

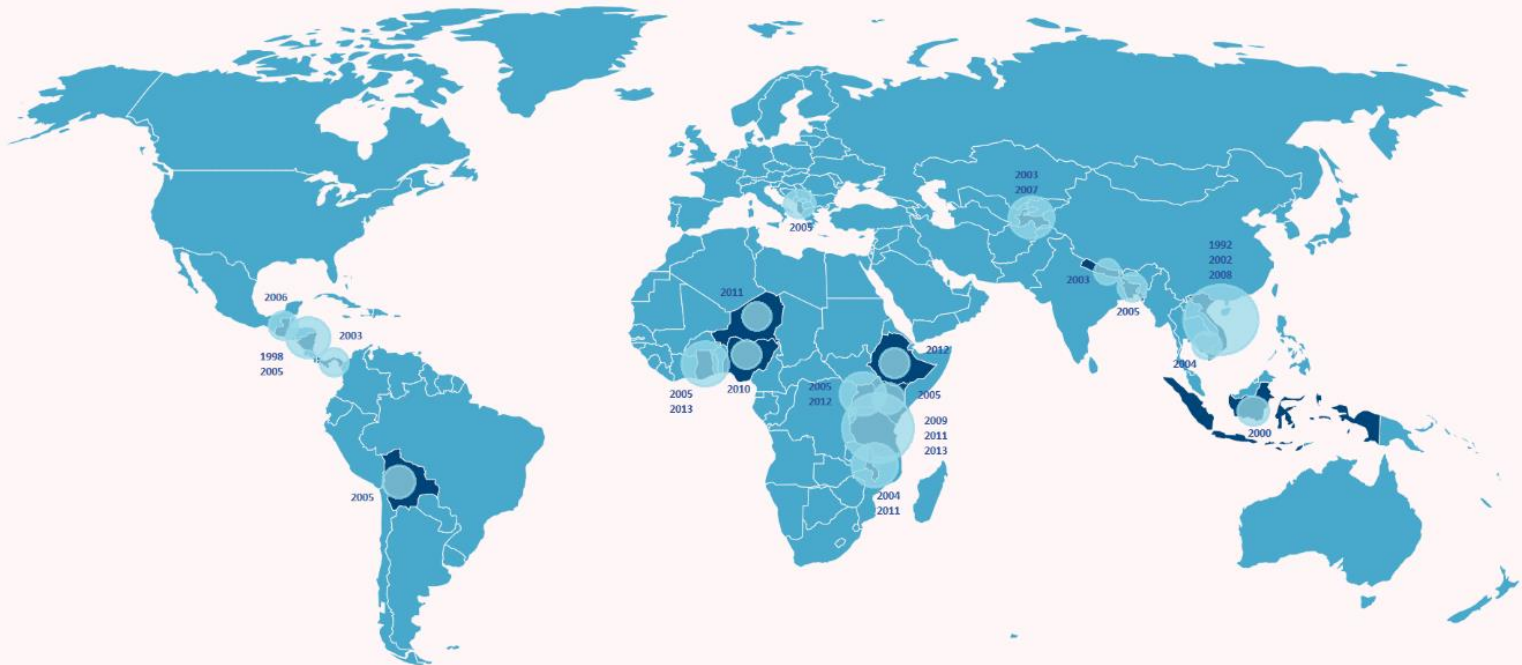


Food and Agriculture Organization  
of the United Nations

# SMALL FAMILY FARMS DATA PORTRAIT

## BASIC INFORMATION DOCUMENT

Methodology and data description



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## Data source and sample

The Data Portrait of Small Family Farms is a project developed by FAO with the objective to set the ground for a standardized definition of smallholders across countries as well as provide consistent measures of inputs, production, sociodemographic characteristics of smallholder farmers across the world. It generates an image on how small family farmers in developing and emerging countries live their lives, putting in numbers the constraints they face, and the choices they make so that policies can be informed by evidence to meet the challenge of agricultural development. The Data Portrait of Small Family Farms makes use of household surveys developed by national statistical offices in conjunction with the World Bank as part of its Living Standards Measurement Study (LSMS). With exception of the Ethiopian Rural Household Survey<sup>1</sup>, all the surveys are nationally representative and cover urban and rural areas. The project focuses on crop farming households, which are identified as those operating some land and reporting a positive value of crop production: according to this rule, we isolated the sample in the survey. So far the Data Portrait of Small Family Farms collects data for 19 countries across the world, and for some of them data are reported for more than one round, resulting in a total of 29 surveys. The following table reports the source of data and the number of crop-farm households in each sample.

*Table 1 - Surveys and sample sizes.*

Country	Source	Year	Households
<i>Sub-Saharan Africa</i>			
Ghana	Ghana Living Standards Survey	2005/2006	5,079
		2012/2013	8,823
Kenya	Kenya Integrated Household Budget Survey	2004/2005	6,903
Ethiopia	Ethiopian Rural Socioeconomic Survey	2011/2012	2,642
Malawi	Integrated Household Survey	2004/2005	9,885
		2010/2011	9,592
Niger	National Survey on Household Living Conditions and Agriculture	2010/2011	2,156
Nigeria	General Household Survey	2010/2011	2,807
		2012/2013	2,831
Tanzania	National Panel Survey	2008/2009	2,019
		2010/2011	2,262
		2012/2013	2,828
Uganda	The Uganda National Panel Survey	2005/2006	5,619
		2011/2012	2,164
<i>Asia</i>			

<sup>1</sup> The Ethiopian survey covers only rural areas and small towns.

Bangladesh	Household Income and Expenditure Survey	2005	5,031
Cambodia	Household Socio-Economic Survey	2003/2004	9,916
Indonesia	Indonesia Family Life Survey	2000	3,044
Nepal	Nepal Living Standards Survey II	2002/2003	2,832
Viet Nam	Viet Nam Living Standard Survey	1992	3,358
	Household Living Standard Survey	2002	20,084
		2008	6,020
<i>Latin America and the Caribbean</i>			
Bolivia	Encuesta de Hogares	2005	1,384
Guatemala	Encuesta Nacional de Condiciones de Vida	2006	5,991
Nicaragua	Living Standards Measurement Study Survey	1998	1,412
	Encuesta Nacional de Hogares sobre Medición de Nivel de Vida	2005	2,839
Panama	Encuesta de Niveles de Vida	2003	1,833
<i>Europe and Central Asia</i>			
Albania	Living Standards Measurement Survey	2005	1,790
Tajikistan	Tajikistan Living Standards Survey	2003	2,587
		2007	3,020

The project covers eleven thematic areas, whose allow to depict the main characteristics of a typical small family farm in each country of interest and compare them with other countries and regions. These eleven topics are: farm size, income, labor, production, inputs, livestock, crop market, inputs markets, technology, constraints and demographics. For each topic several indicators are reported. These indicators allow to analyse the level of productivity of the farm, both in terms of physical and human capital, and the constraints that the farmer faces to access the market, considering costs of inputs, access to credit, level of technology, government support through extension services, and physical barriers such as distance to main road.

Data are reported for three categories: small holders, other (large) holders, and all farmers.

All monetary values are expressed in gross term and in purchasing power parity (PPP), therefore they have been firstly deflated through the Consumer Price Index, taking 2009 as baseline, and then converted into constant 2009 International \$. Imputation techniques to eliminate outliers have been applied when necessary<sup>2</sup>.

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<sup>2</sup> Outliers are identified as values greater or lower than three standard deviations from the median value of the variable for the specific sorting group. The outlier values are flagged and then replaced with the median value of the variable within the corresponding sorting category (Covarrubias et al. 2009).

## Data Portrait variables description

### 01. Farm size.

**Smallholders:** households that manage a certain amount of land at most as large as the weighted median threshold of operated land identified at national level.

**The weighted median threshold** is calculated by ordering farms<sup>3</sup> from smallest to largest and choosing the farm size at the middle as the threshold.

Thresholds for the Data Portrait's countries are the following:

*Table 2 - Weighted median thresholds.*

Region	Country	Year	Threshold (Ha)
Sub-Saharan Africa	Ghana	2005	4.85
		2013	3.64
	Kenya	2005	1.21
	Ethiopia	2012	1.95
	Malawi	2004	1.62
		2011	0.91
	Niger	2011	6.60
	Nigeria	2010	1.90
		2013	1.74
	Tanzania	2009	2.43
		2011	3.01
		2013	3.31
	Uganda	2005	2.70
2012		2.76	
Asia	Bangladesh	2005	0.90
	Cambodia	2004	2.00
	Indonesia	2000	2.00
	Nepal	2003	1.02
	Viet Nam	1992	0.89
		2002	1.20
2008		1.41	
Latin America and the Caribbean	Bolivia	2005	4.50
	Guatemala	2006	1.52
	Nicaragua	1998	42.25
		2005	35.21
Panama	2003	42.00	
Europe and Central Asia	Albania	2005	1.08
	Tajikistan	2003	0.80
		2007	0.85

<sup>3</sup> Farms are ordered according to the amount of land that households have operated, measured in hectares.

**Farm size and land:** it is the land operated by the household, intended as the land owned plus the agricultural land rented/borrowed/sharecropped in minus the agricultural land rented/lent/sharecropped out. Also the land left fallow is considered operated land. In some surveys information on the status of the land is not specified, or just cultivated land is provided. In these cases cultivated land is used.

**Number of holdings:** data are reported for three categories: smaller farms, which are those households with a farm size below the land threshold, other (large) farms, that includes the households with a farm size above the land threshold, and nationally, meaning all farmers. The number of holdings for each category is reported to be representative at national level using household weights.

Number of small holders = $\sum$ household weights if household is a small holder
Number of other holders = $\sum$ household weights if household is not a small holder
Total number of holdings = $\sum$ household weights for the crop-farm households in the sample

*02. Income*

**Household Income:** “consist of all receipts whether monetary or in kind (food, goods and services) that are received or produced by the household or by the individual members of the household at annual level, but excludes windfall gains and other such irregular and typical onetime receipts” (ILO, 2003). It is expressed in gross terms and at household level. Components of income aggregates and methodology follow the Rural Income Generating Activities (RIGA)<sup>4</sup>. Under this methodology income is disaggregated into six principal categories: wages, also separated into agricultural and nonagricultural wages (as determined by the ISIC industry categories), self-employment, crop production, livestock production, transfers, and other income (Carletto et al. 2007). Some technical differences have been applied to respond to specific project purposes.

*Pluriactivity:*

**% of income from crop production:** it is the share of income from crop production.

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<sup>4</sup> For more information please see [http://www.fao.org/fileadmin/user\\_upload/riga/pdf/ai197e00.pdf](http://www.fao.org/fileadmin/user_upload/riga/pdf/ai197e00.pdf)

**% of income from on farm income:** it is the share of income from farm activities, which are crop production, crop by-products (only when it is possible to distinguish it from crop production), livestock and livestock by-products production.

**% of income from agricultural wage labor:** it is the share of income from paid dependent work in agriculture, both skilled and unskilled.

**% of income from non-agricultural wages and self-employment:** it is the share of income from non-farm sector, including both wages from non-agricultural employment and non-farm self-employed business income.

**% of income from transfers, remittances:** it is the share of income from private and public transfers, including pensions and social assistance.

**% of income from other sources:** it is the share of income from other miscellaneous sources. Among these we can mention farm and non-farm rental income, real estate income, savings, interest or other investment income.

**Poverty rate:** it is the percentage of the population living below the national poverty lines. “National poverty lines are the benchmark for estimating poverty indicators that are consistent with the country's specific economic and social circumstances. National poverty lines reflect local perceptions of the level and composition of consumption or income needed to be non-poor” (World Bank, 2011). Per capita total household expenditure is taken into account as indicator of welfare.

### ***03. Labor***

The methodology applied to the Small Family Farms Data Portrait assumes that one working day is constituted by 8 hours of work and each person can work 7 days per week and not exceed 365 days in a year. If a person worked in more than one job, more relevance is assigned to the first job (weighting 2/3 the primary job and 1/3 the secondary).

**Family on-farm labor (days):** total family labor-day supplied on farm over a day period, which is the total number of days at household level divided by the number of working days in a year - here 300 days.

**Hired labor (days ):** total agricultural hired labor days over a day period, that is the total number of days at household level divided by the number of working days in a year - here 300 days.

**Family labor supplied off-farm (days):** total family labor-day supplied off farm over a day period, that is the total number of days at household level divided by the number of working days in a year - here 300 days.

While questionnaire structures on labor supplied off farm are homogenous across countries, this is not the case for agricultural family and hired labor. In some surveys the information on hired-in people from the agricultural module is not available. In such cases the hired-out labor days of family members are taken from the employment module.

The following table summarizes the differences on family and hired labor variables construction.

*Table 3 - Notes on labor in the agriculture sector.*

Country	Year	Family labor	Hired labor
Ghana	2005	From employment module: hours worked per week in agriculture self-employed converted in days.	From employment module: hours worked per week in agriculture not self-employed converted in days.
Ghana	2013	From employment module: hours worked per week in agriculture self-employed converted in days.	From employment module: hours worked per week in agriculture not self-employed converted in days.
Kenya	2005	From employment module: hours worked in the farm by household members converted in days.	From agricultural module: total days of hired labor (permanent/occasional not specified) in all production tasks
Malawi	2004	From employment module: hours worked in the farm by household members converted in days.	From agricultural module: total days of hired labor (ganyu and other labor) in dry and rainy seasons.
Malawi	2011	From agricultural module: family members on farm labor days for land preparation, weeding and other non-harvest activities and harvesting in dry and rainy seasons	From agricultural module: total days of hired labor (men, women and children) worked in the plot for land preparation, weeding and other non-harvest activities and harvesting in dry and rainy seasons.
Ethiopia	2012	From agricultural module: hours worked in the farm by household members scaled in a daily basis.	From agricultural module: total days of hired labor (men, women and children) worked in the farm.
Niger	2011	From agricultural module: family members on farm labor days for land preparation, planting and maintenance, and harvesting both for rainy and dry seasons	From agricultural module: total men, women and children mutual and hired labor days for land preparation, planting and harvesting, both for rainy and dry seasons.
Nigeria	2010	From agricultural module: family on farm labor hours per week converted into days from post-harvest section.	From agricultural module: total men, women and children hired labor days from post-harvest section

Nigeria	2013	From agricultural module: family on farm labor hours per week converted into days from post-harvest section.	From agricultural module: total men, women and children hired labor days from post-harvest section
Tanzania	2009	From agricultural module: days of labor worked in the farm for land preparation and planting, weeding and harvesting in the long and short raining seasons	From agricultural module: number of men and women hired labor days in long and short rainy seasons for land preparation and planting, weeding and harvesting.
Tanzania	2011	From agricultural module: days of labor worked in the farm for land preparation and planting, weeding, ridging and fertilizing, and harvesting in the long and short raining seasons	From agricultural module: number of men and women hired labor days both in the long and short rainy seasons for hired planting, weeding, ridging and fertilizing, and harvesting
Tanzania	2013	From agricultural module: days of labor worked in the farm for land preparation and planting, weeding, ridging and fertilizing, and harvesting in the long and short raining season	From agricultural module: number of men, women and children hired labor days in long and short rainy seasons for land preparation and planting, weeding, ridging and fertilizing, and harvesting
Uganda	2005	From agricultural module: family members on farm labor days for land preparation and planting, weeding, ridging and fertilizing, and harvesting	From agricultural module: total hired labor days supplied on farm.
Uganda	2012	From agricultural module: total family members on farm labor days	From agricultural module: number of men, women and children hired labor days.
Bangladesh	2005	From employment module: worked days on self-employment in agriculture.	From employment module: days worked in agriculture not self-employed.
Cambodia	2004	From employment module: labor hours per week converted in days in agricultural sector self-employed, primary and secondary jobs	From employment module: labor hours per week converted in days in agricultural sector not self-employed, primary and secondary jobs
Indonesia	2000	From employment module: labor hours per week converted in days in agricultural sector self-employed, for primary and secondary jobs	From employment module: labor hours per week converted in days in agricultural sector not self-employed, primary and secondary jobs
Nepal	2003	From employment module: total family members labor days in agriculture self-employment.	From agricultural module: total men and women hired labor days from daily worker, permanent worker and piece-rate worker <sup>5</sup> .
Vietnam	1992	From employment module: family members labor days in agriculture self-employment.	From employment module: family members labor days hired out in agriculture not self-employment.
Vietnam	2002	From employment module: family members labor days in agriculture self-employment.	From employment module: family members labor days hired out in agriculture not self-employment.

<sup>5</sup> While for the first the actual days are available, for the last two only the amount paid is present: in this case days are recovered by dividing by the wage rate.



Vietnam	2008	From employment module: family members labor days in agriculture self-employment.	From employment module: family members labor days hired out in agriculture not self-employment.
Bolivia	2005	From employment module: family members labor hours converted into days in agriculture self-employed	From employment module: family members hired out labor hours converted into days in agriculture not self-employed, primary and secondary jobs
Guatemala	2006	From employment module: family members labor hours converted into days in agriculture self-employed	From employment module: family members hired out labor hours converted into days in agriculture not self-employed
Nicaragua	1998	From agricultural module: family members labor days worked in the family farm	From agricultural module: hired in labor days ( temporary and permanent workers in agriculture and forestry)
Nicaragua	2005	From agricultural module: family members labor days worked in the own farm (men, women, boys, girls)	From agricultural module: hired in labor days ( temporary and permanent workers in agriculture and forestry)
Panama	2003	From agricultural module: family members labor days in own farm	From agricultural module: hired in labor days in the farm ( temporary and permanent workers)
Albania	2005	From employment module: labor days in agriculture self-employment.	From agricultural and employment modules: labor days computed by dividing the expenditure for hired labour into the ag. daily wage
Tajikistan	2003	From employment module: labor hours per week converted in days in agricultural sector self-employed	From employment module: labor hours per week converted in days in agricultural sector not self- employed
Tajikistan	2007	From employment module: labor hours per week converted in days in agricultural sector self-employed	From employment module: labor hours per week converted in days in agricultural sector not self- employed

#### *04. Production*

**Value of crop production:** it is the total value of crop production at annual level. It includes the value of all uses of the crop harvested: self-consumed, sold, given away, stored etc. It comprises also forestry production.

**Amount of food produced:** it is the total value of food produced by the household over a year. This variable does not entail cash crops and all non-food items, such as cotton and tobacco.

**Value of food production per hectare:** it measures the land productivity related to food production. This variable tells whether the production is extensive or intensive.

**Value of crop production per working day:** it is a measure of labor productivity, defined as the ratio of value of crop production (described above) and total

number of agricultural working days. Working days are defined as the sum of agricultural on-farm family working days plus agricultural hired-in labor days.

### *05. Inputs*

**% of household using motorized equipment:** it is the share of households that own<sup>6</sup> at least one motorized equipment for their agricultural work over total households. The most common motorized equipment are tractors, thresher, harvester, spraying machine and water pumping machine.

**% of irrigated land:** it is the share of land irrigated through irrigation systems over total cultivated land.

**Fertilizer:** quantity in kg and monetary value of inorganic fertilizers purchased by the household during the year. In order to compute the amounts per hectare, the variables are divided by the operated land. In some cases only the monetary value is available. Organic fertilizers are excluded.

**Seeds:** quantity in kg and monetary value of seeds purchased by the household during the year, per unit of hectare.

### *06. Livestock*

**TLU:** this measure reports the number of animals owned by each household at the moment of the survey, expressed in Tropical Livestock Units<sup>7</sup>. It is disaggregated into seven categories of livestock:

- *Cattle:* it includes oxen, bulls, calves, cows, buffalo, cattle and yaks
- *Poultry:* it includes chickens, turkeys, ducks, Cornish and other poultry
- *Equines:* it includes horses, donkeys, mules, and other equines
- *Pigs*
- *Camels:* it includes both camels and lamas
- *Goats:* it includes goats and sheep
- *Other:* it includes rabbits, beehives, bird, pigeon and other livestock not present in the other categories

The total number of TLU at household level (on average) is also reported.

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<sup>6</sup> Motorized equipment rented are not included.

<sup>7</sup> The tropical livestock unit is commonly taken to be an animal of 250 kg live weight.

## *07. Crop and Input Markets*

This section wants to provide evidence on small family farmers' participation in markets, the types of markets they have access to and the types of contracts used when they participate. The purpose is to enhance knowledge about the constraints smallholders face doing business in agriculture.

Two criteria were taken into account to identify market: the location (local/ other) and the type of contract (formal/ informal).

A market is defined formal when it is officially and legally recognized. Examples are structured markets, such as district markets, institutional agents (i.e. governmental agencies, cooperatives, NGOs) or who can provide a receipt, like private traders in local markets. Instead a market is informal when the market agent refers to a person with an informal relation with the farmer, such as a friend, a neighbor or a consumer at market.

Regarding the distinction between local/other, the main determinant is the geographical placing of the market. Therefore a market is considered local if it is within or near the village, while it belongs to the "other" category if it is outside the district or outside the region.

Two markets have been considered: the first concerns the sales of crop production (supply-side) and the other examines the purchases of agricultural inputs (demand-side).

For each market, two typologies of indicators were computed:

- 1) Proportion of households who participated in the market. The participation variable is reported for each type of market as follow:

### *Crop market*

% of households selling crops through informal channels

% of households selling crops through formal channels

% of households selling crops in local markets

% of households selling crops in other markets

### *Input Market*

% of households buying inputs through informal channels

% of households buying inputs through formal channels

% of households buying inputs in local markets

% of households buying inputs in other markets

- 2) % of value traded in a specific market. As for the previous indicator, for each type of market corresponds a variable with the related share of value.

*Crop market*

% of the crops' value sold through informal channels

% of the crops' value sold through formal channels

% of the crops' value sold in local markets

% of the crops' value sold in other markets

*Input Market*

% of the inputs' value purchased through informal channels

% of the inputs' value purchased through formal channels

% of the inputs' value purchased in local markets

% of the inputs' value purchased in other markets

**Sample:** it indicates how many households (in percentage) reported the information. This information is important because the above indicators are built on this sample.

Summing up, each market section is composed by 9 variables: 1 for the sample, 4 for the participation and 4 for the share of value.

When a household trades contemporarily in the formal and informal (or local and other) markets, the indicator is split among the two. For instance a household could say to sell two items in the formal market and one item in the informal one. In this case the mean of each source of market at household level is taken, resulting that the household trades for 2/3 in the formal market and for 1/3 in the informal. The final sum is always 1. The same methodology is applied when the information is reported over different seasons, when for instance a household reports to sell in the informal market during the rainy season, while it trades in the formal during the dry season.

## *08. Technology*

**Improved seeds:** the Data Portrait of Small Family Farms wants to detect how many households use improved seeds and in which extend they are employed. For this reason two variables are reported:

- **% of improved seeds:** it is the quantity of improved seeds over total quantity of seeds purchased; and
- **% of households using improved seeds:** it is the percentage of households that purchased improved seeds.

**% of households' recipient of extension services:** it shows the percentage of households that received agricultural extension services in the form of training, technological transfers or agricultural advices, by government or other private or non-profit organizations and networks. It does not include advices from other farmers or non-official media.

**% of households owning a telephone:** it is the share of households owning a fixed telephone line in their dwelling. When such information was not available the households that reported to be users of a fixed telephone line were considered in place. Mobile phones are not taken into consideration.

## *09. Constraints*

**% of agricultural production sold:** it shows the share of crop production that has been sold.

**% of expenditure for inputs on value of production:** it reports the percentage of expenditure for all different types of inputs on total value of crop production. Beyond fertilizers and seeds, inputs include also pesticides, transportation costs, seeding etc. If the cost of inputs exceeds the value of crop harvested, the inputs expenditure is assumed to equally amount to the value of production.

**% of credit beneficiary households:** it reports the percentage of households that received a credit or a loan during the last 12 months from formal sources. Credit received from relatives and friends is excluded, while loans given by banks and private or public institutions are included.

**Credit:** it is the monetary value of the loan borrowed during the last year from formal institutions such as banks, credit unions, savings associations or micro-credit institutions, without accounting for the interest rate applied.

**Distance of households from road:** it reports the distance in km from the household to the nearest road. In case the information was not available at household level the distance from the community center or from the location of plot was applied. For some cases such information was not present in the survey, instead we considered the distance to the nearest public transportation point. When the distance was reported in time, minutes have been converted into km, taking as conversion factor 1 km= 9.4 minutes.

Table 4 reports in details the denomination of distance used in each survey.

*Table 4 - Notes on distance information*

Country	Year	Distance from road
Ghana	2005	Distance from community to the nearest motorable road (km)
Ghana	2013	Distance from community to the nearest motorable road (km)
Kenya	2005	Information not available
Ethiopia	2012	Distance of community from road (km)
Malawi	2004	Distance of community from road (km)
Malawi	2011	Distance of community from road (km)
Niger	2011	Distance of community from road (km)
Nigeria	2010	Distance of community from bus station (km)
Nigeria	2013	Distance of community from bus station (km)
Tanzania	2009	Distance of plot from road (km)
Tanzania	2011	Distance of plot from road (km)
Tanzania	2013	Distance of plot from road (km)
Uganda	2005	Information not available
Uganda	2012	Distance of household from nearest public transport point (km)
Bangladesh	2005	Information not available
Cambodia	2004	Information not available
Indonesia	2000	Information not available
Nepal	2003	Distance of household from the nearest paved road (minutes converted into km)
Vietnam	1992	Distance of community from road (km)
Vietnam	2002	Distance of community from road (km)
Vietnam	2008	Information not available
Bolivia	2005	Information not available

Guatemala	2006	Information not available
Nicaragua	1998	Information not available
Nicaragua	2005	Distance of community from road (km)
Panama	2003	Information not available
Albania	2005	Information not available
Tajikistan	2003	Information not available
Tajikistan	2007	Information not available

### *10. Demographics*

The last section of the Data Portrait of Small Family Farms reports the level of education of the household head, expressed as the years of schooling, and the household size.

## References

- G. Carletto, K. Covarrubias, B. Davis, M. Krausova, and P. Winters. 2007. "Rural Income-Generating Activities Study: Methodological Note on the Construction of Income Aggregate." Agricultural Sector in Economic Development Service, Food and Agriculture Organization.
- ILO (2003) Report II: Household income and Expenditure Statistics, Prepared for the Seventeenth International Conference of Labour Statisticians, Geneva, 24 November.
- K. Covarrubias, A.P. de la O Campos, and A. Zezza. June 2009. "Accounting for the Diversity of Rural Income Sources in Developing Countries: The Experience of the Rural Income Generating Activities Project". Food and Agriculture Organization.
- World Bank. 2011. *World development indicators 2011*. World Development Indicators. Washington, DC: World Bank.  
<http://documents.worldbank.org/curated/en/245401468331253857/World-development-indicators-2011>

## Contacts

[www.fao.org/family-farming](http://www.fao.org/family-farming)

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