

# Assessing coffee farmer household income

## Executive Summary

2017

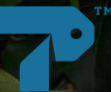


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# Introduction



# About this study

## Motivation for this study

- **Create insights** on current farmer household income sizes and distribution in seven coffee producing countries
- **Develop method** that is rigorous yet sufficiently practical (cost-effective) to be scaled up and used as a permanent tool together with the calculation of Costs of Sustainable Production (COSP), with the aim of improving strategy and policy development as well as the Fairtrade Minimum Price (FMP) calculation
- **Improve the income** of smallholder farmers through FMP setting and Fairtrade Premium Projects
- **Build up knowledge** on measuring farmer income internally and potentially shape the international debate on this topic

## Scope of study

- In this study a **method to measure total farmer household income** was developed and applied to the COSP data collection in 2016, thereby creating a baseline farmer income database for Fairtrade smallholder coffee farms in **7 countries** (Rwanda, Tanzania, Uganda, Kenya, India, Indonesia and Vietnam), covering 465 farmers.
- This study started in **October 2015**, data was collected by Fairtrade's liaison officers from February to August 2016, preliminary results were discussed with experts and local data collection partners and the final report was delivered in **2017**.
- The method was **co-developed by True Price and Fairtrade**, based on True Price's expertise with producer income calculation models and Fairtrade's expertise with COSP calculation

## Key insights

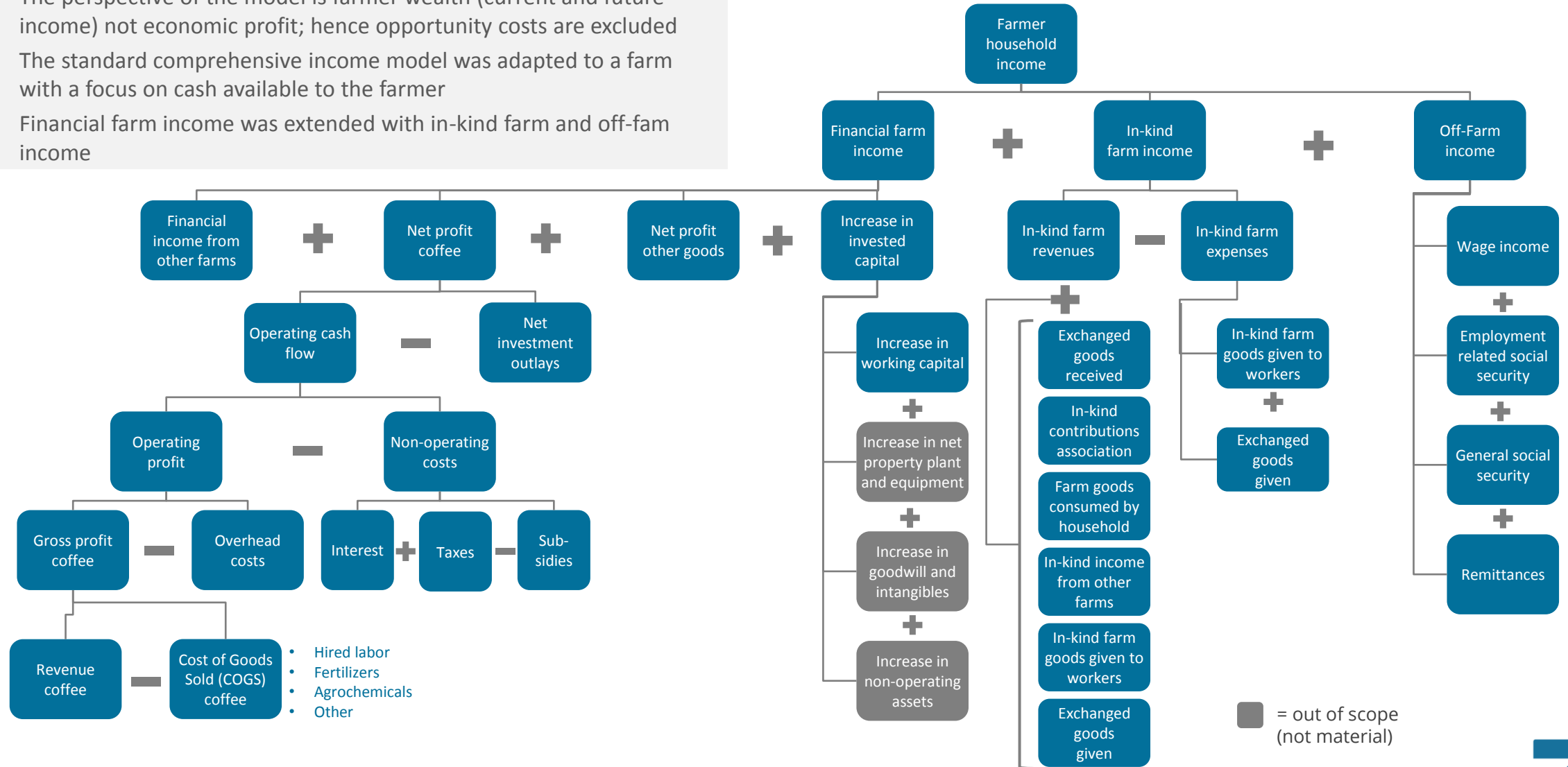
- This study provides insight into the distribution of the coffee farmer household income and shows that about **50% of household income results from coffee production**. Other large contributors are income from other farm goods and off-farm wage income
- This study shows that Indonesian and Vietnamese coffee farmers have the **highest household incomes**. Indonesian farmers have the highest coffee profitability, which results from relatively low costs of production. Although almost a quarter of Kenyan farmers are making a profit, Kenyan farmers on average make a **loss on coffee production**.
- This study shows that on average Indian, Indonesian and Vietnamese farmers earn a **living household income**, but only Indonesian farmers currently earn a living household income from coffee production alone

# Methodology



# Overview farmer income model<sup>1</sup>

- The perspective of the model is farmer wealth (current and future income) not economic profit; hence opportunity costs are excluded
- The standard comprehensive income model was adapted to a farm with a focus on cash available to the farmer
- Financial farm income was extended with in-kind farm and off-farm income



<sup>1</sup>An explanatory list of the variables is provided in the appendix





*Key results*



# Key sample info



Rwanda

Tanzania

Uganda

Kenya

India

Indonesia

Vietnam

Average farm size (hectare) / average area of coffee production (hectare)

1.00 / 0.43

0.96 / 0.96

1.09 / 0.57

0.71 / 0.23

1.31 / 0.66

1.17 / 1.17

1.90 / 1.90

Average yield (kg dried cherry/hectare)

1.625

688

702

1.959

1.559

Average yield (kg green coffee/hectare)

812

344

351

980

779

1.720

5.193

Average yield (kg parchment/hectare)

1.015

430

439

1.224

974

4.217

6.491

Average total sales (USD/farm)

\$1.446

\$703

\$496

\$1.608

\$2.406

\$7.598

\$15.112

% of total sales revenues from coffee

50%

80%

65%

36%

36%

97%

79%

% of revenue from coffee sold as Fairtrade

100%

45%

75%

7%

64%

83%

55%

Household FTE/hectare

2.85

1.73

3.82

1.23

0.29

0.99

1.03

Hired FTE/hectare

1.62

0.63

0.38

2.00

0.52

0.44

0.47

Average household size

4.8

5.52

5.68

3.35

4.35

4.15

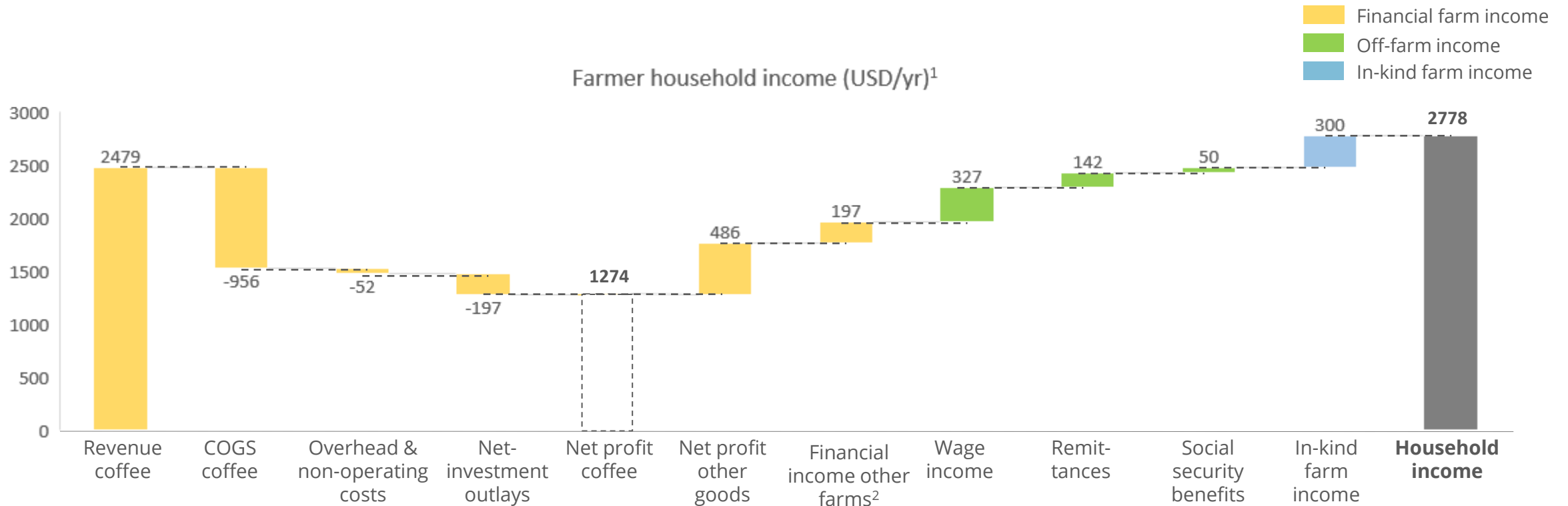
4.06

Yields were reported in dried cherry, parchment or green coffee. However, for comparability reasons, all yields in this table in row 2 were converted to dried cherry, in row 3 to green coffee and in row 4 to parchment. The most reported units were green coffee for Rwanda, dried cherry for Tanzania, dried cherry for Uganda, green coffee for Kenya, dried cherry for India and parchment for Indonesia and Vietnam. The conversion ratios that were used were 1,6 for dried cherry to parchment and 2 for dried cherry to green coffee. Tanzania, Uganda, India and Vietnam are reporting for Robusta and Indonesia, Kenya and Rwanda are reporting for Arabica. In the semi washed process in Indonesia the coffee is processed from fresh cherry to dried parchment and then to green bean. The amount of dried cherry has not been reported in Indonesia and Vietnam. The conversion from parchment to green bean is 0.41. The percentage of revenue from coffee sold as Fairtrade in Tanzania was provided by the local partner (expert) and was not obtained directly from the questionnaires. One FTE represents a Full Time Employee which consists of 48 weeks/year, 5 days/week, 8 hours/day. The FTE's reported here are the FTE's working on coffee production only. All average yields are per hectare of area of coffee production. The FTE's reported here are the FTE's working on coffee production only.





# Results: Distribution of farmer household income



## Key insights

- Financial farm income contributes 70% to the total household income
- 65% from the financial farm income comes from profit on coffee production, 25% from profit on other goods and 10% from other farms (which might also be coffee producing farms)
- Wage income contributes 12%, remittances 5% and in-kind farm income 11% to the total household income .
- The other farm goods that contribute most to the net profit from other goods are milk (35%) and pepper (29%)
- 16% of costs of coffee are net-investment outlays, consisting of the costs of warehouses, tools, equipment, machinery etc.

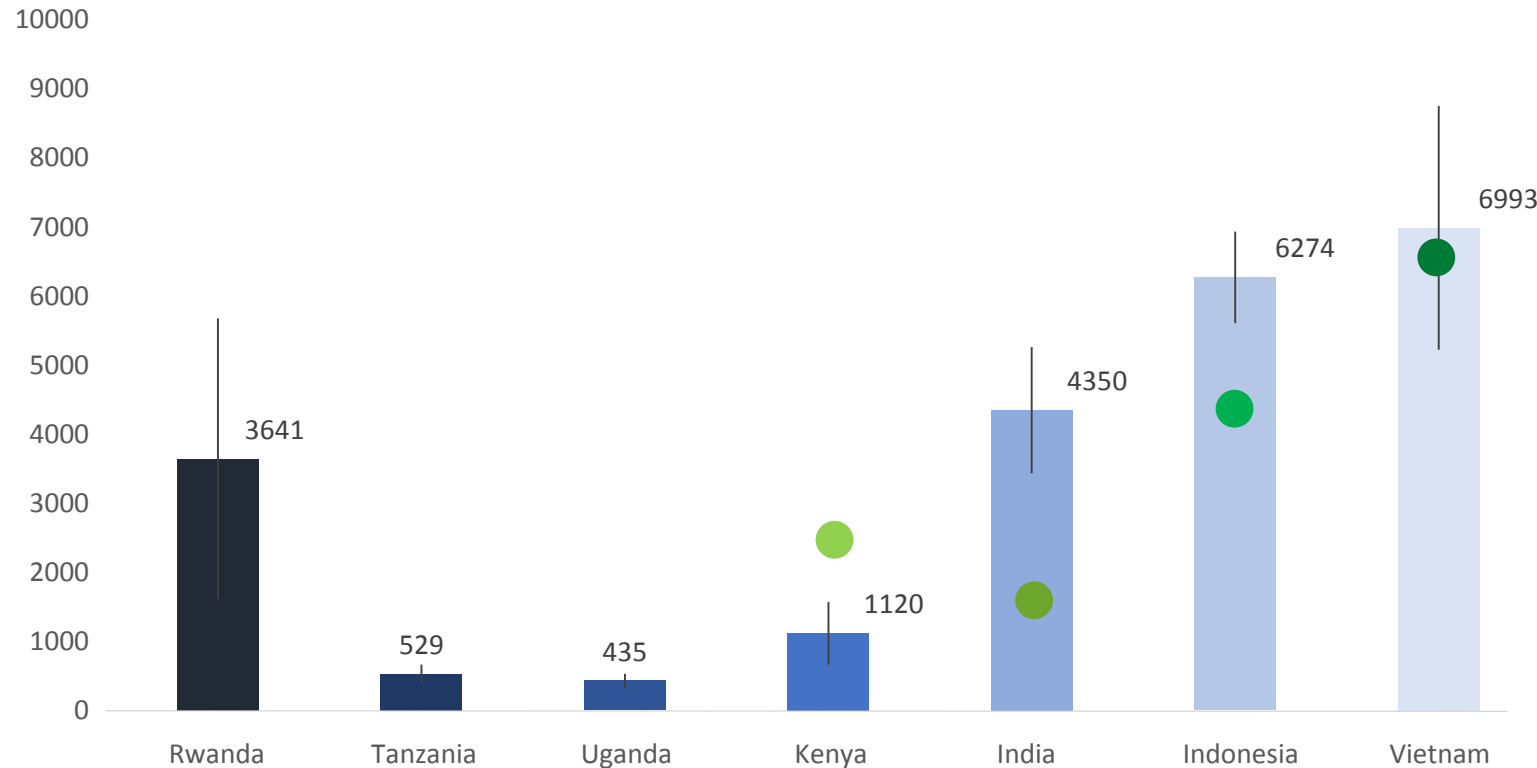
<sup>1</sup>Fairtrade Premium projects are not included in the household income

<sup>2</sup> Only 25% of the farms receive financial income from other farms. For the farms that do receive financial income from other farms, this consists of 23% of their total farmer household income



# Results: Farmer household income per country

Farmer household income (USD/yr)



## Key insights

- Indonesia and Vietnam have the highest average household income; Tanzania and Uganda have the lowest household income
- Household income estimates are most robust for India and Indonesia, whereas estimates for Rwanda have a high uncertainty
- When corrected for Purchasing Power Parity rates, the order of household incomes between countries does not change
- In Vietnam, India and Indonesia the average household income lies above the living income; In Kenya the living income is more than twice as high as the average household income

Average household size	4.8	5.52	5.68	3.35	4.35	4.15	4.06
Average farm size (hectare)	1.00	0.96	1.09	0.71	1.31	1.17	1.90

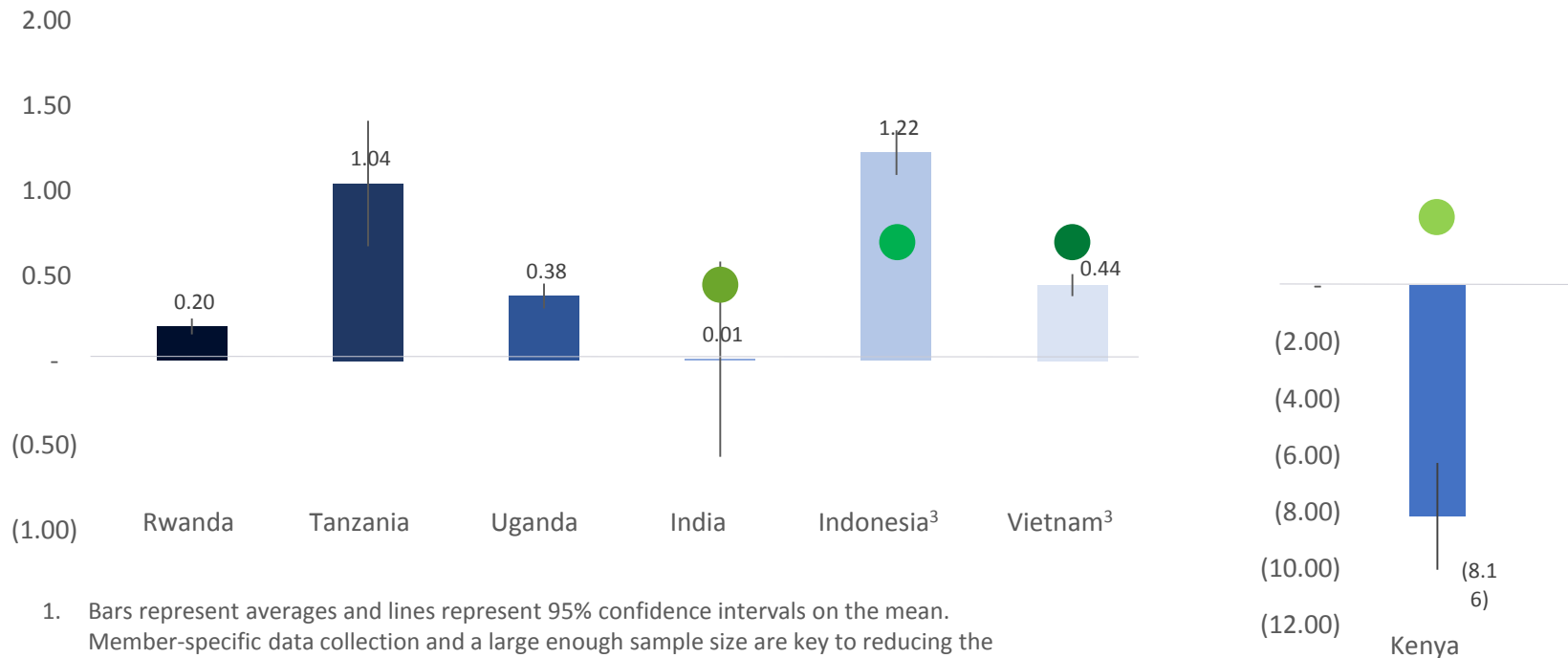
1. Bars represent averages and lines represent 95% confidence intervals on the mean. Member-specific data collection and a large enough sample size are key to reducing the confidence interval
2. True Price research (2015); This living household income consists of a basic living basket (food, housing, clothing, health care & transportation) and education, taxes, social security, insurance and pension. See appendix for more details on living household incomes

- Living household income Kenya \$2927<sup>2</sup>
- Living household income India \$1911<sup>2</sup>
- Living household income Indonesia \$4132<sup>2</sup>
- Living household income Vietnam \$6392<sup>2</sup>



# Results: Profitability per kilogram coffee

Net profit coffee (USD/kg dried cherry)



1. Bars represent averages and lines represent 95% confidence intervals on the mean. Member-specific data collection and a large enough sample size are key to reducing the confidence interval
2. True Price research (2015); This living household income consists of a basic living basket (food, housing, clothing, health care & transportation) and education, taxes, social security, insurance and pension. See appendix for more details on living household incomes
3. In the semi washed process in Indonesia the coffee is processed from fresh cherry to dried parchment and then to green bean. The amount of dried cherry has not been reported in Indonesia and Vietnam and the figure shows profit per kg of parchment.

- Living household income per kg dried cherry Kenya \$2.70<sup>2</sup>
- Living household income per kg dried cherry India \$0.51<sup>2</sup>

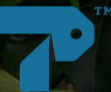
- Living household income per kg parchment Indonesia \$0.66<sup>2</sup>
- Living household income per kg parchment Vietnam \$0.66<sup>2</sup>

## Key insights

- Tanzania, Indonesia and Vietnam have the largest coffee profit/kg, which are robust results. The large profits for Indonesia can possibly be explained by high coffee yields
- All countries make a profit on average, except Kenya. The Kenyan average is largely negative (-8,16 USD/kg dried cherry) and the Indian average is only 0,01 USD/kg dried cherry.
- Only in Indonesia, coffee farmers currently earn a living household income from coffee production alone (on average)



# Appendix



# Methodology development

## Methodology

- Financial income is defined as accounting income and does not include opportunity costs, as would be the case if income was defined in terms of economic profit
- This methodology was chosen as economic profit is less relevant for farmers themselves than the actual profit.
- Operating profit is defined in terms of cash terms instead of accounting profit, and all non-cash items are categorized under changes in invested capital. This allows a clear identification of the cash available to farmers, which is most relevant to farmers.
- A cash flow profit approach is less complex, time consuming and leaves less room for manipulation of numbers than an accounting profit approach. This approach is in accordance with the approach of the European Union to farmers' income (Berkeley & Bradley, 2015).
- This study looks at the costs of (sustainable) coffee production and at the income that the farmer receives on a member level, costs and revenues of other goods, in-kind income and off-farm income
- The farmer household income is defined as all income that a farmer can have, both on and off-farm and both financial and in-kind, minus all financial and in-kind costs the farmer has for the production of coffee and other farm goods
- A household is defined as the family members for which the farm has to provide and who live permanently in the farmer's household. This is in line with the definition of a household of OECD.

## Sources

- The farmer household income model developed in this study is based on several methodologies
- The methodologies described in Brealey & Myers (2013), Damadoran (2012) and Koller, Goedhart and Wessels (2015) were used for defining 'income' and assessing in which categories the income should be split.
- To tailor the methodology to income of smallholder coffee farmers amongst others the methodologies of COSA and INCAE were used. From these sources the standard comprehensive income model was used, which was adapted to farms with a focus on the cash available to the farmer.

# Explanatory list of variables

<b>Financial farm income</b>	Financial income from the household's farm(s)
Increase in working capital	Monetary value of coffee stock increase in last crop year
Net profit other goods	Revenues of goods besides coffee that are sold for cash minus the extra costs of these other products (including costs of goods sold, overhead costs, non-operating costs and net investment outlays)
Net investment outlays	Investment costs on capital assets, spread out over the useful life years. This includes costs of structures, facilities, tools, materials, machinery and equipment and establishment costs of new coffee trees
Overhead costs	Book keeping costs, membership fees, insurances, pre-studies and analysis and other overhead costs. Overhead costs include book keeping costs, memberships fees to the SPO and other member organizations, insurance, pre-studies and analysis and possible other overhead costs
Interest	Interest costs on outstanding loans
Taxes	Government taxes
Subsidies	Subsidies in cash received from the SPO or other parties
Revenue coffee	Financial revenues of coffee sold for cash
COGS (costs of goods sold) coffee	Operational costs of coffee including input costs and hired labour costs; all costs from coffee crop management, coffee processing, coffee packing and storage and coffee transport
Financial income from other farms	Net profit from other farms than the primary farm
<b>In-kind farm income</b>	In-kind income from the household's farm(s)
Exchanged goods received	Monetary value of goods and services received from SPO or others in exchange for farm goods
In-kind contribution association	Monetary value of goods and services received from SPO or others not in exchange for farm goods
Farm goods consumed by household	Monetary value of farm goods that are consumed by the household
In-kind income from other farms	Monetary value of in-kind goods that are received from other farms
In-kind farm goods given to workers <sup>1</sup>	Monetary value of in-kind goods that are produced on the farm and given to the workers
Exchanged goods given	Monetary value of goods farm given to SPO or others in exchange for goods
<b>Off-farm income</b>	Income from sources other than the household's farm(s)
Wage income	Income from off-farm wages earned by the household members
Employment related social security	Monetary value of social security benefits received from employer or SPO (including unemployment insurance, old age pension and health insurance)
General social security	Monetary value of social security benefits not received from employer or SPO, but for instance from the government (including unemployment insurance, old age pension and health insurance)
Remittances	Money or checks received from non-household members, either family or not family (usually internationally) <sup>2</sup>

<sup>1</sup> This concerns only goods produced on the farm that are given to workers and are therefore used in the calculation as both in-kind revenue and in-kind expense

<sup>2</sup> This post does not include family inheritance



# Sample design: data collection and validation



Rwanda



Tanzania



Uganda



Kenya



India



Indonesia



Vietnam

Amount of farms in sample

66

50

60

155

26

60

48

Amount of focus group discussions (amount of members in focus group)

4 (13/14)

0

0

1 (5)

0

8 (6/8)

1 (34)

## Data collection

- Data was collected from a total of 465 farmers from 12 SPO's in 7 countries
- Data was collected via an updated version of the COSP questionnaire as well as a newly developed farmer income questionnaire
- Questionnaires were slightly adjusted after preliminary results of first SPO in Kenya

## Data verification and validation

- After inconsistency check and data gap analysis, a selection of data was locally verified or additionally collected
- Data was checked for outliers (1.5 times Inter Quartile Range approach) and outliers were removed if considered unrealistic
- Certain key data points were cross-referenced within the model by building in (semi-)overlapping questions into the questionnaires
- Various experts (see appendix) were consulted to validate the results of this study

# Sample design and selection

## Sample design

In order to define the research population of Fairtrade-certified coffee farmers for this study, three filters were applied:

1. Only coffee farmers from 15 countries (Brazil; Colombia; Costa Rica; Ethiopia; Honduras; India; Indonesia; Kenya; Mexico; Nicaragua; Peru; Rwanda; United Republic of Tanzania,; Uganda and Vietnam);
2. Only coffee farmers that are members of Small Producer Organizations (SPOs) that became certified before 2014 (2 years in the system) and that had transactions in 2014 (Fairtrade sales);
3. Only coffee farmers that are members of SPOs that had full certification status in 2015 (as of August).

## SPO sample selection

After applying the filters, a list of 283 SPOs remained, out of nearly 500 SPOs. From the list of 283 SPOs a selection of around 54 SPOs was made, focusing to cover a representation of:

1. Robusta and Arabica production
2. SPOs with a trader status
3. Organic and Conventional production
4. 2nd and 3rd grade organizations
5. Washed, Semi-washed and Dried/Natural processing systems

After discussions and assessment of resource capacities for data collection, the CLAC/Red Café decided not to participate in this study at this stage. This left the sampling with only eight countries and 13 SPOs in the sample. In the case of Ethiopia, many challenges were encountered for the data collection; therefore Ethiopia also had to be excluded from the sample.

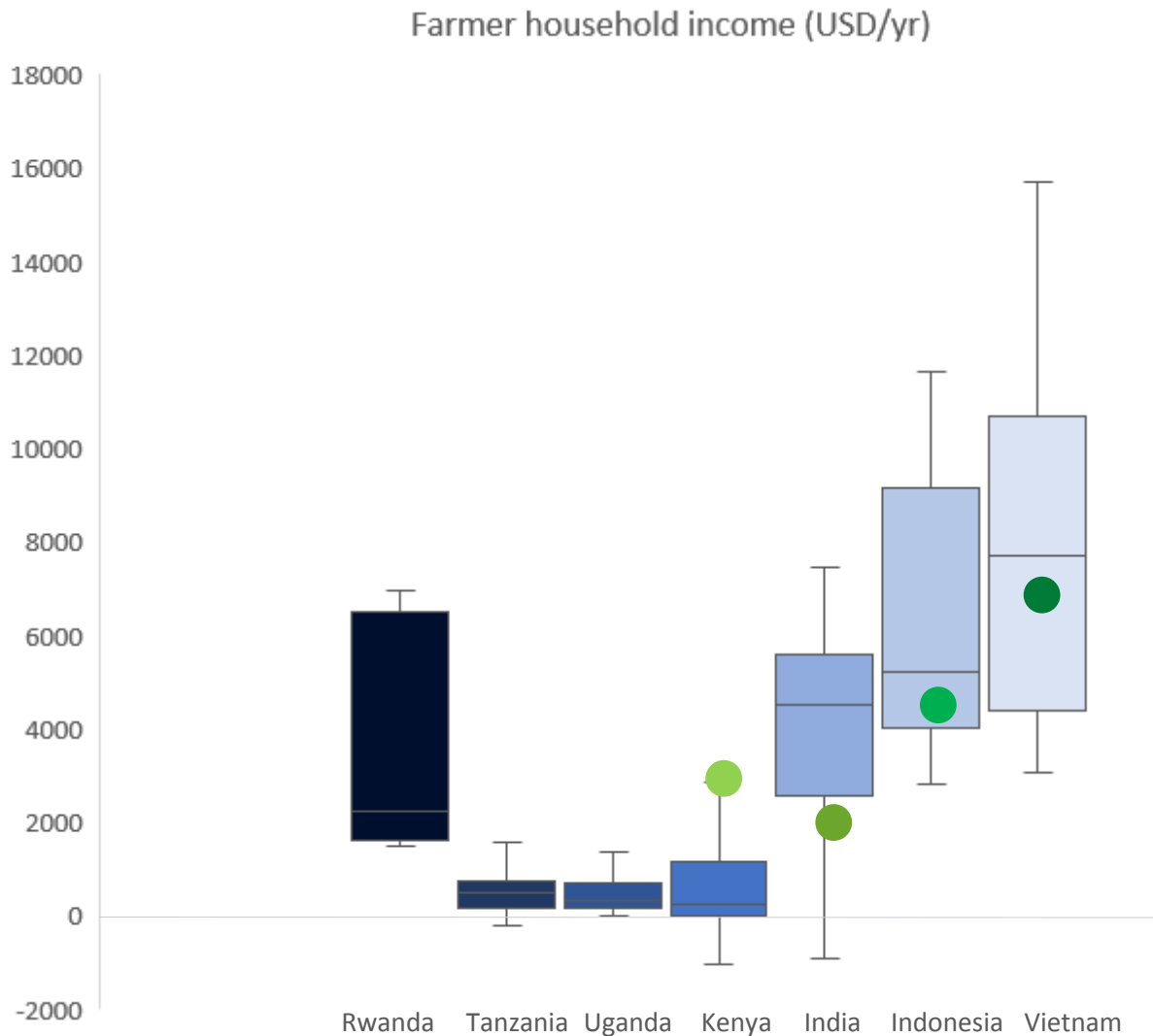
## Farmer sample selection

- Sample sizes were based on a 90% confidence level
- As disaggregated country-specific data on farmer household income was unavailable for the countries in scope, the sample size coefficients  $\sigma$  (population standard deviation) and  $c$  (margin of error) were estimated based on labour cost data from previous coffee farming studies
- The members to be selected were divided over the SPOs in each country proportionate to the amount of members in each SPO
- Members were instructed to be selected in a random manner by the SPOs with the help of Fairtrade's liaison officers





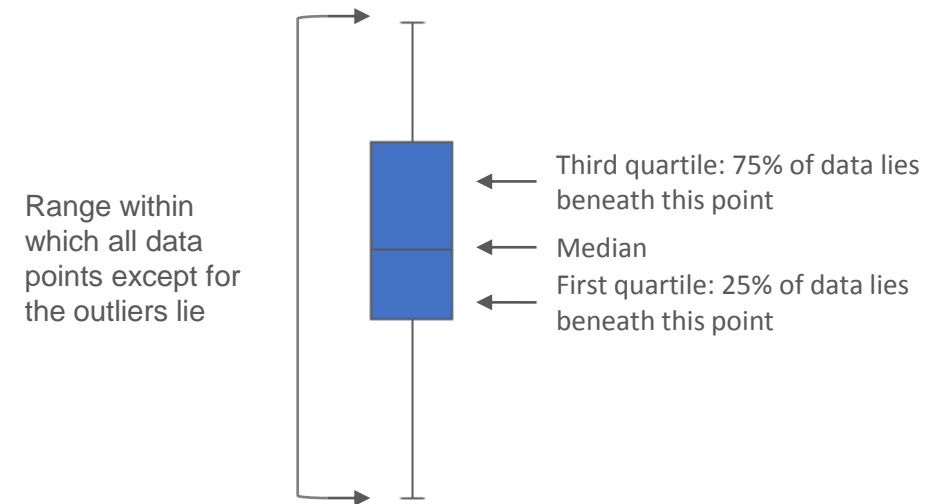
# Results: Farmer household income per country



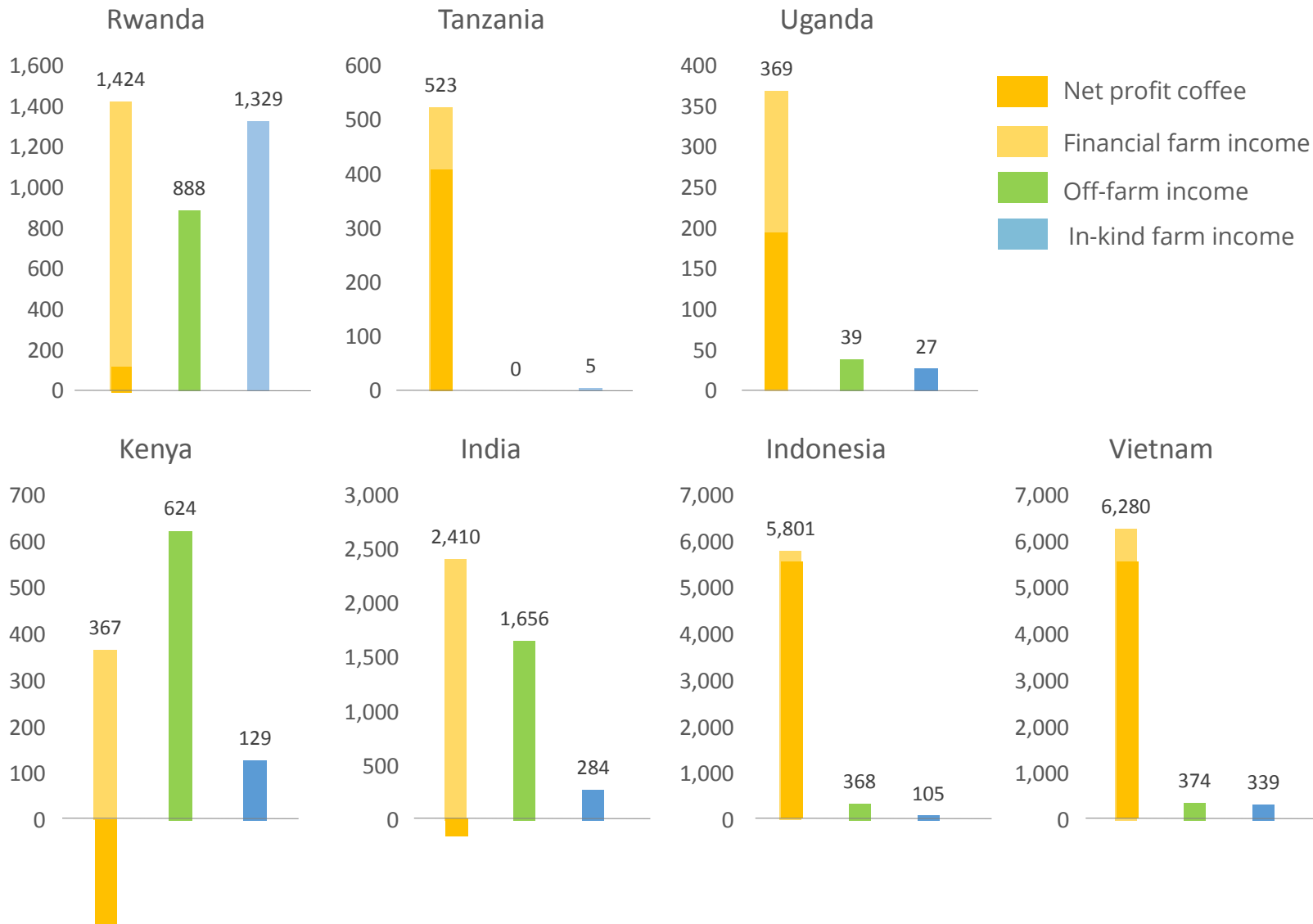
## Key insights

- 100% of Kenyan farmers, 25% of Indian farmers and 30-45% of both Indonesian and Vietnamese farmers do not earn a living income
- Vietnam has the highest median household income but also the largest dispersion of data points
- Tanzania, Uganda and Kenya have very small median household incomes
- The medians of household income are always positive

## Explanation of the Box-and-Whisker graph



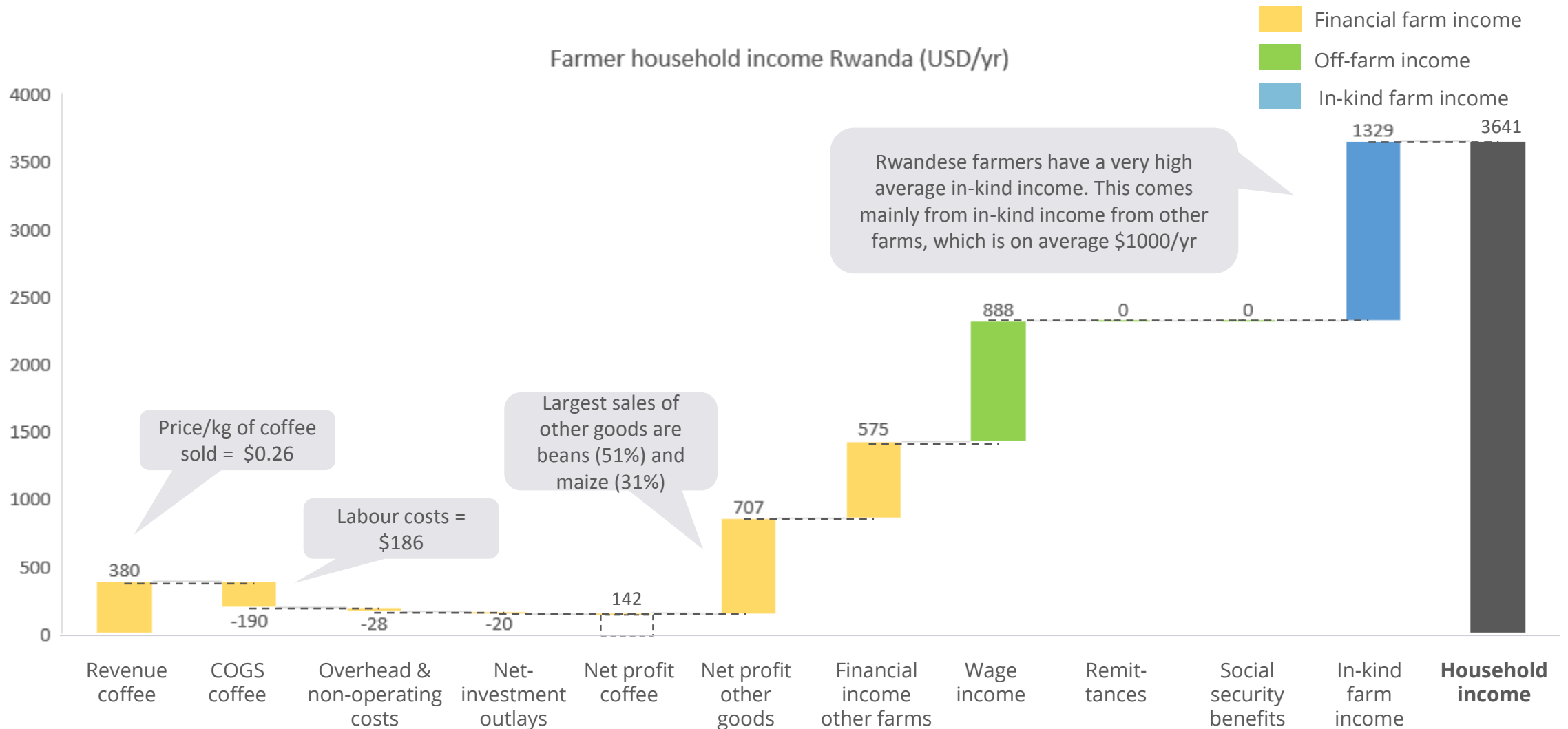
# Results: Distribution of farmer household income



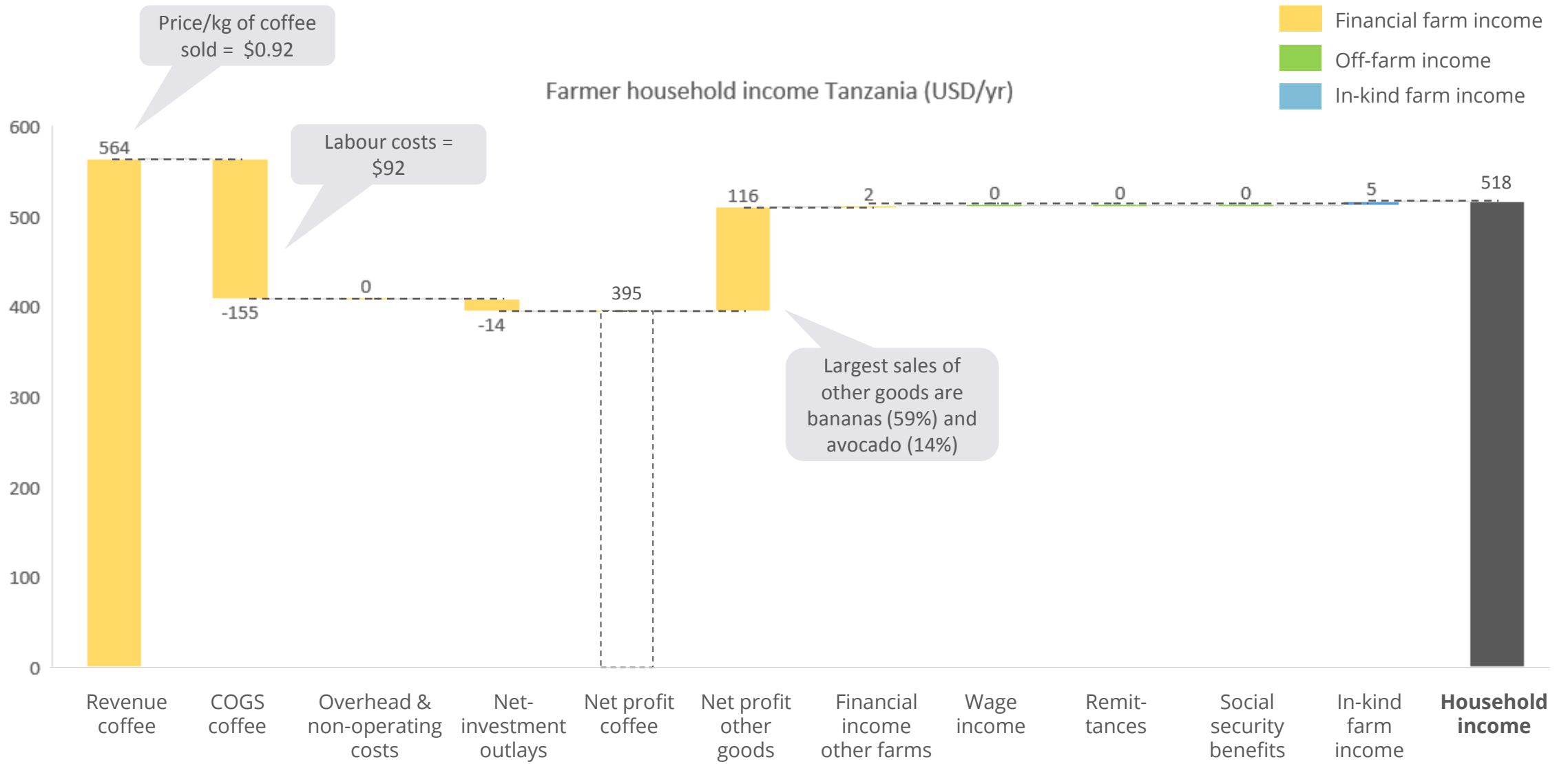
- Key insights*
- In Tanzania, Uganda, Indonesia and Vietnam the farmer household income consists mostly of financial farm income
  - In Rwanda, Kenya and India a large part of the household income consists of off-farm and in-kind income
  - Rwanda and Kenya are the only countries where the in-kind income makes a significant (>10%) contribution to the household income
  - Only in Tanzania, Vietnam and Indonesia does the profit on coffee contribute more than half of the financial farm income



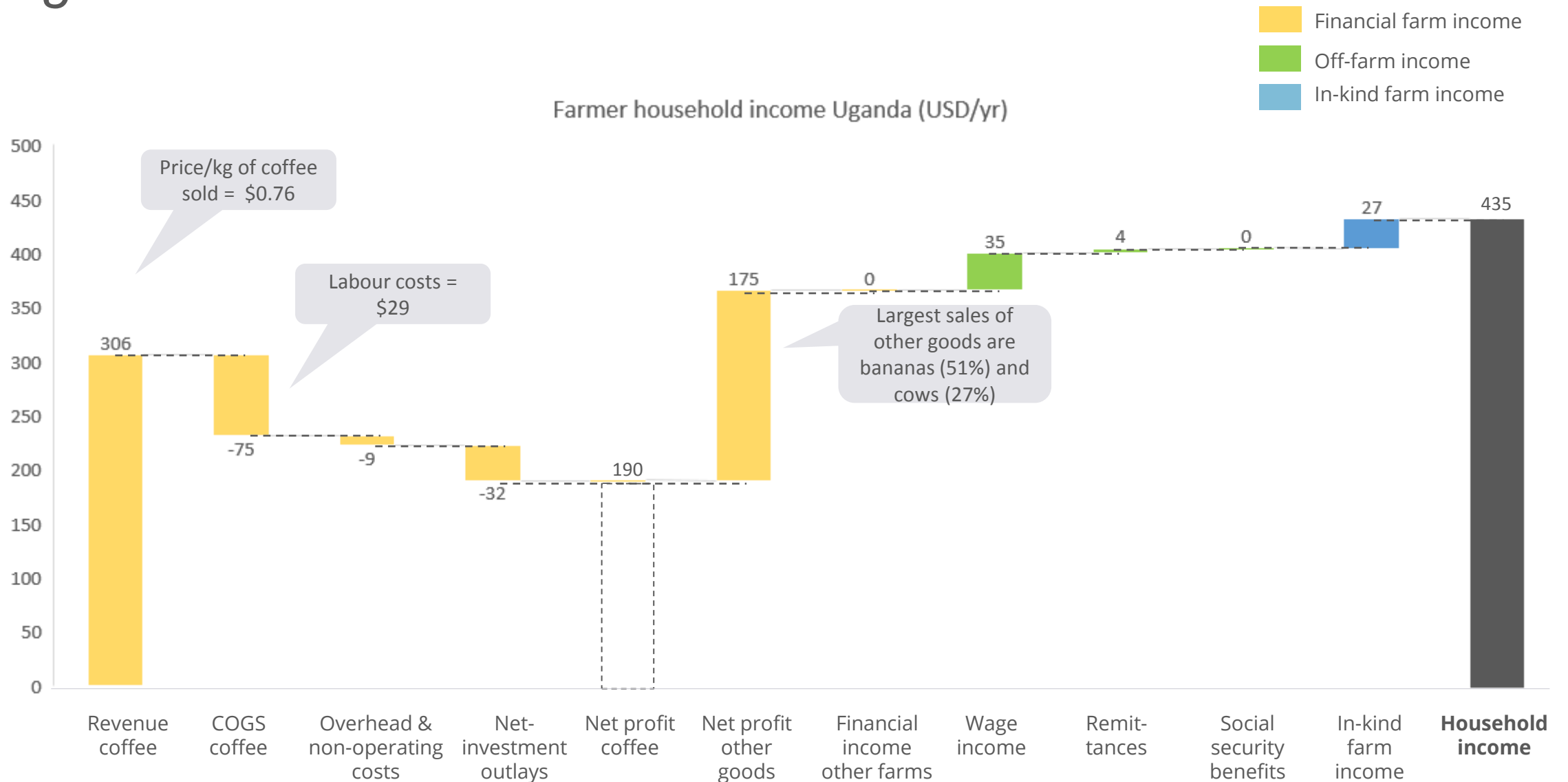
# Rwanda: Distribution of household income



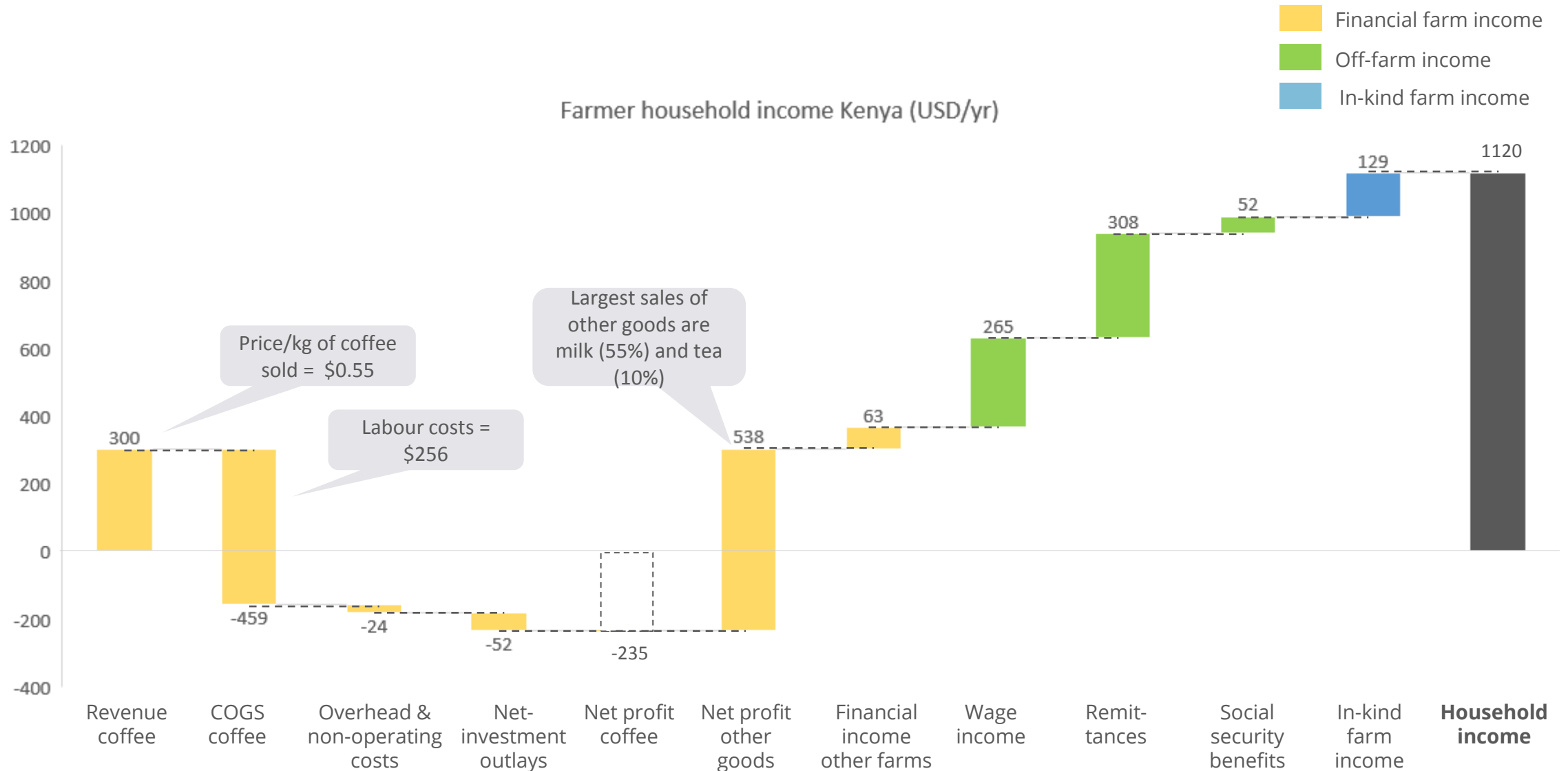
# Tanzania: Distribution of household income



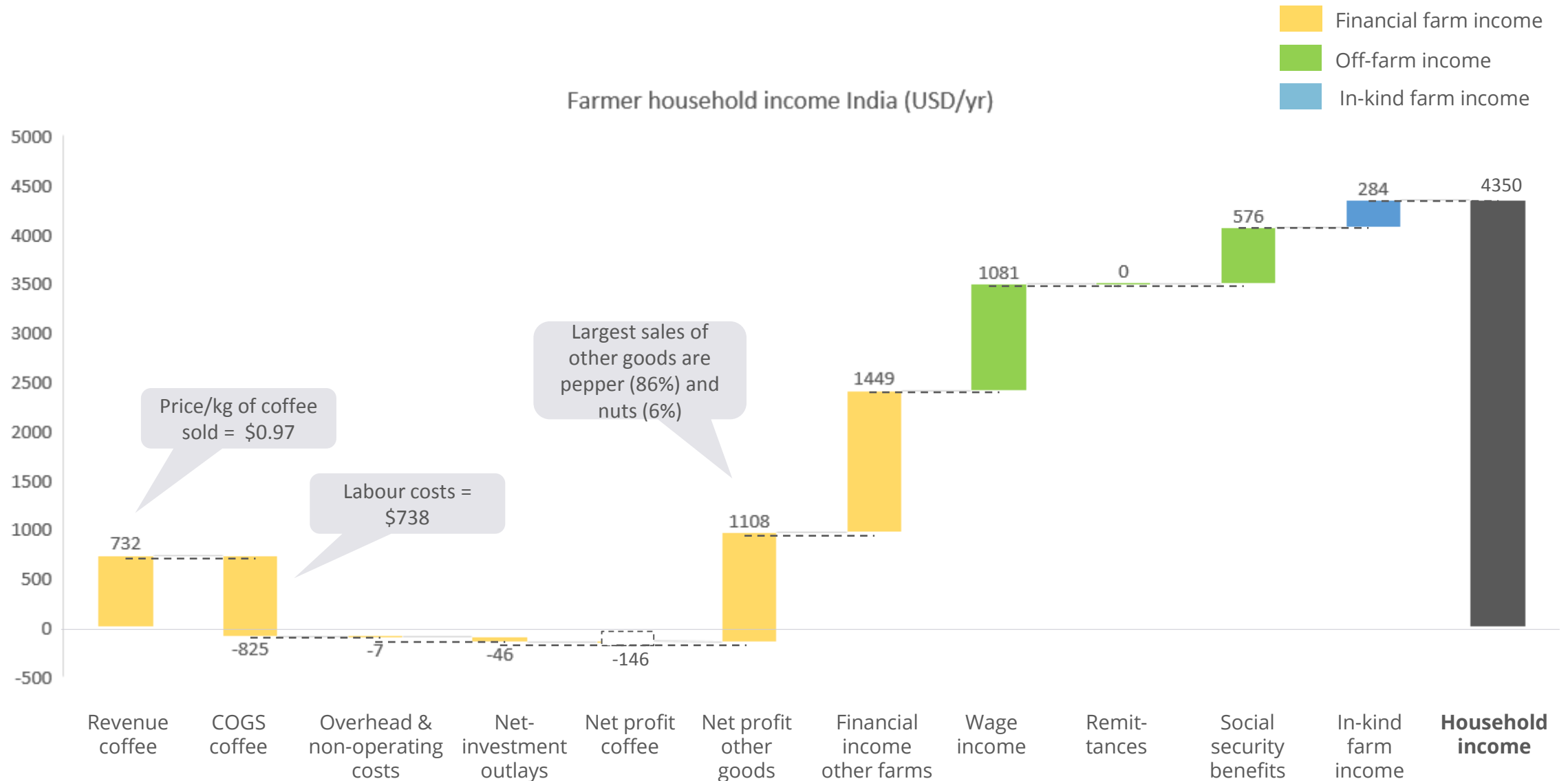
# Uganda: Distribution of household income



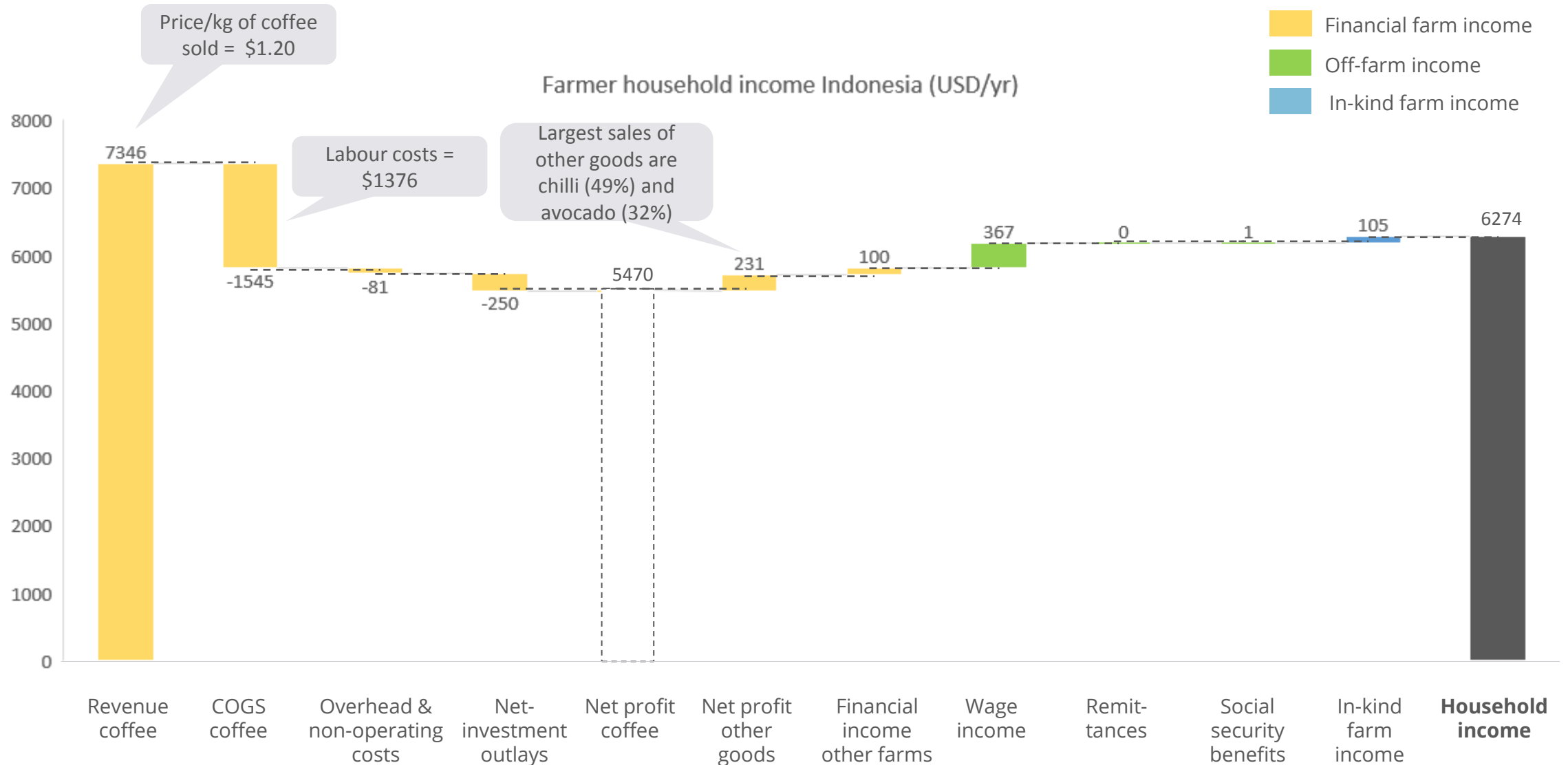
# Kenya: Distribution of household income



# India: Distribution of household income

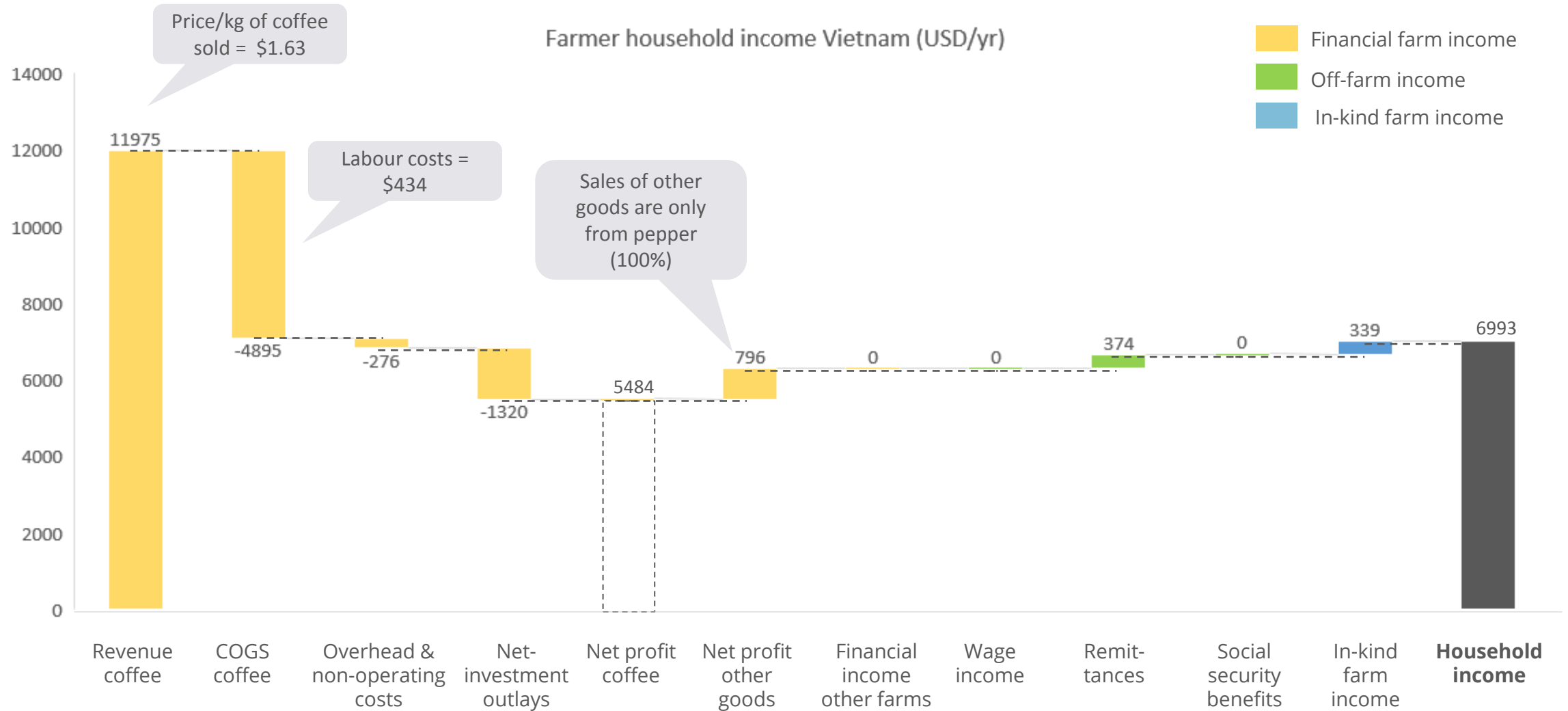


# Indonesia: Distribution of household income





# Vietnam: Distribution of household income



# Consulted experts

## Expert

### Fairtrade International:

- Rene Capote, Global Product Manager, Coffee
- Carla Veldhuyzen, SPO development Senior Advisor
- Lee Byers, Senior Advisor Coffee and Tea

### Fairtrade Africa:

- Frank Olok, Fairtrade Africa, Head of Region for East Africa

### Network of Asia and Pacific Producers (NAPP):

- Raju Ganapathy, Principal India
- Rohini Chandrasekharan, Associate India
- Erwin Novianto, Principal for South East Asia
- Wardah Hasyim, Associate Indonesia
- Hung Trang, Associate Vietnam

### Coffee Research Institute:

- Lucy Muchangi, Kenya

### Coordinadora Latinoamericana y del Caribe de Comercio Justo (CLAC)

- Joao Mattos, Production and market Coordinator for Coffee
- Red Café members: Luis Martínez, Merling Preza, Lina Trujillo, Carlos Reynoso
- Silvia Jurado and Carlos García, consultants for CLAC/Red Café on the work on COSP.

## Local Data Collection Partners

Rohini Chandrasekharan, Associate India; Erwin Novianto, Principal for South East Asia; Wardah Hasyim, Associate Indonesia; Hung Trang, Associate Vietnam; Colbert Sangnie, Business Development Advisor Uganda/Cameroun; Justine Zziwa Namayanja, Development Advisor Uganda; John Mabagala, Development Advisor Tanzania; Pascasie Nyirandege, Development Advisor Rwanda; Sylvain Harerimana, Assitant to BDA Rwanda; Team at CRI, led by Lucy Muchangi



# Overview of the sources

## Model

- Berkeley, H., Bradley, B., (2015). Comparison of Farmers' Incomes in the EU Member States. EU.
- Brealey and Myers (2013). Principles of corporate finance.
- Damadoran (2012). Investment Valuation: Tools and Techniques for Determining the value of any asset.
- INCAE (2009). Nespresso's Sustainable Sourcing Model and Real Farmer Income.
- Koller, Goedhart, and Wessels (2015). Valuation: Measuring and Managing the Value of Companies McKinsey & Company Inc.
- COSA (2013). The cocoa measuring sustainability report; coffee and cocoa in 12 countries. By Committee on Sustainability Assessment.

## Living wage

- Anker, Richard. Anker, R. (2011). Estimating a living wage: A methodological review. ILO.
- The true price of roses from Kenya – Report by True Price, 2014
- The true price of cotton from India- Joint report by IDH and True Price, 2016
- Improving Business Decision Making: Valuing the Hidden Costs of Production in the Palm Oil Sector. A study for The Economics of Ecosystems and Biodiversity for Agriculture and Food (TEEBAgriFood) Program. – Joint report by True Price and TruCost, Forthcoming
- The true price of coffee from Vietnam - Joint report by IDH and True Price, 2016



# End

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