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Return on household labour: a means to accelerate the path to a living income for smallholder coffee farming households

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1. Introduction

There are various living income ambitions in the coffee sector, and innovations in approaches to close living income gaps while many coffee farming households continue to be poor

The concept of a living income has gained traction in the past decade, among companies, NGOs, and governments including the EU, Dutch, German, Belgian, and Luxembourg governments, which have jointly signed a declaration on living wages and incomes.1 In various sectors, including the coffee sector, stakeholders have identified ambitions and targets for smallholder farming households to achieve a living income, which is a milestone on the way to a prosperous income. This has led to the innovation of approaches to reduce or close living income gaps compared to more traditional farmer training and input supply approaches, examples being paying cash transfers to households at scale, paying a Living Income Reference Price or a True Price, and implementing landscape approaches in which also income diversification is addressed. Such new approaches are needed as a large proportion of smallholder coffee farming households, and the workers they employ, continue to be poor, with many earning less than the World Bank extreme poverty line.

Addressing root causes of smallholder coffee farming household poverty is needed for such households to attain a living or prosperous income

To effectively – and efficiently – reduce and close living income gaps, there is an important need to address structural factors that explain why households continue to be poor. The literature shows that many households face challenges related to several factors that influence their income, which are categorised into five categories: 1) The total volumes sold, 2) prices including premiums, 3) land size, 4) cost of production and 5) income from other sources including off-farm employment and social protection. The living income concept looks at a households's total income, so also other income sources than coffee need to be considered. Current discussions and analyses focus mainly on price increases (including reference prices being set) and increasing yields to improve household income. In addition, on-farm diversification is also sometimes promoted. However, to design effective policies and interventions, we also need to better understand the role the cash crop is playing in total household income, in terms of household labour allocation, i.e. how adults in the household spend the time they have available for work. This is part of the cost

¹ The information in this paper is based on a relevant body of literature reviewed by the authors which is presented in the References section. When we present specific information from a certain source, such as datapoints and quotes, we provide the reference for that source.

of production factor, even if household labour is not valuated financially and considered unpaid labour. In addition, it is important to reflect on methodologies and discusions in the sector on what the 'fair share' of companies and other stakeholders such as governments would be to close the living income gaps of farmers they source from.

This study focuses on household labour allocation and returns to household labour, to offer new perspectives on pathways to reduce and close living income gaps

The labour allocation of adult household members, including what options households have to earn a good income, returns to household labour, and a fair remuneration for work, are often not considered in the design of policies and interventions aimed to increase smallholder farming household incomes. Despite this, they are considered, as 'cost of production', one of the five important factors influencing household incomes. Not much empirical evidence exists on labour opportunities, labour deployment and return on household labour in coffee production, and their implications for total household income. This paper closes this knowledge gap by carefully assessing empirical evidence, comparing smallholder farming households producing coffee in Kenya and Vietnam, to help find pathways for households to earn a living income. These two coffee-producing countries represent the wide range of smallholder coffee systems that exist in the world. Kenyan coffee farmers represent very small (<0.5 ha) and low-yielding (<0.75 t GBE²/ha/year) coffee farmsⁱ in a lower-middle income country with low GDP per capita (<USD 2,000/year in 2020).ⁱⁱ Vietnamese smallholders, also working in a lower-middle income country, often have larger coffee plots (>1 ha) that are highly productive (>2 t GBE/ha/year)ⁱⁱⁱ in a more vibrant economy where GDP per capita exceeded USD 3,500/year in 2020.^{iv} Whereas all these farmers would often be labeled as 'poor coffee smallholders' in popular narratives, they actually represent the economic extremes of smallholder coffee production, which is important to unpack as such households have different characteristics and opportunities.

² 'Green Bean Equivalent (GBE): Refers to the equivalent amount of coffee in its green form derived by multiplying the weight of various forms of coffee with the appropriate conversion factors' (ICO, 2021).

We also reflect on methodologies that were created to distinguish what the roles of companies and other stakeholders such as governments would be to close living income gaps of households

Discussions currenty take place in tropical commodity sectors on what the role of companies and other stakeholders such as governments could be to close the living income gaps in those sectors. Two pricing methodologies have been created that indicate what farm gate price should be paid to farming households to reduce and close their living income gaps. The first is the True Price Living Income Module which can be applied to any sector and origin, the second is the Living Income Reference Price which has been developed by Fairtrade and which is established for specific sectors and origins (e.g coffee in Uganda and cocoa in Ghana and Côte d'Ivoire). We will discuss these methodologies and the results of their application for coffee farmers in Kenya, including a reflection on implications for sourcing cost, and present a new way of applying the True Price Living Income Module. The reason for not including Vietnam in the application is that no living income reference price exists for Vietnam, likely because relatively speaking Vietnamese coffee farmers are doing quite well in terms of income. This 'fair share discussion' is also important for discussions in the sectors on how to avoid exclusion of the poorest households from supply chains when inadequate company or multistakeholder targets are set on a certain proportion of households to earn a living income in the near future.

What is a living income?

A living income is 'the net annual income required for a household in a particular place to afford a decent standard of living for all members of that household'; 'Elements of a decent standard of living include: food, water, housing, education, healthcare, transport, clothing, and other essential needs including provision for unexpected events' (LICOP, 2024). A 'living income' is the term used by many stakeholders for 'a decent income', which is a human right according to the Universal Declaration of Human Rights (Articles 23 and 25). A living income is seen as a milestone on the way to prosperity.

The difference between the living income concept and the World Bank's extreme poverty line of 2.15 (2017 PPP) is that the latter communicates the amount needed to meet basic needs, while the living income benchmark communicates the amount needed to afford a decent standard of living. From information published in the ALIGN tool (see below) we estimate that, on average, the World Bank extreme poverty line is about 40-50% of the living income benchmark.



Figure 1 The living income story

Multiple income sources make up the actual income, which should cover the costs of a decent standard of living. The living income benchmark (top left) differs per country and sometimes even within a country. More and more living income benchmarks are becoming available through the ALIGN tool (ALIGN - Guidance tool on living wages & living income - ALIGN - Guidance tool on living wages & living income - ALIGN (align-tool.com). The average monthly living income benchmark per household as reported by ALIGN is about USD 500 for an average household of almost five members in Lower- and Middle-Income Countries, but the benchmark differs greatly between and within such countries (ALIGN, 2024). To establish the gap towards a living income (the income gap), the living income benchmark is deducted from the actual income earned from farming, off-farm income and other income (e.g. remittances).

Use of terms living income, the living income benchmark per working day and return on household labour in this paper

When we talk about whether a household earns a *living income*, this means that they earn enough *in a year* to afford a decent standard of living as per the Living Income Community of Practice definition (LICOP 2024). Their total net actual household income is higher than the Living Income Benchmark.

We analyse in this paper the *return on household labour*, which is the net income earned with coffee production and sale in a season divided by the number of days adults in the household spent on such activities in that season.

In this paper we also present the *living income benchmark per working day*. This benchmark is calculated by dividing the yearly Living Income Benchmark by the total number of working days that adults in a household have available for work in that year. Households therefore earn a living income if: i) their daily net income per working day is the same or more than this living income benchmark per working day, and ii) if they work all the days they have available for work in that year.

In our analyses, we compare the return on household labour in coffee production and sales with the living income benchmark per working day, to see whether households meet or exceed that threshold. In addition, we assess how many working days households spent on coffee production and sales as well as what proportion of time households have available for work they spent on coffee production and sales activities.

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This study has been funded by the Public-Private Cooperation (PPS) project 'True Price – from insight to action' and by Wageningen Economic Research. This PPS project receives financial support from the Dutch Topsector Agri & Food and the Topsector Horticulture & starting materials as well as from different partners. For more information: <u>True Price – From Insight to Action –</u> <u>WUR</u>. The remaining funds have been provided by Wageningen University & Research. ofi did not fund this research. ofi has provided access to the Vietnam data, and contributed through brainstorm sessions on the research question of interest, on the data analysis results and interpretation, and by providing feedback on the draft text. We sincerely thank the owners of the Kenya data for allowing us to use it for this paper.

Within the Topsectors, the private sector, knowledge institutes and the government work together on innovation regarding the sustainable production of healthy and safe food and the development of a healthy and green living environment. Food production involves various environmental and social costs that are not factored into food prices. This public-private partnership (PPS) for True and Fair Prices for Sustainable Products calculates realistic prices for food products and then helps stakeholders to conceive effective and feasible plans for reducing the environmental and social costs of food production based on the insights gained. This partnership has implemented several activities in the coffee sector as coffee is an important trade product for the Netherlands, as it is the third-largest roasted coffee exporter in the world, the third largest re-exporter of coffee in Europe (both in 2020)^v and it is the 6th importer of green coffee in EU27 (2022) in terms of volume.^{vi} This paper contributes to the discussions within this partnership and beyond on how to reduce social costs of coffee production related to living income.

2. Methodology

We compare coffee farming household realities within and between Kenya and Vietnam, and present new information on household labour allocation and return on household labour

In this discussion paper, we present in-depth information on the realities of coffee farming households, but also farm workers, in both Kenya and Vietnam (Dak Lak). The following research questions are addressed for both countries (including different groups within the countries), and compared between countries:

- 1. What is the situation of coffee producing households in Kenya and Vietnam regarding the total household income they earn and whether or not they earn *a living income*?
- 2. What factors influence total household income and whether or not households meet the living income benchmark per working day *for the days they spent working on_*coffee production and sales?
- 3. What proportion of the time that adult household members have available for work do households spend on coffee production activities?
- 4. What is the return on household labour for coffee production activities, and how does it compare to the living income benchmark per working day?
- 5. What is the 'true price' at farm gate for coffee in Kenya based on the 'the Living Income Impact-specific module for true price assessment' and what proportion of households would earn a living income at this price?

- 6. What does this tell us about strategies to close the living income and wage gaps and the opportunities for the coffee industry, governments and other stakeholders?
- 7. What insights can the 'return on household labour' add to the Living Income concept and application?

Two datasets were used, one derived from on a household survey conducted in Kenya, the other derived from data collected through the Farmer Field Book approach in Vietnam

To answer the research questions, two already existing datasets have been used, and new analyses have been performed on the data.

Kenya

A dataset was used including information from a household survey of coffee producing households in Kenya, producing Arabica coffee. The initial dataset included 698 households of which 340 households provided all the data required for the full analysis. Farmers were interviewed in July 2021 about the season July 2020 - June 2021 by a consortium of Wageningen University & Research (WUR) and a local partner, in which the local partner conducted the interviews, and WUR analysed the data for the primary objective for which the survey data was collected, in collaboration with the local partner. The results of the initially commissioned analyses were validated with the commissioners of the study including local experts on coffee production. Farmgate coffee prices self-reported by the farmers were on average USD 1.58 per kilogram GBE. By early 2024, farm gate prices in Kenya had more than doubled to USD 3.64 per kilogram GBE.vii We used the farmgate price paid during the 2020-2021 season for the analyses.

Vietnam

A dataset was used containing information of 144 Robusta coffee farming households, which was collected through the Agri-Logic Farmer Field Book approach in which information on cost of production and sales (including prices) is recorded every two weeks by the households. A technical officer collects and validates this information every two weeks. The information for the entire production year 2020 (January-December) was compiled and analysed. These data were collected by ofi staff members, supported by Agri-Logic, and Agri-Logic analysed the data. The results of the analyses were discussed with the ofi team and with all the farmers that contributed the data. Farm-gate coffee prices selfreported by the farmers were on average USD 1.517 per kilogram GB. Early 2024, Robusta coffee farm-gate prices had increased in Vietnam to about USD 4 per kg GBE.^{viii} We used the farmgate price paid during the 2020 season for the analyses.

In terms of accuracy, these datasets likely have different results as the recall bias is much larger when conducting a household survey asking information for a past year, compared to the Farmer Field Book approach. We do not expect this to influence the conclusions that we can draw from the results, however, as we mainly conclude on trends and main differences between the groups. Also, the literature confirms the differences between Kenya and Vietnam that we have observed in terms of income and farm size³ (Cordes et al., 2021). However, for future analyses of cost of production and return on investment, it is recommended to use data from tools such as the Farmer Field Book to minimise recall bias, especially to monitor cost of production and similar indicators which may occur every day on the farm or in the household.⁴

We have used data for one specific production year per country. For the True Price living income calculations (see <u>Appendix 1</u>), it is recommended 'to use the mean of the annual actual incomes over a period of 3 to 5 years to limit the influence of fluctuations in the income, caused by, for example, drought or crop rotation'⁵ or fluctuations of the world market and farm-gate prices. Therefore the results of our data analyses need to be interpreted with caution.

We assess various indicators including household time available for work per year, return on household labour in coffee and the True Price of coffee at farm gate

The key indicators assessed in our analyses are presented in in <u>Appendix 1</u>.

⁵ Van Veen, B., Galgani, P., 2022. Living Income True pricing method for agri-food products. True Price and Wageningen University & Research.

³ Kaitlin Y. Cordes and Margaret Sagan, with Solina Kennedy, 2021. Responsible Coffee Sourcing: Towards a Living Income for Producers. Columbia Center on Sustainable Investment.

⁴ See for more information on farmer field book approaches: Stanton, C., Wadham, R., 2024.

Data analysis

Descriptive analyses are complemented by regression analyses on the relationship between coffee production factors and total household income and the living income gap per working day (see for more information Appendix 1). Cross sectional analyses were performed based on information for one production year as we did not have information from multiple years. The information was analysed for the whole population per country, but also separately for households who meet the living income benchmark per working day compared to households not doing so. Regression analyses were performed to assess the relationship between for instance investment in coffee and coffee yield and volumes, and in a second step between coffee yield and volumes and whether or not a household earns a living income per country. Comparisons between Kenyan and Vietnamese households were performed through descriptive analyses and not through statistical analyses.

Potential bias

There are three limitations in addition to the different recall bias in the two datasets because the data have

been collected differently (see more information above). The first is that in our analyses, we did not account for differences in soil type or climate, which could explain part of the differences in coffee yield, and therefore also income, between Kenya and Vietnam. Second, some analyses were performed for households not incurring a loss from coffee production, as otherwise the comparisons could not be performed. For instance, the coffee income dependency rate cannot be calculated for households incurring a loss from coffee production or in total. This means that we overestimate the situation of the coffee producing households in terms of coffee and total household income in our study. The third limitation of our analyses is that we do not have information on the time spent by households on activities other than producing coffee. Therefore, we cannot compare return on household labour in coffee production with a return on such investment for other activities. We can thus also not assess whether households are fully employed. We can however, assess how households benefit from their time spent on coffee production activities and conclude on their labour availability for other activities, inferring whether there could be hidden unemployment.

Results on the income situation of households: striking differences between Kenya and Vietnam and within the countries

Different coffee farming realities in Kenya and Vietnam, with Vietnamese farming households earning much more because of much higher yields and larger farms

Vietnamese coffee farmers earn on average 5.5 times more than Kenyan farmers from their coffee production (USD 2,860 per year vs USD 520 respectively) (Table 1). Vietnamese farmers have almost twice as much land as Kenyan farmers; their coffee area is almost four times bigger, and their yield almost five times higher (GBE 2,200 /ha compared to about GBE 500/ha in Kenya). Including additional revenues, total household incomes are about USD 3,500 and 1,200 on average per year for Vietnam and Kenya respectively. Vietnamese farming households therefore earn a much larger proportion of their income from coffee compared to Kenyan households (86% and 46% respectively). Also there are striking differences among households in Kenya in which a small group (23%) produces a moderate yield per hectare (~900 kg/ha), and a large group (77%) having very low yields (~390 kg/ha).

Box 2: A large variation in total coffee volumes produced between households per country

In analysing the situation of coffee producing households in supply chains or countries, it is important to understand how households vary in their productivity and total volumes produced. If this variation is high, this has implications for sourcing efficiency and intervention design. Large differences between the least and most productive farmers in terms of their total coffee volume produced are quite often observed in the coffee sector.



Figure 2 The cumulative volume of coffee sourced from farmers plotted against the farm population sorted from the highest to the lowest volume producer. The graph illustrates that the top 30% coffee farmers supply about 70% of the total coffee volume and the bottom 50% of the farmers generally supply less than 20% of the total volume. (Source: ofi)

The importance of assessing the total volume of coffee produced per household for understanding household income

The total cash crop volume produced is often a good predictor of whether the household earns a living income, especially if households are highly dependent on the cash crop for earning an income.^{ix} This also means that information on total volumes produced or sold, which is often available to buyers, can be useful for intervention design, especially if information on farm size is available. If a household produces or sells very small amounts, and has a small farm, they likely earn a very low income. This means they cannot be easily expected to invest much more in farming. There is large variance in the volumes produced by the farming households within countries (see Figure 2 and Table 1.) but also between countries. Of the 842 coffee farming households in our total dataset (Kenyan and Vietnamese households combined), the Vietnamese coffee farming households represent 17% of the total farmers but produce 80% of the total volume of coffee produced. This variation in total volumes produced means that there are a limited number of households producing large volumes, and that there are large numbers of households producing very little on average.

9% and 45% of Kenyan and Vietnamese households, respectively, earn a living income

Nine per cent of Kenyan households earn a living income (they earn minimally USD 3,395 per year on average in

Kenya) and those that do not, have a living income gap of about USD 2,495 per year on average. In Vietnam 45% earn a living income (on average USD 3,124 per year in Vietnam) and those that do not have a gap of about USD 1,427 per year on average (Figure 3). Averaged across the entire population, Kenyan households earn 38% of the living income benchmark (they earn on average about USD 1,200 in total), while Vietnamese households earn on average 1.14 times the benchmark (they earn on average about USD 3,500 in total (Table 1)). These analyses are based on the total net actual income earned from coffee and other income sources.

Farming households do not pay hired workers a living wage

While we consider farmers' return on household labour, it's important to also consider how much of the labour is provided by labourers who are paid at local market rate, as this is included as cost of production. Households do not pay workers they hire an amount that meets the daily living wage benchmark. Currently, in Kenya, households pay on average 29% of the daily living wage benchmark to hired workers (USD 3.10 compared to a living income benchmark per working day for a typical family of USD 10.69 per day), while in Vietnam they pay 86% (USD 8.33 compared to a living income benchmark per working day for a typical family of USD 9.71 per day).⁶



Figure 3 (Living) income status of coffee farming households in Kenya and Vietnam and the average living income gap of households not earning a living income (N = 340 for Kenya, and N = 144 for Vietnam)

⁶ We did not include in our analyses that hired labour is paid a living wage.

Households spend on average 22% and 34% of the available worktime for adults on coffee production while they earn on average 46% and 86% of their income from coffee in Kenya and Vietnam

Kenyan households have more adults available for work than Vietnamese households in total; they can spend 370 days per year per household in Kenya on average compared to 336 days per year in Vietnam while one Fulltime Equivalent (FTE) is 220 days per year.⁷ Kenyan households have also more adult household members available for work per hectare of land than in Vietnam because their farms are much smaller than farms in Vietnam. The number of full time equivalents (FTE) available per hectare is more than twice as large for Kenyan households than for Vietnamese (3.6 versus 1.7 respectively). Kenyan and Vietnamese households devote a much lower proportion of their total available working time on coffee production activities (22% compared to 34% respectively) than the proportion of their income earned from coffee (46% and 86% respectively) (Figure 4).



Proportion of net coffee income in total net household income

Proportion of available household labour time for work spent on coffee production

Figure 4 Average coffee income dependency and the average proportion of the available household labour time spent on coffee production activities

Households spend relatively little time on coffee production compared to the income they earn from coffee

Looking at the total labour (i.e. family and hired labour) invested in coffee production activities, Kenyan farmers in our dataset spend less than Vietnamese coffee farmers (85 versus 102 days in total); the Kenyan coffee farms are also much smaller. The maximum number of days spent on coffee production activities is generally less than 250 days per year which is slightly more than one FTE (220). Vietnamese households in our dataset invest almost twice as much time of household labour in coffee than Kenyan households (102 compared to 39 days per year). In both countries, households have more than one FTE per household available for work other than in coffee production: 298 days per year in Vietnam and 315 days per year in Kenya (Table 1).

Likely there is hidden unemployment in both countries

As indicated earlier households also earn an income from other sources than from coffee, especially in Kenya. Unfortunately, we do not have labour data on non-coffee activities so cannot calculate the return on household labour for such investments. However, considering the limited household time invested in coffee (22-34% of available household time) with the proportion of total income earned from coffee (46-86%) in Kenya and Vietnam respectively, we infer that under these conditions, likely there is hidden unemployment. This for two reasons: i) the daily remuneration for non-coffee work would be really low if households would spend all the time that is available after spending time on coffee production on non-coffee activities (e.g. 78% of their time for 54% of their income. And ii) if households would not spend all remaining time on the other activities, their remuneration per day for such activities could be high, but they would have (much) time left that is available for other work thus indicating partial unemployment. Interviews with farmers in Kenya indicate that there indeed are limited options for earning more income from non-coffee sources.

Reduction of Hours of Work Recommendation from 1962 (ILO, 1962). A farmer or worker should not be expected to work more hours per week to earn a living income than the typical number of hours worked in high income countries such as the Netherlands.

⁷ See Appendix 1 for information on how this is calculated. The 220 days per year is less than what Fairtrade uses in their living income reference price methodology which uses 246 days, mainly because they base their calculation on 48 hours per week while we use 40 hours per week as is defined by ILO as a principle in the

Return on household labour and the proportion of households earning a living income per working day through coffee

To understand how effectively coffee contributes to total household income, we analysed the return on household labour per day and compared it with the living income benchmark per working day As we have seen, households in both Kenya and Vietnam spend roughly 22-34% of their time on coffee production, respectively, while they rely for 46% (Kenya) and 86% (Vietnam) on their income from coffee. We calculated the return on household labour in coffee production activities and compared it with the living income benchmark per working day. The return on household labour was calculated by dividing the total net coffee income earned per year by the total number of days spent by adult household members on coffee production activities. Then we compared this amount with the living income benchmark per working day specific for Kenya and Vietnam and the households in our sample (see the Methodology section and Appendix 1). The living income benchmark per working day used in our study is USD 11.79 in Kenya and USD 10.74 in Vietnam.

23% and 89% of the households in Kenya and Vietnam meets or exceeds the living income benchmark per working day for each day the household spent on coffee activities

Twenty-three per cent of the Kenyan households in our sample meet or exceed the living income benchmark per working day of USD 11.79 from days spent on coffee production,⁸ and these households produce 51% of all coffee. In Vietnam, 89% of the households meet or exceed the living income benchmark per working day of USD 10.74 from days spent on coffee production, and these households produce 92% of all coffee. On average, Vietnamese households in our dataset earn about three times as much per day spent on coffee-production activities as the living income benchmark per working day. In Kenya, this return on household labour is much lower as Kenyan households earn on average a bit less than the living income benchmark per working day. In both countries, households that meet or exceed the living income benchmark per working day from coffee have an average return on household labour of USD 30-35 per day, which is three times the benchmark. Households not meeting the living income benchmark per working day from coffee earn between USD 2 and 3.8 per day⁹ (Table 1).

⁹ In Kenya, this is higher than wages paid to hired workers (USD 3.8 versus 3.1), in Vietnam it is much lower (USD 2 versus 8.3).

⁸ This is calculated as the net income earned from coffee production per year divided by the total number of days spent by the household on coffee production in that year.

Table 1Key indicator values for two groups of households in Vietnam and Kenya (all figures are means)

Indicator	Vietnam (N = 144, season 2020, Robusta)			Kenya (N 340, season 2020-2021, Arabica)		
	Average	Households meeting or exceeding the living income benchmark per working day through coffee production (89%)	Households not meeting the living income benchmark per working day through coffee production (11%)	Average	Households meeting or exceeding the living income benchmark per working day through coffee production (23%)	Households not meeting the living income benchmark per working day through coffee production (77%)
Key income and living income indicators						
Living income benchmark per household per year (typical household) (USD)	3,996			4092		
Living income benchmark per household per year (this sample) (USD)	3,124	3,122	3149	3395	3,193	3,463
Living income benchmark per working day (FTE, typical household) (USD)	9.71			10.69		
Living income benchmark per working day (FTE, this sample)	10.74	10.30	14.27	11.79	12.12	11.68
Total net household income (USD)	3,519	3,906	428	1,235	2,222	906
Total net coffee income (USD)	2,857	3,168	366	523	1403	229
Total net non-coffee income (USD)	662	738	61	712	819	676
Proportion of total household income earned from coffee (%)^	86%	85%	92%	46%	67%	39%
Proportion of households earning a living income	45%	51%	0%	9%	27%	3%
Yearly living income gap for households not earning a living income (USD) *	1,427	1,100	2,712	2495	1,837	2,640
Cocoa production, income and cost of production						
Price per kg GB (USD)*	1.52			1.58		
Total volume of coffee produced (kg GBE)	2,385	2,481	1622	180	393	109
Coffee yield per hectare (kg GBE)	2,191	2,274	1533	510	889	386
Hired labour cost of coffee production (USD/year)	461	445	586	131	244	94
Hired labour cost of coffee production (USD/ha)	377	354	562	384	578	319
Input cost of coffee production (USD)	672	592	1,314	233	372	187
Input cost of coffee production (USD/ha)	636	565	1,205	715	829	677
Total cost of coffee production per farm (USD)	1266	1,171	2,027	364	616	280
Total cost of coffee production per hectare (USD/ha)	1132	1,039	1,882	1,099	1,407	996
Coffee profitability (UDS/ha)	2699	2,987	388	1,401	3098	855
Farm and household characteristics						
Gender of the respondent (% women)	14%	15%	6%	59%	62%	58%
Age of the respondent (years)	56	55	62	55	57	54
Total number of household members	2.48	2.48	2.5	3.42	3.12	3.53
Total number of adults in the household	1.98	1.98	2	2.31	2.19	2.35
Coffee farm size (ha)	1.13	1.13	1.14	.33	.47	.28
Total farm size (ha)	1.14	1.14	1.14	.69	.88	.63
Share of coffee area in total farm	99.8%	99.8%	100%	51%	55%	50%

Indicator	Vietnam			Kenva		
	(N = 144, season 2020, Robusta)			(N 340, seaso	n 2020-2021, A	rabica)
	Average	Households meeting or exceeding the living income benchmark per working day through coffee production (89%)	Households not meeting the living income benchmark per working day through coffee production (11%)	Average	Households meeting or exceeding the living income benchmark per working day through coffee production (23%)	Households not meeting the living income benchmark per working day through coffee production (77%)
Household labour allocation, productivity and return on household labour						
Number of FTE in the household	1.52	1.55	1.34	1.68	1.52	1.73
FTE per hectare - coffee farm size only	1.66	1.69	1.43	7.61	4.70	8.58
FTE per hectare – total farm size	1.66	1.68	1.43	3.64	2.41	4.05
Total number of days that adults in the household have available for work per year	336	341	296	370	335	381
Total number of days spent by adults in the household on coffee production per year	102	103	96	59	60	59
Total number of days spent by hired labourers on coffee production per year	55	54	65	41	61	35
Total number of days spent by adult household members and hired labourers on coffee production	102	103	162	85	103	78
Proportion of time adult household members have available for work spent on coffee production and sales (%)	34%	34%	42%	22%	23%	21%
Total number of days left for adults in the household for other activities	298	295	323	315	279	327
Return on household labour for the time spent on coffee production per day** (USD)	31.29	34.95	2.01	10.35	30.04	3.79
Living income benchmark per person per FTE per day (this sample)	10.74	10.30	14.27	11.79	12.12	11.68
Living income per working day gap for coffee production for households not meeting the living income benchmark per working day through coffee production [#] (USD/day)			8.73			7.78
Return on household labour for the time spent on coffee production per day (kg coffee GBE)	31.23	32.50	21.11	3.60	8.69	1.92
Hired labour cost per day (USD)	8.3			3.1		

* We see some differences in price levels between the different groups in Vietnam: households meeting or exceeding the living income benchmark per working day through coffee have significantly higher prices than households not earning a living income. This could perhaps be because the former households are able to wait with

selling their coffee until prices are better because they have much higher incomes for this season and likely also for the previous season, but we are not diving into this for this paper.

** Households making a loss removed from the calculation of this variable for Kenya

A positive number means that there is a gap (the daily net income earned with coffee production is lower than the living income benchmark per working day)



Figure 5 Coffee living income gap per working day for coffee farming households in Kenya and Vietnam and the living income benchmark per working day (Kenya, N = 278, Vietnam N = 142), not including households making a loss from coffee production. The coffee living income gap is calculated by deducting the return on household income per day worked on coffee production from the living income benchmark per working day

The average return on household labour in coffee production is estimated to be between 2,7 times and 12 times higher than for non-coffee activities

As can be seen from Figure 5 above, the return on household labour is quite low for the majority of households in Kenya and also low for a small group in Vietnam. Coffee appears to be a relatively good way of earning an income compared to other sources, even if we lack information on the time people spent on implementing the other income earning activities. When assuming all available household time not spent on coffee production is used for earning an income from non-coffee income sources, households in Kenya earn on average USD 3.7 per day from non-coffee income sources.¹⁰ However, they earn on average USD 10 per day from coffee production. For Vietnam, households earn an estimated USD 2.6 per day from other income sources on average, compared to a return per day for coffee production of on average USD 31 per day.¹¹ A question is how much time in reality households spend on non-coffee activities; if this is much less than currently estimated, returns for non-coffee activities would be higher, but also there would be days left available to do other work if such work is available.

¹⁰ This is slightly higher than what coffee farm workers are paid which is USD 3.1 per day on average.

Vietnamese coffee farmers have much better returns on cash and time investment in coffee production than those in Kenya and there are large differences in returns between households meeting the living income benchmark per working day through coffee and those that do not

On average, there is a positive return on investment in our datasets; for every dollar invested in cash in coffee production, on average USD 1.26 is earned in Kenya and USD 4.1 in Vietnam.¹² There are stark differences between the groups; the households meeting or exceeding the living income benchmark per working day through coffee have a much better return on monetary investment (USD 4.2 in Kenya and USD 4.6 in Vietnam) compared to households not meeting this threshold, who make a loss on average (a return of USD 0.99 per dollar invested in Kenya and USD 0.40 in Vietnam).

Farm size, household time investment and monetary investment are important factors to explain whether households meet the living income benchmark per working day through coffee in Kenya

We also conducted regression analyses to assess which factors are associated with the likelihood of meeting the living income benchmark per working day through coffee

 ¹¹ Coffee workers in Vietnam are paid on average USD 8.33 per day.
 ¹² This analysis does not include a remuneration for household time spent on coffee production. A question is whether households who

earned more in the previous season also invested more in the studied coffee season but we do not have data to conduct this analysis.

(See <u>Appendix 1</u> for more information). In Kenya, larger farms, more time investments (both by hired labour and household labour) and higher cash investments in coffee production are associated with larger coffee volumes produced. The larger the coffee volume produced, the more likely a household meets the living income benchmark per working day through coffee production. Total cost of production plays an interesting role: cash investments drive coffee volumes, but can lead to households (just) not meeting the threshold. For Vietnam the analyses results were limited, which is likely due to the fact that the sample size was smaller than for Kenya and that the size of the two groups is also relatively small. We therefore do not include the results in this paper.

Returns to labour are much higher in Vietnam than in Kenya and at maximum slightly more than one FTE is spent per year on coffee farms

After assessing the returns on household labour, we do a last deep dive into returns to labour by calculating the total net coffee income earned and dividing it by the total number of days that hired labourers and household members spent on coffee production activities. For this, we exclude hired labour cost from the equation as such cost influences the net coffee income earned by a household and thus affects the return on labour analyses. Some households hire much labour while other households do not hire any labour and therefore the net coffee income of the former would be much smaller than the income of the latter, even while spending the same amount of labour in total and producing the same amount of coffee. We thus assumed that all labour time spent on coffee production was done by the household to come to conclusions on return on total labour. As can be seen from Figure 6 below, farmers in Vietnam have much higher returns than farmers in Kenya. For the same number of days invested, their net income from coffee, excluding hired labour cost, is much higher. This is while Robusta coffee prices are slightly (4%) lower in Vietnam compared to Arabica coffee prices in Kenya. But also in Kenya we observe that some households have much higher labour returns than others, and thus that there is much room for improvement for a large group of households.



Figure 6 Total number of days spent on coffee production activities by household and hired labour and total net income excluding hired labour cost, and the yearly living income benchmark for Kenya and Vietnam

Reflection on methodologies that distinguish what the roles of companies and other stakeholders such as governments would be to close living income gaps, and results of their application to Kenyan coffee farmers

Two methodologies for establishing farm-gate prices that should be paid, for companies and other stakeholders such as governments to contribute their 'fair share' to reducing and closing living income gaps

To identify what can be done to reduce and close living income gaps through pricing strategies, two methodologies have been developed: the Living Income Reference Price (LIRP, developed by Fairtrade) and the True Price Living Income Module (developed by True Price and Wageningen University & Research). Please see <u>Appendix 1</u> for more information including how they are calculated. Both methodologies distinguish what farmgate price should be paid per kilogram to ensure that farming households with certain characteristics earn a living income. This information sheds light on how companies and governments could contribute their 'fair share' to reducing and closing living income gaps. This by addressing the fact that farming households also often earn an income from other sources than coffee, and therefore the living income gaps should not be closed through coffee alone. Both methodologies see a role for stakeholders other than companies to close part of the living income gaps, as for instance government policy can affect farm gate prices, but also as paying the farming households the farm-gate prices resulting from their application would not close the living income gaps of all farming households. The role of other stakeholders is not explicitly discussed in those methodologies, however. In this section we apply the True Price Living Income Module in Kenya,¹³ and assess what it would mean for the households if the theoretical True Price at farm gate resulting from these analyses would be paid. We then compare this theoretical true farm-gate price result with the LIRP of Ugandan coffee farmers with similar characteristics as Kenyan farmers in our sample. In this section, we focus on Kenya, as a large group of Vietnamese households in our sample meets the living income benchmark through coffee and likely because of that, no LIRP exists for coffee farmers Vietnam.

¹³ Applying the True Price Living Income Module labour dependency approach, see Section 2 for more information.

Paying a LIRP or a True Price based on the Living Income Module increases incomes generally, but does not guarantee all households to earn a living income

Both paying the LIRP and the True Price based on the Living Income at farm gate increase incomes, if other factors do not change, but do not guarantee that all households are earning a living income. The True Price Living Income Module is based on the price needed such that an average household that does not earn a living income, would earn a living income. This means that even if a True Price (calculated using the Living Income Module) would be paid at farm gate, still many households would not earn a living income. The LIRP is based on assumptions regarding viable farm size and sustainable yields (amongst others), and guarantees that if farmers who meet such criteria are paid the LIRP, they would earn a living income. In reality a large proportion of households does not meet the criteria, and therefore paying the LIRP increases incomes, sometimes substantially, but does not close the living income gap of all households.

Large farm-gate price increases are necessary to close the yearly living income gap for the average household not earning a living income in Kenya

In order for an average Kenyan household in our sample not earning a living income to close the entire living income gap through coffee sales alone, the farm gate coffee price would need to increase by almost USD 70/kg to about a theoretical USD 71/kg (USD 69.4 + USD 1.58), an extremely high amount compared to the prices paid to the farmers (USD 1.58 per kg) and farm-gate prices in spring 2024 (USD 3-4 per kg). The True Price methodology indicates it is not fair for coffee sector stakeholders to need to pay such an amount if farmers also earn an income from other sources. When recalculating the living income gap per kilogram of coffee produced based on the labour dependency approach of the Living Income Module (see also Appendix 1), the average living income gap per kilogram of coffee would be about USD 8 (meaning the theoretical farm gate price would be USD 9.7/ kg). This is because many households not earning a living income spend only a limited amount of time on coffee production activities. This theoretical farm-gate price is 6 times higher than the farm-gate price¹⁴ in the year of our study (2020)

kilogram. In total the farm-gate price would need to be USD 9.7 per kilogram to fulfil the True Price Living Income Module requirements. Allocating the living income gap to coffee based on the income dependency approach would lead to a True Price at

¹⁴ The labour adjusted living income gap per kilogram of coffee is USD 8.1 while the actual farm-gate price was USD 1.58 per

and about 2.2 times the early 2024 farm-gate price of USD 3.64/kg. $^{\times}$



Figure 7 The True Price at farm gate per kilogram of coffee, based on the Living Income Module, in case coffee sales need to close the living income gap of the average household not earning a living income, and based on the True Price Living Income Module labour dependency approach

Paying the True Price based on the Living Income Module would lead to 96% of Kenyan households in our sample meeting the living income benchmark per working day through coffee, and 53% would earn a living income.

If the True Price at farmgate based on the Living Income Module would be paid for coffee (USD 9.66 /kg, more than six times the original price), and keeping all else constant, 53% of the Kenyan households in our sample would earn a living income, compared to the original 9%. This would be a truly substantial income improvement. Forty-seven per cent would not earn a living income even with such large price increases, as they produce such small volumes and have such large living income gaps. Paying this True Price would lead to 96% of all Kenyan households in our study meeting or exceeding the living income benchmark per working day through coffee compared to 23% without such a price increase. It is important to note that the relatively richest households would benefit the most in absolute terms from such a price increase; the households earning a living income would earn about USD 4,500 more on average while household not earning a living income would earn about

USD 1,150 more, while they need income increases the most.

The total sourcing costs would increase by a factor 6 while almost half the households would still not earn a living income, requiring also other stakeholders to contribute to close living income gaps

The total additional cost of paying this amount to Kenyan coffee farmers compared with the initial sourcing cost would be about USD 492,000 per year for 340 farming households in our sample, on average USD 1,450 per household, compared to the original yearly cost of about USD 96,000. If all 514,000 coffee farming households in Kenya^{xi} would be paid this additional amount, assuming the other Kenyan farmers producing the same volumes as the farmers in our study, this would amount to additional sourcing cost of USD 743,820,667 per year. This is a huge amount and a question is therefore how such an amount would be generated. Even with such a large additional investment about half the households would still not earn a living income. The True Price methodology indicates different types of stakeholders can play a role in reducing and closing the living income gaps of households and indicates implicitly for instance that if farmers have more sources of income, actors connected to the other sources of income would be responsible for closing the living income gaps connected to such other activities. Therefore, in addition to companies contributing their 'fair share' to substantially reducing and closing the living income gaps of farming households in their supply chain, also other actors have a role to play.

The True Price for coffee at farm gate is higher than the LIRP because the LIRP assumes certain farm size and sustainable yields that Kenyan farmers in our sample usually do not achieve

We also compared the True Price Living Income Module results with the Living Income Reference Price (LIRP) for arabica coffee producers in Uganda (for 2022). A LIRP does not exist for Kenya, but one has been developed for coffee farmers in Uganda with similar characteristics as the Kenyan farmers in our data set. The farmers in Uganda earn 50% of their total household income from coffee, similar to the coffee income dependency of the Kenyan households in our sample. The LIRP is USD 3.71 per kilogram coffee (GBE) at farm gate which would lead, if paid to all farmers in Kenya, to a total additional sourcing cost of USD 129,930 per year for 340 households, USD 667 per household on average. If all 514,000 households in Kenya would receive such an additional amount, this would amount to USD 342,771,130 additional yearly sourcing cost, lower

farm gate of about USD 20.5/kilogram as households spend a much lower proportion of time on coffee production activities (on average 22%) than the proportion of income they earn from coffee (46%).

than 50% of the additional sourcing cost based on the True Price calculations. The theoretical True Price at farm gate based on the Living Income Module is USD 9.66 per kilogram of coffee (GBE) as explained above. A reason this True Price at farm gate is much higher is that the LIRP is based on assumptions on viable coffee farm size (0.81 ha with coffee) and sustainable yields (640 DP/acre = 1,265 kg GBE per hectare) which are much higher than the actual coffee farm size and volumes of the Kenyan farmers in our dataset (0.33 ha with coffee, and 180 kg GBE/ha). The True Price Living Income Module does not factor in such assumptions and therefore results in a higher theoretical farm-gate price to be paid.

Using the return on labour concept to look at coffee only and to what extent the coffee sector contributes its fair share to reduce and close living income gaps

We would also like to discuss another way of establishing a True Price at farm gate for living income. The reason to introduce this new approach is that using the original approach which is applied above, factors external to the coffee sector (e.g. the availability of other income sources, employment) influence the True Price calculations for the coffee sector: If, for instance, the income that a household earns from non-coffee sources decreases, which is outside the sphere of influence of the coffee sector, while the income earned from coffee stays the same, this increases the living income gap as well as the proportion of the living income gap that needs to be closed by the coffee sector. This will lead to an increase in the true farm-gate price for coffee. It also works the other way around: If farmers earn more from non-coffee income sources while the coffee income stays the same, then the True Price at farm gate for coffee will decrease, which is not logical. We can remove the effect of noncoffee income to look at coffee only. To do so we multiply the Living Income Benchmark by the percentage of available adult time spent on coffee. We then get the fair share of the Living Income benchmark for coffee. In other words, this is the amount needed so that each workday spent on coffee will be remunerated at the living income benchmark per working day. We then compare this amount to the actual net coffee income and calculate the gap. In our case, the yearly living income benchmark for households not earning a living income is USD 3,415 per year on average. Adults in these households spent on average 21% of their available time on coffee production activities.¹⁵ This would mean that coffee sales should earn farmers at least USD 639 per year.¹⁶ They currently earn USD 380 per year from coffee and thus should earn USD 260 more per year with coffee to meet this coffee living income benchmark. Based on the coffee volumes produced, this would result in an average coffee farmgate price of USD 9.95 per kg (the original USD 1.58 + USD 7.36). This result is similar to the True Price living income calculation above because the total volume of coffee produced is so low for so many farmers. If the volume would have been higher, the True Price at farm gate would be lower. See for example Appendix 1.

6. What does this tell us about strategies to close the living income gap and the use of the return on household labour concept?

More households meet the living income benchmark per working day through coffee production than those that meet the yearly living income threshold for the year 2020, and Vietnamese households are much better off than households in Kenya

In Kenya, 9% of the households in our sample earn a living income from all sources combined while 23% of the households meet or exceed the living income benchmark per working day through coffee production (they produce 51% of the total volume). In Vietnam, 45% of the households in our dataset earn a living income, compared to 89% of the households meeting or exceeding the living income benchmark per working day through coffee production (who produce 92% of the total volume). When looking at the return on household labour in absolute terms, households in Vietnam are much better off than households in Kenya but also in Kenya we observe large differences between households. Even at the low coffee prices during this studies almost half of farmers in Vietnam (45%) earn a living income. On the contrary, farmers in Kenya produce such small volumes and earn such low amounts of income from non-coffee sources that only 9% earns a living income. Please find below conclusions from our analyses for the different factors that influence income levels as identified in our study:

¹⁵ Please note that this is a slightly different group than households meeting the living income per working day threshold, who earn 22% of their income from coffee. The True Price Living Income Module is applied to households not earning a living income, which is why we use that group for these analyses.

¹⁶ The USD 639 per year is 19% of 3,415 and not 21%; this is because of the variability between farmers regarding the yearly benchmark and the proportion of time spent in the dataset. We use the analysis results from the dataset.

cost of production, volumes of coffee produced and sold, price, farm size and income diversification.

6.1 Cost of production – household labour allocation and return on household labour in coffee production

Households in both countries spend a low proportion of the time that adult household members have available for work on coffeeproduction activities

Farming households spend small proportions of the available time adult household members have yearly on coffee-production activities. Producing coffee appears to be a relatively profitable use of time because households spend on average 22% and 34% of the available worktime for adults on coffee production, while they earn on average 46% and 86% of their income from coffee in Kenya and Vietnam. Households spend at most about 1 FTE (220 days per year) by households and hired workers combined and on average less than half an FTE and a guarter FTE in Vietnam and Kenya respectively by household members. Meanwhile, households generally have 1.5 to 2 FTE available per household in Vietnam and Kenya. We therefore observe that households likely have time available for other income generating activities, especially in non-coffee harvest months. Much coffee work is seasonal with harvest seasons being really busy, while in other periods much less time needs to be invested. This seasonality might mean that household members don't have attractive work opportunities outside of coffee (e.g., work that allows them to also participate in coffee harvesting) or that there is hidden unemployment for most of the year.

There is large variety in the return on household labour; households not meeting the living income benchmark per working day through coffee earn about one third of what is needed per day

Returns to household labour are often low, especially in Kenya. The average net income earned per working day from coffee for the 89% and 23% of the households in our sample meeting the living income benchmark per working day through coffee is USD 35 in Vietnam and USD 30 in Kenya.¹⁷ The return on household labour in coffee production for the 11% of Vietnam households and the 77% of Kenyan households not meeting this threshold is one third of what is needed per day, amounting to USD 2 and 3.8 earned per day spent on coffee production by the household respectively. We should note that coffee production can ensure households meet the living income benchmark per working day threshold through coffee production, while investing a low proportion of household labour in coffee production or working on small farms. Because of these low returns to labour for a large group and high returns for a smaller group farmers (especially in Kenya), much can be advanced still in labour productivity.

The return on household labour concept is a useful addition to analyses and discussions on living incomes as it generates insights on labour productivity and allocation, including hidden unemployment

Looking at the coffee income earned per day of work, in addition to the total household income earned per day, generated useful insights into the efficiency of some households in terms of labour investments, compared with the inefficiency of many other households. This means that still large improvements are theoretically possible: this study sheds light on what to do to improve this. Also, we conclude that likely coffee production has the best remuneration per day of work by the households; comparing their time available for non-coffee activities with the income earned from such activities shows either their remuneration would be very low per day spent, or they have much time available for work, or a combination of both. This is very useful information to explore in the design of interventions as it allows to look at more factors influencing household income than are currently taken into account.

6.2 Cost of production – monetary investments

Cost of production and return on cash investments are important to consider as some households have negative returns to investment and/or make a loss from coffee production

Larger investments in time (labour) and money are associated with higher volumes produced which are associated with a higher likelihood to minimally meet the living income benchmark per working day threshold through coffee. However, some households appear to invest so much money that they have negative returns to cash investments. In addition, some households make a loss from coffee production, which is really important to address. This might also be because it can take 1 to 2 years of time before newly-planted and/or rejuvenated coffee starts to produce. Hence, farmers invest labour and cash on inputs, but only see returns in the future. Such variations in time could not be accounted for in this study, which only focused on 1 crop year.

¹⁷ Based on the living income per working day benchmark of USD 10.74 in Vietnam and USD 11.79 in Kenya.

6.3 Cost of production and the link with coffee volumes produced

The larger the volume of coffee produced, time and monetary investments and farm size, the higher the likelihood of meeting the living income per working day threshold with coffee in Kenya

In Kenya, larger farms, more time investments (both by hired labour and household labour) and higher cash investments in coffee production are associated with larger coffee volumes produced. The larger the coffee volume produced, the more likely a household meets the living income per working day threshold from coffee production. Larger farms are associated with larger coffee volumes produced. Total cost of production plays an interesting role: cash investments drive coffee volumes, but can lead to households (just) not meeting the living income per working day threshold. Managing cost of production is a delicate process, especially when your income is very low. Farmers who invest very little in their coffee farm are unlikely to earn a living income per working day. Livelihoods likely improve if farmers can improve their productivity and this will require some cash investment and risk taking which poor farming households are often not capable off. Vietnamese farmers in our dataset have somehow been able to invest much to generate high yields, while most of the Kenyan farmers have not been able to do so: The low volumes they produce coupled with generally low price levels, which they cannot influence, lead to low gross income and therefore limited room to invest to increase yields, also because these households neither not earn much from other sources of income.

6.4 Price

Paying the True Price at farm gate based on the Living Income Module would multiply coffee sourcing cost by a factor of 6 in Kenya; 96% of Kenyan households would meet the living income per working day threshold and 53% would earn a living income

The True Price at farm gate based on the Living Income Module was found to be about six times higher than the farm-gate price that farmers received in 2020. If this True Price would be paid to Kenyan households in our dataset, 96% would meet the living income per working day threshold through coffee production, compared to 23% without such a price increase. And 53% of the households would earn a living income compared to the original 9%. It is important to find solutions for how companies and other stakeholders such as governments can contribute their 'fair share' in progressing towards a living income for all households, while ensuring continued inclusion of the most vulnerable Closing the coffee specific living income gaps of all farming households requires huge investments. If all 514,000 coffee farming households in Kenya would be paid the True Price at farm gate, based on the Living Income Module, this would require an additional sourcing cost of USD 743,820,667 per year. Paying the LIRP would lead to additional sourcing cost of USD 342,771,130 per year. These are huge amounts and a question is therefore how such an amount would be generated. Even with such large theoretical additional investments by companies, about half the households would still not earn a living income. Therefore, also other stakeholders such as governments are needed to contribute their 'fair share' in substantially reducing and closing the living income gaps of their coffee farming citizens. We call for a further discussion on the different approaches to assess the 'fair share' of companies and governments to close living income gaps which is also important in the light of the Directive on corporate sustainability due diligence (CSDDD) and the Corporate Sustainability Reporting Directive (CSRD).

A risk of exlusion of the poorest if companies are asked to ensure the coffee they source comes from households earning a living income

Asking coffee roasters and traders to only buy coffee from farmers earning a living income or meeting the living income per working day threshold could possibly lead them to shift sourcing from low volume smallholders coffee communities like Kenya to origins in which farmers produce relatively large volumes like Vietnam and Brazil. This might have the opposite effect than the one expected as it could decrease demand for coffee from the more vulnerable households who need support the most. It is therefore important for the sector to find solutions for how the large investments that are needed can be implemented and how strategies can be developed that ensure the most vulnerable households continue to be included in programs and value chains.

Price increases and/or cash transfers/social protection measures are important to enable investments by farmers, that again enable income increase

Many of the farming households in Kenya (our sample) are poor, as the average income in our sample is about one third of the living income benchmark. This poverty is combined with volatile prices beyond the control of the farmers and social protection systems that do not reach farming households.^{xii} This leads to such farming households currently not having sufficient income to

invest more in coffee production or other activities, to increase their income substantially. Our analyses show that higher investments are associated with higher volumes and incomes. This means that structurally increasing farm gate prices (including minimum price guarantees) and/or providing households with social protection will help reduce poverty and will enable increased farm investments that can spur entrepreneurial growth if other factors do not change. A few pilots on cash transfer programs in the coffee sector, in which farming households obtain a yearly, monthly or weekly amount from a government or donor¹⁸ suggest positive results, xiii but mechanisms that enable large structural price increases such as the living income reference price are adopted marginally/sparsely¹⁹. Large and structural price increases paid at scale need to be coupled with supply management measures to avoid oversupply, which could result on a downward pressure on prices and farmers who might not be able to sell all their coffee, and also to avoid environmental deterioration if farmers would choose to expand their activities in forest or biodiverse areas. Price increases, while important for all farmers, benefit a small proportion of the richest households the most in absolute terms as they sell the largest volumes. For poverty reduction purposes focused on the poorest households, a structural social protection or cash transfer programme may increase incomes of the poorest households more than price increases.

6.5 Farm size

Farm size matters, but small farms can generate relatively large volumes under the right conditions

Vietnamese farmers in our sample have almost two times more land than Kenyan farmers in our dataset and their coffee area is almost four times bigger. Larger farm sizes are *indirectly* associated with the likelihood of a Kenyan coffee farmer earning the equivalent of a living income per working day from coffee: Households can produce relatively large volumes on small farms. Therefore, farm size by itself is not always a limiting factor, certainly not if looking at income earned per working day instead of looking at the total income earned. However, small farms do have a maximum volume of coffee that can be produced in total if high yields are achieved, so in that sense small farm sizes are a barrier to earning a living income.

6.6 Income diversification

Coffee farmers often have multiple income sources already, but on- and off-farm income diversification is important to support because of time available and limited farm size

Because the low proportion of labour spent on coffee production activities and the small farms most farming households have, it is essential to explore on- and offfarm diversification opportunities to close living income per working day and yearly living income gaps. The low income generated from non-coffee activities, while households have much time available for work in addition to working on coffee (1-1.5 FTE per household), suggest that there is likely hidden unemployment. Regarding remuneration for non-coffee work: if households spend all their remaining time on other income-generating activities, the returns per day for such activities would be really low. But also regarding household availability to work more: if households do not spend all remaining time on the other activities, their remuneration per day for such activities could be high, but they would have (much) time left for other work. We thus infer that many poor farmers have challenges finding meaningful income opportunities outside coffee production and that hidden unemployment seems an important challenge for these rural households. Offering farmers other economic opportunities that are equally or more remunerative than coffee is essential on the journey to a Living Income, at scale this would impact total production, and therefore put upward pressure on the market price.

Embracing more farming realities and closing the return on household labour gap

The return on household labour approach allows to more clearly identify what useful interventions could be, to increase the income earned per day spent on coffee production, as well as the total income earned. The results of the analysis highlight that there is a high likelihood of hidden un-employment in coffee producing areas (see above), especially in Kenya but also in Vietnam, and a lack of alternative income opportunities generating adequate incomes. Even if we do not have information on how much time households spend on other activities, we observe that either households have much time left on average to spend on other incomegenerating activities, or that the returns on labour of other income-generating activities is very low. Coffee appears the best option for most farming households. The return on household labour approach therefore allows to look at household support in a new way, not focusing on yield improvement like many strategies at the moment, but looking at how to improve farming efficiency (higher returns with the same time or monetary investment),

¹⁸ With or without conditions for receiving such an amount. Amounts sometimes implemented range around 400 Euro a year.

¹⁹ Expert judgement by the authors, based on a few examples on LIRP or true price payments for coffee on the internet.

which is essential for professionalisation. As the study shows, there are important differences in time and monetary investments with the same coffee volume produced, which is useful to consider in detail to learn how farmers can achieve better efficiency, and what innovations could help increase efficiency as well as income. Farming efficiency is also essential, as the return on household labour varies substantially between the most professional farmers and the smallest traditional farmers around the world (e.g. Kenyan farmers vs Vietnamese, but also for instance between Ivorian and Brazilian farmers). Supporting smallholder farmers to become more efficient, and therefore more competitive, alongside other income-generating activities, is key on the journey to a Living Income.

7. Recommendations

Recommendations for implementing the return on household labour approach and discussing the results with farming households

- Use information from data-driven tools that collect and monitor cost of production and similar indicators which may occur every day on the farm or in the household, with high accuracy and minimal recall bias such as a Farmer Field Book approach that was used for the collection of the Vietnam data presented in this paper. Based on such highly accurate data, analyses should be performed to compare labour productivity, and returns to cash investment, for different types of activities and households, to feed learning activities with coffee farming households. Based on an analysis of what farmers who are more efficient are doing differently, and discussions with the farming households about those results, households can be supported to increase their labour productivity and efficiency.
- Investigate how different types of households spend their time throughout the year, why they spend so little time on coffee generally, the returns to household labour for non-coffee activities and their aspirations regarding how to increase their income.
- Investigate what innovations can be proposed that would help farmers become more efficient and earn more while they spend the same amount of time; what would unlock the labour potential? This can be done by further assessing the yields and volumes achieved by the farmers with the highest return on household labour and learning from their approach.
- Investigate what other activities (on and off farm, employed or self-employed) could be available for coffee farming households based on the discussions with the households and other stakeholders (e.g. the government). This includes an assessment of how much time households have available and in what periods per year. Based on this, support initiatives to create such opportunities. This is especially relevant for the poorest half of the households in Kenya and should

include reviewing possibilities in all types of income generating activities, including in informal markets (e.g. midstream actors in supply chains).

Recommendations for different types of stakeholders

- Private sector stakeholders as well as governments, NGOs and knowledge institutes should consider labour productivity improvement and on and off-farm income diversification in their policies and strategies. Asking the private sector to take responsibility for all supplying households to earn a living income might disincentivise sourcing from, and engaging with, communities that are most in need. Using the returns to household labour approach allows for better discussions on the 'fair share' for different coffee sector stakeholders to close the living income gap.²⁰
- All stakeholders should explore ways to structurally increase farm gate prices and the coverage of social protection systems/cash transfer programs, including avoiding oversupply as that could lead to households not being able to sell all their coffee or creating a downward pressure on prices. At the time of this study, farmers were at the end of a low market cycle. Shortly after the period 2021-2022, prices on the world market more than doubled. The market volatility with often low farm gate prices requires a level of income resilience that the poorest farmers don't have. Supply chain actors throughout the supply chain together (including traders, manufacturers, retail but also investors) can help develop price stabilisation mechanisms with support of governments. NGOs can also play a role in cash transfer programs.
- Because we observe small farm sizes which are linked to low total volumes and low incomes, the governments in Kenya and Vietnam should explore how to avoid land fragmentation below the current farm sizes to avoid increasing poverty of future generation coffee farming households if other factors do not change. This is

²⁰ This study does not include the analysis to support the argument that the private sector can seek supply from other farmers. While this may be a possibility, this paper does not address it. Additionally, this is not an ethics paper that defines what

constitutes a fair share for the industry. It can only be used for discussions about what constitutes the fair share of responsibility for different coffee sector actors because there can be many other views.

mainly the role for the government but private sector companies can share information and data (data at aggregate level, complying with data protection regulations) to facilitate such decision making, and support farmers on ways to increase farm management efficiency²¹.

 All stakeholders to avoid the poorest and most vulnerable households to be excluded from sourcing strategies and interventions, and developing appropriate targets that ensure this.

Recommendations for sector discussions and research

- Further discuss and assess what the 'fair share' of companies and governments is in closing living income gaps of different types of farming households, considering the fact that most farmers spend a small proportion of the time available on coffee production activities. This to understand what role different actors can and should play.
- Implement the return on household labour approach for the whole farm to assess what on-farm activities can improve the total income with a limited additional effort. This includes that some practices could benefit

more than one crop/product. This information could support thinking about supply management if investment in other activities than coffee would have a similar return. Handheld mechanisation devices for farming operations such as weeding, fertiliser application, spraying and harvesting would allow farmers to reduce labour days invested by half or more. This would free up time to develop other on- farm and off-farm income sources. But a question is whether the freed-up labour has other opportunities to earn an income. If not, such measures might decrease employment opportunities for workers and increase rural poverty.

- Assess labour efficiency and returns for different groups of households to see if we find patterns and understand the share of farmers earning a living income per working day in the different groups.
- Further assess the extent of hidden employment in coffee supply chains and the barriers and opportunities for income generation, on and off-farm.
- Assess the living income and living wage gaps and household labour allocation of workers in coffee sectors and compare these with other workers and farmers.

²¹ Such land use governance measures can also address environmental objectives such as forest and biodiversity protection.

Appendix 1 Detailed methodology

Key indicators assessed in our study

Indicator	Description
Living income (gap)	We assess whether households earn a living income or not, and what their yearly living income gap is if they earn less than the living income benchmark. Information on the cost of a decent standard of living for a family from available living wage benchmarks was used to calculate the household specific living income benchmark and living income gap for each household in the datasets following Living Income Community of Practice guidance. ^{xiv} , xv For Kenya, the living wage benchmark for Rural Kericho was used, ^{xvi} as the living income benchmark for Rural Mount Kenya is not available anymore. For Vietnam we applied the Rural living wage benchmark. ^{xvii} We adjusted the Kenya benchmark for inflation using the CPI indices from the World Bank as the benchmark year (2022) was different than the year for which data was collected (2020-2021). For Vietnam that was not necessary as the years were the same. All amounts were recalculated into US Dollars based on the average exchange rate for the 12-month production season.
The number of days that households have available for work in a certain year	This number was calculated based on the number of adult household members in the household and the number of days each person has available for work in a year. The number of days available for work per person per year is based on information from the International Labour Organisation (see Appendix 1). In total, one person working fulltime (1 FTE) has 220 days per year available for work. This means that such a person has 18.33 days per month available for work on average (220/12). This is based on a five day working week (40 hours/week), 20 days of holiday per year, 10 days of sick leave/care days per year and 10 days of public holidays per year.
	Please note that our assumptions in this study are different from the country specific legally specified working hours per week and days per month and year. The living wage benchmarks for Kenya and Vietnam specify 26 working days per month on average. The challenge with following national legislation is that persons in Kenya need to work more hours per week (e.g. 45 or 48) and days per year to meet their living income benchmark, than persons in countries who work 40 hours per week and have more leave days. We therefore follow the ILO 'principle of the 40-hour work week' to ensure all households in our analyses work under the same conditions to meet their living income or wage benchmark.
	Based on the household composition of households in our sample, the total number of FTEs per household is calculated. Respondents at or over the official retirement age (60 in Kenya and Vietnam) are assumed not to be available for work. And households with two adults and children are assumed to have 1.5 FTE available for work because they need enough time for care activities and household chores.
	See for more information Appendix 1.
The living income benchmark per working day	We calculated the living income benchmark per working day based on the living wage benchmark per person per month (FTE) for each country. We did this by dividing the monthly cost for a decent standard of living specified in the benchmark by the average number of working days per month (which is 18.33, see above).
	The living income benchmark per working day is calculated to be USD 11.79 in Kenya and USD 10.74 in Vietnam for the 2020-2021 and the 2020 season respectively. This means that if a person (1 FTE) works all days available for work in a year, and minimally earns USD 11.78 in Kenya per day worked, that person would earn a living income.
	Our calculated income benchmark per working day is higher than the living income benchmark per working day for the typical households from the benchmark studies (USD 10.69 and USD 9.71 respectively) because we base our calculations on different assumptions than those benchmarks regarding the number of available days for work per year per FTE and the number of FTEs in a household with children. See for more information above and Appendix 1.
Monetary investments in coffee production	We calculated the total cash investments in coffee production activities for the production year assessed, limiting total costs to hired labour, fertiliser, crop protection and seedlings: we excluded cost of land or depreciation of capital items (e.g. machinery). These calculations are based on actual expenditures and do not assume households pay a living wage to the workers they hire.
Household time investment in coffee production activities	We calculated the total number of days spent per year by adult household members on different coffee production activities (up to and including sales), based on questions on time investment for different activities in a survey (Kenia) and recordings of time investments (Vietnam).
The proportion of available household time for work spent on coffee production	We calculated the number of days all adult household members spent on coffee production activities and divided these over the total number of days households have available for work.
Coffee income dependency	This was calculated by dividing the income from coffee production activities by the total household income.
Return on household labour in coffee production	This was calculated as: the net income earned from coffee production and sales divided by the total number of days adult household members spent on coffee production and sales activities.
The living income gap per working day	The living income gap per working day was calculated by deducting the return on household labour on coffee production activities from the living income benchmark per working day.
Coffee yield per hectare	Information on coffee production was recalculated from different units (e.g. fresh cherry) into Green Bean Equivalent (GBE) units. All yield figures are reported in GBE. Coffee and total farm size is based on self-reported farm size.

Indicator	Description
Indicator True Price at farm gate based on the True Price Living Income Module	 Description The True Price Living Income Module is a methodology that identifies what the (coffee) farm gate price should be to reduce and close the living income gap related to a specific product. Through its application, it is calculated what the additional amount per kilogram of product produced (e.g. coffee, cocoa, banana) that the average farming household not earning a living income needs, to earn a living income.^{xviii} This is done in two steps: first we calculated the <i>living income gap per kilogram of coffee</i> produced for the average household not earning a living income.^{xviii} The Living Income Gap is the difference between the Living Income Benchmark and the Total Net Household Income, divided by the total number of kilograms of coffee produced in a year. E.g. USD 6,000 – USD 3,000 (based on USD 2,000 non-coffee income and USD 1,000 for coffee income) = USD 3/200. Divided by 1,000 kg = USD 3/kg. This amount is then added to the original farm-gate price. For the second step there are two approaches: a calculation based on the proportion of the time that adult household members had available for work in a year which they spent on coffee production (the labour dependency approach). This is done as the methodology assumes that coffee sales are not responsible for closing the entire yearly living income gap, in the case household income earned with coffee production is used to adjust the living proces on tousehold labour. For the labour dependency approach, we adjusted the living income gap per kilogram of coffee production, this paper we focus on the labour dependency approach duals to usehold atour. For the labour dependency approach, we adjusted the living income gap per kilogram of coffee production. This amount is the dividen by the total number of kilograms of coffee production, as per the methodology. In Kenya, households not earning a living income spend 21% of their available time for work of adults on coffee produ
	second adjustment based on similar differences between farmers, as time investment in correct production is associated with coffee volumes produced (see Section 4). We consider this second adjustment as double counting and therefore it would have reduced the living income gap and therefore the True Price disproportionally. It is important to note that because the True Price Living Income Module is based on the price needed such that an average household that does not earn a living income, would earn a living income, this means that even if a True Price at farm gate, calculated using the Living Income Module, would be paid at farm gate, still many
	households would not earn a living income. It is therefore implicitly assumed that such households would need to be supported by other stakeholders than companies, such as governments, to close their living income gap.
True Price at farm gate based on the True Price Living Income Module – new approach discussed in this paper	A new way of looking at establishing a True Price based on the Living Income Module is to focus on <i>the proportion</i> <i>of the Living Income Benchmark</i> that farming households not earning a living income need to earn from coffee production, based on the proportion of the total available time adult household members have available for work spent on coffee production.
	The Living Income Benchmark for coffee is the Living Income Benchmark multiplied by the proportion of available household labour time spent on coffee production. The coffee specific living income gap is calculated by deducting the net coffee income from this coffee living income benchmark. The coffee specific living income gap is the divided by the total number of kilograms of coffee produced in a year. E.g. USD 6,000 * 21% = USD 1,260. USD 1,260 - USD 1,000 earned from coffee = USD 260. USD 260 divided by 1,000 kg is USD 0.26/kg. This amount is then added to the original farm-gate price.
	 The reason to introduce this new approach is that using the original approach, factors external to the coffee sector (e.g. the availability of other income sources, employment) influence the True Price calculations for the coffee sector: If for instance the income that a household earns from non-coffee sources decreases (which is outside the sphere of influence of the coffee sector), this increases the living income gap as well as the proportion of the living income gap that needs to be closed by the coffee sector. This will lead to a true farm-gate price increase for coffee as well. It also works the other way around, if farmers earn less from coffee, e.g. because of adverse climatic conditions, then the True Price at farm gate for coffee will decrease if their non-coffee income stays the same. The example with households earning USD 1,000 less from non-coffee sources (USD 1,000 instead of USD 2,000): USD 6,000 - USD 2,000 = USD 4,000. USD 4,000 * 21% = USD 840. USD 840 divided by 1,000 kg =
	USD 0.84/kg. This amount is then added to the original farm-gate price. This will result in a USD 0.21/kg higher farm-gate price than the original calculation of USD 0.63/kg.

Indicator

The living income reference price for coffee (Uganda)

The Living Income Reference Price (LIRP) methodology has a similar ambition as the True Price Living Income Module: to identify what coffee farm-gate price farmers should be paid for companies and other stakeholders such as governments to contribute 'their fair share' to reducing and closing living income gaps. It is established based on assumptions regarding viable coffee farm size and sustainable yields and the proportion of income earned from coffee which have been established and validated with stakeholders in the sector and region the LIRP is established for. A LIRP does not exist for Kenya, but one has been developed for coffee farmers in Uganda similar to the Kenyan arabica coffee farmers in our data set.^{xx} The arabica farmers in Uganda earn 50% of their total household income from coffee (similar to the coffee income dependency of the Kenyan households in our sample). The LIRP for Arabica coffee farmers in Uganda earning 50% of their total household income from coffee is USD 3.71 per kilogram coffee (GBE) at farm gate. Please note that paying the LIRP usually directly increases household incomes as the LIRP is usually higher than normal farm-gate prices, but that they do not necessarily close the living income gaps of all households, because households generally score low in terms of sustainable yield and viable farm size.^{xxi} It is therefore implicitly assumed that households not earning a living income even while they are paid the LIRP would need to be supported by other stakeholders than companies, such as governments, to close their living income gap.

Assumptions on the number of days one person can work per year

Description

We based our analyses on conditions for work and labour availability based on ILO standards, and assuming the same conditions for work as in the Netherlands regarding holidays (20 days per year), public holidays (10 days per year), and days for sick leave and carer leave (10 days per year). This is because we believe that workers everywhere in the world should work the same amount of days and hours per year to earn a living income. Because legislation between countries differs, following the country specific legislation would mean that e.g. Kenyan households would need to work more days per year to meet the same standard (e.g. a living income) than e.g. Dutch households.

Please find below calculations/assumptions related to household labour availability used in this paper:

- The number of hours per week is advised by the ILO to be 40 (with a maximum of 48). See ILO, 1935.
- The number of hours per day are estimated between 8 and 10 hours per day (ILO, 2023). We did not ask farmers in Kenya or Vietnam about the number of hours in a working day, we leave it to farmers to specify what a day is. We assume 8 hours per day.
- The leave is based on our Dutch system, with 4 weeks off (20 days). And 10 public holidays, working 5 days per week (40hrs/week). This is similar to information by ILO, which indicates 15-18 days per year for leave (ILO, 2023). We use the same measures as in Netherlands, to ensure farmers and workers need to work the same number of hours and days as Dutch workers do to obtain a similar result: earning a Living income/living wage.
- We add 10 days of sick leave (reports on illnesses e.g. because of food insecurity/diseases), so we assume 10 days less available for work (Fair Work Ombudsman, 2023). Of course, farmers are not paid when sick, but they cannot be expected to work when ill and should earn enough in the remaining days to earn a living income. The maximum of sick days per year is 'one month' (102 countries), 11 days to

1 month (33 countries) or up to 7 days (3 countries) (ILO 2010).

This leads to the following number of days per FTE per year.

Total number of days per FTE 1: 5 days/week * 52		
2: 4 weeks off: holidays	-20	
3: 10 days off: public holidays	-10	
4: Sick leave / care days etc: 10 days	-10	
Result: # total days available per year per adult household member (FTE)	220	

Assumptions on the number of persons available for work per household

Kenya living wage benchmark:

- Rural Kericho: a household has 1.74 FTE.
- Rural Vietnam: a household has 1.87 FTE.

We calculated the FTE per household as follows.

- Households without children: the number of FTE is the same as the number of adult household members
- Households with children:
 - A household with one adult and one or more children: 0.5 FTE
 - If there are 2 adults and there are one or more children: 1.5 FTE. This is lower than the 1.74 and 1.87 FTE for a typical household in the Kenya and Vietnam but we conclude this is a rather high number of FTE in households with children because of the need for household chores, caring for children and the elderly etc. even if community members can help out. We also assume that the labour participation rate as observed in the data which is used in the benchmark studies is so high because people need to work much because of the need to maximise their income. We propose the establishment of the number of adult household members available for work to be discussed and

validated with the farming households and not base it on national statistics only.

- Households with children: each additional adult household member above two adds one FTE. So a household with 3 adults and children has 2.5 FTE etc.
- If the respondent is older than 60 years, we deduct 1
 FTE. This because 60 years is the official retirement
 rate in Kenya and also for men in Vietnam (in
 Vietnam it is 55 for women but as there are few
 women in the sample we used 60). We do not have
 data on the age of the other household members, so
 we could not reduce the FTEs available based on
 that.

Information on regression analysis

Regression analyses were performed to assess the influence of factors on net coffee income earned per day. Multiple regression analyses were performed to avoid factors influencing each other not being included in the same regression analysis, e.g. time spent by hired labourers on coffee production, and hired labour cost of coffee production, and the total number of days spent by all types of workers compared to the total number of days spent by hired and household labour.

The following analyses were performed:

 Whether households earning a living income per working day have different characteristics than households not doing so in terms of: gender, age of the respondent, the total number of household members, the total days spent on coffee production, coffee farm size, the proportion of total land used for coffee, the proportion of time the household spent on coffee production, input cost of coffee production, and the total volume of coffee produced

- 2. Whether households earning a living income per working day have different characteristics than households not doing so in terms of: gender, age of the respondent, the total number of household members, the total days spent on coffee production by household labour, the total days spent on coffee production by hired labour, coffee farm size, the proportion of total land used for coffee, the proportion of time the household spent on coffee production, input cost of coffee production, and the total volume of coffee produced
- 3. Whether households earning a living income per working day have different characteristics than households not doing so in terms of: gender, age of the respondent, the total number of household members, the total days spent on coffee production by household labour, coffee farm size, the proportion of total land used for coffee, the proportion of time the household spent on coffee production, the total cost of coffee production, and the total volume of coffee produced

In addition, the same analyses were performed to assess the association of these factors with total volumes of coffee produced by the household, as total coffee volumes produced were found to be an important factor explaining the likelihood of meeting the living income per working day threshold.

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