as defined by international standards but adapted to local housing conditions. The first step in estimating the cost of decent and healthy housing is to establish a normative standard for decency for the location in question, which can then be used to estimate the rental value of adequate housing. Table 6 shows the local standard we developed for rural cocoa growing areas, which was based on minimum international standards and national statistics for housing conditions in the locality[47], in the absence of a national standard[48].

[42] UN Habitat (2011) and GLSS 6 (GSS, 2014b).
[43] GLSS 6 (GSS, 2014b).
[44] Ibid.
[45] A National Housing Policy was finally launched in 2015, but it is unclear how effective this is being in increasing the stock of housing.
[46] UN Habitat (2011); Ghana National Housing Policy (2015).
[47] The main source of national statistics used was the GLSS 6, for which rural data are often down by agro-ecological zone: rural coastal, rural forest, and rural savannah. In Ghana 94% of cocoa is produced in forest zones, so we used rural forest data rather than data for all rural areas wherever possible, as the latter are influenced by higher levels of poverty in northern Ghana.
[48] Considerable effort was made to find a national housing standard which could be used as the benchmark for decent housing, but the government does not currently have such a standard and NGOs such as Habitat for

Table 6: Local housing standard for rural cocoa growing areas (Ashanti, Central, Eastern and Western Regions)

Housing characteristics	International minimum standards	Local housing standard for rural cocoa growing regions
MATERIALS		
Walls	Durable material providing protection from elements	Walls made of cement block, concrete or brick, in decent condition. Baked mudbrick walls plastered with cement acceptable if well constructed and in good condition.
Roof	Durable material without leaks	Roof made of metal sheet or tiles, no leaks.
Floor	Durable material	Floor made of cement, concrete or tiles, in decent condition.
AMENITIES		
Toilet	At least pit latrine with slab	Pit latrine with slab, KVIP or flush toilet, clean and acceptable drainage and depth. Public toilet acceptable if meets standard, is only shared by a few households and is close to home.
Water	Safe water not far from home	Safe water not far from home (no more than 30 minutes total collection time). Safe sources: piped into dwelling or nearby, public tap, borehole/ pump/ tube well, protected well or spring.
Electricity	Not required	Mains electricity required, as 55% households in rural forest areas have electricity.
VENTILATION & LIGHTING		
Ventilation quality	Good ventilation	≥ 1 window per room. Ceiling height no less than 2m.
Lighting	Adequate	Mains electricity required, but acceptable to use torches and kerosene lamps during power outages.
Number of windows	Sufficient for adequate lighting and ventilation	≥ 1 window per room
LIVING SPACE		
Number of square meters of living space	≥30 m^2	≥ 36 m^2 living space for a family of 5 (floor area of usable rooms, including covered porch area). This is consistent with international standards for a lower middle income country, but allows porch space to be included as living space which is not typical but is realistic given lack of spacious housing in Ghana.
Kitchen location	If kitchen is inside house, adequate ventilation for cooking needed	If cooking inside or on porch, adequate ventilation is required (especially when using wood or charcoal stoves)
CONDITION	In good state of repair	In good state of repair
ENVIRONMENT	Not a slum No site hazards such as: surface water drainage, industrial pollution, danger of landslides, flood zone	Not a slum. No animals in or near house. No site hazards such as: surface water drainage, industrial pollution, danger of landslides, flood zone

Source: The Authors

Humanity were unable to provide one either. The housing standard used by Rainforest Alliance for Ghana was referred to, but otherwise the authors fell back on international standards as summarized in the Ankers' living wage manual.

Figure 11: Photos of housing which does and does not meet the local standard for decency in cocoa growing areas of Ghana


Not acceptable: Mudbrick walls in poor condition


Acceptable: Compound house with block walls


Not acceptable: Kitchen with insufficient ventilation


Acceptable: Kitchen on an open patio


Not acceptable: Pit latrine with wooden slats


Acceptable: Pit latrine with concrete slab

7.2 Rent for basic acceptable housing

In order to estimate the rental cost of decent and healthy housing, we surveyed 31 dwellings in the locations selected for primary data collection. We specifically targeted housing which had the potential to meet the standard for decency, but found it challenging to find housing which met all the criteria. It was also challenging to find rental accommodation in small villages, with most people living in housing they owned or which was provided to them for free. This resulted in 9 of the houses we surveyed being owner occupied rather than rented. We found 5 rented houses which met the

decency standard, and 7 which did except for not having enough living space for a family of 5. A further 3 houses almost met the standard but fell short on a criteria such as mains electricity and adequate ventilation. The 'typical' dwelling which met, or almost met, the standard has two large rooms (living room and bedroom, known locally as 'chamber and hall'), a covered porch where cooking is done and/or a separate kitchen, and a bathroom and toilet which are shared with a few other households. In a few cases housing was of a standard considered higher than the minimum required for decency. For the 7 rented properties which did not meet the standard at all, the most common reasons were: (i) not enough living space for a family of 5; (ii) inadequate toilet facilities; (iii) poor construction or maintenance of building; (iv) insufficient ventilation of fumes from cooking.

Table 7 gives a summary of the dwellings visited, indicating whether they met the local housing standard or not, and the reasons why. The table also shows the rental costs for each dwelling, including the number of years of rent which tenants had to pay in advance and the date when they paid this advance.

Table 7: Summary of rental housing surveyed in rural cocoa growing areas

Acceptable standard? [a]	Rent per month (GHS) and Advance paid	Size [b] & rooms [c]	Comments
Ashanti Region			
No	20.8 1 year advance (Feb 2018)	19.8 m^2 BR, porch, shared K & BathR	Compound house. Insufficient living space, poor condition roof, toilet full so not usable, electricity cut off due to non-payment by some tenants, not enough ventilation of smoke from cooking.
Yes except for size	40 1 year advance (Nov. 2017)	25.7 m^2 BR, porch, shared BathR + T	Decent standard for current household of 2 people, but not enough living space for family of 5.
Yes except for size	80 1 year advance (Jan 2018)	29.5 m^2 LR, BR, porch, shared BathR + T	Decent standard for current household of 1 person, but not enough living space for family of 5.
Yes except for size	80 2 year advance (Oct 2017)	25.8 m^2 LR, BathR incl T, porch	Semi-detached house in good condition. Decent standard for current household of 1 person, but not enough living space for family of 5.
Yes	100 2.5 year advance (Oct 2017)	39.6 m^2 LR, BR, BathR, toilet, porch	Newly built apartment, good size and decent condition. At higher end of decency as no shared facilities.
Central Region			
No	15 6 year advance (Aug 2017)	22.6m^2 BR, porch, shared BathR + T	Living space inadequate. Not enough ventilation. Toilet shared with too many households.
Yes except for size	20 1 year advance (June 2017)	15m^2 BR, porch, shared BathR + T	Decent standard for current household of 1 person, but not enough living space for family of 5.
No	30 (no advance)	42.7m^2 LR, BR, porch	Building with mudbrick and cement walls in poor condition, toilet shared with too many households and in poor condition.
Yes except for size	35 1 year advance (Aug 2017)	21.5m^2 BR, porch, shared BathR + T	Decent standard for current household of 1 person, but not enough living space for family of 5.
Almost	40 1 year advance (Feb 2018)	35.2m^2 LR, BR, porch, shared K, BathR + T	Roof has some leaks, kitchen not well enough ventilated, not quite enough space, but otherwise decent standard.

Acceptable standard? [a]	Rent per month (GHS) and Advance paid	Size [b] & rooms [c]	Comments
Yes	60 2 year advance (Feb 2018)	38.6m^2 LR, BR, porch, shared BathR + T	Compound housing in good condition.
Eastern Region			
No	10 1 year advance (Oct 2017)	13.1m^2 LR, shared BathR + T	Inadequate living space and construction (e.g. gap between wall and roof).
Yes except for size	Provided free *(tenant estimated 20 per month)*	14.6m^2 BR, shared BathR + T	Decent standard for current household of 1 person, but not enough living space for family of 5. Rental cost not necessarily reliable.
Almost	20 1 year advance (Jan 2018)	34m^2 BR, K, porch, shared BathR + T	Semi-detached house. Not quite enough space for family of 5, but decent standard.
Yes except for size	40 1 year advance (Dec 2017)	33.9m^2 LR, BR, K, shared BathR + T	Separate house with some shared facilities. Not quite enough space for family of 5, but decent standard.
No	80 incl. electricity 8 months advance (Oct 2017)	37.4m^2 LR, BR, porch, shared BathR + T	Pit latrine does not have slab and is in poor condition. Insufficient ventilation.
Yes	80 2 year advance (Feb 2018)	39m^2 LR, BR, porch, shared BathR + T	Separate house with some shared facilities.
Yes	80 1 year advance (Sept 2017)	42.8m^2 LR, BR, K, porch, shared BathR + T	Self contained apartment. At higher end of decency, though still some shared facilities.
Western Region			
No	10 1 year advance (Jan 2018)	19.1m^2 BR, porch, shared K, BathR, T	Not enough space for family of 5, ventilation poor.
No	15 2 year advance (Sept 2016)	22.9m^2 LR, BR, shared BathR + T	Not enough space for family of 5, windows too small, toilet and bathroom dirty.
Almost	Provided free. *(Tenant estimated 41.7 per month)*	36.6m^2 LR, BR, K, BathR, T	1 of 3 self contained apartments for teachers at local primary school, built by NGO. Decent standard except no mains electricity. Rental cost not necessarily reliable.
Yes	60 4 years advance (2011)	46.1m^2 LR, BR, porch, shared K, BathR, T	Compound housing. Tenant is health worker, so landlord has not charged rent for last 2 years. Rent may be higher at current rates.

Source: Living income housing survey

Notes: [a] Dwelling is considered of acceptable standard if it meets all the criteria contained in the local decent housing standard. [b] Size of dwelling is the total floor area for all rooms, including covered porch areas, but excluding walls. [c] LR stands for living room, BR is bedroom, K is kitchen, and BathR is bathroom, T is toilet.

The rental cost ranged from GHS 20 per month to GHS 100 per month, with most in the GHS 40-80 range. There were no clear differences between rental costs in small villages compared to large

villages and small towns, but this is largely due to the low number of rental properties we found in small villages.[49] Similarly, the sample was too small to pick up differences between regions.

The rental cost for the 5 houses that met the standard ranged from GHS 60 to GHS 100 per month, with the top end considered somewhat above the minimum standard for decency. For the 6 rented houses that met the standard except for the amount of living space (excluding the house provided rent free), we calculated the cost per square metre and extrapolated this to get an approximate cost for the minimum space for decency of 36m^2. This gave us a range of GHS 42 to GHS 112 per month, with a mean of GHS 69. Taking the same approach for housing which did not meet the standard of decency gave us a range of GHS 19 to 48 per month, with a mean of GHS 29.

Taking all the information into consideration, GHS 60-80 per month for renting decent housing seems reasonable at 2018 prices, with GHS 70 considered an appropriate figure to use.

In addition, **it is necessary to add an amount to reflect the cost of having to pay 1-2 years rent in advance**. This may be borrowing costs or opportunity costs (i.e. lost income from having the money tied up in advance rent rather than invested). The Bank of Ghana calculated the average Annual Percentage Rate (APR) charged on loans and credit at 24.5% at the end of February 2018, while the average Annual Interest rate (AI) for bank deposits was 10.1%. Although most farmers are unlikely to be using banks to borrow or save money, we can use these figures to given a rough estimate of borrowing and opportunity costs in Ghana. It makes sense to use the midway value of 17.3%, as some farmers may have to borrow money why others may have savings which they could otherwise invest. Most people pay 1 year advance, so for rent of GHS 70 per month this would equate to GHS 12 per month. **This gives a total rental cost of GHS 82 per month for decent housing.**

7.3 Utilities and other housing costs

We estimated the cost of utility and other housing costs using a combination of secondary data and information gathered through the local housing survey. The costs fall into three main areas: electricity and other lighting; water; and cooking fuel. In most cases the cost for repairs and maintenance is covered by the landlord. Tenants sometimes pay for relatively minor one off costs, such as maintaining a polytank or small electrical repairs, but these are relatively rare. As such, it is not considered necessary to include anything for repairs and maintenance in the cost of decent housing.

All but one of the rented houses visited were connected to mains electricity. The average cost per household was GHS 29.65 per month, excluding houses with only one room (as this would not be adequate for decent housing) and a house which had a generator. In addition, most households reported expenditure on batteries and/or kerosene for lamps or torches, as blackouts are common in Ghana, typically occurring several times a week for at least a few hours, if not days at a time.[50] Expenditure on batteries and/or kerosene averaged GHS 3.26 per month according to households interviewed.

In the local survey the most common source of water for drinking and for general use was a public standpipe or borehole (26 of 31 houses). In the other cases water was piped to the dwelling or compound, or to a neighbour's house. Sometimes rainwater was collected, or river water used, but

[49] In contexts where rental properties are rare, the cost of building and maintaining housing which meets the local standard for decency can be used to estimate the cost of housing. Unfortunately, we found no examples of low income or government housing projects which could provide us with accurate information on building costs in the study areas. We gathered information on building an maintenance costs from the owners of 7 properties, of which 3 met the standard for decency, but this data is not considered reliable as there were gaps in the data (e.g. for the market cost of land), full costs were not always accounted for (e.g. cost of labour), and houses were often built over several years which made it hard to estimate current costs.

[50] Blackouts due to insufficient power supply is a well known problem in Ghana, with blackouts experienced on 159 days in 2015. See: https://phys.org/news/2017-02-ghana.html

not for drinking. In the majority of cases water was paid for (except rain and river water) and usually collected daily in buckets and stored in large plastic barrels with lids. However, in 12 cases there was no charge, or a nominal fee of GHS 1 per month, for water collected from public boreholes. The average cost was GHS 3.44 per household member per month, giving an average of GHS 17.20 for a family of 5 people.

Cooking fuels used by households in the survey were gas (11 households), gas and charcoal (5 households), charcoal (5 households), gas and wood (1 household), and wood (6 households)[51]. Average expenditure on fuel was GHS 17.32 per household member per month, giving an average of GHS 86.60 for a family of 5 people.

This gives a total of GHS 137 per household per month as an estimate for expenditure on utilities from our local housing survey. We compared this with an estimate derived using secondary data on household expenditure, which are based on a representative sample of households across Ghana, but unfortunately not disaggregated by locality for expenditure on utilities. The GLSS 6 found that across Ghana 7.9% of household cash expenditure was on utilities (comprising electricity, gas and other fuels, water supply and miscellaneous services related to dwelling), with the cost of utilities as a percentage of food costs being 14.5%[52]. The preliminary estimate of the living income model diet is GHS 757 per month for a family of 5 people; 14.5% of this gives us an estimate of GHS 110 for utilities. This is significantly lower than the estimate of GHS 137 from the housing survey, which is somewhat surprising given GLSS 6 indicates that households in rural forest areas spend relatively less on housing and utilities than the average for all Ghana. However, we know that costs for water and electricity increased markedly in Ghana in the years after the GLSS 6 was carried out (2012 to 2013), with price hikes causing protests in 2015 and 2016. Year-on-year inflation for 'housing, water, electricity, gas and other fuels' was significantly above the general rate of non-food inflation for March 2014 to March 2016 (e.g. 43.8% for March 2014 compared to 19.2% for all non-food), although it has been somewhat below the general rate in the past two years (7.3% compared to 11.8% for all non-food for March 2018).[53] Given this context, **it is reasonable to take a midway figure between the two estimates, i.e. GHS 124 per month.**

8. NON-FOOD AND NON-HOUSING COSTS

Food and housing make up the majority of household expenditure in Ghana, but there are a range of additional costs which a living income needs to cover, including: health care, education, transport, furniture and household equipment, clothing and footwear, personal care, mobile phones, and recreation and culture. It would be too complex and expensive to estimate the cost of all these items separately, so they are grouped together as 'non-food non-housing' costs and estimated using secondary data on current expenditure patterns. Cross-checks are done using primary data for important expenditure groups, notably health and education, to ensure that the amounts included for them are sufficient for decency. This is necessary as current expenditure may be limited by low incomes.

We estimated all non-food non-housing costs for rural cocoa growing areas (Ashanti, Central, Eastern and Western Regions) to be GHS 439 ($99) per month. Below we describe the steps taken to arrive at this estimate.

The first step was to calculate the ratio of non-food non-housing (NFNH) expenditure to food expenditure using the most recent Ghana Living Standards Survey data (GLSS 6). We used data

[51] Two dwellings were empty at the time of the survey, and the single male adult in one household said he did not cook.

[52] Utilities make up 7.9% of cash expenditure compared to 45.8% for food and non-alcoholic beverages. This gives a ratio of 17.2% (cost of utilities as percentage of cost of cash expenditure on food). However, cash expenditure makes up 84% of all expenditure on food, which means the cost of utilities as a percentage of all food expenditure is 14.5%.

[53] GSS Statistical Bulletins, Consumer Price Index, http://www.statsghana.gov.gh/cpi_bulletin.html

specific to rural forest zones, as the most representative for cocoa growing areas[54]. Table 8 shows that this gave us a mean unadjusted NFNH to Food ratio of 0.72 for our rural cocoa growing areas, which compares to 0.88 for all Ghana.

The second step was to eliminate expenditure that is considered unnecessary for a decent standard of living, and adjust for expenditure that is categorised by GLSS 6 incorrectly for the living income methodology. For Ghana, this meant two things: (i) funds for tobacco were removed as unnecessary (which were anyway very small as few people in Ghana smoke); (ii) a proportion of funds for 'catering services' was transferred from food costs to non-food costs. The latter was necessary as the model diet assumes all food is prepared at home, and so we needed to remove from food costs the part of that expenditure which relates to service provision (i.e. related to caterers' labour, overheads and profit margin) [55] and add it on to NFNH costs.

The next step was to adjust for the impact of household income on expenditure patterns. This is required because the proportion spent on food decreases as income increases ('Engel's Law'[56]), and average expenditure across all income groups is skewed by the expenditure of wealthier households. We consider expenditure patterns for rural forest households at the 40th percentile to be the most appropriate reference for cocoa farming households earning a living income, as these are households on a relatively low income but not below the poverty level[57]. Unfortunately, data disaggregated by percentile of the household expenditure distribution were not available separately for rural and urban areas. Instead we adjusted the mean NFNH to Food ratio for rural forest areas downwards by 25% to be reflective of 40th percentile households.[58]

These adjustments resulted in a NFNH to Food ratio of 0.57 (see table 8). **This gave us a preliminary estimate of GHS 439 ($99) for non-food non-housing costs** (i.e. 0.57 ratio × GHS 757 for food). We then looked specifically at the costs for health care and education in our rural cocoa growing regions, to check that the funds allowed for these human rights and important areas of expenditure were sufficient. This did not result in any adjustments, for the reasons described in the next section.

Table 8: Calculation of ratio of non-food non-housing expenditure to food expenditure in rural forest areas using GLSS 6 data

% expenditure on food, incl. value of home produced food (rural forest areas)	**53.6%**
% expenditure on housing, incl. value of owner occupied housing (rural forest areas)	**8.0%**

[54] Some data is only available for rural areas in general (e.g. % household expenditure on education), and some only at the national level with no disaggregation by location (e.g. % of household expenditure on tobacco). In such cases we used ratios to adjust the percentages for rural forest areas. This is not considered to have had a major impact on the final NFNH to Food ratio, as only minor adjustments were required to the original ratio, which was based on data for rural forest areas specifically.

[55] In Ghana this expenditure typically relates to purchase of prepared foods like *kenkey* or *banku* with soup or stew, which may be eaten at a street or market stall or bought readymade to eat at home. We assumed that 40% of the cost of such meals related to the service provision, based on an assessment of ingredients and analysis carried out by the Ankers for living wage benchmarks.

[56] See Anker (2011b) for a more detailed explanation of Engel's Law and the implications for estimating a living wage.

[57] The poverty incidence level is 28% in rural forest areas, compared to 24% for Ghana as a whole.

[58] The rationale for using 25% is based on the following: (i) the difference between the mean unadjusted NFNH:Food ratio for all Ghana (0.88) and unadjusted NFNH:Food ratios for the 2nd quintile (0.66) and 3rd quintile (0.74) is 25% and 16% respectively - this implies around 21% for households at the 40th percentile; (ii) the difference between the mean and 40th percentile will be greater for rural households than urban households, given the distribution of wealth in Ghana and higher poverty levels in rural areas; (iii) analysis by the Ankers of 20 developing countries which suggests an adjustment of 30% from the mean is typically required to arrive at the 40th percentile household. Based on these factors, a midway value between 21% and 30% was considered reasonable for Ghana, i.e. 25%.

% expenditure on non-food non-housing (rural forest areas)	**38.4%**
Unadjusted ratio of non-food non-housing (NFNH) to Food expenditure	**0.72**
NFNH to Food ratio following adjustments for unnecessary and inappropriately classified expenditure[59]	**0.77**
NFNH to Food ratio following adjustments for 40th percentile expenditure patterns (-25%)	**0.58**
Estimate of NFNH costs based on cost of model diet (0.58 x 757)	**GHS 439**

Source: GLSS 6 and authors' calculations.

9. POST CHECKS OF NON-FOOD AND NON-HOUSING COSTS

9.1 Health care post check

According to national statistics, out of pocket expenditure on health care represents a very low percentage of household expenditure in Ghana generally, and only 1.4% of expenditure in rural areas. Based on our model diet estimate and NFNH to Food ratio, our preliminary estimate for expenditure on health care is GHS 18 per household per month in rural forest areas[60]. In part, this low cost reflects the fact that 64% of people in rural forest areas have health insurance, almost all under the national health insurance scheme (NHIS)[61]. However, according to the GLSS 6, the NHIS was used to cover medical costs in just 40% of visits in rural forest areas. This implies that even if most members of cocoa farming households are covered by health insurance, it is reasonable to include some funds in the living income calculation for out of pocket expenses for health care. This was confirmed during interviews with cocoa farmers and staff in health care facilities, who said that: i) most women and children in cocoa growing households are registered with NHIS, but men are often not registered or let their membership lapse due to the cost and inconvenience of registration/ renewal and/or a belief that they will not get sick; (ii) some communities do not have a public healthcare facility, and even if they do the public facilities don't always have adequate supplies of drugs, so drugs are bought from privately owned facilities to avoid the financial and opportunity costs of travel; (iii) not all medical costs are covered by the NHIS and patients are sometimes asked to pay 'top up' fees even for treatments or medicines which are supposed to be free. Two health practitioners (in different cocoa growing regions) mentioned that people seek medical care more frequently during the cocoa harvest season, suggesting current access the health care is limited by the availability of money to pay for services. Given this context, it is necessary to check whether current expenditure on health (as indicated by the GLSS household expenditure data) is sufficient to ensure households have adequate health care. This was done using the Ankers' rapid assessment methodology.

To estimate the typical cost of health care in our cocoa growing areas, we looked at data on the percentage of people who reported being ill in the two weeks preceding the GLSS 6 survey (16% in rural forest areas). This implies approximately 4 episodes of illness or injury per person per year, and therefore approximately 21 illness episodes per year for our reference size family of 2 adults and 3 children. Of people reporting an illness or injury, 62% of people in rural forest areas consulted a health practitioner, which implies approximately 13 visits to health practitioners per year for our reference size family. Of those who visited health practitioners, 57% consulted a government health facility and 43% a private health facility, but the latter did not necessarily mean they automatically had to pay as many private facilities accept NHIS patients. Just under half went to a hospital, 21% to a clinic, 1% to a pharmacy, and 29% to a chemical store (a store without a pharmacist where medicines

[59] 0.3% was removed from NFNH for expenditure on tobacco, and 1.7% was transferred from food to NFNH to account for costs associated with purchase of prepared foods.
[60] Health care expenditure accounts for 4% of NFNH expenditure, which equates to GHS 17.56 using our preliminary estimate of NFNH costs (0.04 x 439).
[61] GLSS 6 (GSS, 2014b).

can be purchased). This implies approximately 6 visits to hospitals, 3 visits to clinics or health centres, and 4 visits to pharmacies or chemical stores per year for our reference size family.

To gauge the cost per visit for these different types of healthcare facility, we used information from Ghana's Ministry of Health about the top 10 causes of outpatient morbidity and the top 5 causes of inpatient admissions[62]. We then visited health care facilities in each of our study locations to ask about the cost of treating each of these illnesses and conditions. In total we visited 4 government hospitals, 11 government health centres, 1 pharmacy (private) and 14 chemical stores (all private).[63] In each case, we asked about costs for registration, consultation, laboratory tests and medicines for people who are insured as well as the uninsured, including top up fees.

To calculate typical monthly out of pocket expenses for our reference sized family, the following assumptions were made: (i) 4 out of 5 of the reference family members have health insurance[64]; (ii) 1 in 4 visits to healthcare facilities involve laboratory tests; (iii) in patient treatment is required for 1 in 6 visits to hospitals and clinics. The cost of initial registration was not included, as it is relatively minor and defrayed over many years. The calculation is presented in Table 9, resulting in an estimated monthly cost of GHS 15.37 for health care for our reference size family. It should be noted that the calculation does not account for the possibility of longer term illnesses such as anaemia, rheumatism and hypertension which would increase the monthly expenditure on medicines.

Table 9: Estimate of typical out of pocket health care expenditure for reference sized family in cocoa growing areas

	Out of pocket cost per visit (GHS)				Average cost per visit per family member	# visits per family per year	Cost per year for reference size family (GHS)
Type of provider	**Insured**	**# family members**	**Not insured**	**# family members**			
Hospitals							
Consultation fees	1.25	4	8.25	1	2.65	6	15.90
Lab tests	4.31	4	10.38	1	5.52	1.5	8.29
Medicines	2.55	4	14.76	1	4.99	6	29.95
In patient treatment	51.70	4	178.75	1	77.11	1	77.11
Health Centres/ Community-based Health Planning Service compounds							
Consultation fees	0.82	4	4.66	1	1.59	3.0	4.76
Lab tests	1.20	4	1.75	1	1.31	0.8	0.98
Medicines	2.44	4	7.86	1	3.52	3.0	10.57

[62] The Health Sector in Ghana: Facts and Figures 2015, Ghana Ministry of Health, https://www.ghanahealthservice.org/downloads/FINAL%20_23_06_2015%20Facts%20and%20figures.pdf

[63] Most hospitals and health centres in Ghana are public facilities, while clinics, pharmacies and chemical stores are mostly privately owned. We only came across 2 private clinics during the fieldwork - one provided only first aid and basic medicines, the other was referred to by a public health practitioner (in the context of maternity care, as the owner is a midwife) but we didn't have time to visit it.

[64] Assumes one adult and all children are insured. This is higher than the overall insurance rate of 64% in rural forest areas, but reflects higher coverage rates among children.

In patient treatment	9.53	4	24.31	1	12.48	0.5	6.24
Pharmacies/ Chemical stores							
Lab tests	3.40	4	3.40	1	3.40	1.0	3.40
Medicines	6.82	4	6.82	1	6.82	4.0	27.29
Total cost per year for reference size family (GHS)							**184.49**
Estimate of monthly out of pocket expenditure on health care for reference size family (GHS)							**15.37**

Source: Based GLSS 6 and information from staff at health care facilities in cocoa growing regions.

The monthly cost of GHS 15.37 is slightly less than the pre-fieldwork estimate of GHS 17.57 using the GLSS 6 figures. As such, **it is not considered necessary to make an adjustment in the allowance for health care in the NFNH component of the living income estimate.**

9.2 Education post check

Schooling in Ghana is structured as follows:

Pre-school: 1 year nursery (age 3-4) plus 2 years kindergarten (age 4-6). Kindergarten is considered part of basic education and is compulsory;

1. Primary: 6 years (age 6-12);
2. Junior Secondary School, known as Junior High School (JHS): 3 years (age 12-15);
3. Senior Secondary School, known as Senior High School (SHS): 3 years (age 15-18). SHS may be as general, technical, vocational, business or agricultural institutions.

National enrolment data indicate that the majority of children in Ghana attend public school rather than private school, particularly at secondary level. School attendance rates reported by the Ministry of Education show that net enrolment is high for kindergarten and primary school, at around 91% for both boys and girls, but below 50% for both junior and senior secondary school (and somewhat lower for girls than boys).[65] The majority of children attend public school rather than private school, particularly at secondary level, and most cocoa farmers we spoke to during fieldwork said their children attended government schools. The public education system faces a number of challenges, including a lack of financial and material resources, inadequate school infrastructure, shortage of qualified teachers (particularly in rural and remote communities), and a lack of credible and reliable data on student and teacher performance.[66] Nevertheless, sending children to private school is not considered necessary for a basic level of decency in the Ghana context.

National statistics indicate that 8% of household expenditure in rural forest areas is on education[67] - a relatively high percentage relative to other countries. On inspecting the data, we see that this is partly explained by the fact that a wide range of costs are covered in Ghana household expenditure statistics as part of this 8%, including clothing, books, transport, food, PTA contributions, expenses on

[65] Ghana Ministry of Education (2015a, 2015b).
[66] UNESCO (2015).
[67] GLSS 6

extra classes, and in-kind expenses. Our preliminary estimate of education-related expenditure based on these figures is GHS 88 per month for rural forest areas.[68]

To find out about educated-related costs in our four cocoa growing regions, we gathered information from officials in 28 schools covering all levels of education. The average cost per child per year including all fees, uniforms, school supplies, meals, and transport, was GHS 371 in kindergarten, GHS 509 in primary school, and GHS 643 in JHS. At SHS level the cost for students in year one was only GHS 522, as the government introduced a policy of free SHS education in September 2017. This compares to an average of GHS 2,120 for students currently in years two and three, who are not within the scope of the new policy, but who will be in future.

Lunch money makes up a significant proportion of these costs, as parents send their children to school with between GHS 0.50 and 5 per day to buy lunch (depending on their age and affordability for the family).[69] The living income estimate assumes that all meals are prepared at home. Rather than removing this expenditure from the post check estimate of education costs, it is preferable to calculate the value of children's lunches based on the model diet (which varies depending on the age, and therefore calorie requirements), and then reduce the expenditure on education by the replacement cost of those meals. This brings the figures down to GHS 139 per child per year in kindergarten, GHS 190 in primary school, GHS 201 in JHS, and GHS 293 (year 1) / 1,611 (years 2 and 3) in SHS.

The next step is to estimate the monthly cost for education for our reference family. This is calculated by multiplying the cost per year in each level of school by the number of years spent at that level, then dividing the total of these amounts by 18 years to arrive at an average cost per year over the 18 years of a child's life. This amount is then multiplied by the 3 children in our reference family to arrive at an estimated cost of GHS 99 per month for education (see Table 10). This amount is 13% higher than the amount estimated using national statistics for rural forest areas (GHS 88). Given the difference is relatively small, and the post check is based on a limited amount of primary data, we feel there is **no strong argument to adjust the education component of the estimate for NFNH costs**.

Table 10: Post check estimate of education related costs for reference family based on primary data collection

	Kinder-garten	Primary	JHS	SHS Year 1	SHS Years 2 & 3	Total
Average expenditure per student per year, GHS	138.66	190.30	201.26	293.20	1610.86	-
Number of years in level	2	6	3	1	2	-
Annual cost per student x number of years in level, GHS	277.32	1141.80	603.78	293.2	3221.72	5537.82
Average cost per student per year, GHS	-	-	-	-	-	395.56
Average cost per child per month, GHS	-	-	-	-	-	32.96
Average cost for reference family with 3 children per	**-**	**-**	**-**	**-**	**-**	**98.89**

[68] As for our estimate of expenditure on health care, these figures are based on calculating the percentage of all NFNH costs which are for education, and then multiplying this percentage by our estimate of NFNH costs.
[69] Of the 24 kindergarden/ primary/ JHS schools visited, 6 were participating in the government's School Feeding Programme (SFP) through which students receive a free lunch. However, teachers said that students still bring money to school to supplement the meals provided.

month, GHS						

Source: Based GLSS 6 and information from staff at schools in cocoa growing regions.

10. PROVISION FOR UNEXPECTED EVENTS TO ENSURE SUSTAINABILITY

Unforeseen events and expenses, such as accidents, illness or death of family members, can quickly throw people living a basic lifestyle into poverty and debt from which it is often difficult to recover. For this reason it is common when estimating a living wage or living income to add a small margin above the cost of a basic quality life to allow for unexpected events. It is also common to include some funds to allow for some discretionary spending. Margins of 5% and 10% are the most common. For the Anker living wage methodology, a 5% margin on the basic cost of living is generally recommended. In a smallholder farming context (as compared to a waged employment context) there are additional risks to income due to weather-related shocks, climate change, periodic infestation, and global market price fluctuations. However, these risks need to be accounted for on the side of *actual* incomes, with resiliency costs built into the calculation of net incomes from agricultural production[70]. This is important because the living income estimate is applicable to any family in a geographic area regardless of livelihood system, and so provision for unexpected events and sustainability should be for those situations which are common across families regardless of how they earn their income. As such, a margin of 5% is considered appropriate for living income estimates[71], unless there are strong reasons to go above this.

A possible reason to allow a higher percentage in Ghana relates to the norm of providing financial support to parents and extended family members if one has the means to do so, and the fact it would socially unacceptable not to do so. Regular giving to churches and other religious bodies is another norm widely practiced in Ghana. Discussions with cocoa farmers indicated that these two types of expenditure can involve significant amounts of money each month. However, they are accounted for under gifts and donations in the household expenditure statistics, and while the amount given may increase with higher levels of income, they are almost always based on affordability (i.e. you give what you can). As such, it is not considered necessary to allow an additional amount for this in the margin for sustainability.

A 5% margin on top of basic costs equates to **GHS 70 ($16) per month for unexpected events and discretionary spending**. Note that interest and debt payments are excluded from the living income calculation, as it is assumed that a living income would enable families to stay out of crippling debt.

[70] Grillo, 2018
[71] Ibid.

SECTION III: LIVING INCOME FOR SMALLHOLDER FARMERS

11. FAMILY SIZE NEEDING TO BE SUPPORTED BY LIVING INCOME

Living income is a family concept, as indicated in the definition given at the start of this report. It was therefore necessary to determine an appropriate family size for a typical family in rural cocoa growing areas of Ghana (Ashanti, Central, Eastern and Western Regions).

We use 2 adults and 3 children as the reference family size for our living income estimate. This is based on (i) the number of children that women in rural Ghana typically have ('total fertility rate') and the survival rate of children, and (ii) average household sizes in rural areas, as explained below.

The total fertility rate (TFR) for rural forest areas of Ghana is around 4.5 children. The 2014 Demographic and Health Survey (DHS) reported that women in rural areas have on average 5.1 children, while the 2010 Population and Housing Census found an average of 5.3 children and the 2011 Multiple Indicator Cluster Survey (MICS) reported an average of 5.5 children. Regional figures suggest the rural averages are skewed upwards by higher fertility rates in northern Ghana - women have an average of between 4.8 and 6.2 children in the 3 northern regions according to the DHS, compared to an average of 3.6 to 4.7 children in the four regions of our study[72]. The midway point of the 3 data sources for rural areas is 5.3, so 4.5 for rural forest areas represents a moderate downward adjustment to mitigate for the influence of northern Ghana on the figures.

Not all of these children survive: between 8% and 9% of children die before their fifth birthday in rural Ghana.[73] As for TFRs, under-5 mortality rates (U5MR) are higher in northern Ghana than elsewhere[74], so following the same logic as before we assume a U5MR of around 7.5% for rural forest areas. This gives us an average of around 4.2 surviving children for women in cocoa growing regions. However, we also need to take into account spacing between births[75], and that at any given point in time not all children have been born yet and/or are still under 18. For a typical family in cocoa growing regions, the number of children under 18 is therefore likely to be somewhat under 4 (depending on the age of the mother).

Turning to data on household size, the 2010 national census found an average household size of 4.7 people in rural areas, excluding 1 person households (that do not have any dependents) and especially large households (that are likely to have several earners). This compares to a mean household size of 4.5 for all rural areas and 4.1 in rural forest areas according to GLSS 6 (including single person and very large households). This suggests the household size of 4.7 calculated using the census data for rural areas may be on the high side for cocoa growing areas[76]. Several relatively large scale surveys carried out in the cocoa sector have found a mean or median household size of between 4.4 and 5 people[77]. However, KIT's recent survey of 1,560 rural households in all cocoa

[72] Between 70% and 84% of people in northern Ghana live in rural areas, compared to 49% for the country as a whole. As such, while only 17.1% of the total population lives in the three northern regions, they account for 26.1% of the rural population. (Figures based on 2010 Population and Housing Census.)
[73] DHS (2014) reports an under five mortality of 7.5% for rural areas, PHC (2010) reports 9%, and MICS (2011) report 9.4%.
[74] 10% to 12% in the 3 northern regions compared to 5.6% to 8% for our 4 cocoa growing region, according to the DHS
[75] Median spacing between births is 38.2 months in rural areas (average 3.2 years between births), with rural women being on average 20.1 years old when they have their first child (DHS, 2014).
[76] The mean household size for rural areas in the 2010 PHC was 5 people, which came down to 4.7 once single person and very large households were excluded.
[77] Hainmueller et al. (2011) found a median household size of 5 among 3,000 cocoa farming households across 5 regions of Ghana, typically 2 adults and 3 children; Kolavalli and Vigneri (2017) report a mean household size of 5 people among 702 cocoa farming households in 3 regions, based on a 2010 survey; Vigneri and Serra (2016) found a mean household size of 4.4 among 900 cocoa farming households in 2 regions.

growing regions of Ghana[78] found an average household size of 5.8 people, of which 2.6 were children under 18 years.[79] These differences in household size and composition are likely to be due to differences in sampling and in the way households were defined and measured, which is one reason why using household size as the sole basis for deciding the reference family size for a living income benchmark can be problematic.

Considering all of the above, and given that the living income estimate is a geographical construct, not a livelihood specific one, we decided that a reference family size of 5 persons (2 adults and 3 children) would be most appropriate for the benchmark in cocoa growing areas. However, in order to be able to use KIT's data on actual incomes of cocoa farmers to assess the gap, we constructed a second benchmark for the average household size and composition in their survey. The calculations for the adjusted benchmark are summarized in the next section.

12. ADJUSTING THE LIVING INCOME ESTIMATE TO ALLOW COMPARISON WITH DATA ON ACTUAL INCOMES

Using a reference size family/household with a different number and composition of adults and children changes the living income benchmark through: (i) effect on the per person cost of the model diet, which is based on calorie requirements for different aged people and therefore changes with different compositions; (ii) possible need to change the decent housing standard to allow more living space, which affects the rental cost; (iii) impact on utility costs which have a per person cost base (i.e. water and cooking fuel); (iv) effect on non-food non-housing costs, as these are based on the cost of the model diet; (v) post check on education, as this depends on the number of children in the household.

To align with KIT's data from their survey of rural cocoa growing households, and allow calculation of the gap between actual household incomes for cocoa farmers and a living income, our estimate was adjusted to fit a reference size household of XX adults and XX children.

[Forthcoming following validation workshop]

Table XX: Summary of calculations for adjusted Living Income for reference size household of XX adults and XX children, to align with data on actual incomes in cocoa growing households

Item	GHS	USD
Food cost per month for reference family (1)		
Food cost per person per day		
Housing costs per month (2)		
Rent per month for acceptable housing		
Utilities and minor repairs per month		
Non-food non-housing costs per month taking into consideration post checks (3)		
Preliminary estimate of non-food non-housing costs		
Health care post check adjustment		

[78] KIT, 2018

[79] Asamoah et al. (2017) also report larger household sizes than other surveys of cocoa farming households, with 22% of their 1,761 households having between 2 and 4 members, 42% having 5-7 members, and 29% having 8-12 members.

Item	GHS	USD
Education post check adjustment		
Other post check adjustment (if any)		
Additional 5% for sustainability and emergencies (4)		
Total household costs per month for basic but decent living standard for reference family (5) [5=1+2+3+4]		

Key values and assumptions for Table XX

KEY VALUES AND ASSUMPTIONS	Comments
Location	Rural forest areas in Ashanti, Central, Eastern and Western Regions, with reference to cocoa sector
Exchange rate of local currency to USD	GHS 4.45 to USD (1 March 2018)
Reference family size	
Number of children in reference family	
Ratio of non-food non-housing costs to food costs	

SECTION IV: ESTIMATING GAPS BETWEEN LIVING INCOME AND ACTUAL INCOMES

13. PREVAILING INCOMES IN THE GHANA COCOA SECTOR

[Forthcoming following validation workshop.]

14. LIVING INCOME IN CONTEXT AND COMPARED TO OTHER ECONOMIC INDICATORS

14.1 Living income ladder

To get a sense of how our living income estimate for rural cocoa growing regions compares with prevailing incomes in the cocoa sector and other wage and economic indicators for Ghana, we prepared the living income ladder shown in Figure XX. We based our living income ladder on the following reference points for comparison:

1) **Minimum wage:** The minimum wage in Ghana is GHS 9.68 per day (since 1st January 2018). Monthly minimum wages are based on 27 working days[80], which equates to GHS 261 gross wage per month per full time worker. To convert this into a monthly family income, we assume that our reference size family has 1.58 full time equivalent workers[81], giving us a monthly family income of GHS 412. This is an extremely low income which, as we can see from the national poverty lines below, would not even allow people to meet their basic food needs.

2) **National poverty lines:** Ghana uses two poverty lines: an upper one, below which an individual is considered to be unable to meet all their food and non-food needs, and a lower poverty line, below which an individual is considered unable to even meet their food needs.[82] The upper poverty line was set at GHS 1,314 per adult male equivalent[83] per year for 2013, and households below this level are referred to as living in poverty. The lower poverty line was set at GHS 792 per adult male equivalent per year, and households below this level are referred to as living in extreme poverty.

   To make a comparison with the living income, we need to convert the poverty lines into monthly family income by multiplying by the number of adult (male) equivalents in our

[80] We have used 27 days to calculate the monthly wage as this is in line with national law, but this is an unrealistic assumption for daily workers because it means that workers must work more than 6 days per month throughout the year. In addition, they would not have any annual leave, sick days, or public holidays off, unless they were paid for these, which seems unlikely for minimum wage workers.

[81] This is based on labour force participation rates (LFPR) in Ghana, which are high for both men and women in the 25-59 year age group. According to the GLSS 6 Labour Force report, around 96% of adults aged 25 to 59 years in rural areas are actively engaged in the labour market, i.e. either working or looking for work. Only around 2.6% of economically active people in this age group are unemployed, with the rate for women slightly higher than for men. However, a substantial proportion of employed people work less than full time - around 34% work less than 35 hours a week in rural areas. Using these figures, we calculated the probability of adults aged between 25 and 59 years in rural areas being in full-time equivalent employment as 0.78. With two adults in our reference sized family, this gives us 1.58 full-time equivalent workers in the family.

[82] Cooke *et al*. (2016).

[83] The number of adult male equivalents used to calculate national poverty lines uses household composition data and a calorie-based scale which recognizes that adult women, babies and young children require fewer calories than adult men (GSS, 2014). The adult male equivalent ratio for adult women is 0.77. The average adult male equivalent ratio for children aged 0 to 17 is 0.71.

reference family size[84] and dividing by 12 months. This gives an upper poverty line family income of GHS 427 per month, and a lower poverty line family income of GHS 257 per month, in 2013. Adjusting for inflation to our study month[85], this gives an upper poverty line monthly family income of GHS 853 and lower poverty line monthly family income of GHS 513 in March 2018.

3) **World Bank international poverty lines:** The World Bank uses $3.10 PPP (purchasing power parity) per person per day as its absolute poverty line, and $1.90 PPP as its extreme poverty line. The latest implied PPP conversion factor for Ghana is 1.55[86] which gives an absolute poverty line of GHS 4.81 per person day, and an extreme poverty line of GHS 2.95 per person day. Converting this into monthly income for a family of 5, this equates to an absolute poverty line income of GHS 732 per month, and an extreme poverty line income of GHS 449 per month.

4) **Average wages by occupation:** The Ghana Living Standards Surveys report average monthly earnings for different occupations, including both cash and in-kind earnings. According to the GLSS 6, average monthly earnings for skilled agricultural and fishery workers was GHS 263. Earnings were substantially higher for men at GHS 346 compared to GHS 127 for women, perhaps indicating more full-time work for men. Taking into account inflation since 2012/2013, this would be equivalent to around GHS 525 gross income per month in March 2018, with men earning GHS 691 and women earning GHS 254. Service and sales workers earned GHS 490, equivalent to GHS 979 in 2018, while plant machine operators and assemblers earned an average of GHS 662, equivalent to GHS 1,322 in 2018. Converting these figures into family income, assuming the family has 1.58 full-time equivalent workers doing the same type of work, gives us GHS 830 for agricultural and fisheries workers, GHS 1,547 for service and sales workers, and GHS 2,089 for plant machine operators and assemblers.

As we can see from the living income ladder, our living income estimate for rural cocoa growing areas of Ghana is higher than most of the reference points. It is nearly four times a rural family income based on the minimum wage, and double the World Bank's absolute poverty line income. It is also considerably higher than average income for agricultural and fishery workers, but somewhat lower than service and sales workers, and significantly lower than plant machine operators and assemblers.

Our estimate of the average prevailing income for cocoa farming households using KIT's data is GHS XXX per month, taking into consideration XXXXXX. This is XX% of the living income estimate, with a gap of GHS XXX ($XX) between the average income and the living income estimate.

INSERT LIVING INCOME LADDER

[84] Our reference family size equates to 3.9 adult male equivalents ((0.71 x 3 children) + 0.77 female adult + 1 male adult).
[85] We assume 5 years of inflation since the GLSS 6 survey took place, and used annual CPI inflation rates for 2013 to 2017 to calculate the March 2018 values. Inflation rates were sourced from the IMF's DataMapper (http://www.imf.org/external/datamapper/PCPIPCH@WEO/GHA), which gave rates of 11.7% for 2013, 15.5% for 2014, 17.2% for 2015, 17.5% for 2016, and 12.4% for 2017.
[86] The most recent official World Bank PPP conversion factor for Ghana was 1.43 for 2016 (http://data.worldbank.org/indicator/PA.NUS.PRVT.PP?locations=GH). Adjusting for inflation in Ghana and the United States (comparator country), this gives an implied PPP of 1.55 for December 2017 (https://www.quandl.com/data/ODA/GHA_PPPEX-Ghana-Implied-PPP-Conversion-Rate-LCU-per-USD).

14.2 Recent income trends

If possible, include figures and discussion on recent price trends for cocoa and how these trends might effect incomes overall (as well as recent trends in labor costs and labor productivity when these data are available), because this provides important context for understanding current pressures on farmers as well as their workers, who it should be explained, would also earn a living wage in the correct scenario, but are not likely earning this amount currently. It should be explained that this will reduce even further the current profit margins and implies that the gap to a living income where employee wages meeting a living wage is also considered, will likely be considerably higher than shown in the income ladder.

A price / income analysis would be good to include as well as productivity trends. Ghana has kept the farmgate price fairly stable but productivity has risen in some areas due to the fertilizer subsidies and hybrid clone distribution. Let's discuss and consider this after the validation workshop.

15. CONCLUSIONS

Table XX provides a summary of our calculation of the living income estimate for rural cocoa growing regions in Ghana (Ashanti, Central, Eastern and Western Regions). **Our estimate of the income required for a basic but decent standard of living for a reference size family of 5 people is GHS 1473 ($331) per month**.

Table XX: Summary of calculations for Living Income for reference size family of 2 adults and 3 children in rural cocoa growing regions of Ghana (Ashanti, Central, Eastern and Western Regions)

Item	GHS	USD
Food cost per month for reference family (1)	**757**	**170**
Food cost per person per day	4.98	1
Housing costs per month (2)	**206**	**46**
Rent per month for acceptable housing	82	18
Utilities and minor repairs per month	124	28
Non-food non-housing costs per month taking into consideration post checks (3)	**439**	**99**
Preliminary estimate of non-food non-housing costs	439	99
Health care post check adjustment	0	0
Education post check adjustment	0	0
Other post check adjustment (if any)	0	0
Additional 5% for sustainability and emergencies (4)	**70**	**16**
Total household costs per month for basic but decent living standard for reference family (5) [5=1+2+3+4]	**1473**	**331**

Key values and assumptions for Table XX

KEY VALUES AND ASSUMPTIONS	Comments
Location	Rural forest areas in Ashanti, Central, Eastern

KEY VALUES AND ASSUMPTIONS	Comments
	and Western Regions, with reference to cocoa sector
Exchange rate of local currency to USD	GHS 4.45 to USD (1 March 2018)
Reference family size	5
Number of children in reference family	3
Ratio of non-food non-housing costs to food costs	0.58

TO DO ONCE LI GAP HAS BEEN CALCULATED:

Discussion should then indicate the gap between prevailing incomes, minus production expenses, and the Living Income. This discussion should provide additional information on this gap when a Living Income study focused on a particular crop. Next, discussion should emphasize and illustrate how the Living Income benchmark is a conservative estimate of how much is needed for decency. Such discussion is important so that readers are not left with the impression that the Living Income benchmark is an exaggerated and utopian estimate of needs. This should be done using examples of some of the conservative assumptions that were used to estimate the Living Income benchmark and therefore the basic level of living that is affordable on the Living Income estimate. It is also often useful now to point out interesting aspects of local living conditions, recent price and income trends and possibly extent to which employers and actors higher up the value chain are believed to be in a position to help raise incomes for small-holders and so move toward payment of a Living Income. It is often useful to end by indicating how much effort was put into estimating the Living Income benchmark so that readers are aware of how seriously estimation of a Living Income benchmark was taken.

REFERENCES

Agyepong, I., Abankwah, D., Abroso, A., Chun, C., Dodoo, J., Lee, S., Mensah, S., Musah, M., Twum, A., Oh, J., Park, J., Yang, D., Yoon, K., Otoo, N., and Asenso-Boadi, F. (2016). **The "Universal" in UHC and Ghana's National Health Insurance Scheme: policy and implementation challenges and dilemmas of a lower middle income country.** *BMC Health Services Research*, 16:504: https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-016-1758-y.

Anker, R. and Anker, M. (2017). **Living wages around the world: Manual for measurement.** Edward Elgar, London: http://www.e-elgar.com/shop/living-wages-around-the-world.

Anker, R. (2011a). **Estimating a living wage: A methodological review.** Conditions of work and employment series, No 29. ILO, Geneva.

Anker, R. (2011b). **Engel's law around the world: 150 years later.** Working Paper Series 247. Political Economy Research Institute, University of Massachusetts, Amherst.

Anker, R (2006a). **Living wages around the world: A new methodology and internationally comparable estimates.** *International Labour Review*, 145 (4).

Anker, R. (2006b). **Poverty lines around the world: A new methodology and internationally comparable estimates.** *International Labour Review*, 145 (4).

Cooke, E., Hague, S., and McKay, A. (2016). **The Ghana Poverty and Inequality Report.** ASHASI, UNICEF, University of Sussex: https://www.unicef.org/ghana/Ghana_Poverty_and_Inequality_Analysis_FINAL_Match_2016(1).pdf.

Food and Agriculture Organization (2009). **Nutrition Country Profile, Republic of Ghana:** ftp://ftp.fao.org/ag/agn/nutrition/ncp/gha.pdf.

Food and Agriculture Organization (2012). **West African Food Composition Table**: http://www.fao.org/documents/card/en/c/238ce5e9-acd5-5cb2-8442-6498506aee1c/.

Frimpong, S. (2013). Urbanization and Pattern of Urban Food Consumption in Ashanti Region, Ghana: Implications for Food Security. ***Journal of Economics and Sustainable Development*, 4 (9):** http://iiste.org/Journals/index.php/JEDS/article/view/6487**.**

Ghana Ministry of Education (2015a). **Report on Basic Statistics and Planning Parameters for Basic Education in Ghana 2014/2015:** http://www.moe.gov.gh/emis/EMIS%20BASIC%20EDUCATION%20DATA/Basic/2014-2015/Basic%20Report%202014-2015%20No.1.pdf.

Ghana Ministry of Education (2015b). **Report on Basic Statistics and Planning Parameters for Senior High Schools in Ghana 2014/2015:** http://www.moe.gov.gh/emis/EMIS%20BASIC%20EDUCATION%20DATA/Secondary/2014-2015/SHS%20Report%202014-2015%20No.1.pdf.

Ghana Ministry of Health (2009). **Dietary and Physical Activity Guidelines for Ghana**: http://rhnp.gov.gh/admindox/DIETARY%20AND%20PHYSICAL%20ACTIVITY%20GUIDELINES%20FOR%20GHANA%20Final%20draft%202_akdits%20(2)_5Feb10[1][1].pdf.

Ghana Ministry of Water Resources, Works and Housing (2015). **National Housing Policy**: http://www.mwrwh.gov.gh/index.php/publications/category/13-publications.

Ghana Statistical Service (2011). **Ghana Multiple Indicator Cluster Survey with an enhanced Malaria Module and Biomarker:** https://www.unicef.org/ghana/Ghana_MICS_Final.pdf

Ghana Statistical Service (2013). **2010 Population and Housing Census, National Analytical Report**: http://www.statsghana.gov.gh/docfiles/2010phc/National_Analytical_Report.pdf.

Ghana Statistical Service (2014a). **Poverty Profile in Ghana (2005 - 2013)**: http://www.statsghana.gov.gh/docfiles/glss6/GLSS6_Poverty%20Profile%20in%20Ghana.pdf

Ghana Statistical Service (2014b). **Ghana Living Standards Survey Round 6 (GLSS 6), Main Report:** http://www.statsghana.gov.gh/glss6.html.

Ghana Statistical Service (2015). **Ghana Poverty Mapping Report**: http://www.statsghana.gov.gh/docfiles/publications/POVERTY%20MAP%20FOR%20GHANA-05102015.pdf

Ghana Statistical Service, Ghana Health Service, and The DHS Program (ICF International) (2015). **Ghana Demographic and Health Survey 2014:** https://dhsprogram.com/pubs/pdf/FR307/FR307.pdf.

Gilbert, C., Christiaensen, L. and Kaminski, J. (2016). **Price seasonality in Africa: Measurement and extent**. Policy Research Working Paper 7539. World Bank Group, Africa Region: http://documents.worldbank.org/curated/en/498741467998767669/pdf/WPS7539.pdf.

Grillo, J. (2018). **From Living Wage to Living Income. Considerations for the use of the Anker methodology and living wage data to inform living income estimates**. ISEAL Alliance.

Osei-Asare, Y. B. (2013). **The effects of food price increases on urban household food commodities expenditures in Ghana.** *Journal of Economics and Sustainable Development*, 4 (6): http://www.iiste.org/Journals/index.php/JEDS/article/viewFile/5225/11059.

National Development Planning Commission and United Nations Development Programme (2015). **Ghana Millennium Development Goals 2015 Report:** http://www.gh.undp.org/content/dam/ghana/docs/Doc/Inclgro/UNDP_GH_2015%20Ghana%20MDGs%20Report.pdf.

Nti, C. (2008). **Household dietary practices and family nutritional status in rural Ghana.** *Nutrition Research and Practice*, 2 (1), 35-40: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2815306/.

Subramanian, S. V.; Özaltin, E.; Finlay, J. E. (2011). **Height of Nations: A Socioeconomic Analysis of Cohort Differences and Patterns among Women in 54 Low- to Middle-Income Countries.** *Public Library of Science*, *6 (4).*

UNESCO (2015). **Education for All 2015 National Review: Ghana**: http://unesdoc.unesco.org/images/0023/002314/231429e.pdf.

UN-Habitat (2011). **Ghana Housing Profile**: https://unhabitat.org/books/ghana-housing-profile/.

World Health Organization (2006). **Fuel for life: Housing energy and health**: http://www.who.int/indoorair/publications/fuelforlife/en/.

World Health Organization (2015), **Ghana: WHO statistical profile:** http://www.who.int/gho/countries/gha.pdf?ua=1.