The Living Income
Community of Practice

FAIRTRADE

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

How to calculate (living income) reference prices of agricultural commodities

Practitioner's guide

V1.0

Authored by Tim K. Loos, Eberhard Krain, Carla Veldhuyzen van Zanten and Aaron Petri

October 2022

Supported by the

Federal Ministry for Economic Cooperation and Development

Implemented by

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

iseal

Sustainable Food Lab

Acknowledgments

Principle author:

Tim K. Loos| Evaluation Specialist, *Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)*

Eberhard Krain| *Independent Consultant*

Carla Veldhuyzen van Zanten | *Senior Advisor Sustainable LivelihoodsFairtrade International*

Aaron Petri | *Programme Coordinator, Fairtrade International*

Editor:

Nicola Nuecken |Junior Advisor for Sustainable Agricultural Supply Chain (INA), *Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)*

Funder:

GIZ

Technical Advisory Committee:

The authors would like to acknowledge the Living Income Community of Practice Technical Advisory Committee (TAC). The committee is composed of agricultural economics, income enumeration and livelihoods experts representing different stakeholder groups who actively engage with the Living Income Community. We would like to give special thanks to Nicola Nuecken (GIZ) who kindly commented on earlier draft versions of this guide and contributed by preparing figure 2 using the GIZ Living Income Reference Price Estimator Tool and the Living Income Community of Practice TAC (technical advisory committee) members for their review and contributions to this work.

Representatives from the Living Income Community of Practice:

Supported by the Federal Ministry for Economic Cooperation and Development

Implemented by giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

iseal

Sustainable Food Lab

FAIRTRADE

Abstract

Everyone who is serious about achieving decent livelihoods for smallholder farmers in commodity supply chains should acknowledge the need for sustainable prices paid at farm gate, as a critical element within an integral approach that enables farmers to earn a living income. There are several approaches to reach such a reference price which differ regarding calculation method and data assumptions. This practitioner's guide gives a transparent insight into these approaches and underlying assumptions, which can help to decide (i) which calculation method to use, and (ii) which production system and thus data to base the calculation on. While the methods were developed to calculate living income reference prices, in fact, it can be applied to any given benchmark, e.g., a poverty line, thus reflecting a universal method to calculate reference prices.

Table of Contents

1. Why do we need (Living Income) Reference Prices?

Increasing commodity prices for agricultural raw materials is likely the most straightforward way of increasing the income of smallholder producers. Ideally these prices are accompanied by effective policies that balance demand and supply and prohibit potential negative consequences such as deforestation or oversupply, which could backfire in exacerbating price volatility. Thus, an integral approach that enables farmers to earn a living income within global commodity supply chains should include sustainable prices paid at farm gate. A sustainable price is one that covers the cost of sustainable production and remunerates all labour inputs in accordance with the universal human right for everyone who works to "just and favourable remuneration ensuring for [themselves] and [their] family an existence worthy of human dignity …" (Article 23, UDHR).

Adoption of good agricultural practices, maximizing efficiencies and diversifying income sources are equally relevant levers to optimize farm yields and enhance income resilience and can contribute – if implemented well and conditions such as access to inputs, finance etc. are in place – to improve farmers' incomes. However, even when full-time farmers have reached their full productivity potential, the current market prices are often too low to provide a decent level of income. **Calculating a reference price serves to estimate the farm gate price necessary for a producer to reach a given income benchmark**, e.g., a living income benchmark or a poverty line.

This guide reviews the living income concept and derives the Living Income Reference Price (LIRP) model and its underlying principles. Although based on the same principles, the different approaches for calculating a reference price depend on two methodological choices related to (i) the calculation method, and (ii) the assumed agricultural production scenario and/or the respective database:

These decisions will have implications for data requirements as well as on resulting reference prices. Thus, this guide provides a transparent overview, outlining the commonalities and differences, with recommendations for uptake.

2. Decision 1: calculation method

Living income is defined as "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" (LICOP, 2021). Following this definition, a household depending on agricultural production must be able to generate enough revenue from agricultural activities, e.g., crop sales to cover its respective production costs and, in addition, to meet the given (living income) benchmark. The underlying logic can be transformed to show price as the key variable of interest. The corresponding mathematical notation for calculating a reference price is shown in equation 1.

$$(price * yield) - costs = benchmark \quad \rightarrow \quad reference\ price = \frac{benchmark + costs}{yield} \qquad 1$$

Rural households usually have several sources of income, including the focus crop for which a reference price is calculated, other on-farm activities, off farm income, and other sources of income. Thus, a focus cash crop or focus commodity often contributes only a part of the overall household income. It cannot be expected that the sales of this crop generate a full living income. This implies that the underlying base model needs to be adjusted.

So far, there are two ways to adjust the reference price calculation, i.e., by either looking into the income contribution of the different income generating activities, or by looking into the labour

requirement of the different income generating activities. In practice there are three approaches used by stakeholders.

The first approach is based on the ***income share***, i.e., the income contributed by the focus crop to the total household income, as a conversion factor in the reference price calculation. This approach is e.g., used by Fountain and Adams (2019). The underlying principle states that "If a crop contributes a certain share to the total household income, that crop should generate the corresponding share of a living income." Phrasing this as an example: If an average farmer earns e.g., 60% of his or her income from cocoa, 60% of a living income must be generated through cocoa (figure 1). This approach assumes that the income generated by a crop is identical to the amount of labour necessary for its cultivation. In our example this translates to cocoa producing 60% of income while using roughly 60% of household labour. It remains controversial if this assumption accurately depicts reality. While the authors prefer the second and third approach, the advantage of this approach is that it is easy in its application (usually not considering adequately the virtual cost of family labour which are difficult to obtain) but may give some good first indication on the possible level of a living income reference price.

The second approach is based on the ***labour share***, i.e., the actually deployed labour spent on the focus crop in relation to the total available household labour capacity, as a conversion factor. This approach was suggested by Krain and Steffens (2019) and used in a cocoa and cashew baseline study by Krain et al. (2021).

The calculation draws upon per area figures (e.g., hectares) for all required data and is therefore independent from actual land sizes. The underlying principle states that "If a crop requires a certain share of household labour, that crop should generate the corresponding share of a living income." Phrasing this in an example: A farmer invests 60% of his or her available labour in cocoa, therefore, 60% of a living income must be generated through cocoa (figure 1; see Krain and Steffens, 2019).

The third approach is also based on labour, but assumes ***full employment farm size***, i.e., cultivation on a land size that fully absorbs all available legitimate[1] household labour, which is considered a viable land size to generate a living income. The underlying principle states that "If a household can fully employ his or her workforce on a crop with adequate productivity, the crop should generate a living income". Phrasing this in an example: If a farmer invests all household labour on cocoa production, with full employment farm size, and using sustainable production practice to reach adequate yields, a living income should be generated through cocoa (figure 1; Fairtrade, 2019).[2]

[1] Excluding e.g., child labour.

[2] *Note:* Approach 2 can be extrapolated to a crop area that fully deploys the available household labour, in which case the deployed household labour equals the available household labour (or deployed household labour per available household labour capacity = 1), thus, in principle aligning with approach 3, provided that all other assumptions are set equal.

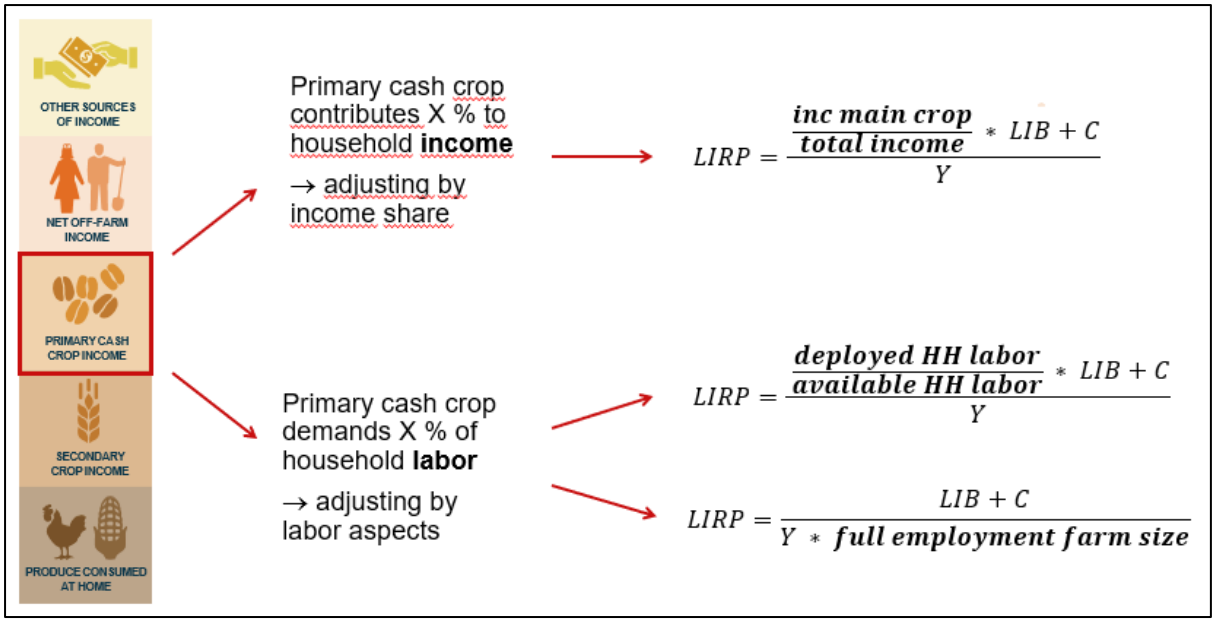

Figure 1: Approaches for calculating reference prices (where LIRP=living income reference price, LIB=living income benchmark, C=cost of production, Y=yield); Source: Authors

The second and third approach theoretically led to the same result of a living income (or other benchmark) reference price. However, the approaches differ with respect to data requirements.

2.1. Data requirements

For all three calculation approaches, information is needed on the key variables. Common *price determinants* include a living income benchmark or poverty line, yield levels, and production costs[3]. In addition, income shares, labour shares or information on fully employed land area are required.

Regarding the living income benchmark, the method developed by Anker & Anker (2017) is considered the most acknowledged approach and state of the art to establish the cost of a basic but decent standard of living for an average household in a specific context of interest. If there is no Anker benchmark available, alternative benchmarks may serve for orientation. However, these (e.g., poverty lines, minimum wages[4]) are usually substantially below the Anker Living Income benchmark and no true substitute. Based on the elements considered (food, housing, etc.) in different benchmarks, comparing these will result in a benchmark cascade which can be used to calculate a reference price ladder.

Yield and cost of production data need to reflect detailed production system information which are commonly used in gross margin or crop budget calculations. Gross margin data may be collected by different means, including literature reviews, expert interviews, and focus group discussions (with or without validation rounds), survey data based on recall questions, or farm record keeping books. These different data collection instruments have implications for reliability, representativity along with time and resource requirements to gather the information. In any case, the LIRP parameter values need to be validated either on-ground or through experts.

[3] Input of household labour is not considered a cost item.

[4] Most often minimum wages are representative for individuals, not households. The calculation of reference prices is always done for households. Therefore, when selecting minimum wages, or different types of benchmarks, the conversion to a reference household is fundamental.

Depending on the calculation method chosen, additional data is required, i.e., income relevant data for the first approach and data about household labour and labour deployment for the second and third approach. Approach three, additionally needs data on labour requirements per hectare, from which the full employment farm size is being derived. Further, as labour demand is not equally distributed over an agricultural production cycle, different assumptions on labour and other crops need to be made. Table A1 in the appendix elaborates the assumptions and data requirements for approach 2 and 3 in more detail.

3. Decision 2: production scenarios

While the income benchmark is universal to the three calculation methods, the values for all other variables vary to a certain extent, depending on different assumptions regarding the production system. Regardless of the selected calculation method, the underlying scenario will lead to higher or lower reference prices. In practice there are three production system scenarios (figure 2).

The first scenario assumes the ***prevailing production system*** and is based on primary or secondary household level data and therefore builds on production costs and yield levels achieved and invested by farmers. This scenario draws upon mean (or median) figures and therefore reflects the situation of ***an average or a typical farmer***. The data may be based on cross-sectional or panel data from specific surveys, or on published national data available at different aggregation levels[5]. The reasoning behind this scenario is to base the calculations on the actual situation of farmers. This allows advocating implications for the average farmer and thus builds the case for the majority of farmers.

The second scenario assumes the ***improved production system*** and is based on primary or secondary household level data and therefore draws upon production costs and yield levels achieved by the best performing farmers. Rather than using the average farmer (prevailing production system), this scenario stratifies farmers into segments or clusters reflecting different levels of efficiency and profitability. Reference price calculations focus on the ***(most) profitable farmer segment***, thus assume a higher yield level and related costs of production. The stratification can be selected depending on ambition, e.g., the best tercile, quartile, quintile, etc.

Scenario 2 allows a more holistic approach when calculating a reference price. Price cannot be the single lever to reach a living income (or another benchmark). Optimizing farm productivity and profitability through sustainable agricultural practices and other measures must be considered, too. Looking at the most profitable farmer segment shows yield levels that are already achieved by a share of farming households. Therefore, these yields can be considered realistically achievable and may serve to determine short to medium term productivity goals for all farmers. However, the potential to professionalize farming does have limits, and therefore, other stakeholders need to contribute their fair share to achieve systemic improvement. This includes paying higher prices.

The third scenario uses a ***model production system*** and usually refers to a system ***with good agricultural practice***, sustainable yield, and productivity levels as well as related costs of sustainable production.[6]

To estimate realistically achievable yields per hectare based on the adoption of sustainable agricultural practices, expert opinions, focus group discussions and literature are triangulated and used for cross-validation. Productive crop area may be reduced to factor in continuous crop renovation and

[5] Use case example for this approach are: a consultation paper by the Voice Network and the Südwind Institut for the Cocoa Barometer (Fountain and Hütz-Adams, 2019) or the www.verifiedlivingincome.com pilot in which actual farm data is used to calculate prices for average coffee farmers.

[6] In fact, any type of production system may be modelled ranging from unproductive to ideal production system.

optimization of the crop life cycle[7]. The production costs account for all agricultural labour including family and hired labour[8] inputs, required to implement sustainable agricultural practices to achieve the target yields. Like scenario 2, the reasoning behind the good agricultural practice model is to include the holistic understanding that all stakeholders in (international) supply chains must contribute to close the gap towards living incomes This also includes the farmers responsibility to manage their land and natural resources well. But with evidence showing that farmers often cannot cover the costs of sustainable production working towards sustainable production and decent livelihoods must be accompanied by appropriate farm gate prices, long-term purchasing commitments, etc. to complement each other.

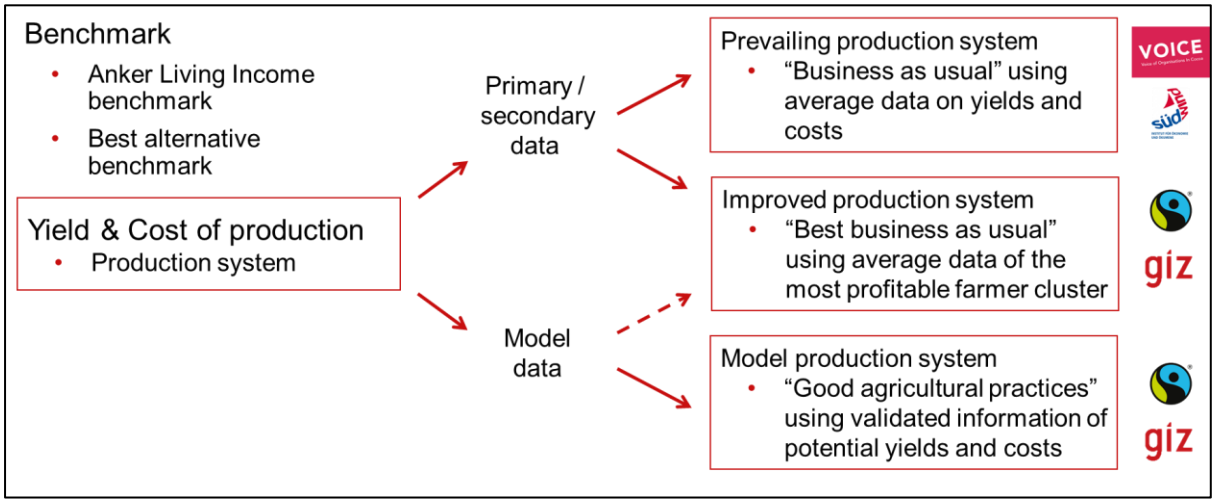

Figure 1: Potential production scenarios and data base for reference price calculation; Source: Authors

3.1. Reporting, visualizing and interpreting results

Depending on the aim of the exercise and data availability, one specific reference price like the living income reference price, or a set of reference prices considering different production scenarios or benchmarks can be calculated. Results of the calculations can be reported as absolute numbers, which, for example, is done in the case of the Fairtrade Living Income Reference Price (FLIRP) or the reference price used by Tony's Chocolonely, or in relative terms expressed as a price gap in percent. Such figures can be used for awareness raising, developing development strategies or price negotiations. The implications of assuming different scenarios are displayed in figure 3 and shows the reducing effect of an improved production system on the reference prices. Displayed are current prices (grey horizontal line) and reference prices (coloured bars) for different reference benchmarks. Even when considering optimal productivity, the Living Income is often not reached. This highlights the responsibility to address the topic of sustainable pricing.

[7] Alternatively, crop rejuvenation or refilling can also be considered indirectly by building an estimated yield reduction as a result of newly planted trees into the total expected yield.

[8] Hired labor must be remunerated on a Living Wage level to account for decent livelihoods for all involved parties in the LIRP calculation.

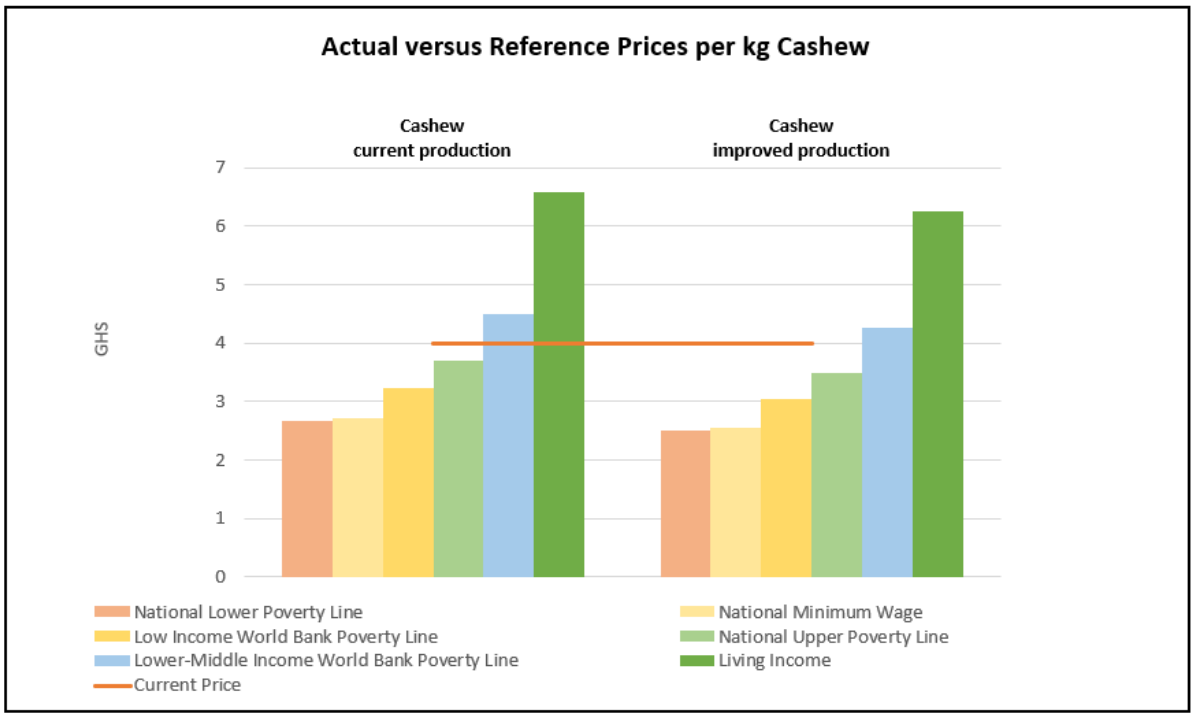

Figure 3: Reference prices for different production scenarios; Source: based on Krain et al. (2021); Figure: generated by GIZ (Living Income) Reference Price Estimator (2022)

4. Summary and Recommendations

This document provides practitioners with background and guidance for calculating living income reference prices. A Living Income Reference Price is a powerful tool for any company to act and assume its responsibility to enable living incomes for farmers in their supply chain. However, individual calculations of Living Income Reference Prices will most likely lead to significantly different outcomes, due to the high data sensitivity for each of the variables. This may create confusion and undermine its potential to create a level playing field within a sector and allow for impact at scale. Therefore, independently calculated Living Income Reference Prices can serve as an important advocacy instrument to move a sector towards paying sustainable prices. In order to avoid unintended consequences, the price discovery model should be applied with caution and take into account:

- *Data quality*: data inputs should come from reliable sources and cover a representative sample of the target population. A combination of primary and secondary sources, including reality checks and validation loops with key stakeholders, maximizes reliability.
- Alignment: In case of multiple interested parties for a certain reference price it is important to avoid multiple values inhibiting collective action. Thus, it is strongly recommended to pool efforts and datasets to agree on the underlying assumptions and arrive at a single reference price applicable to the specific product and origin, with support of independent bodies.
- *Calculation method*: Human rights principles are related to labour, which implies that the labour-related calculation approaches (2 and 3) should be preferred. This results in higher advocacy value of the resulting Living Income Reference Price.
- *Benchmarks*: An Anker living income benchmark should be the preferred reference for a living income because it establishes a cost of living for a basic but decent life in accordance

with human rights. Anker benchmarks are broadly recognized as the gold-standard for its robust research methodology. Other income benchmarks can be used as additional references to assess the relation of actual income to a critical or seriously critical income situation.

- *Production scenario*: Recognizing the need for a holistic concept where all stakeholders must contribute and work towards achieving decent livelihoods for smallholder producers, focussing on profitable farmers, or modelling good agricultural practice scenarios consider the farmers' part to professionalize production. Simultaneously, it shows that this will not suffice and stresses the importance to increase farm gate prices to be at par with a living income.

5. References

Anker, R. and Anker, M. (2017): Living Wages around the world. Edward Elgar Publishing/Elgaronline. https://doi.org/10.4337/9781786431462.

Fairtrade International (2019): Fairtrade Living Income Reference Price model (available at https://www.fairtrade.net/issue/living-income#lirp, accessed 06/2021)

Fountain, A.C. and Hütz-Adams, F. (2019): Necessary Farm Gate Prices for a Living Income. Consultation paper. Cocoa Barometer Consortium. (available at https://www.voicenetwork.eu, accessed 06/2021)

Krain, E.; Gyimah, O.J.; Pumpuni, I.; Kwapong-Akuffo, N. and M. Kuntze-Fechner (2021): Analysis and Report of a Baseline Study for a Living Income (and Other Benchmarks) in Cashew and Cocoa Growing Regions of Ghana. GIZ Competitive Cashew Initiative (ComCashew) and the Sustainable Agricultural Supply Chain Project (INA), Bremen, DE and Accra, GH.

Krain, E. and Steffens, L. (2019): Living Income Reference Pricing Tool, a Handbook to Determine Reference Prices for Agricultural Commodities Based on Benchmarks (Draft), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Bonn

Living Income Community of Practice (2021): Definition of living income. (Available at www.living-income.com, accessed 06/2021)

Loos, Tim K. and Nuecken, N. (2022): The GIZ (Living Income) Reference Price Estimator. (Available at http://live-ina.ichwillfair.de/en/tips-tools/ accessed 04/2022)

6. Appendix

variable	Approach 3: e.g., Fairtrade/Tony's (FLIRP)	Approach 2: e.g., GIZ
Cost of a basic but decent but basic standard of living (Living Income)	Prevailing Living Income benchmark (Anker methodology) minus in-kind value of food crops grown for domestic consumption	Prevailing Living Income benchmark (Anker methodology) or any given alternative benchmark (e.g., poverty line, minimum wage, sector wage)
Cost of sustainable production	Variable costs of inputs per hectare + hired labour costs at a living wage rate, after available household labour is fully absorbed on farm + fixed farm costs	Variable costs of inputs per hectare + hired labour costs at living wage rate, e.g., based on average hired labour needs + Depreciated values or lease costs for major farm assets
Yield	Realistic sustainable target yield	Realistic sustainable target yield Average yield of most profitable farmer segment Average yield of farmers
Farm size	Full-employment farm size	Typical area unit (e.g., 1 ha)
Diversification	The model is based on a single focus crop, assuming that any alternative crop a farm is diversified with – except for food crops for home consumption - would be equally profitable as the target crop. Farm produced food for domestic consumption is deducted from the total cost of decent living, based on its actual market value.	The model facilitates the calculation of a reference price for each individual crop or livestock, in proportion to the actual labour input. Food crops for home consumption are considered as any other crop for which a living income reference price can be calculated.
Application	Establishment of crop & origin specific reference prices in the context of farming systems with a predominant focus crop accounting for a major part of the household income.	Calculation of a reference price for any specific target crop within complex diversified farm economic models
Challenges	Lack of readily available data: Accurate farm economic data - particularly on labour needs relative to productivity - are needed to determine a full-employment farm size. Consensus around a realistic target yield level is difficult to reach and requires robust data of yields obtained when implementing good agricultural practices.	The model needs reliable gross margin data (input and output data on agricultural production) of the focus agricultural activity for which the reference price is calculated. Data on required labour input per area unit may be difficult to get. Data on estimating the labour capacity[9] is also often not properly available.

[9] the labour capacity can be worked out from "labour participation rates", data that are collected by statistical offices (however, these may be sometimes flawed) and be combined with household data of typical smallholder households (see chapter XIII of Anker and Anker, 2017)