

THE LAND INEQUALITY INITIATIVE
DATA PAPER

GLOBAL LAND INEQUALITY

BY LUIS BAULUZ, YAJNA GOVIND,
AND FILIP NOVOKMET

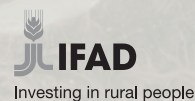
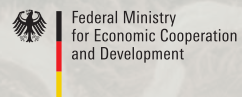
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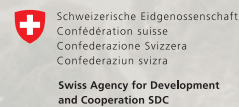


GLOBAL LAND INEQUALITY

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Government of the Netherlands



ISBN: 978-92-95105-51-5

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The opinions expressed herein are those of the authors and the individuals interviewed for this report. They do not constitute official positions of ILC and the initiative's reference group. **Published:** September, 2020. **Editing:** David Wilson. **Design:** Federico Pinci.

A dramatic landscape photograph showing a view through a dark, narrow rock crevice. The foreground is dark and shadowed, with a few small rocks on the sandy ground. In the middle ground, a bright, hazy desert landscape unfolds under a clear sky. Several small figures of people are visible standing on a distant ridge, silhouetted against the bright light. The background features rolling sand dunes and distant mountains.



ABSTRACT

Agricultural land is vital for three out of every four of the poorest billion individuals in the world, yet little is known about its distribution. Existing cross-country estimates of land inequality, based on agricultural census data, measure the size distribution of agricultural holdings. These reflect neither land ownership inequality nor value inequality and often do not account for the landless population. In this paper, we tackle these issues and provide novel and consistent estimates of land inequality across countries, based on household surveys. We show that (i) inequality in land value can differ significantly from inequality in land area, (ii) the proportion of landless households across countries varies substantially, markedly affecting estimates of inequality, and (iii) regional patterns in inequality according to our benchmark metric (land value inequality including the landless) contradict existing estimates from agricultural censuses. Overall, South Asia and Latin America exhibit the highest levels of inequality, with the top 10% of landowners capturing up to 75% of agricultural land, followed by Africa and “Communist” Asia (China and Vietnam) at levels of around 55–60%.

KEYWORDS

LAND OWNERSHIP

INEQUALITY

DISTRIBUTION

Acknowledgements

This work is part of a larger project on land inequality by the International Land Coalition (ILC). We acknowledge financial support from ILC, the World Inequality Lab (WIL), and the Deutsches Institut für Entwicklungspolitik (DIE). We would like to thank Shalmali Ghaisas and Indu Chhatwani for research assistance and we are grateful to Daniel Sanchez Ordoñez for help at different stages of the project. The results provided in this paper are provisional and subject to change.

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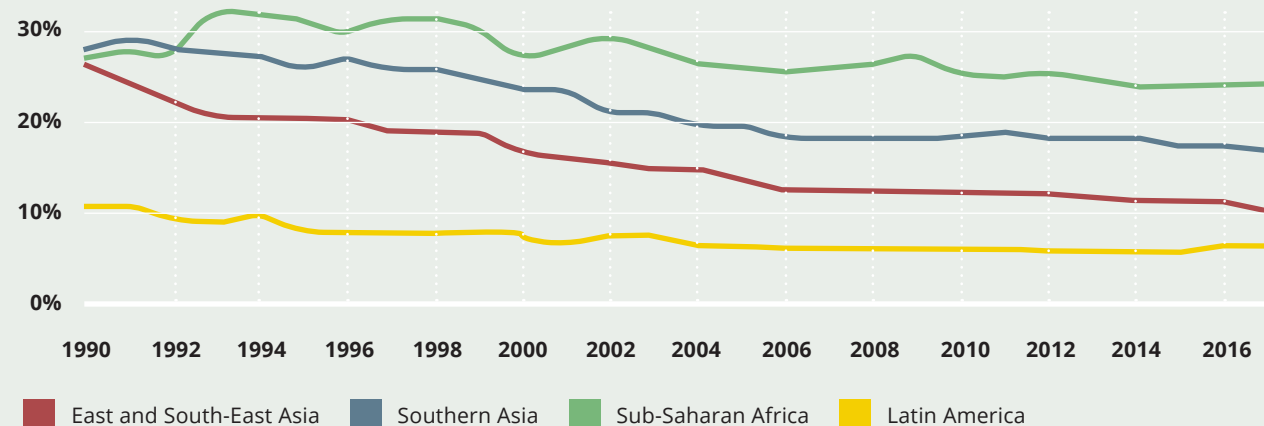
INTRODUCTION

Agricultural land is vital for three out of every four of the poorest billion individuals in the world, who depend on land and related activities for their subsistence (FAO, 2016). Over the past three decades, developing countries have gone through a profound economic transformation, as they embark on a catch-up process with the advanced economies (Bourguignon, 2015). However, this process of convergence has been very unequal, with only a few countries (foremost China) undergoing a significant process of industrialisation (Rodrik, 2016) and vast parts of the developing world (notably South Asia and Africa) proceeding at a much slower pace and following a more fragile path (Lakner and Milanovic, 2015). The number of agricultural workers worldwide today is largely the same as it was 30 years ago (Figure 1a and Figure 1b). Despite the importance of land for the world's poor people, we know almost nothing about its value and distribution, since the existing estimates reflect neither inequality of land ownership nor inequality of value and do not account for the landless population. Consequently, both policy-makers and academic researchers lack basic information to evaluate the economic conditions and the ownership structure in which the lives of the world's poorest people take place.

Precisely estimating land inequality is crucial given its relevance to debates that range from institutions and human capital accumulation to food security and poverty alleviation. Research has analysed the effect of land inequality on economic development. Unequal distribution of land adversely affects growth and development, as it results in institutions that preserve the distributive status quo (Engerman and Sokoloff, 1997; Sokoloff and Engerman, 2000). Land concentration hampers investment in education, as this goes against the interest of land elites (Galor et al., 2009). It can also affect, and be reinforced by, poor financial development (Binswanger and Deininger, 1999). Land concentration restricts small actors' access to credit and hence restricts their access to land markets. The resulting poor institutions, inadequate investment in education and provision of public goods, and underdevelopment of the financial market are some of the channels through which land inequality affects growth and development (Deininger and Squire, 1998; Easterly, 2007; Guereña and Wegerif, 2019).

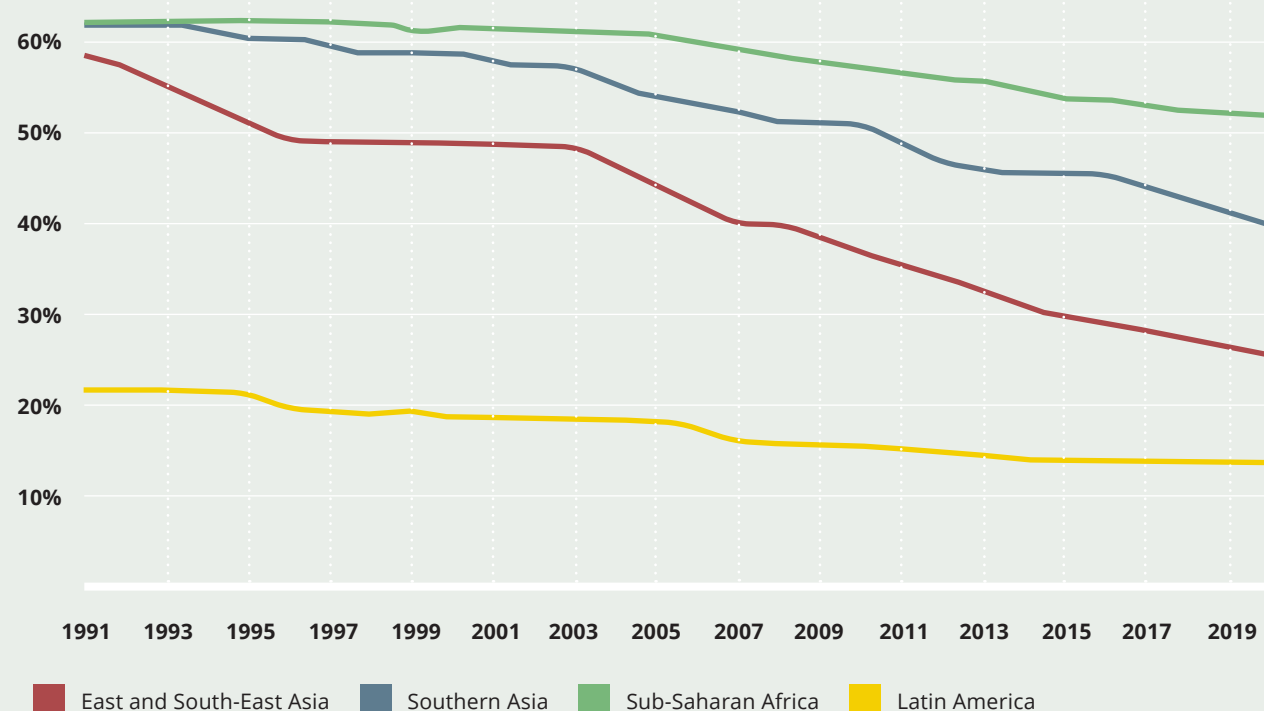
Existing cross-country estimates of land inequality, and the ensuing literature which analyses its effect on economic outcomes, are based on the distribution of the size of operational holdings, according to agricultural census data (Hudson and Taylor, 1972¹; Deininger and Squire, 1998²; Frankema, 2010³). Operational holdings are economic units of agricultural production under single *management* (FAO, 2018). Hence, these estimates pose serious conceptual challenges for measuring inequality in land ownership since they do not capture the *ownership* of land holdings nor do they account for differences in the value of land (e.g. due to soil quality or location). It is thus unclear whether the

Figure 1a: Trends in the share of agricultural value added of total value added (regional-weighted averages by country population sizes).



Source: ILO and FAOStat.

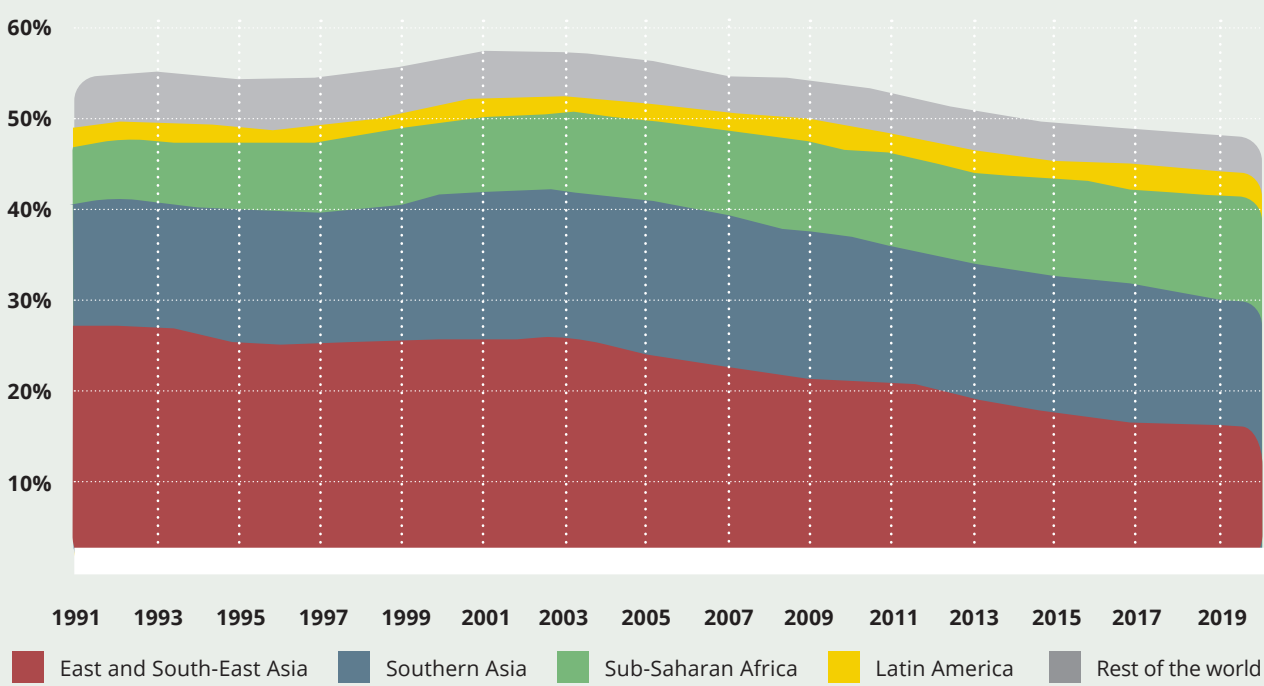
Figure 1b: Share of agricultural employment of total employment (regional-weighted averages by country population sizes).



Source: ILO and FAOStat.

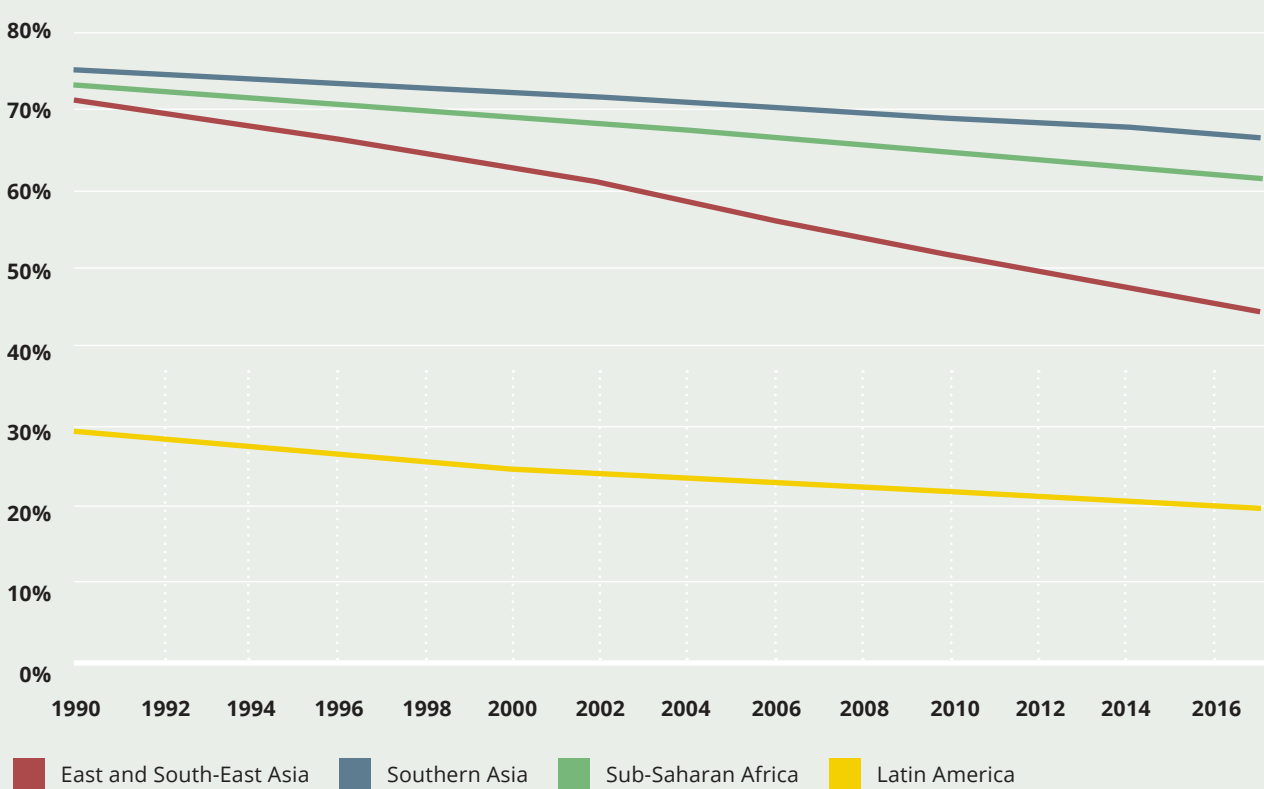
1 For 54 countries in the 1960s, based on FAO's World Programme for the Census of Agriculture.
2 Using 261 observations for 103 countries, based on FAO's World Programme for the Census of Agriculture.
3 Using 186 observations for 105 countries, based on census data from the International Institute of Agriculture (IIA) and FAO.

Figure 1c: Employment in agriculture in absolute millions (regional-weighted averages by country population sizes).



Source: ILO and FAOStat.

Figure 1d: Trends in the share of the rural population of total population (regional-weighted averages by country population sizes).



Source: ILO and FAOStat.

distribution of the area of holdings from agricultural census data reliably captures overall land inequality. There is a need to assess the validity of this link and to define the concept of land inequality, which is most pertinent in the context of developing countries.

The contribution of this paper is to provide consistent estimates of inequality in land ownership across countries and regions of the world, in terms both of area and value and accounting for the landless population. Departing from the use of agricultural censuses, we exploit household survey data, which allows us to focus on land privately owned by a household rather than merely its holdings, the former being more appropriate when analysing land ownership inequality.⁴

Additionally, while land area inequality provides an idea of the distribution of land, accounting for the differential value of land owned by households might give a different picture. To the best of our knowledge, this is the first paper to present and explore the relationship between inequality in land area and inequality in land value. Finally, since agricultural censuses do not capture landless individuals, this part of the population has been substantially disregarded in the literature and at best only roughly proxied. This is a significant shortcoming as variations in ownership rates across countries are unaccounted for. Moreover, landless families are precisely the most vulnerable as they are at the bottom of the distribution but still rely heavily on working and using land. In this paper, we provide and compare estimates of land inequality including and excluding the landless population.

The paper is organised as follows. In the next section, we discuss different concepts with respect to land inequality and their implications. We then describe the data and methodology used in this paper in section 3, followed by the main results in section 4. We first examine the link between the area of inequality in holdings from censuses and our estimate of inequality in land ownership area from household surveys. We then provide estimates of both land area and value among the landowning class. Our results show that land value inequality differs significantly from land area inequality, and confirms the need to take both into account. Our results further show that accounting for the landless population increases land inequality unequally between countries due to differences in ownership rates.

This paper thus makes an important contribution in showing the need for more critical use of existing estimates based on census data. It is also the first to provide comparable estimates of land inequality, under different definitions, in various countries across the world. We provide a novel perspective on international patterns of land inequality. Our benchmark metric of agricultural land inequality (i.e. inequality of land value when including the landless population) reveals regional patterns that show South Asia and Latin America to be the most unequal regions of the world, followed by relatively more egalitarian African countries, and finally “Communist” Asia (China and Vietnam) as the least unequal world region.

⁴ At this stage of the project, we only account for land that is privately owned, and we do not include communal land as part of the land owned by households. In future versions of the paper we plan to include the role played by communal land across different countries.



2 LITERATURE REVIEW

The literature on land distribution has long relied on estimates of Gini coefficients for land using agricultural censuses, which provide tabulated data on the number of holdings and the total area of holding by size class (Deininger and Squire, 1998; Frankema, 2010). However, these estimates involve various challenges.

First, land distribution calculated using an agricultural census captures the distribution of operational holdings (i.e. economic units of agricultural production under single management) rather than land ownership. From a distributional point of view, the latter is more relevant because an agricultural census does not necessarily account for multiple landholdings per owner⁵ and fails to capture the full extent of land concentration.⁶

On the other hand, household surveys often include an agricultural module which collects detailed information on land at the household level. The advantages of this kind of source are numerous. Surveys provide a better idea of inequality in land ownership since each plot of land is linked to the household owning it, unlike with census data. A survey also allows a distinction to be made between privately owned land and operated land i.e. land that is merely utilised by the household, for instance through renting or sharecropping.

The sparse literature relying on surveys has focused on the distribution of operated land. While this gives an idea of the extent of access to land in terms of utilisation, it is not equivalent to land ownership. In fact, households which operate land that they do not own will need to compensate the landowner for its use through rent payments or sharecropping. Moreover, land that is owned can also be used as collateral to gain access to credit or can be rented out or sold in case of a need for liquidity – hence the need to distinguish in survey data between land that is merely operated and effective ownership (Doss et al., 2015).

Second, differences in the value and quality of land are not measured in agricultural censuses. Unlike an agricultural census, household surveys often provide information on the area (e.g. GPS measurements and farmers' estimates) as well as the market value of land at the household level. The distribution of land in terms of area might not be equivalent to the distribution in terms of value. For instance, if larger landowners have disproportionately more valuable land, then land area inequality would not reflect the full extent of the unequal distribution. This paper bridges the gap in the literature when it comes to land value inequality and provides consistent estimates across countries.

5 “The holding's land may consist of one or more parcels, located in one or more separate areas or in one or more territorial or administrative divisions, providing that they all share such means of production as labour, farm buildings, machinery or draught animals. Several different economic agricultural production units under the same ownership, or under the same general management, may be considered as separate holdings if they are operated by different persons.” (FAO, 1999)

6 As explained by Vollrath (2007: 204), the distribution of operational holdings does not capture the distribution of land ownership. The distribution of land holdings is relevant if “we are interested in efficiency, not equity”.

Additionally, census data, by definition, do not account for landless households. They may not portray actual levels of inequality or provide comparable estimates across countries. For instance, based on estimates of inequality between landowning households, a country where land is equally distributed among only a handful of landowners will have a lower level of inequality compared with another country that has a more disparate distribution of land ownership among a larger share of landowning households. There is thus a need to include landless households to account for the full picture. In fact, Erickson and Vollrath (2004) show that the established effect of land inequality on institutions and financial development is sensitive to the inclusion of the landless population.

Erickson and Vollrath (2004) propose a complementary measure of inequality, which is the ratio between agricultural population and the number of holdings; this aims to capture the extent to which holdings are spread across the relevant population, using FAO data. However, the implicit assumption behind such a proxy for landless households is that each agricultural holding has a single owner. Although it is an improvement vis-à-vis the existing literature, this raises concerns similar to those around the existing literature on land inequality.

Departing from agricultural census data, we exploit household surveys, which are mostly nationally representative and hence effectively designed to capture all types of household, whether landowning or landless. In this paper, we estimate inequality both including and excluding landless households, to provide evidence of the issues that arise when they are not accounted for.

Finally, as argued by Lowder et al. (2016), the coverage and methodology of agricultural censuses are not uniform between countries and over time, especially in developing countries, despite efforts by FAO to encourage uniformity. Agricultural censuses in different countries do not distinguish between different forms of legal ownership and can also have different minimum thresholds for recording holdings, which further reduces comparability. Household surveys, on the other hand, provide the flexibility required to make them more comparable across countries and over time. Some papers in the literature have turned to household surveys to assess land distribution in different countries (see Doss et al., 2015 for a review of gendered land outcomes in Africa based on surveys).

These factors suggest that agricultural census data do not allow the full extent of land inequality to be grasped. Surveys, on the other hand, can provide a valuable source of data in this respect. Surveys are not devoid of issues, however, and caveats include the fact that they capture only household land and miss part of government-owned land, as well as private corporate farms. Estimates of the share of total agricultural land operated by family farms⁷ range between 53% (Graeub et al., 2016), taking a more conservative approach, and 73% (Lowder et al., 2016). Another concern regarding household surveys is under-reporting at the top of the distribution.

Despite the caveats of survey data, we believe that surveys remain a relatively better source when estimating inequality of land ownership. They provide detailed data on the land owned by a household, which allows for an in-depth analysis of inequality in land ownership in terms of area and value, while accounting for the landless population. To the best of our knowledge, this paper represents the first attempt to provide a comprehensive estimation of the distribution of landownership inequality by both area and value that is comparable across countries, spanning different continents, by exploiting household surveys.



7 According to Lowder et al. (2016), communal lands are generally not included in agricultural censuses.



3 DATA AND METHODOLOGY

In this paper, we start by revisiting and updating estimates of land area inequality based on agricultural census data. This data source is centralised and overseen by the UN Food and Agriculture Organization (FAO) and is published at the country level every decade under the World Programme for the Census of Agriculture (WCA). The unit of analysis – the operational holding – is defined as “an economic unit of agricultural production under single management comprising all livestock kept and all land used wholly or partly for agricultural production purposes, without regard to title, legal form or size” (FAO, 2018). FAO census data typically provide an estimation of the total number of holdings and the corresponding area for all farms, including family farms, government lands, and holdings by private corporations.⁸ Agricultural census reports provide a tabulated distribution of operational holdings by size bracket.⁹

Previous estimates of land distribution based on this source cover most of the twentieth century, but with only a few estimates in the early 2000s (Deininger and Squire, 1998; Frankema, 2010). In this paper, we reassess and update estimates of land inequality based on census data, up to the most recently available data. Given the tabulated format of the data, we use the generalised Pareto interpolation method (Blanchet et al., 2017) to update census-based estimates of inequality.

As explained previously, we then use household surveys to provide estimates of land area and value distribution, as well as including the landless population in different countries across the world. There are two main types of survey that are used in this paper: the World Bank’s Living Standards Measurement Study (LSMS) household surveys and official household surveys done by different countries.¹⁰ These types of survey generally include an agricultural module which collects information about the fields or plots owned by the household. The relevant information for estimating land ownership inequality includes the land area, reported value, and an indication of ownership.

The choice of countries in this paper is based on the availability of household surveys capturing the ownership of land (Table A1). In some countries the quality of the data was not sufficiently good and they were therefore excluded from the analysis. Most surveys available in the different countries have a very short temporal dimension (e.g. in various cases only one year of data is available). For this reason, we restrict our analysis to a single observation per country and do not analyse trends in the concentration of agricultural land.¹¹

⁸ The sector coverage, however, varies across countries and over time. For example, most African countries only cover land operated by the household sector (for instance, excluding corporate land).

⁹ Some countries further provide breakdowns by tenure, gender, land use, and crops.

¹⁰ In addition, we use the Demographic and Health Surveys (DHS) of the DHS Program for robustness purposes. DHS provides two key pieces of information regarding land, a direct question on ownership and the area of land owned, but it makes no estimation of value. We thus estimate land ownership inequality and obtain estimates close to our main estimates, using the LSMS and other household surveys (see Figure B1).

¹¹ In future versions of this paper, we plan to exploit the time dimension in cases where data allow for such an analysis.

Our object of analysis is to measure the distribution of land ownership. In this paper, land ownership is defined as any agricultural land over which a household has private property rights. This is defined fairly consistently across countries. China and Vietnam are special cases, as in these countries private property is less clearly defined but rural households are given extensive rights over land e.g. rights to control, dispose of, and inherit land (McKinley, 1993; Li and Zhao, 2007; Do and Iyer, 2003; Piketty et al., 2019). At the moment, we do not include communal land in our definition of ownership but we plan to investigate this in future versions of the paper, as it plays a relevant role in certain countries (e.g. in Africa or Latin America).

In this paper we focus on two ways of measuring the agricultural land owned by a household. The first is in terms of area of agricultural land (i.e. the size of the land holdings owned by a household).¹² The second is in terms of the value of agricultural land. The latter is our preferred measure since it accounts for the large heterogeneity of land types within a country and captures the value of land as an asset. Values reported by surveys are based on the concept of current market value, where agricultural land is valued at prevailing market prices.¹³

To describe the distribution of agricultural land, we use standard measures of inequality such as the Gini coefficient and land shares (i.e. the percentage of land owned by a population group such as the top 10%, middle 40%, or bottom 50%). Although the Gini coefficient has been used predominantly in land inequality studies based on census data, we prefer to use land shares. The Gini index is a synthetic measure of inequality which summarises the entire distribution into a single number, and it is thus less informative about where the important changes in distribution take place. In Appendix 1, we explain both measures and show that they provide a consistent picture of cross-country differences in agricultural land inequality.

We measure inequality of land ownership within two population groups. The first group consists of landowners (i.e. those households owning land). Our second group consists of landowners plus landless households. The latter is our benchmark unit, since it is important to account for landless households to obtain a complete picture of land inequality. Surveys are extremely useful in examining the landless population, since they capture both the population of households living in rural areas and the working activities of each member of a household, including agriculture. This information, together with the number of households who are landowners, allows us to identify the population of “landless households”. We define landless households as those where at least one of its members is employed in agriculture but does not report owning any agricultural land.

¹² Note that agricultural land area is reported in both agricultural censuses and in surveys. The difference is that surveys measure land ownership at the household level while agricultural censuses measure the land area of operational holdings.

¹³ The valuation practice in surveys is generally based on a subjective assessment of respondents (surveys generally ask a question along the lines of: “What would be the amount received if the land was sold today?”), but this is often complemented by external assessments based on administrative data. In certain instances, in particular in the absence of well functioning agricultural land markets, the survey design evaluates the market value of land using alternative approaches, such as by capitalising agricultural income (for example, this is an approach adopted by the China Family Panel Studies (CFPS)).

4 RESULTS

Census vs survey

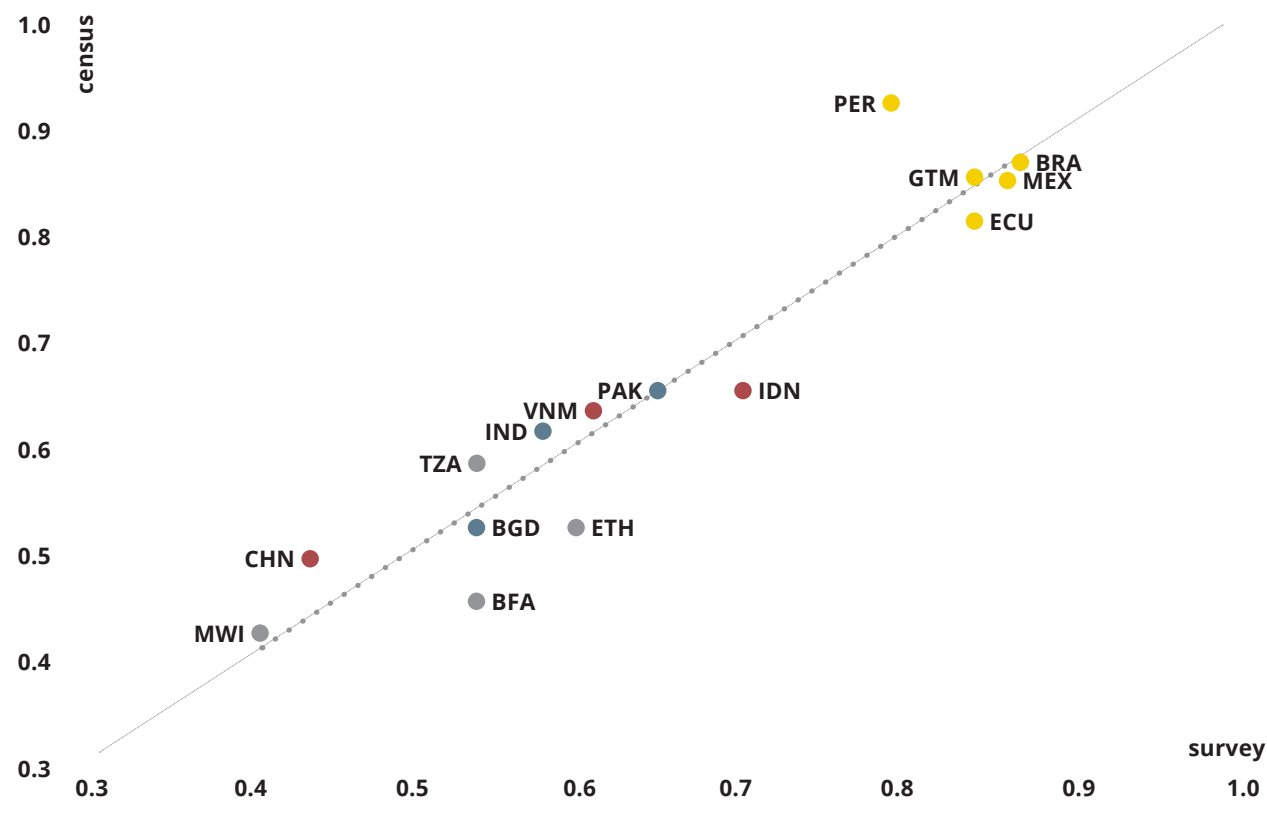
Previous work on the measurement across countries of the distribution of land ownership has been based on information contained in agricultural censuses. However, as argued above, censuses do not record agricultural ownership units but rather operational (or production) units. The implicit assumption behind this is that the size distribution of operational holdings provided in censuses serves as a proxy for the distribution of land ownership. Moreover, the use of census data has restricted analysis to inequalities of land area and not of land values, as well as to inequalities between landowners, excluding landless households.

Given the wide use of census-based estimates in the literature, as a first step it is useful to examine the extent to which the size distribution of farms reflects the distribution of land area ownership. Figure 2 compares agricultural land inequality estimated from survey and census data. More precisely, it shows the Gini index for the distribution of land area: (i) among households owning land from surveys (x axis), and (ii) among land holdings from agricultural censuses (y axis). In order to ensure comparability, we select rounds of survey data that are the closest to the census year of the countries included.

Interestingly, the Gini index is broadly comparable according to the different definitions in the two data sources (the regression line is almost equivalent to the 45-degree line). We find, according to both sources, that land inequality is highest in Latin America, is at an intermediate level in Asia, and is lowest in Africa.

Given that the two estimates of land inequality tend to coincide, this suggests that inequality of landholding area can be an appropriate proxy for inequality of land area ownership. However, the various caveats associated with census data, such as inconsistencies in terms of coverage (household, corporate or government sector included or not, in an unsystematic way) should be kept in mind. Additionally, while census data could be seen as a first approximation for inequality in land area, it does not reflect inequality in land value. Section 4.2 expands on this by including different dimensions of inequality to arrive at our benchmark concept of inequality, which is that of the distribution of agricultural land value among rural households (including both landowners and landless households).

Figure 2: Gini index based on census and survey data in selected countries



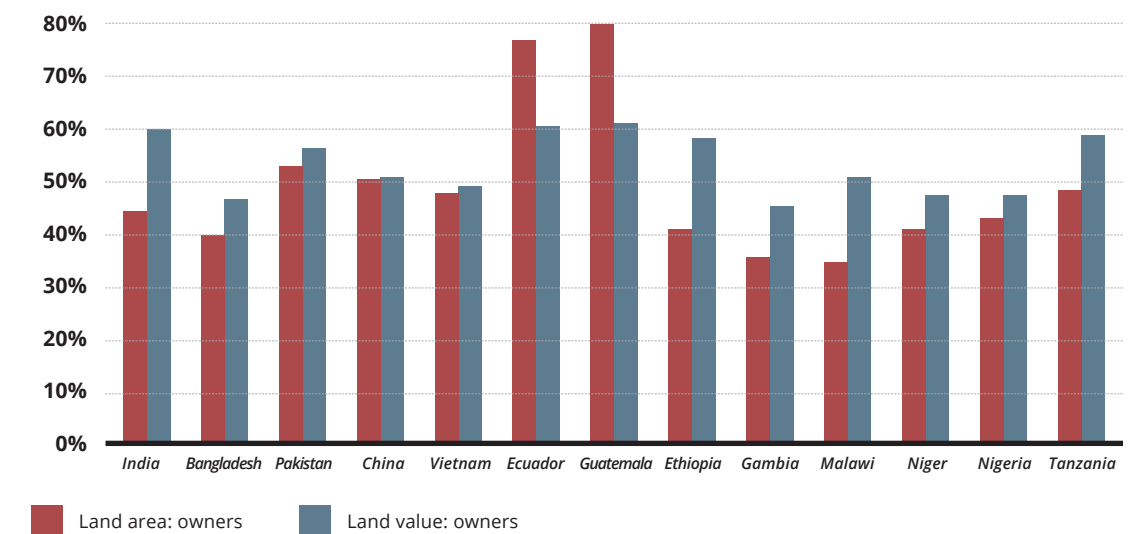
Note: This figure includes Brazil, Mexico, Peru, and Burkina Faso, for which we have land area estimates from surveys but no information on value. They are hence not part of the sections that follow. Conversely, the Gambia, Nigeria, and Niger do not appear in this figure as there is no census information on the distribution of holdings. In order to ensure comparability, we select rounds of survey data that are the closest to the census year of the respective country. The countries and the year of survey are as follows: BGD – Bangladesh (2011); BFA – Burkina Faso (2014); BR – Brazil (1996); CHN – China (2002); ECU – Ecuador (2014); ETH – Ethiopia (2011); GUA – Guatemala (2000); IND – India (2012); IDN – Indonesia (2014); MWI – Malawi (2010); MEX – Mexico (2009); PAK – Pakistan (2010); PER – Peru (2007); TZA – Tanzania (2018); VNM – Vietnam (2014). For sources of data, see Appendix 1.

Distribution of land area vs land values

The value of one hectare of agricultural land can vary widely within a country, with numerous factors explaining the differences: for instance, diversity in soil quality (Benjamin, 1995), type of agricultural cultivation (e.g. cropland vs pastures), access to irrigation and agricultural capital, area of the agricultural holding (Barret 1996; Martinelli, 2016), land market regulation (Restuccia and Santaaulalia-Llopis, 2017), factor market imperfections (Sen, 1966), etc. It is clear that agricultural land is not a homogeneous asset and that estimates of land area inequality fail to capture the diversity of values across landholdings.

We go one step further than previous studies and compare inequality of land area with that of land values in household surveys, whenever this information is available. Figure 3 shows the distribution of agricultural land within landowning groups for the most recent year for which data are available, using two measures of agricultural land: land area (orange bars) and land values (blue bars). In other words, the figure shows the share of total agricultural land owned by the top 10% of landowners, according to the two measures.

Figure 3: Share of top 10% of land owners in selected countries, by land area and land value



Note: This figure provides estimates of the share of land area and land value held by the top 10% of the landowning class in the countries selected, including both rural and urban areas.

Importantly, the results indicate that inequality of land value can be significantly different from inequality of land area. For example, a comparison of India and Ethiopia with Ecuador and Guatemala is particularly informative. The first two countries have relatively low levels of land area concentration when compared with the second two: in fact, the share of the top 10% of landowners in Ecuador and Guatemala is twice that of the same groups in India and Ethiopia.¹⁴ From this perspective, inequality in these two pairs of countries is remarkably different. Based solely on these estimates, Ethiopia and India would be assessed as being relatively egalitarian countries compared with Ecuador and Guatemala, which are extremely unequal by any standard. However, results for land value inequality, as opposed to land area inequality, completely change this comparison. Under the land value metric, differences between the four countries all but disappear, as the top 10% of landowners own around 60% of total agricultural land value in all four countries.

Generally, our results point to important differences between land value inequality and land area inequality. In particular, Guatemala and Ecuador seem to be exceptions to the rule, with land area inequality tending to be higher than land value inequality, unlike in other countries. One potential explanation for this result is that the largest holdings in Latin America are substantially less productive than medium- to low-sized holdings. This would be broadly consistent with FAO data on the area of agricultural land covered by cropland and pastures in each country, which indicate that pastures cover a larger percentage of the agricultural land surface in Latin America than in most of the countries in our sample. In other words, such differences could be explained if the largest landholdings in Ecuador and Guatemala consisted mostly of low-productive pastures. This aspect requires further examination, however.

¹⁴ More precisely, 80% of total agricultural land is owned by the top 10% of landowners in Ecuador and Guatemala compared with 40% in India and Ethiopia.

Accounting for the landless population

As explained in previous sections, a meaningful measurement of the distribution of agricultural land should not be restricted solely to landowners. While inequality within the landowning class provides useful insights into the structure of inequality, a comprehensive assessment of the phenomenon needs to include the landless population (i.e. those directly involved in agriculture but who do not own land).

Figures 4a and 4b show the land shares of the top 10% and bottom 50%, respectively, for land value among landowners (blue bars) and landowners and landless households (green bars). In addition, Table 1 shows the share of landless households within the population of landowners plus landless households. Figures 4a and 4b show that including landless households is important in establishing levels of inequality. More specifically, regions with the highest shares of landless households show larger increases in levels of inequality.

Figure 4a and Figure 4b: Shares of land value in selected countries of top 10% and bottom 50% of landowning class, including landless households

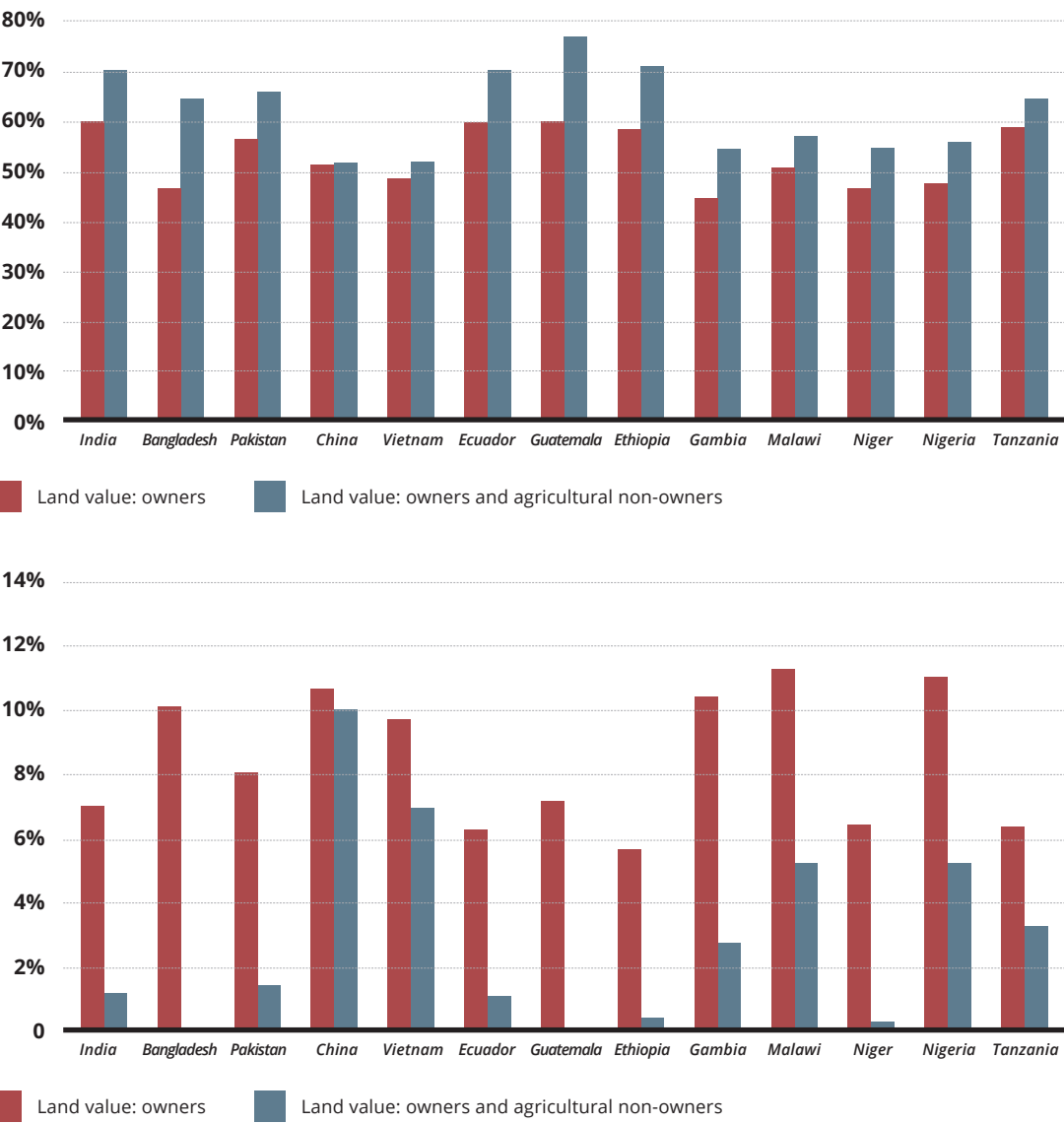


Table 1: Proportion of landless households

LANDLESS HOUSEHOLDS (% 'LANDOWNERS AND AGRICULTURAL NON-OWNERS')						
World Regions	Individual countries					
South Asia 38%	India 39%	Bangladesh 40%	Pakistan 36%			
China-Vietnam 7%	China 3%	Vietnam 12%				
Sub-Saharan Africa 29%	Ethiopia 40%	Gambia 33%	Malawi 25%	Niger 27%	Nigeria 27%	Tanzania 21%
Latin America 37%	Ecuador 36%	Guatemala 56%	Brazil 29%	Peru 29%		

Note: Table 1 shows the proportion of landless households out of landowning and landless households. A household is defined as landless if (i) it does not own any piece of land and (ii) at least one household member participates in activities related to agriculture. We include Brazil and Peru in this table since we are calculating the percentage of landless households, although surveys do not cover the value of land. Hence, these countries are not included in subsequent analysis.

Three patterns are worth mentioning. First, South Asia (India, Bangladesh and Pakistan) and Latin America (Ecuador and Guatemala) are the most unequal regions, with the share of the top 10% rising from 45–60% to up to 70%, and that of the bottom 50% falling from 7–10% to 0–2%. In both regions, landless households account for more than one-third of the reference population.

In contrast, inequality in China and Vietnam is not significantly affected by the inclusion of the landless population, with an increase of a few percentage points in the share of the top 10% (and a decrease in the share of the bottom 50%). This is driven by the very low proportion of landless households, around 3–12%. This is explained by historical land reforms carried out in these countries under their communist regimes, which still provide widespread access today to agricultural land for most households in rural areas.

Finally, African countries have proportions of landless households that are somewhere in between. Hence, changes in levels of inequality when switching from one population concept to the other are in the middle compared with the two groups of countries as well.

Overall, it is clear that any assessment of land inequality that excludes the landless population will result in an incomplete understanding of the complex structure of inequality present in different countries.

From land area inequality between landowners to accounting for landless people and land values

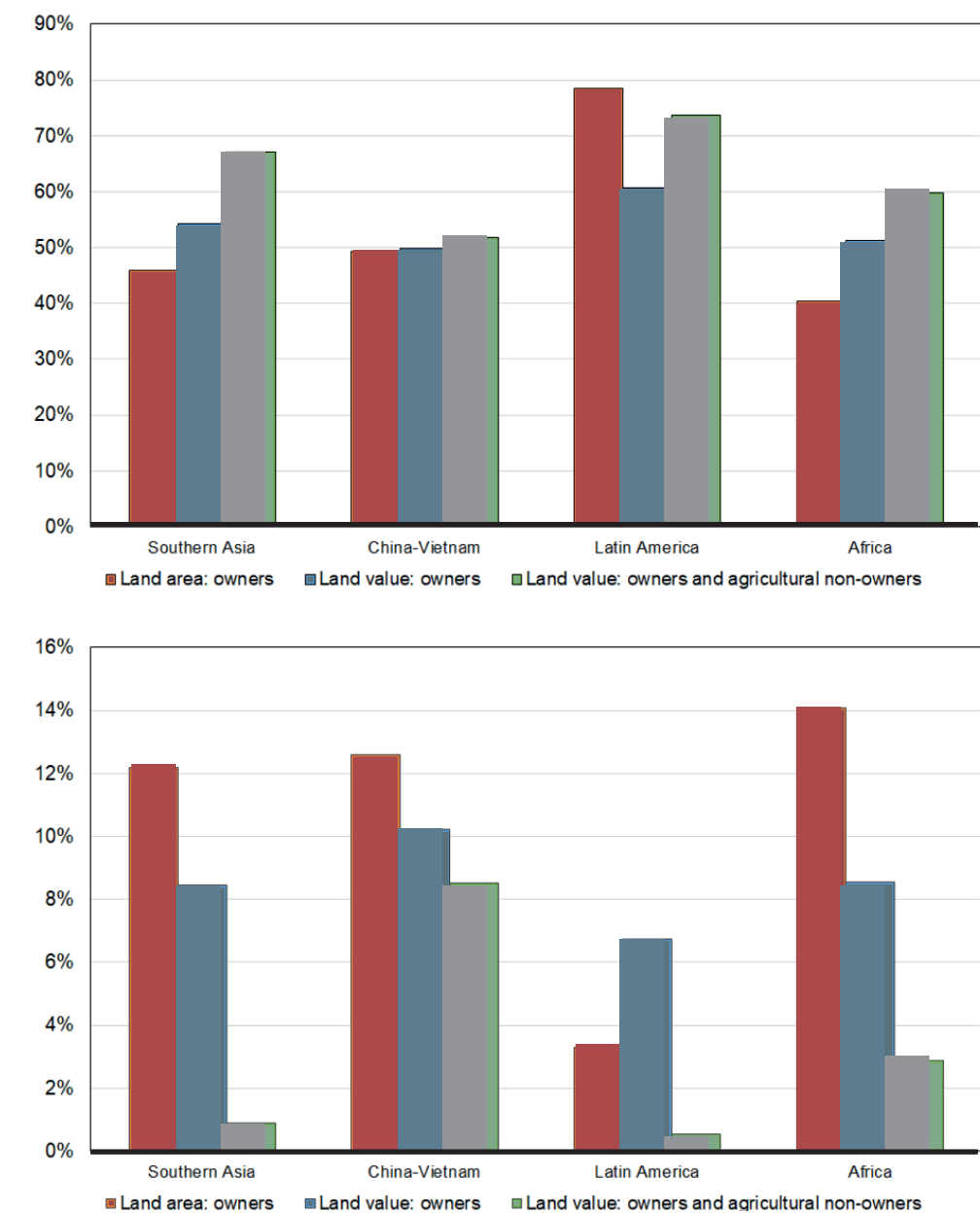
Figures 5a and 5b summarise the main results of the paper. They show the agricultural land shares of the top 10% and the bottom 50% for the three concepts examined in this paper: (i) land area inequality between landowners; (ii) land value inequality between landowners; and (iii) land value inequality within the population of landowners plus landless households. Rather than presenting results at the country level (as done in previous sections), Figures 5a and 5b show the unweighted country averages for four world regions: (i) South Asia – Bangladesh, India, Pakistan; (ii) China and Vietnam; (iii) Latin America – Ecuador and Guatemala; (iv) Africa: Ethiopia, the Gambia, Malawi, Niger, Nigeria, and Tanzania. The country groupings are based not only on geographical location but also on common patterns in the ownership of agricultural land and in macroeconomic trends (e.g. proportion of employment and value added in agriculture; share of rural population, etc.).

Figures 5a and 5b condense the main patterns documented in the paper. First, countries in the South Asia region appear to be moderately equal when looking at the distribution of land area between landowners. However, these countries have some of the highest levels of inequality when land values and the landless population are included. China and Vietnam, by contrast, display higher levels of land area inequality between landowners than both South Asia and Africa, but land concentration is only slightly higher when land values and landless households are taken into account. Overall, China and Vietnam appear to be the least unequal world region in our sample, according to our benchmark indicator of inequality.

Latin America (at least as reflected by Ecuador and Guatemala) displays the most unequal distribution of agricultural land area between landowners. This also applies to Mexico and Peru (Figure 2), and is a finding that has been documented in most Latin American countries based on agricultural censuses (Frankema, 2010). Unlike the other world regions, inequality between landowners is substantially lower in land value than in land area. When the landless population is included, similar patterns of land inequality are observed, with land value inequality also at one of the highest levels.

Finally, the African countries selected for this analysis occupy an intermediate position between China and Vietnam on the one hand and South Asia and Latin America on the other. Africa has the lowest levels of land area inequality between landowners, but inequality rises gradually when land values and the landless population are included.

Figures 5a and Figure 5b: Shares of land area and land value held by top 10% and bottom 50% of landowning class and including landless households, in selected countries



CONCLUSION AND NEXT STEPS

This paper provides the first consistent estimates of agricultural land inequality in developing countries. As such, it presents the most comprehensive overview of the different dimensions of inequality in agricultural land and emphasises the importance of using well defined concepts and clear methodology for measurement. Notably, it shows that we need to go beyond existing studies looking at the size distribution of agricultural holdings based on agricultural censuses. Existing estimates do not reflect either land ownership inequality or land value inequality and do not account for the landless population. We advocate instead the use of household surveys as the most appropriate data source to estimate land ownership inequality across countries, both in terms of area and value, and to account for non-owners.

Our new estimates provide a novel perspective on international patterns of agricultural land inequality. According to our benchmark metric (i.e. land value inequality including the landless population), South Asia and Latin America show the highest levels of inequality, with the top 10% of landowners capturing up to 75% of agricultural land and the bottom 50% owning less than 2%. The African countries selected display relatively less unequal land ownership patterns, while “Communist” Asia (China and Vietnam) represent the region with the lowest levels of inequality.

Having said this, we need to stress that the current results represent a first attempt at assessing agricultural land distribution in developing countries. Although we have included the most populated countries in the analysis, we intend to cover more developing countries to obtain a more complete picture. To do this, we are also developing robust approaches to estimate land values in countries for which surveys provide information on land area only (e.g. Mexico, Mongolia).

To finish, we indicate several methodological extensions of the current work. First, we need to critically assess the role of different forms of land ownership, especially those for which distinctions from private property are not clear-cut (e.g. such as the role of communal land). Related to this, we need to better understand the importance of corporate land and public land and its impact on distributional patterns. In the future, an effort will be made to combine survey data and census data.

Finally, given the importance of land for the world's poorest people, we stress the need for governments and international organisations to invest more in collecting more detailed and systematic information on agricultural land in household surveys, especially in countries where data are currently not available.

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APPENDIX 1

Sources of data

Table A1: Sources of data

COUNTRY	TYPE	YEAR	DESCRIPTION	SOURCE
AFRICA				
Burkina Faso	Census	2010	FAO 2010	FAO
	Survey	2014	Enquete Multisectorielle Continue (EMC-BF), 2014	LSMS (World Bank)
Ethiopia	Census	2000	FAO World Census of Agriculture 2000	FAO
	Survey	2015	Ethiopia Socioeconomic Survey (ESS) Wave 3, 2015-16	LSMS (World Bank)
Gambia	Survey	2015	Gambia Integrated Household Survey (IHS), 2015	The Gambia Bureau of Statistics
Malawi	Census	2006	FAO World Census of Agriculture 2010	FAO
	Survey	2016	Fourth Integrated Household Survey (IHS4), 2016	LSMS (World Bank)
Niger	Survey	2014	National Survey on Household Living Conditions and Agriculture 2014	LSMS (World Bank)
Nigeria	Survey	2015	General Household Survey, Panel 2015-2016	LSMS (World Bank)
Tanzania	Census	2007	FAO World Census of Agriculture 2010	FAO
	Survey	2014	National Panel Survey (NPS), 2014-15	LSMS (World Bank)
ASIA				
Bangladesh	Census	2008	FAO World Census of Agriculture 2010	FAO
	Survey	2011	Bangladesh Integrated Household Survey (BIHS), 2011	International Food Policy Research Institute (IFPRI)
China	Census	2002	ILC	Khan 2001
	Survey	2002	Chinese Household Income Project	Chinese Academy of Sciences and others
	Survey	2016	China Family Panel Studies (CFPS), 2016	Institute of Social Science Survey, Peking University
India	Census	2010	FAO World Census of Agriculture 2010	FAO
	Survey	2012	All India Debt and Investment Survey (AIDIS), 2012	Ministry of Statistics and Programme Implementation
Indonesia	Census	2013	FAO World Census of Agriculture 2010	FAO
	Survey	2014	Indonesia Family Life Survey	
Pakistan	Census	2010	FAO World Census of Agriculture 2010	FAO
	Survey	2010	Pakistan Household Integrated Survey (HIES), 2010-11	Pakistan Bureau of Statistics
Vietnam	Census	2011	FAO World Census of Agriculture 2010	FAO
	Survey	2014	Vietnam Household Living Standards Survey (VHLSS), 2014	General Statistical Office (GSO) of Vietnam

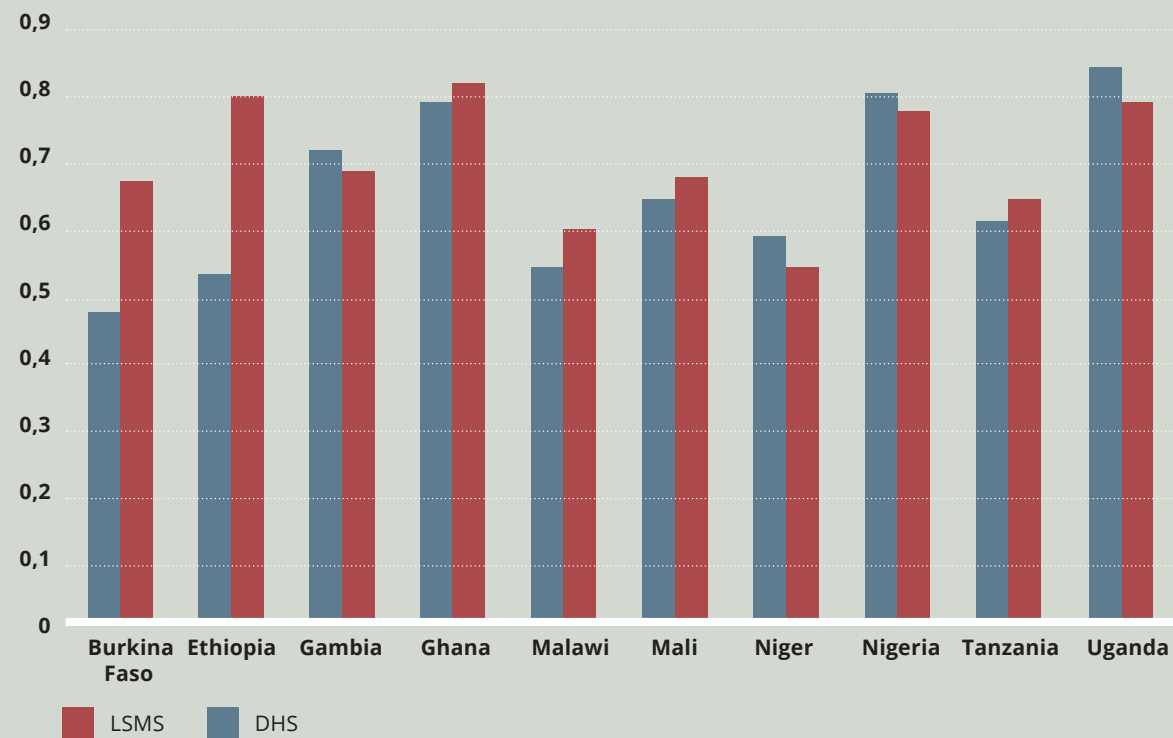
COUNTRY	TYPE	YEAR	DESCRIPTION	SOURCE
LATIN AMERICA				
Brazil	Census	1996	FAO World Census of Agriculture 2000	FAO
	Survey	1997	Pesquisa sobre padroes de vida 1996-1997	LSMS (World Bank)
Ecuador	Census	2000	FAO World Census of Agriculture 2000	FAO
	Survey	2014	Ecuador Living Conditions Survey	National Statistical Office of Ecuador
Guatemala	Census	2003	FAO World Census of Agriculture 2000	FAO
	Survey	2000	Encuesta Nacional sobre Condiciones de Vida 2000	LSMS (World Bank)
Mexico	Census	2007	FAO World Census of Agriculture 2010	FAO
	Survey	2009	Mexican Family Life Survey	UIA and CIDE
Peru	Census	2012	FAO World Census of Agriculture 2010	FAO
	Survey	2007	Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza 2007	National Statistical Office of Peru

Table A2: Agricultural land distribution (distribution of agricultural land value, including the landless population)

COUNTRY	BOTTOM 50%	MIDDLE 40%	TOP 10%	GINI INDEX
India (2012)	1,20%	28,20%	70,60%	0,82
Bangladesh (2015)	0,00%	31,50%	68,50%	0,84
Pakistan (2010)	1,40%	32,20%	66,40%	0,8
China (2012)	10,00%	38,40%	51,50%	0,64
Vietnam (2014)	7,00%	41,10%	51,90%	0,68
Ecuador (2014)	1,10%	28,60%	70,30%	0,82
Guatemala (2000)	0,00%	22,70%	77,30%	0,88
Ethiopia (2015)	0,40%	28,40%	71,20%	0,83
Gambia (2015)	2,80%	42,50%	54,70%	0,73
Malawi (2016)	5,30%	37,30%	57,40%	0,72
Niger (2014)	0,30%	44,60%	55,20%	0,75
Nigeria (2015)	5,30%	39,10%	55,60%	0,71
Tanzania (2015)	3,30%	32,30%	64,40%	0,77

DHS and LSMS comparison

Figure B1: Gini indices for landowners based on LSMS and DHS data



As part of efforts by the World Bank, household surveys under the Living Standards Measurement Study (LSMS) have been implemented in a number of countries, with the aim of providing nationally representative household surveys, in some countries with a panel component. The coverage of the LSMS is particularly wide in Africa compared with other regions of the world and provides detailed information on land and agricultural activities. Since the focus of these surveys is often on capturing agricultural activities, they cover land both operated and owned by households. In surveys where distinctions between the two are not straightforward, a proxy for ownership is defined as individuals who have inherited or purchased land. As a robustness check, the Demographic and Health Surveys (DHS) of the DHS Program are used. These are nationally representative household surveys that focus on health and nutrition aspects but which since the 2000s have also included basic information on land ownership, reporting whether a given household owns land or not and the area of land owned. Gini coefficients estimated from the LSMS and DHS are very similar, validating the ownership proxy of the LSMS (Figure B1).

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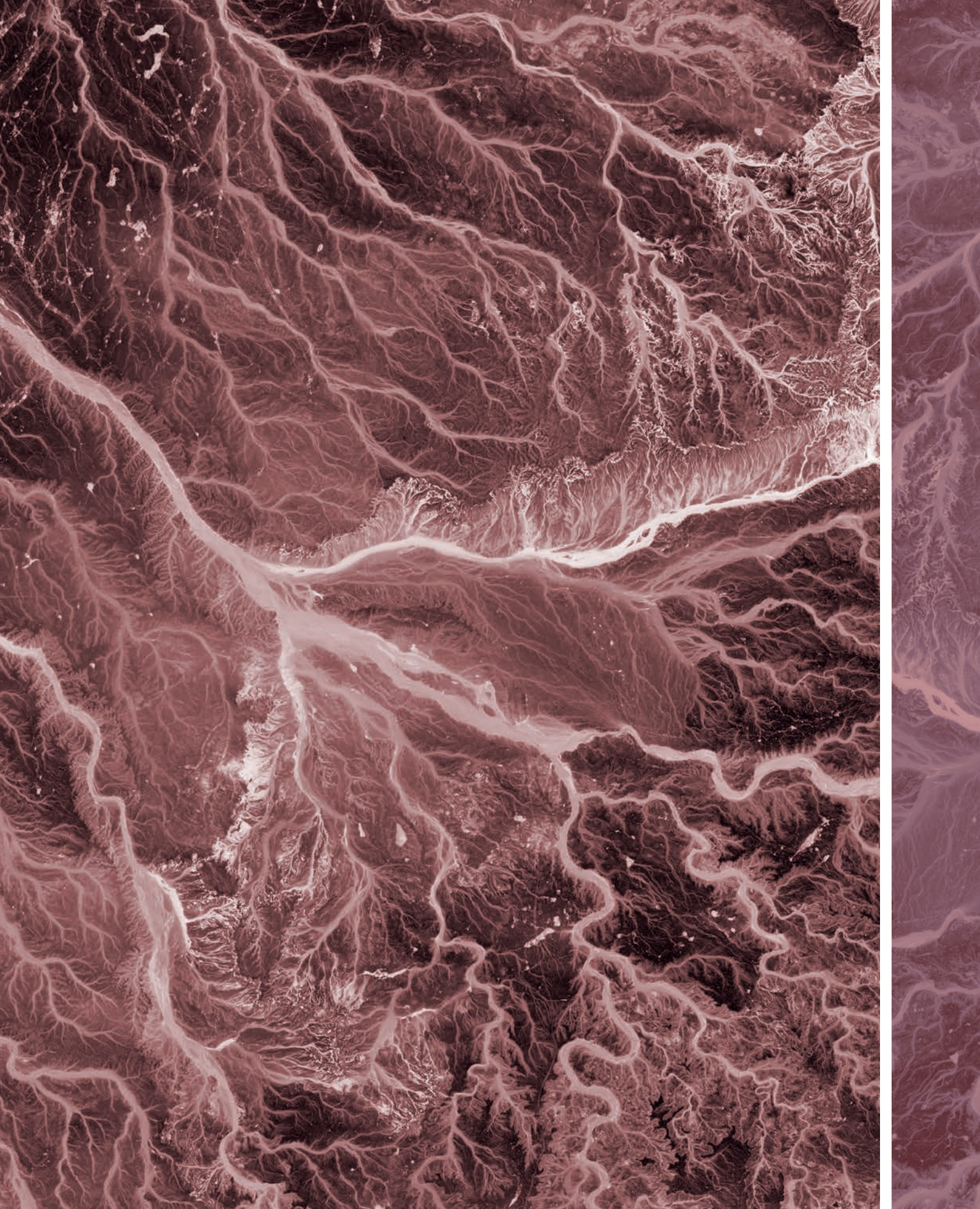
is steered by an informal reference group, composed of experts in the field of land and wider inequalities.

Members of the reference group did provide guidance and expertise throughout the process and include the following organisations:









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