Check for updates

Sustainable Development

WILEY

Sustainable Development

RESEARCH ARTICLE OPEN ACCESS

Digging Deeper Into Living Income: Policies and Strategies for Rural Poverty Reduction in Tropical Value Chains

Ruerd Ruben

Wageningen University & Research, Wageningen, the Netherlands

Correspondence: Ruerd Ruben (ruerd.ruben@gmail.com)

Received: 3 January 2025 | **Revised:** 24 June 2025 | **Accepted:** 15 July 2025

Funding: The author received no specific funding for this work.

Keywords: income policies | living income | poverty line | pro-poor strategies | sub-Sahara Africa

ABSTRACT

Rural poverty alleviation programmes have adopted living income benchmarks as a major strategic goal. Much of the policy discussion centers around appropriate measurement procedures, while far less attention is usually given to concrete strategies for reducing existing living income gaps. This article digs deeper into possible opportunities for smallholder farmers and midstream value chain agents to reduce living income gaps. Therefore, it identifies major determinants of living income differences between production systems and countries and discusses policy options to create better prospects for improving living incomes. We rely on comparative cross-country data on living incomes and poverty lines combined with structural country-level characteristics and stylized farm-household models to identify major leverage points for mitigating the registered living income gaps. This analysis combines case study material from agri-food value chains in sub-Sahara Africa with statistical analysis on income gaps, drawing on theoretical discussions on the structural causes of income differentiation. Increasing our insights into the drivers of income differences and income gaps might enable us to bring the discussion on living income from principle to practice.

1 | Introduction

Living income is increasingly considered as an important strategic goal to guarantee that smallholder farmers' revenues are sufficient to meet the basic needs of their families, as well as to put aside some savings, thus being more likely to find their way out of poverty. While there is growing agreement on international standards for measuring living income (Anker 2006) and an active Living Income Community of Practice (LICOS) is involved to support its practical implementation, discussions on strategies and policies that enable smallholders to reach a living income still show much divergency.

Since the launch of the 'living income' concept, much attention has been given to the correct measurement of the costs for guaranteeing a decent living standard to smallholders (and workers) involved in agri-food commodity chains (Yao et al. 2017). A lot of effort and resources have been devoted to the estimation of living income benchmarks in a broad range of countries, for different commodities, in rural and (peri)urban locations and by different types of farms. This information is conveniently bundled in the ALIGN living-wage-and-income-dataset including more than 120 detailed field studies that measure living income benchmarks.

While a large part of current debates concern procedures for adequately measuring living income (from its key components: food, housing, health, water and sanitation, energy, child care, communication and unforeseen events) far less attention is given to the identification of suitable policy instruments and leverage points for reducing the living income gaps (Waarts et al. 2021; van Vliet et al. 2021). This article aims to assess the determinants of living income gaps at the microlevel (i.e., between different farm-households) and at the

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2025 The Author(s). *Sustainable Development* published by ERP Environment and John Wiley & Sons Ltd.

macrolevel (i.e., between different countries) in order to better understand the available opportunities for farmers, businesses and policy makers to overcome this injustice (van de Ven et al. 2021). The analysis is illustrated with empirical data on agri-food systems in sub-Saharan Africa that are currently facing large structural income gaps.

We analyse the main drivers of income differences in local and global settings in order to identify leverage points and opportunities for public and private stakeholders and to assess prospects for direct and/or indirect policy interventions to improve rural farmers' welfare. This is based on a disaggregated analysis of the determinants of household income as outlined by Odedokun and Round (2001) and Ravallion (2016) (see also: World Bank 2005). This framework draws attention to three key drivers for income differentiation (see Figure 1):

a. Farm-household characteristics (farm size, land use, assets, family size) and individual characteristics (age, gender, experience, etc.) that influence living wage requirements;
b. Value chain (VC) linkages that influence product-market opportunities (such as access to resources, prices and wages, etc.) that determine commercial and business strategies;
c. Community and regional characteristics (such as roads, water, electricity, communication services, social networks and norms) that together shape the agri-food environment.

This multi-level approach aligns with recent advances in development economics and agrarian studies which emphasise that income gaps are not purely individual but shaped by structural and institutional factors (Barrett et al. 2017). It resonates with the rural livelihood's framework (Ellis 2000) and inclusive VC approaches (Reardon and Timmer 2014; de Janvry et al. 1991) that highlight the interplay between household strategies, market dynamics and broader socioeconomic conditions. The proposed framework bridges a critical gap by integrating microlevel analysis based on agricultural household modeling (Singh et al. 1986) with sector- and country-level accounting analyses (Diao et al. 2012) for identifying suitable policy devices to reduce rural living income gaps in developing countries.

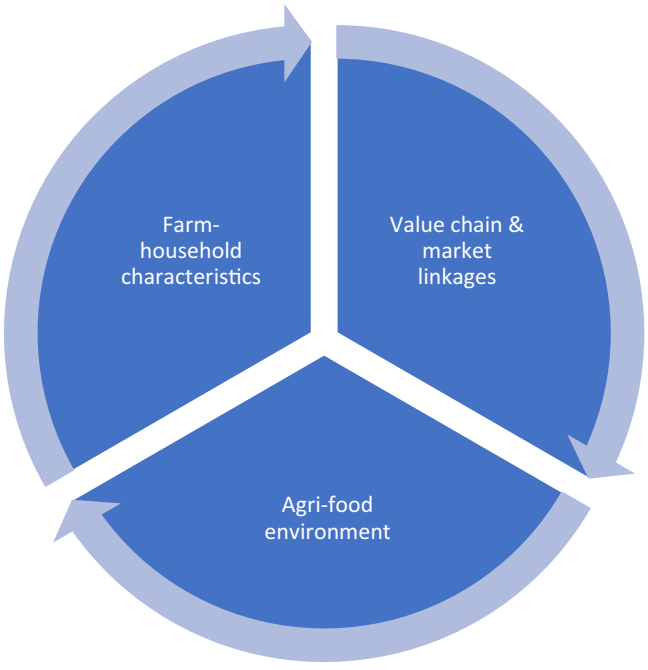

FIGURE 1 | Key drivers of rural income differentiation.

The purpose of this article is to identify some of the root causes for lagging income in rural areas of sub-Sahara Africa (SSA), looking at income determinants at multiple levels (Béné et al. 2019). Whereas individual factors influence microlevel opportunities for overcoming local bottlenecks, interventions at the regional meso-level are critical for reducing specific resource constraints. Changes in the institutional macro-environment might be necessary to improve the external conditions for food system transformation that create space for pulling-in the required adaptations at lower system levels.

We devote attention to specific drivers and opportunities at each of these system levels. The article contributes new insights on three specific topics. First, we compare different strategies that are available for reducing the living income gap at the farm-household level. Attention is given to four alternative strategies: (a) improving the production potential by reducing the existing yield gaps, (b) opportunities for increasing farm-gate prices for guaranteeing higher net revenues, (c) wider access to land resources, either through more land or better land use practices and (d) better access to labour markets through engagement in off-farm and non-farm employment. These strategies show rather different perspectives for reaching living income benchmarks. The feasibility of each of these strategies depends on individual capabilities (especially related to age, education and gender) and access opportunities to markets, resources, financial services and information.

Second, we recognise considerable differences in living incomes between countries and regions, as well as within countries between rural and urban settings. Moreover, living income benchmarks for the same location sometimes show variation due to different measurement procedures. Welfare gaps resulting from deviations of the living income benchmark and the prevailing poverty line could provide insight into specific constraints for poverty alleviation. These gaps are likely to reflect natural and institutional variation as some of the underlying factors for income generation.

Third, we discuss the opportunities for reducing the living income gap and the responsibilities of business parties involved in the agri-food supply chain and public sector agencies responsible for shaping the business environment. While most strategies for promoting living incomes focus on higher (farm-gate) prices and better delivery conditions offered by private traders, substantial gains can also be reached through public investments that improve overall linkages between farmers and market outlets. We therefore identify some structural causes in the institutional environment that may reduce living income gaps, thus creating the conditions for adjustment in production systems and livelihoods that reinforce the responsiveness to market incentives by marginalised farm-households.

This remainder of this article is structured as follows: Section 2 presents the analytical framework and outlines the data sources and the measurement procedures. Section 3 focuses attention on different types of micro-level

10991719, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/sd.70100 by ruerd ruben , Wiley Online Library on [21/07/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

farm-household bottlenecks in SSA agri-food supply chains and the technical and economic opportunities for improving living incomes. Section 4 looks at structural differences in living wages between SSA countries, distinguishing between pathways focusing on innovation and strategies toward structural market reforms. Section 5 broadens the analysis to global interventions that support food system governance and that could strengthen the opportunities for reaching living wage benchmarks. Section 6 concludes with a discussion on major challenges for future research and outlines some key policy implications.

2 | Analytical Framework

Living income benchmarks are defined to identify minimum living standards for farmers in rural areas. They include estimates of the monthly requirements of an average family for purchasing food, housing, health, water and sanitation, energy, child care, communication and a small amount for unforeseen events (Anker and Anker 2017). Living income benchmark calculations are based on norms for minimum household expenditures necessary to guarantee a decent living at local level (Yao et al. 2017). Differences between poverty and living income are likely to be influenced by farm-household and country-wide characteristics.

The living income gaps compares the net revenues from current household activities with the living income benchmark. In cases where farmers' livelihoods are strongly specialised in particular crops, returns to agricultural activities determine to a large extent the household income. For more diversified farming systems, farm income can be supplemented with other (non)farm revenues, including wages from off-farm employment, revenues from a non-farm self-employment and income from remittances (Banerjee et al. 2019).

In Section 3, we construct a stylized household model for four typical farm types that includes income from cropping activities and outside employment, where net revenues depend on market prices (for the crop output) and wages (for engagement in employment). The baseline reports current VC revenues based on costs and revenues that were collected under the EU-Agrinatura programme 'Value Chain Analysis for Development' (VCA4D) for different key commodities produced in several sub-Saharan countries. Living income benchmarks for rural households in each of the countries are derived from the ALIGN dataset. This data is used to estimate the size of the equivalent living income gaps.

We subsequently present a number of simulations to compare different pathways for bridging these income gaps (Waarts and Ruben 2022). We, therefore, rely on VC scenarios to better understand different pathways for reducing living income gaps (Akyüz et al. 2023; Donovan et al. 2015; Ruben et al. 2006). This requires a detailed reconstruction of the net crop revenues (costs of inputs and price of outputs at crop and plot level) and an assessment of the opportunities for increasing revenues through higher physical yields (increasing output per unit of land and labour) or by taking more land into production (through land conversion or hiring-in additional land). Otherwise, net income can increased by raising prices from farming operations and from higher wages from alternative use of family labour outside the farm. The latter calculations use nominal market prices at farm-gate level but and a deduction for transaction costs (for getting access to markets), taxes and other levies.

For the empirical analysis at cross-country level in Section 4, we started to analyse the relationship between living income (US$ per family per month) with the poverty line (US$ per family/month) for rural areas in 15 sub-Saharan countries for the year 2021. Poverty data are extracted from the World Bank Living Standards Measurement Survey (LSMS) that uses purchasing power parity (PPP) to account for differences in exchange rates. The composition of living income baskets may differ between countries due to dietary preferences or cultural standards. We finally distinguish between two different groups of countries that each exhibit specific economic opportunities and institutional constraints for reducing the poverty/living income gap. It appears that differences in the availability of physical and social infrastructure determine to a large extent the scope for reaching living income benchmarks.

In Section 5, we analyse how differences in the poverty/living income gap (measured as a percentage deviation of household income from the poverty level) can be related to structural differences in country-level development. We particularly look at the role of education (literacy rate), urbanisation (% of population living in cities) and communication (mobile phones per 100 inhabitants) as key leverage points for poverty reduction. Hereafter we estimated the relationship between living income (dependent variable) and the income-poverty gap (independent variable). In this analysis, living income becomes a function of a fixed intercept (reflecting country-level development as determined by resource availability, social and physical infrastructure, urbanisation and education) and a series of correlation coefficients that indicates how the poverty-income gap can be reduced by improving the availability of resources.

3 | Pathways for Closing the Farm-Household Living Income Gap

Rural farm-households are to a different degree engaged in agricultural and off-farm activities. Smallholder farmers are strongly focussed on farm production of particular (food or cash) crops and can only improve their income manly through more land, better yields or higher prices. Other farmers that also generate additional income from wage employment or self-employment in non-agricultural activities can also realise income gains through higher wages or more engagement into off-farm activities (Cordes et al. 2021; Waarts and Kiewisch 2021).

In order to assess the feasibility of each of these different strategies for reaching living income benchmarks, we explore the available opportunities for farm-households to improve their net revenues. We identified four different pathways for closing the living income gap at farm-household level:

a. increase land area: larger cultivated area or acquiring additional land (either for more productive use of existing land or purchase/hire/lease of additional land);

10991719, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/sd.70100 by ruerd ruben , Wiley Online Library on [21/07/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

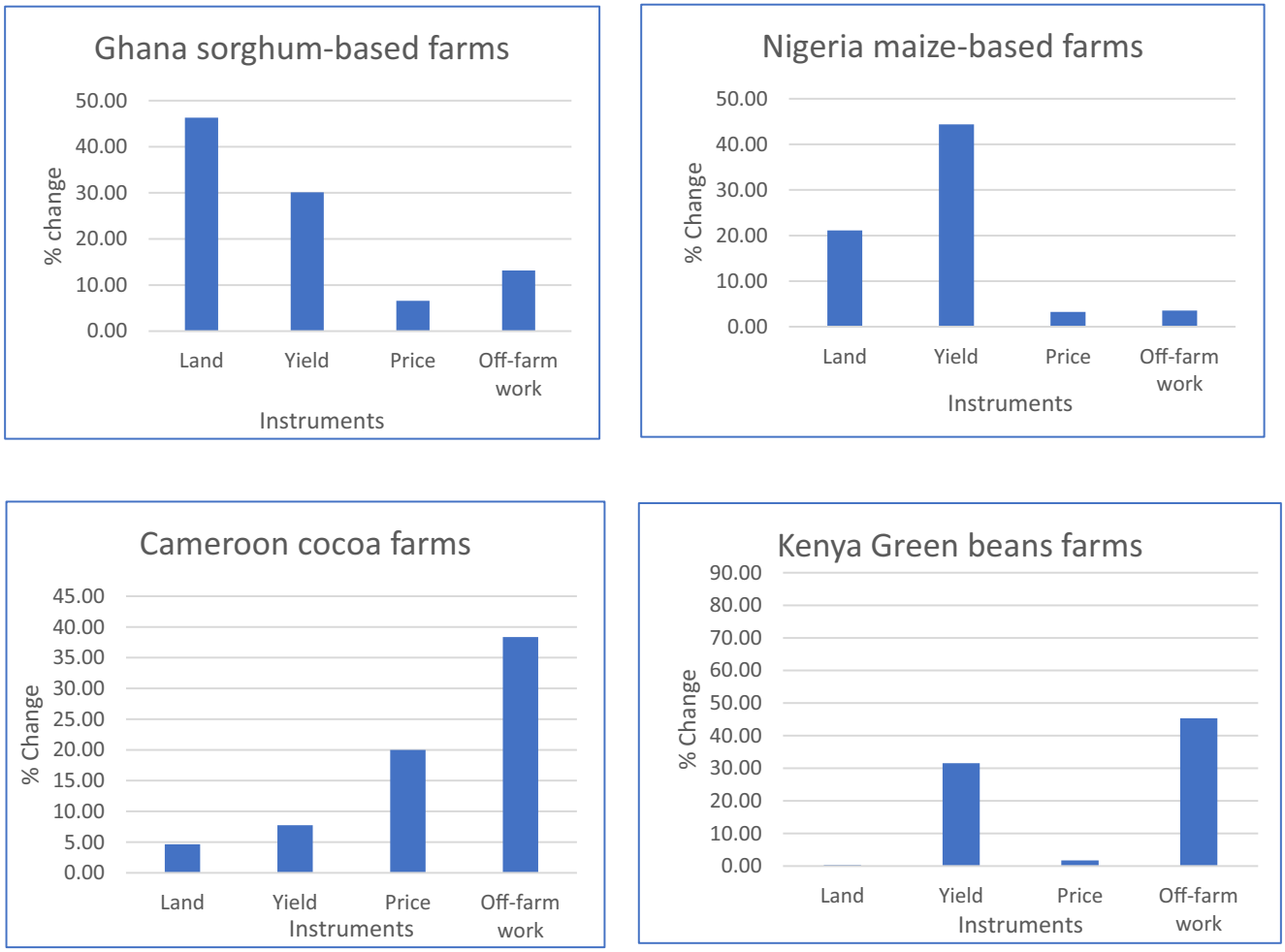

FIGURE 2 | Micro strategies for closing the living income gap.

b. improve technologies: increase yields by reducing the yield gap or controlling crop losses, using better inputs and seeds and more appropriate production technologies and knowledge;

c. higher prices: increase of crop prices for sales on markets (either through better bargaining or as the result of higher scarcity);

d. better wages: income from family labour generated from engagement in wage employment in off-farm or non-farm self-employment activities and/or from migration (remittances received from family members living abroad).

Figure 2 shows the percentual changes in each of the four instrument variables—compared to their initial baseline value—required to close the living income gap in the supply chain of key commodities in particular countries. In the baseline situation current incomes at market prices deviate from the living income benchmark. This gap can be filled by improving some of the instruments. The subsequent bars indicate percentual changes in each of the instrument variables required for reaching the living income benchmark. They provides insight into the most limiting factors that constrain the living income (Niles et al. 2015). A larger percentual increase in a particular variable indicates that more efforts have to be made for improving the required income. Note that this only refers to physical changes and still does not include differential cost estimates for reaching these changes.

Living incomes in food crops for local and regional market outlets (sorghum in Ghana; maize in Nigeria) are mainly constrained by intrinsic difficulties in increasing the farm area or improving crop yields. Therefore, reinforcing the incomes of smallholders can be better pursued at the extensive margin through higher prices and better employment and earning opportunities for family labour in the off-farm labour market. Many agricultural production systems have important margins for improving yields and reducing yield gaps, albeit at high costs and with major efforts. Yield constraints are not always determined by limited access to inputs or lack of knowledge, but may also be caused by scarce availability of complementary (family) labour, sometimes precisely due to their engagement in off-farm employment.

Cash crops (such as cocoa in Cameroon or green beans in Kenya), on the other hand, have more opportunities for reaching living income benchmarks at the intensive margin through investments for higher yields, land expansion and better prices. Making use of supply chain linkages with downstream VC partners, investments for improving input use and upgrading of farming systems can be afforded. Price premiums are sometimes promoted as part of certification programmes, but their effectiveness remains limited (van

10991719, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/sd.70100 by ruerd ruben , Wiley Online Library on [21/07/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Vliet et al. 2021). Engagement in off-farm employment proved to be a relevant strategy in almost all farming systems because rewards to labour outside agriculture are usually higher than on-farm labour remuneration (Vollrath 2014). This is even more the case for farmers involved in contractual cash cropping that usually have no spare land available and thus mainly rely on additional labour income for family maintenance.

When assessing the income composition of smallholder farmers involved in selected agricultural VCs with respect to their contributions for guaranteeing living income, four different agri-food system strategies for reducing living income gaps can be distinguished.

3.1 | Land-Constrained Smallholder Households

Smallholder farmers may need a considerable expansion of their cultivated cropping area for reaching the living income benchmark. This is particularly the case when farmers have small plots and local land markets constrain the opportunities to lease or purchase additional land, or if land prices are prohibitively high because of scarcity or competition. Land redistribution is only possible in rare occasions and does not automatically lead to better land use. When crop yields with current technologies face difficulties for improvement and output markets offer small margins, area expansion remains the main option for reducing the living income gap.

In SSA, opportunities for structural redistribution of land are limited, but land markets are quite dynamic. Jayne et al. (2022) show that land ownership is highly unequal and midsize farmers are becoming gradually more important, while land fragmentation affects the lower end of the tenancy range. Most SSA governments are rather reluctant to public land regulation and land policies are limited to land registration and titling, as done in some market-assisted land redistribution schemes (in South Africa). This implies that limited access to land and small farm size remain major constraints for realising living income benchmarks.

By definition, most smallholder farms are family-operated and severely constrained in reaching their living income benchmark due to the scarcity of land resources. Land constraints appear to be especially critical for staple food crops (such as sorghum in Ghana, and—to a minor extent—maize in Nigeria) that are usually cultivated at relatively small plots due to input constraints (limited access to improved seeds and fertilisers) and sparse availability of finance. Land constraints are less relevant for farmers involved in cash crop production that mainly grow at the intensive margin through the intensification of land use and improvements in yields. However, in some cases, this may be constrained due to newly emerging water constraints or climate change challenges.

3.2 | Yield-Constrained Smallholder Households

Some smallholder producers can still rely on yield-improving inputs and better land management practices for increasing their farm-household revenues. This strategy is preferred when there is a considerable yield gap (i.e., difference between actual and potential production) and therefore opportunities are available for applying improved seed and fertiliser packages to reach higher production (or lower crop losses).

van Ittersum et al. (2016) argue that the expected increase in food demand in SSA is not likely to be met only through closing the gap between current farm yield and potential yield on existing cropland. Their agronomical yield gap analysis for 10 countries in SSA reveals that there are still considerable technological options for yield gap closure, but these require rather complex components of intensification, such as higher cropping intensity (more crops grown on the same field), expansion of irrigated areas and more intensive use of improved inputs (seed and fertilisers). If such intensification is not successful and massive cropland expansion into forest areas is avoided, SSA is likely to depend much more on imports of cereals.

Almost all smallholder crops show important opportunities for increasing yield within their technical potential. But current yields would need at least to be raised by at least 30% in most crops for reaching the living income benchmark. Marinus et al. (2023) show that maize yields are mainly limited by cash constraints and not by technological limitations. Providing input vouchers to smallholders to support the narrowing of yield gaps can be especially helpful to larger and male-headed farm households that could get access to additional rented land.

Yield constraints are found to be a critical constraints for both food crops (such as sorghum and maize), as well as for commercial tree crops (such as coffee, cocoa and tea) and other export crops (such as cotton, green beans and mango). Whereas food crops can improve their yields through investments in better inputs (hybrid seeds, irrigation, etc.), commercial export crops also benefit from better land management and crop cultivation practices (mixed cropping, shadow trees, etc.).

3.3 | Market-Constrained Smallholder Households

Farmers with a considerable marketable surplus are facing low prices and could try to improve their net sales margins in order to approach the living income benchmark. Several low-input and/or high-value crops still have opportunities for getting higher output prices or improving their VC efficiency. Higher prices can only be reached when smallholders strengthen their bargaining position (i.e., through collective action) or when products become scarce in the market.

Ruben et al. (2022) outline that farmers that are linked to commercial midstream actors are better able to enhance their productivity, efficiency and profitability due to higher input use and more incentives for quality upgrading. Smallholder's access to input markets (for better seeds and yield-increasing fertilisers) strongly depends on the availability of credit and the collateral for borrowing. When smallholders are involved in contract farming with more permanent linkages to midstream commercial agents, they may be able to realize higher output prices and could also capture a larger share of the value added (Ton et al. 2017). Engagement in community networks (savings and credit associations) and cooperative systems (for joint processing

10991719, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/sd.70100 by ruerd ruben , Wiley Online Library on [21/07/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

and sales) is equally helpful for increasing market prices and raising sales margins towards living income levels. In addition, public investments in market infrastructure and (mobile) communication can support the competitive position of smallholders at local markets.

These situations mainly occur in cropping systems with high value added potential and constrained market competitiveness. In many settings, the output price should increase by at least 50% to guarantee a living income. Such improvements in market prices—with given yield level and production volume—are beyond reach for extensive export crops with minor local processing activities, such as cotton (Ethiopia), cocoa (Ghana, Ivory Coast) and coffee (in East African countries). Prices appear to be the most critical constraint in market settings with low competition between traders and/or limited supply chain transparency.

3.4 | Labour-Constrained Smallholder Households

Smallholders might be able to increase their engagement in off-farm employment as a key strategy for reaching the living income benchmark. This is mainly the case if they are involved in livestock production with low permanent labour use and extensive crops that mainly rely on seasonal labour demand. Moreover, incentives for on-farm intensification are limited when market wages are higher than farm-level returns to family labour.

Labour productivity in SSA smallholder farms is clearly stagnating and rural labour markets are segmented according to wealth, age, gender and schooling levels (Otsuka and Yamano 2008). Van den Broeck and Kilic (2019) show that off-farm employment constitutes a growing share of the household livelihood portfolios across Sub-Saharan Africa, ranging from 34% in Ethiopia to 58% in Malawi. The majority of jobs are self-employment in the informal sector where workers are poorly paid. Major drivers of entry into off-farm employment are related to demography, the occurrence of shocks and job characteristics.

Several low-rewarding cropping systems require considerable complementary income from off-farm employment to guarantee achieving a living income. Export crops like coffee in Tanzania and cotton in Ethiopia almost need to double engagement in off-farm work for reaching a living income. Food crop producing households in Ghana rely up to half of the income on off-farm sources, but engagement in off-farm employment is only viable for farmers that have surplus labour (large families) and in regions with a well-developed labour market.

In summary, we find that many smallholder farmers face multiple interlinked constraints that reduce their ability to reach living income benchmarks. Strategies for closing existing yield gaps or increasing the output price prove to be quite demanding. VCs may offer opportunities for overcoming living income constraints in market-oriented settings. In addition, outside options for engagement in off-farm work provide important additional income opportunities. Smallholders motives for selection amongst these strategies and their opportunities for strategic engagement with relevant markets largely depend on the available resource base and their abilities to invest under risky conditions.

4 | Living Income Differences Between Countries

For a better understanding of the underlying determinants of differences in living income levels between countries, it is worthwhile to take a closer look at the relationship between poverty lines and living income estimates. This enables us to identify the existing gap between poverty and living income and to systematically assess the opportunities for reducing this gap through meso-level interventions at a sub-regional or national level. Searching for a systematic and meaningful relationship between living income and poverty estimates (defined as the living income-poverty gap) permits a considerable reduction in time investments for the detailed field measurement and creates space to focus on country-level strategies for reducing the current living income gap.

Poverty line estimates by the World Bank might provide us with an acceptable proxy for the living income benchmark. Poverty line data is widely available and consistently considers differences in purchasing power and consumption habits between countries. These poverty lines are computed with large-scale surveys from nationally representative samples of households. This data is publicly available from open access sources, is regularly updated, and does not require the cumbersome collection procedures that are required to determine living incomes.

The gap between (rural) living income and (rural) poverty reflects disparities in welfare that can be based on either resource constraints or efficiency differences (Caselli 2005). Whereas the former constraints tend to be more important for poorer countries at lower development levels, the latter constraint becomes more relevant for emerging economies that search for higher returns to capital, land and labour (Acemoglu and Robinson 2012).

4.1 | Living Income and Poverty Comparison

We look at the relationship between farm-household income and rural poverty in 15 countries in sub-SSA for the year 2021. It appears that—on average—living incomes are 50% higher than poverty lines. In some countries (Uganda, South Africa, Nigeria and Ghana) the living income benchmark is twice as high as the World Bank poverty line, whereas in other countries like Kenya and Tanzania differences are small to negligible.

These differences are remarkable and require further exploration. In some cases, they may be caused by different measurement procedures or a different compilation of the minimum household survival requirements. The World Bank Living Standards Measurement Studies (LSMS) tend to focus more on basic health and nutrition needs, whereas the living income benchmark also considers childcare and unforeseen events. Moreover, LSMS studies construct household income from the production side (*how is income generated?*), whereas living

10991719, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/sd.70100 by ruerd ruben , Wiley Online Library on [21/07/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

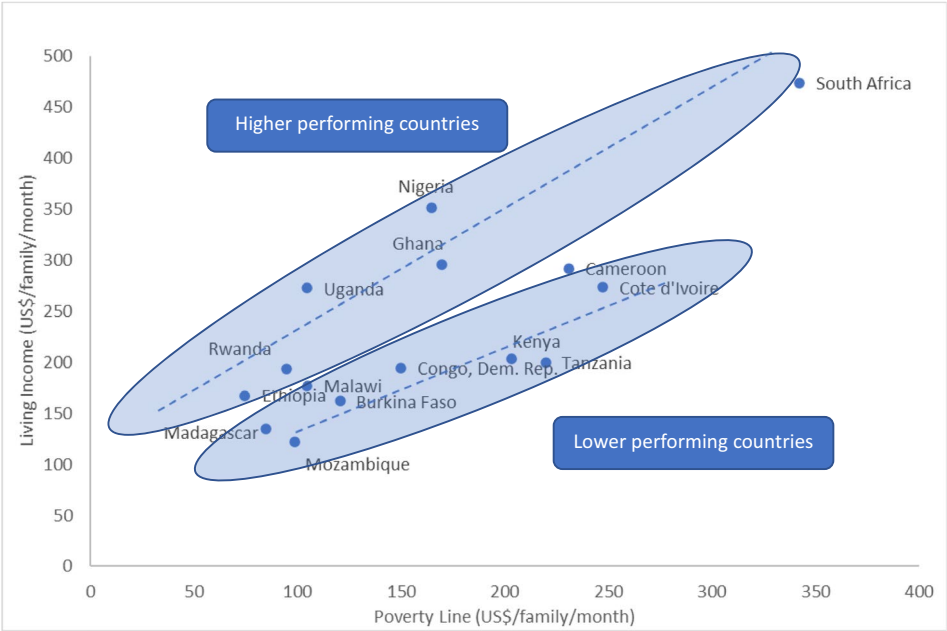

FIGURE 3 | Rural poverty and living income in high- and low-performing SSA countries (2021).

income studies start with the consumption level (*how is income spent?*).

For our analysis, we first plotted household income from a poverty perspective and a living income perspective for the 15 SSA countries (see Figure 3). The overall difference is almost 50%, but variation between countries is strong. In 13 countries the living incomes are substantially higher than the poverty line estimates (in three countries even more than double), whereas only in two countries the living income is slightly lower. This may point to a systematic difference.

We therefore estimated the overall regression function between living income (independent variable) and poverty (independent variable) and arrived at the following outcome:

$$\text{Living income} = 82 + 0.95 \times (\text{Poverty line})$$

The regression analysis shows that the living income aligns for 95% with the poverty line but with a structural baseline difference of $82. This means that the living income is generally $82 higher than the estimated poverty level. The overall relationship between poverty and living income is fairly robust: most observations are equally distributed around the estimated values and 61% of the difference is explained by the regression analysis. The explanatory variable (poverty line) proved to be very significant.

This does not mean, however, that the relationship between the poverty line and living income holds for all countries in the same way. Some countries (i.e., Nigeria, Ghana, Uganda) register substantially higher living income benchmarks, while other countries (i.e., Ethiopia, Rwanda, Mozambique, Madagascar) have a poverty line beyond the living income benchmark. This indicates that more disaggregation is required between different types of countries for reaching an acceptable average living income estimate.

4.2 | Country Differentiation

Countries with relatively high living income levels compared to the poverty line (> 25% higher) are characterised by stronger growth dynamics and their economies also tend to be more market-oriented. These 'higher-performing' countries face larger challenges to guarantee that domestic incomes satisfy minimum living conditions, since risks are high and access to innovations for improving factor productivity of land and labour remains limited. On the other hand, in several 'lower performing' SSA countries, the gap between poverty and living income levels is fairly small (and sometimes even negative), basically because there is still a lot of subsistence production and limited access to land, labour and capital markets that constrains opportunities for poverty reduction.

In order to reduce this heterogeneity—and thus to avoid too much variation between countries that respond to the same poverty-living income equation—we divided the sample into two groups (see Figure 3) that maintain low standard deviations on the key parameters and thus have on average less than 7% differences between what the equation delivers as living income estimate and what the field data effectively registered.

Based on this disaggregation, we can identify two different groups of country dynamics with a specific relationship between living income and poverty:

a. Lower performing countries: Living Income = $41.7 + 0.90 \times (\text{Poverty line})$ ($N = 7$, $R^2 = 79\%$)

Countries with lower levels of economic development, infrastructure limitations, less educational performance and lower mobile phone coverage start their development path at a lower income level (shown by the smaller intercept) and need more reduction in poverty to reach a subsequent improvement in living income (reflected in the lower coefficient of the flatter curve).

10991719, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/sd.70100 by ruerd ruben , Wiley Online Library on [21/07/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Typical representatives in this category mostly belong to the least developed countries such as DR of Congo, Burkina Faso, Cameroon and Mozambique.

b. Higher performing countries: Living Income = $87 + 1.02 \times$ (Poverty line) ($N = 8$, $R^2 = 85\%$)

Countries with higher rates of economic development, better infrastructure facilities, higher enrollment in education and more coverage of mobile phone networks have more favorable resource endowments (reflected by the higher intercept) and are therefore better able to translate reductions in poverty into improvements in living incomes (illustrated by the higher coefficient and the steeper curve). Typical countries in this category are emerging economies such as Nigeria, Ghana, Ethiopia and Rwanda.

These categories of countries are internally more homogeneous with respect to the Poverty Line—Living Income relationship, and therefore the estimated regression functions can be used as a suitable approximation for identifying the living income benchmark. This may not only save time and money that is nowadays invested in living income measurement, but can be used better to focus on pathways for reducing the income gap in practice. Given the structural differences between SSA countries, we can identify two specific poverty-reducing development strategies:

a. For lower performing countries that usually start with less physical and social infrastructure, opportunities for reaching and improving living income levels are likely to be based on strategies for enhancing *access to resources*, particularly land and/or opportunities for improving engagement in off-farm employment. This strategy mainly focuses on the extensive margin of development and tries to strengthen smallholder access to critical resources and markets. In statistical terms, this includes all efforts that lead to an upward shift (or rise of the intercept) of the income function.

b. For higher performing countries where initial resource conditions are better guaranteed, reaching living wages will depend especially on the strategies for increasing the responsiveness to poverty reduction by improving the *return to resources*. This is mostly related to crop innovations (i.e., yield gap reduction), improvements in cropping mix (i.e., crop diversification) or higher wages in (off-)farm work that could lead to a higher intensive margin of development. This pathway becomes available to countries that already have regular access to resources and now try to improve net revenues and incomes through more efficient resource use strategies. In statistical terms, this is translated into a steeper regression function that reflects better use and higher returns to available factors of production.

This better understanding of the relationship between poverty line and living income can be considered an attractive procedure for identifying structural conditions that explain differences in living income gaps between countries and regions, thus enabling a better identification of strategic opportunities for effective poverty reduction programmes to support poor people in reaching their living income benchmarks.

5 | Global Strategies to Support Living Incomes

Until now, much attention has been given to individual and regional determinants of poverty traps and living income gaps (Brady 2019). The focus on individual livelihoods is helpful to identify poverty reduction strategies that give priority to investments in human capital (education, health care, gender empowerment) and physical capital (housing, credit, land ownership) that raise the earning capacity of members of the farm-household. The focus on regional development leads to strategies for increasing resource productivity through better linkages with markets and institutions that provide resources and knowledge for improving land use and resource productivity. This may eventually result in the selection of a better crop mix, higher prices (or less price volatility) and enhanced opportunities for additional earnings from off-farm employment.

Far less attention has been devoted, however, to global strategies that try to strengthen the responsiveness of rural households to these changes in production and exchange conditions. Poverty reduction is more than just '*not being poor*' since escaping from poverty requires major behaviour changes that enable smallholder farmers and workers to improve their risk-taking capacity, develop trustful relationships with VC partners and assume a longer time horizon for their investment decisions, mainly based on the reinforcement of property rights, engagement in collective action and strengthening of bargaining power (Ravallion 2016).

Such interventions clearly go beyond the farm-gate and surpass the scope of local and regional markets and therefore require a broader set of national and sector-wide activities that could contribute to better governance and transparent markets, and thus reinforce social capital and bargaining power as well. In addition to supporting specific types of farm households and their access to rural factor markets (for land, labour and capital) and commodity markets (for inputs and outputs), key attention needs to be given to spatial strategies that reach a wider number of poor people living in marginalised communities. Pathways towards living income should therefore not only focus on combating the consequences of poverty, but try to identify the *root causes* of the problem. Changes in the global market and institutional environment create conditions for subsequent adjustment in production systems and livelihoods and thus contribute to a stronger supply response of marginalised farm households.

This implies that—instead of targeting individual farmers and workers involved in specific tropical supply chains—a broader *place-based* orientation is required of targeting poor regions rather than poor people (Grover et al. 2022). Even while this may result in some excessive coverage (i.e., non-poor households receiving assistance) it is likely to be more effective to improve overall production and living conditions in particular regions with a high incidence of chronic poverty. Some conditionality may be applied—such as asking for an in-kind contribution or requiring adherence to particular sustainable land use practices—in order to reinforce self-selection by poorer households, as shown by the recent experiences in cash transfer programmes (Bergstrom and Dodds 2020).

10991719, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/sd.70100 by ruerd ruben , Wiley Online Library on [21/07/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Living income benchmark calculations are based on norms for minimum household expenditures necessary to guarantee a decent living at the local level. The gap between poverty and living income (measured as percentage of the poverty level) is likely to be influenced by several country-wide characteristics (see Figure 4). We find—as expected—lower living income to poverty gaps in countries with stronger urbanisation and higher mobile phone coverage, revealing the importance of

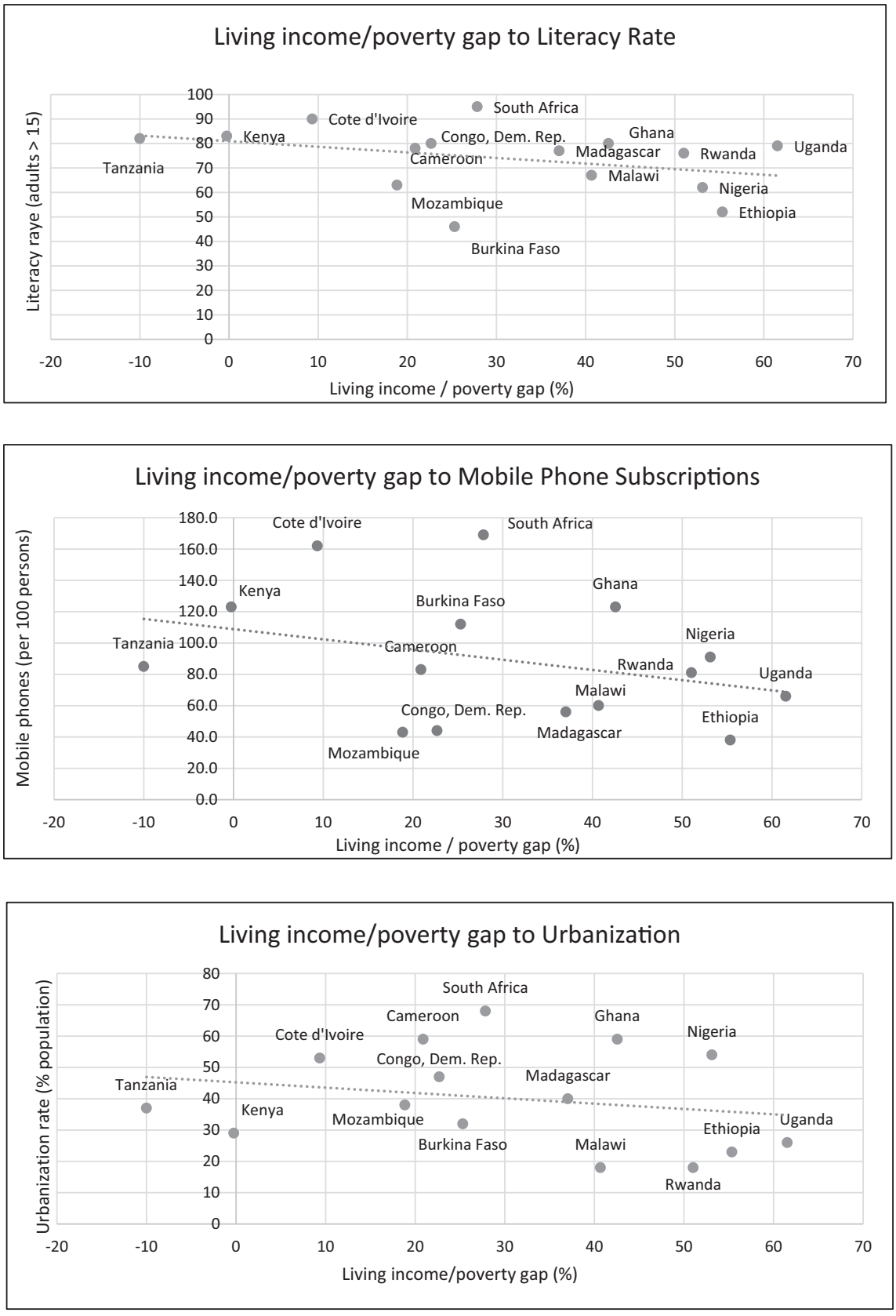

FIGURE 4 | Living income/poverty gaps by country characteristics.

10991719, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/sd.70100 by ruerd ruben , Wiley Online Library on [21/07/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

communication. Moreover, the living income/poverty gap also decreases with a higher degree of literacy and is expected to be negatively related to other development indicators, such as life expectancy and malnutrition.

We used the rural living income-poverty gap estimates for 15 sub-Saharan countries to identify the possible role of broader region-wide interventions on the income elasticities of some key variables, such as more education (adult literacy rate; % of people age 15 and above), higher urbanisation (% of total population living in cities according to national standards), or more mobile phones (number of connections by 100 persons).

We estimated the following regression function: *Living income = f (education, urbanisation, mobile phones). Note that this is a rather rude estimate that includes no fixed effects* but is provides us with some indication on the possible effects of public investments on poverty reduction.

Table 1 shows that several country-wide strategies for reducing living income-poverty gaps are able to generate substantive effects. Investments in education and mobile phones are particularly powerful for strengthening the income-generating capacity of poor households. Public investments enabling urbanisation could improve employment opportunities and support higher wages. Wider access to mobile phones gives farmers and consumers better access to market information and thus enhance their bargaining position. Investments in educational enrolment take more time but may eventually support labour productivity and contribute to the engagement of family labour into higher rewarding non-farm employment opportunities.

Other potential instruments for strengthening the institutional environment for living incomes could focus on land tenure regulation (i.e., land titling to stimulate farmers' willingness to invest in better land use practices), rural non-farm investments (such as creating off-farm employment opportunities and raising the rural wage rates) and primary health services (reducing the loss of working days and improving labour productivity).

This view widens the debate on 'living income' from the domain of individual characteristics, production properties and VC linkages to a more structural analysis of governance and institutional conditions that enable rural households to improve their economic returns to land and labour, increase crop prices and marketing margins and enhance wage labour opportunities. This may also open the way for identifying more direct and effective public interventions to reach living income benchmarks that go beyond the responsibility of private sector agents. The most effective way for strengthening prosects for reaching living income benchmarks might be based on well-articulated public investments and legislation that enhance the responsiveness of farmers and support the adherence of business enterprises.

6 | Conclusions and Outlook: Bringing Living Income From Principle to Practice

In this article, we reviewed different strategies for bridging the living income gap of smallholder farmers in several developing countries in SSA, discussing their practical possibilities and political feasibility. In line with analytical approaches that consider micro-, meso- and macro-determinants of households income, we looked at strategies at three different system levels.

Whereas individual factors (such as plot size, crop mix and labour use) influence micro-level opportunities for overcoming local poverty bottlenecks, interventions at the regional meso-level (such as improving market access and opportunities for technical innovation) are critical for overcoming binding resource constraints. Changes in the institutional macro-environment (infrastructure, education, etc.) might be necessary to strengthen the enabling external conditions for food system transformation by creating space for the required adaptations at lower system levels.

Our analysis of driving factors for enabling rural households to pursue their corresponding living income benchmarks shows that very substantial changes in land use, production systems, price margins and labour opportunities are required to raise farmers' welfare and reduce their poverty. Farmers involved in VCs that are strongly market-oriented have more options available for reducing income constraints, but market-based interventions alone are seldom enough for fully reducing living income gaps.

Therefore, it is important to look at strategies beyond VC upgrading that enable rural farmers to improve their household income. In addition to farm-level resource use adjustments, regional investments for structural reforms that broaden access to critical resources (land, inputs, employment) are required in less developed countries to broaden the extensive margin of agri-food production and trade. On the other hand, more developed economies benefit more from investments in training and innovation to increase their resource productivity. Differentiated strategies should be in place depending on the underlying causes in poverty-living income gaps.

TABLE 1 | OLS regression of living income-poverty gaps in 15 SSA countries (2021).

	Coefficients	Standard error	*t* Stat	*p*
Intercept	95.617	23.988	3.987	0.002
Education	−0.822	0.369	−2.228	0.048
Urbanisation	−0.916	0.267	−3.435	0.006
Communication	−0.272	0.124	−2.200	0.050

Note: $N = 15$; $R^2 = 0.59$; Adj $R^2 = 0.48$; Sign $F = 0.00$.

10991719, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/sd.70100 by ruerd ruben , Wiley Online Library on [21/07/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Finally, we considered the role of public investment for reducing the poverty-living income gap. It turns out that the gaps are considerably lower in countries with better education, higher urbanisation and more extensive mobile phone communication. This implies that—in addition to improvements in resource availability and market conditions—region-wide public investment strategies for strengthening the global socio-economic environment for all poor people in selected locations can be particularly effective in reducing living income-poverty gaps.

Based on these findings, the discussion on opportunities and possibilities for satisfying rural living income conditions could be substantially broadened. First, while much time and effort has been devoted to precise measurement of living income benchmarks, it becomes far more important to focus attention on concrete interventions that are effective for reducing income-poverty gaps. Given specific local circumstances and widely different VC configurations (Salignac et al. 2021), choices should be made between technical improvement (in land use and production systems) or reinforcing exchange conditions (better market prices and wages). While the former strategy mainly relies on stakeholder cooperation, the latter strategy is likely to lead to more social conflict and requires bargaining solutions.

Second, interventions for reducing the living income-poverty gap go beyond simple changes in local farm-level production and market arrangements, but require sector-wide adjustments for leveraging access to resources and innovations that make current resources more productive. This implies detailed insights into the underlying constraints behind the poverty incidence and a sound understanding of the key leverage points for reducing poverty-living income gaps. Structural differences between countries create different prospects for poverty reduction programmes either at the intensive or at the extensive margin.

Third, much of the discussion on living incomes is focused on business conditions for the production and marketing of specific commodities. It is considered relevant to broaden the analysis to institutional income and poverty determinants. Much of the poverty/living income gap can be reduced through public investments targeted to regions with a predominance of high living income deficiencies and strong poverty incidence. It is unlikely that private sector and VC partnerships alone are able to bridge living income gaps and therefore targeted public sector involvement in rural poverty reduction programmes (such as cash transfers) is urgently needed.

Ethics Statement

The author has nothing to report.

Conflicts of Interest

The author declares no conflicts of interest.

References

Acemoglu, D., and J. A. Robinson. 2012. *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. Crown Business.

Akyüz, Y., H. E. Salali, P. Atakan, et al. 2023. "Case Study Analysis on Agri-Food Value Chain: A Guideline-Based Approach." *Sustainability* 15, no. 7: 6209. https://doi.org/10.3390/su15076209.

Anker, R. 2006. "Living Wages Around the World. A New Methodology and International Comparable Estimates." *International Labour Review* 145, no. 4: 309–338. https://doi.org/10.1111/j.1564-913X.2006.tb00037.x.

Anker, R., and M. Anker. 2017. *Living Wages Around the World: Manual for Measurement*. Edward Elgar Publishing.

Banerjee, A., P. Niehaus, and T. Suri. 2019. "Universal Basic Income in the Developing World." *Annual Review of Economics* 11, no. 1: 959–983. https://doi.org/10.1146/annurev-economics-080218-030229.

Barrett, C. B., L. Christiaensen, M. Sheahan, and A. Shimeles. 2017. "On the Structural Transformation of Rural Africa." *Journal of African Economics* 26, no. 1: i11–i35. https://doi.org/10.1093/jae/ejx009.

Béné, C., S. D. Prager, H. A. Achicanoy, et al. 2019. "Understanding Food Systems Drivers: A Critical Review of the Literature." *Global Food Security* 23: 149–159. https://doi.org/10.1016/j.gfs.2019.04.009.

Bergstrom, K., and W. Dodds. 2020. "The Targeting Benefit of Conditional Cash Transfers." Policy Research Working Paper # 9101. World Bank. http://hdl.handle.net/10986/3315.

Brady, D. 2019. "Theories of the Causes of Poverty." *Annual Review of Sociology* 45: 155–175. https://doi.org/10.1146/annurev-soc-073018-022550.

Caselli, F. 2005. "Accounting for Cross-Country Income Differences." In *Part A: Handbook of Economic Growth*, edited by P. Aghion and S. N. Durlauf, vol. 1, 679–741. Elsevier. https://doi.org/10.1016/S1574-0684(05)01009-9.

Cordes, K., M. Sagan, and S. Kennedy. 2021. *Responsible Coffee Sourcing: Towards a Living Income for Producers*. SSRN. https://doi.org/10.2139/ssrn.3894124.

de Janvry, A., M. Fafchamps, and E. Sadoulet. 1991. "Peasant Household Behaviour With Missing Markets: Some Paradoxes Explained." *Economic Journal* 101, no. 409: 1400–1417. https://doi.org/10.2307/2234892.

Diao, X., J. Thurlow, S. Benin, and S. Fan. 2012. *Strategies and Priorities for African Agriculture: Economywide Perspectives*. IFPRI. https://doi.org/10.2499/9780896291959.

Donovan, J., S. Franzel, M. Cunha, A. Gyau, and D. Mithöfer. 2015. "Guides for Value Chain Development: A Comparative Review." *Journal of Agribusiness in Developing and Emerging Economies* 5, no. 1: 2–23. https://doi.org/10.1108/JADEE-07-2013-0025.

Ellis, F. 2000. *Rural Livelihoods and Diversity in Developing Countries*. Oxford University Press.

Grover, A., S. V. Lall, and W. F. Maloney. 2022. *Place, Productivity, and Prosperity: Revisiting Spatially Targeted Policies for Regional Development*. World Bank. http://hdl.handle.net/10986/36843.

Jayne, T. S., A. Wineman, J. Chamberlin, M. Muyanga, and F. K. Yeboah. 2022. "Changing Farm Size Distributions and Agricultural Transformation in Sub-Saharan Africa." *Annual Review of Resource Economics* 14, no. 1: 109–130. https://doi/:10.1146/annurev-resource-111220-025657.

Marinus, W., K. Descheemaeker, G. W. J. van de Ven, B. Vanlauwe, and K. E. Giller. 2023. "Narrowing Yield Gaps Does Not Guarantee a Living Income From Smallholder Farming—An Empirical Study From Western Kenya." *PLoS One* 18, no. 4: e0283499.

Niles, M. T., M. Lubell, and M. Brown. 2015. "How Limiting Factors Drive Agricultural Adaptation to Climate Change." *Agriculture, Ecosystems & Environment* 200: 178–185. https://doi.org/10.1016/j.agee.2014.11.010.

10991719, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/sd.70100 by ruerd ruben , Wiley Online Library on [21/07/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Odedokun, M., and J. I. Round. 2001. "Determinants of Income Inequality and Its Effects on Economic Growth: Evidence From African Countries." Discussion Paper 2001/103. UNU-WIDER.

Otsuka, K., and T. Yamano. 2008. *The Role of Rural Labor Markets in Poverty Reduction: Evidence From Asia and East Africa*. World Bank. http://hdl.handle.net/10986/9238.

Ravallion, M. 2016. *The Economics of Poverty: History, Measurement and Policy*. Oxford University Press.

Reardon, T., and C. P. Timmer. 2014. "Five Inter-Linked Transformations in the Asian Agrifood Economy: Food Security Implications." *Global Food Security* 3, no. 2: 108–117. https://doi.org/10.1016/j.gfs.2014.02.001.

Ruben, R., R. Kuijpers, and Y. Dijkxhoorn. 2022. "Mobilizing the Midstream for Supporting Smallholder Intensification." *Land* 11, no. 12: 2319. https://doi.org/10.3390/land11122319.

Ruben, R., M. Slingerland, and H. Nijhoff, eds. 2006. *Agro-Food Chains and Networks for Development*. Springer. https://library.wur.nl/WebQuery/edepot/137747.

Salignac, F., B. Bhatia, and A. Tallontire. 2021. "The Nature of Fair Trade Exchanges and Their Outcomes: Producer Voices in Vietnam and India." *Business Strategy and Development* 4, no. 4: 437–448. https://doi.org/10.1002/bsd2.169.

Singh, I., L. Squire, and J. Strauss, eds. 1986. *Agricultural Household Models: Extensions, Applications, and Policy*. Johns Hopkins University Press.

Ton, G., S. Desiere, W. Vellema, S. Weituschat, and M. D'Haese. 2017. "The Effectiveness of Contract Farming for Raising Income of Smallholder Farmers in Low-and Middle-Income Countries: A Systematic Review." *Campbell Systematic Reviews* 13, no. 1: 1–131. https://doi.org/10.4073/csr.2017.13.

van de Ven, G. W. J., A. de Valença, W. Marinus, et al. 2021. "Living Income Benchmarking of Rural Households in Low-Income Countries." *Food Security* 13: 729–749. https://doi.org/10.1007/s12571-020-01099-8.

Van den Broeck, G., and T. Kilic. 2019. "Dynamics of Off-Farm Employment in Sub-Saharan Africa: A Gender Perspective." *World Development* 119: 81–99. https://doi.org/10.1016/j.worlddev.2019.03.008.

van Ittersum, M. K., L. G. van Bussel, J. Wolf, et al. 2016. "Can Sub-Saharan Africa Feed Itself?" *Proceedings of the National Academy of Sciences of the United States of America* 113, no. 52: 14964–14969. https://doi.org/10.1073/pnas.1610359113.

van Vliet, J. A., M. A. Slingerland, Y. R. Waarts, and K. E. Giller. 2021. "A Living Income for Cocoa Producers in Côte D'ivoire and Ghana?" *Frontiers in Sustainable Food Systems* 5: 732831. https://doi.org/10.3389/fsufs.2021.732831.

Vollrath, D. 2014. "The Efficiency of Human Capital Allocations in Developing Countries." *Journal of Development Economics* 108: 106–118. https://doi.org/10.1016/j.jdeveco.2014.01.009.

Waarts, Y., and M. Kiewisch. 2021. *Balancing the Living Income Challenge: Towards a Multi-Actor Approach to Achieving a Living Income for Cocoa Farmers*. Wageningen UR. https://edepot.wur.nl/557364.

Waarts, Y., and R. Ruben. 2022. *Pathways for Reducing the Smallholder Living Income Gap in Agricultural Value Chains*. Agrinatura VCA4D. https://capacity4dev.europa.eu/library/presentation-living-income-and-vcs.

Waarts, Y. R., V. Janssen, R. D. Aryeetey, et al. 2021. "Multiple Pathways Towards Achieving a Living Income for Different Types of Smallholder Tree-Crop Commodity Farmers." *Food Security* 13: 1467–1496. https://doi.org/10.1007/s12571-021-01220-5.

World Bank. 2005. "Understanding the Determinants of Poverty." In *Chapter 8: Poverty Manual*, 124–136. World Bank. https://web.worldbank.org/archive/website01407/WEB/IMAGES/PMCH8.PDF.

Yao, C., J. Parker, J. Arrowsmith, and S. C. Carr. 2017. "The Living Wage as an Income Range for Decent Work and Life." *Employee Relations* 39, no. 5: 875–887. https://doi.org/10.1108/ER-03-2017-0071.

10991719, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/sd.70100 by ruerd ruben , Wiley Online Library on [21/07/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License