

Towards a standard land module for multi-topic household surveys

Although land is a key asset for individuals, households, and societies, complexity and variation in institutional arrangements imply that, although land sections of relevant questionnaires are large, coverage of non-agricultural land and consistency of the information collected, e.g. with respect to gender is often limited. To improve consistency in data collection without sacrificing relevance, this note presents a parcel module and questions community level that can be integrated into ongoing survey instruments with minimal adaptation (in terms of coding). This will allow existing surveys to be used more effectively to facilitate richer analysis, build local capacity, and report on key land indicators, including those for the SDGs, in a comparable way. It will also help open up new areas of analysis by helping to integrate household surveys with administrative data or remotely sensed imagery.

1. Introduction

Land and associated investments are key assets for individuals, households, and societies. The institutions defining how land can be used or rights to it are assigned and can be transferred affect social and economic development in numerous ways, most directly via (i) incentives for land-related investment, sustainable land management and resilience; (ii) the functioning of land markets and their contribution to structural transformation and the scope for emergence of financial markets based on using land as collateral; and (iii) individuals' ability to take risk and bargaining power within the household through endowment effects.

Reliable information on land is important to measure households' endowments and to assess if existing institutional arrangements or policies achieve their goals or could be improved to better contribute to desired outcomes. Multi-topic household surveys have long been key tool to provide relevant data and to explore links between different aspects of land tenure and agricultural productivity or household welfare and to identify if land policies reach their target population or achieve intended outcomes.

Yet, in part as a result of the complexity and context-specific nature of land institutions, the information available from existing surveys varies considerably. To improve consistency in data collection without sacrificing relevance, this note presents a parcel module and few questions at community level that can be integrated into ongoing survey instruments with minimal adaptation, e.g., in terms of coding, to ensure coverage of key issues. Such more standardized coverage will allow existing surveys to be used more effectively to facilitate richer analysis, build local capacity, and report on key land indicators, including those for the SDGs,¹ in a comparable way. It will also help open up new areas of analysis by helping to integrate household surveys with administrative data or remotely sensed imagery.

2. Rationale and unit of analysis

2.1 Why do we want to know about land?

Land as a key asset: The way in which land can be accessed and rights to it are distributed affects equality of opportunity, individuals' bargaining power within the household and their ability to take risk and deal with negative shocks. The distribution of land ownership affects the overall asset distribution and growth at the household as well as individual level and going beyond the unitary household model to capture these is of great importance in practice (Goldstein and Udry 2008; Udry 1996). For example, female rights to land and other assets have been shown to affect girls' survival rates (Qian 2008), their anthropometric status (Duflo 2003), level of schooling (Deininger *et al.* 2013; Luke and Munshi 2011), and their ability to use of economic opportunities. Legal reforms allowing women to inherit increased asset ownership (Deininger *et al.* 2013) and benefited their offspring (Deininger *et al.* 2014). Yet, although laws may mandate gender equality, enforcement is often weak (Peterman 2012), leaving considerable gender gaps (Kilic *et al.* 2015) and implying that women may be disproportionately affected by tenure insecurity (Adelman and Peterman 2014) and conflicts (Deininger and Castagnini 2006; Joireman 2008), often inheritance-related ones (Chapoto *et al.* 2011). Beyond legal reforms, joint titling is argued to have helped not only to empower

¹ The SDG indicator most directly relevant is 1.4.2 which aims to measure the "proportion of total adult population with secure tenure rights to land, with legally recognized documentation and who perceive their rights to land as secure, by sex and by type of tenure".

women (Newman *et al.* 2015) but also their children (Menon *et al.* 2014) and experimental evidence from Tanzania suggests that nudges to put females on titles can be effective (Ali *et al.* 2016b).

Land, agricultural productivity, and structural transformation: Secure property rights are essential to provide incentives for land-related investment to ensure sustainable and efficient use of this resource. While customary institutions can historically offered high levels of tenure security (Bruce and Migot-Adholla 1994), they often fail to protect women's rights, are ill-equipped to resolve inter-community disputes, and may come under pressure if increased demand for land from outsiders (Chimhowu and Woodhouse 2010) materializes in a setting where oversight and accountability are weak so that chiefs act as landlords rather than custodians of community assets (Berry 2009).

Economic development involves specialization and a move of part of the labor force out of the agricultural sector, creating heterogeneity in skills and scope for efficiency-enhancing land transfers. Land rental has long helped to drive structural transformation (Baland *et al.* 2007; Deininger *et al.* 2008a) in a way that allows labor to move out of agriculture without losing the implicit safety-net provided by land ownership. If rentals remain short and involve only community members, formal documents are unlikely to be needed. But long-term leases or transfers with outsiders or that involve migration that may offer more opportunity for increased productivity may require formal records (Macours 2014). Formal land tenure will improve credit access if land markets are sufficiently fluid and third parties such as mortgage lenders can access reliable registry information at low cost on a routine basis although broad-based credit effects should not be expected in rural settings where these conditions are unlikely to hold (Carter and Olinto 2003).

As definition of property rights is a public good, public programs to improve security of land tenure have a long tradition. Their main objective is to enhance tenure security and investment especially by vulnerable groups and reduce expropriation risk (Fenske 2011; Lawry *et al.* 2016), and transaction costs that may impede market-based transfers of land to its best use (Besley and Ghatak 2010). Investment impacts have, among others, been documented in studies from Vietnam (Do and Iyer 2008), Ethiopia (Deininger *et al.* 2008b), Rwanda (Ali *et al.* 2014a), Benin (Goldstein *et al.* 2015), and Peru (Field 2007). The effects of greater tenure security on land market operation are discussed for Rwanda (Ali *et al.* 2014b), Mexico (de Janvry *et al.* 2015) and India where there is also evidence of urban credit market effects (Deininger and Goyal 2012). While high costs have undermined replicability of such approaches in the past (Jacoby and Minten 2007), new technology and community participation can reduce costs, allowing implementation at scale (Nkurunziza 2015) but survey evidence is needed to document that all target groups are included and that efforts are sustainable (Ali *et al.* 2016a).

2.2 What types of information is needed?

Parcels: Households or individuals hold parcels of residential or agricultural land. Parcels differ from each other in many dimensions, including soil quality, slope, levels of erosion, and land-attached investments (fences, bunds, trees, etc.) but also tenure type, mode of acquisition (purchased, inherited, cleared, rented, etc.) and the type of formal or informal ownership documents (title, sales deeds, tax receipts, etc.). As all of these affect productivity, surveys that aim to analyze agricultural production often not only include parcel rosters to capture these differences but also enumerate input use and production outcomes at parcel level.

Where this is the case, adding parcel-level questions on tenure and ascertaining impacts of tenure on a range of parcel-level outcomes is straightforward, though it will be important to make sure the residential parcel is included. Where not, inclusion of a parcel roster, with the residential parcel as the first one, is still recommended as aggregating information across different parcels will not save time but create considerable aggregation bias. In this case, arrangements will need to be made to link parcels to output (e.g., by noting for each parcel the type of crop grown). A parcel roster will also allow to inquire about agricultural or non-agricultural parcels, including those located far from the household's current residence, that are not currently cultivated by the household to avoid that, as found in many surveys, the total amount of land leased in is larger than that of land leased out, often by an order of magnitude (Deininger *et al.* 2015).

Individuals: Information on land endowments and perceived tenure security at individual level is obtained at parcel level making reference to person ids from the household roster approach as suggested by Doss (2014). This implies that the only type of information needed at individual level relates to knowledge about land rights and institutional arrangements (e.g., where to register land transactions or what institution to approach in case of a land dispute with the state, e.g., about the threat of eviction). Questions of this nature, which will need to be carefully pretested and correct answers checked, will be included in more expanded versions of the questionnaire.

Communities: Institutional arrangements and norms regarding ownership and use of individual or communal land (including access to common property) will affect household behavior. These may vary considerably within communities in a country and it will be most efficient to inquire about these variables as well as current and past prices for land rental and sales of one hectare of average quality land at community level. This includes access to public institutions to register transactions and resolve disputes, norms for marriage and inheritance, perceived tenure security and challenges to land rights, land-related taxes and fees, as well as land use planning.

3. Modules and specific questions

Annex 1, 2, and 3, include plot and community-level modules to provide basic issues of land access and key institutional factors in a way that is short enough to be integrated into multi-topic household surveys. While a set of more detailed annotations is included in annex 4, we discuss analytical rationale more broadly below.

3.1 Plot level questionnaire

Nature of respondent: Although questions pertaining to a specific parcel should be answered by the person managing or owning it, the additional time requirement in terms of interview time would be too much for the typical multi-topic household survey. To the extent that both the respondent's as well as plot owners' and plot managers' roster ids are included, it will be possible to conduct analysis separately for different groups to explore if there may be aggregation bias.

Parcel characteristics: It is important to obtain information on all parcels currently owned or used by the household, including the ones that are leased out or those that may be located far from the location where the interview actually takes place (e.g., in the village of origin for either head or spouse). Enumeration should start with the residence, followed by all agricultural plots located in the place of residence and then all plots that may be owned in other places, most likely either the head's or spouse's birthplace. Key parcel characteristics to be obtained include location and area,² type of use, and mode as well as date of acquisition. The date of acquisition is important to compute the share of those accessing land, say, via purchase but also to obtain an approximation of the level of land sales market activity in a given year. If the survey collects information on agricultural production at crop rather than at parcel level, it will also be essential to obtain information on the nature of crops grown on each parcel so as to be able to make at least indirect inferences regarding the productivity effects of different tenure arrangements.

Formal and informal rights: To assess the extent to which ownership is formally or informally documented, information is needed on who, in terms of household members or outsiders, has individual or joint ownership rights to the parcel and the extent to which these rights are backed by formal documents or informal papers. As the type of rights that can be acquired and the way they are documented is often highly country specific, it will be important to check these questions with relevant line Ministries, secure their participation in enumerator training and ideally include pictures of relevant documents in relevant training materials and have the enumerator indicate whether the document has actually been seen. This can help assess coverage, documents' status of updating, gender-or wealth bias in access to documentation, or

² While measuring plot area by GPS is ideal (Carletto *et al.* 2015), actual walking of boundaries requires significant time that is likely to be available only in more specialized surveys. One way to overcome this in CAPI-based interviews is to use high resolution satellite imagery to identify parcels on the map.

impacts it may have on tenure security, investment, or productivity. If coverage is low or most documents are out of date, a question on time and resources spent on trying to secure formal rights or willingness to pay for up to date formal documents can be added.

Land-related investment: While higher levels of tenure security are expected to encourage investment in productivity-enhancing measures (e.g., perennials, fallowing, manure and irrigation), tenure insecurity may lead to investment in protective measures, including fences or border guards, with no productive value. Being able to distinguish the two categories is important. As it will affect productivity of land use directly, it is essential to inquire about stocks (e.g., the total amount of land with irrigation facilities or the total number of coffee trees). If there is interest in analyzing determinants of increments in investment, it will be important to identify relevant categories (e.g., the amount of trees planted in the last 3 years). As large investments can normally be recalled for a number of time periods, this can be used to assess if specific interventions affected investment.

Land market participation: As information on parcels no longer owned is obtained at household rather than parcel level and the level of sales market participation can be inferred from acquisition dates for purchased parcels, the only question needed at parcel level is the amount of lease payment for parcels leased in. There is ample room for expansion of this module to explore nature and formality of contractual arrangements, resource transfers (including sharing of input or output in case of sharecropping), and contracting parties socio-economic characteristics to, for example, determine whether land markets lead to land concentration or if their activity is constrained to related parties.

Disputes and subjective tenure security: While questions about pending disputes may not elicit a truthful response, inquiring about the likelihood of still owning the parcel in 5 years' time as well as past and likely future disputes by type is important to provide a measure of subjective tenure (in)security that can at least be broadly compared across countries and the extent to which such security may be under threat either from other individuals or the state.

3.2 Community level questionnaire

Prices: Information on going prices for rental or sale (if allowed) of an agricultural or residential parcel of average quality at present and 5 years ago will not only provide a point of reference for the prices reported at parcel level but also an indication of the extent to which prices have changed over time and, by comparing to profits, of the extent of market imperfections.

Availability and use of common property resources: Forest and grazing land can play an important role as a safety net or, in hilly terrain, as protection against erosion. Inquiring about current size, modalities for management, and problems with encroachment or disputes in the past 5 years will provide a basic understanding of how access to such resources is managed. More elaborate questionnaire version can add changes in the size and modalities of access to such resources over time, possibly to be cross-checked with satellite imagery.

Land transactions with outsiders: While most communal systems allow land transactions within the local community or village, transfers of land to outsiders are normally prohibited. Inquiring if such transactions are allowed, happen in practice, and how they are documented either locally or with formal registries provides important background to assess the nature of land transaction and the competition for land. In more elaborate versions of the household questionnaire, information on transaction partners' place of origin, occupation, and actual land use can then provide a robust assessment of these issues.

Marriage and inheritance: Inheritance practices are in many contexts evolving rapidly and vary widely across localities. Having information on how ownership and use rights will be transferred in this case will provide an important basis to assess different household members' risk of dispossession or loss of ownership rights, with possible implications for investment incentives on plots managed but not owned by them. More elaborate versions of the parcel level questionnaire can then inquire in more detail to assess

whether inheritance practices vary depending on how and by whom a land parcel was acquired or brought it into the family.

Expropriation and incidence of disputes: There has been considerable discussion of whether responses to direct questions on perceived risk of land loss at individual or household level are reliable or whether a more indirect way of asking these will be preferable. In either case the level of perceived risk is likely to be affected by the extent to which cases of expropriation or large scale land acquisition happened in the village or its immediate surroundings. Although in principle such information can be obtained from administrative records, the data contained in these are often unavailable or, if transactions are not formalized, incomplete. Including questions on actual events and perceived threats in the community schedule will allow cross-checking with administrative data and allow analysis of the divergence between actual incidences of land loss through different mechanisms, perceived risk of land loss, and the incidence of land disputes overall and between different socio-economic groups.

Fees: High (implicit and explicit) cost of obtaining formal documents or registering subsequent transactions is often held to be a key cause of informality. Including information on the cost of first-time registration as well as sales (or long-term transfers) of undivided parcels and subdivision surveys at community level will provide evidence on different aspects of this issue, inform areas (e.g., survey regulations or registration fees) to be targeted to improve the situation, and especially if fees are changed over time, allow to explicitly test this hypothesis.

Taxes: Taxes on different types of land (e.g., residential, industrial and agricultural) can be an important source of local government revenue. As rates are set by local governments whose incentives to establish the needed infrastructure (e.g., up to date tax rolls) and undertake actual collection will be affected by the share of receipts they may retain, information on tax obligations is best obtained at community level. More elaborate versions of the household questionnaire can then inquire about actual payments at the household level to better appreciate the incidence of these taxes. Even if the type of land affected and rates are determined by national laws inclusion of such issues in the questionnaire is warranted as such laws are often applied inconsistently. The fact that tax obligations or fees are often set as a percentage of (reported) land values may increase incentives for systematically under-declaration of land prices, affecting overall governance.

Land use planning: While the literature has largely focused on land ownership, land use plans are important in settings characterized by peri-urban expansion and ecologically fragile environments. Doing justice to the issue will require more detail than can be included in the short module described here. But key parameters to assess the extent to which current plans are up to date and enforced, and the level in which regulations to prevent uncontrolled building or land conversion from agricultural to non-agricultural land use is in place can be obtained from questions included in the module, compared to remotely sensed imagery documenting land use changes, and expanded upon as needed if these issues emerge as concerns.

4. Implementing the survey module and analyzing data

Institutional arrangements to regulate land ownership and use are highly context specific and may vary even within small geographical areas. As a result, careful adaptation of questions to the local context (e.g., by adapting codes) and training will be essential. There are several ways in which administrative data can be used as a basis for sampling or to complement survey data in terms of analysis. Moreover, as availability of remotely sensed imagery is expanding rapidly, use of spatial information to complement survey data is a very promising area for research and analysis.

To distinguish informal from formal documents the nature of which has often changed dramatically over time, basic familiarity with a country's land tenure system and history is essential. Best practice is to have the relevant Ministry be involved in the training, provide samples of relevant documents for inclusion in the enumerators' manual, help prepare sensitization material to obtain reliable information, and be available to answer questions arising in the course of implementing the survey (e.g., helping to determine the nature

of documents held by respondents). Without good enumerator training, including very specific questions regarding tenure type may give rise to very misleading information, as can be illustrated by wide variation over time within the same country.

In addition to often disproportionately affecting specific groups (e.g., widows or marginal land users), rare events such as land disputes, expropriations, large scale land transfers, or natural disasters often have a strong impact on perceived tenure security and thus land use. By definition, incidence of these events in a random sample of households will be low and obtaining information on the impact of these will require use of alternative frames. Administrative data such as court records, boundaries of large concessions, or of other types of interventions have been used to good effect in such cases.

Suggested parcel module

Respondent ID (from household roster): _____																	
1	2	3		4		5		6	7	8						9	10
P A R C E L D E	Please tell me about each parcel of land belonging to your household or used/occupied by a member of your household during the past 12 months? Please describe or give me the name of each parcel starting with the parcel you reside on.	Where and in whose birthplace is this parcel located?		What is the area of this parcel?		What is the current use of this parcel?		Do you or a member of your household own this parcel?	What is the annual lease fee ?	Who in this household owns (has ownership rights to) or manages this parcel?						In what year did your household first acquire this parcel?	How did your household acquire this parcel?
		LOCATION CODES THIS VILLAGE/LOC.1 NEIGHBORING VILLAGE2 ANOTHER VILLAGE, THIS DISTRICT.3 ANOTHER DISTRICT.4		BIRTHPLACE CODES HEAD'S BIRTHPLACE .1 SPOUSES' S B .PLACE .2 BOTH SPOUSES'S BP. .3 NEITHER SPOUSES'S BIRTHPLACE. . . .4		AREA CODES SQUARE METERS. . .1 HECTARES.2 ACRES.3 LOCAL UNIT.4		LAND USE CODE RESIDENTIAL. . . .1 AGRICULTURAL. . .2 COMMERCIAL. . . .3 INSTITUTIONAL. . .4 VACANT.5 UNUSED6		YES 1 > 8 NO, LEASED. IN. 2 NO, USED-FREE -3 -> -29	SKIP TO 29	LIST UP TO 4 JOINT OWNERS AND 2 MANAGERS FROM THE HOUSEHOLD ROSTER, AND LIST UP TO 2 NON-HOUSEHOLD MEMBER USING THE CODES GIVEN BELOW. CODES FOR OTHERS NON-RESIDENT PARENT . . .101 NON-RESIDENT SIBLING . . .102 OTHER RELATIVE103 OTHER (SPECIFY)104					
		LOCATION		BIRTHPLACE		AREA	UNIT	1ST	2ND	LOCAL CURR.	OWNERSHIP				MANAGEMENT		YEAR
											ROSTER ID CODE	ROSTER ID CODE	ROSTER ID CODE	ROSTER ID CODE	ROSTER ID CODE	ROSTER ID CODE	
1																	
2																	
3																	
4																	
5																	
6																	

Suggested community land module

1. Land prices

		1	2	3	4
	Type of land	What is the current rental price of [...] in this village?	What was the rental price of [...] in this village 5 years ago?	What is the current sales price of [...] in this village?	What was the sales price of [...] in this village 5 years ago?
		IN LOCAL CURRENCY	IN LOCAL CURRENCY	IN LOCAL CURRENCY	IN LOCAL CURRENCY
1	1 ha of agricultural land				
2	200 m2 of residential land				

2. Common property resources

	Type of common property resource	1 Does this village have [...]?	2 What is the size?	3 Who manages access to the [...]?	4 Has there been problem of encroachment over [...] in the past 5 years?	5 Has there been any dispute over [...] in the past 5 years?
		YES...1 NO...2>>NEXT		MANAGER CODES VILLAGE ELDERS...1 VILLAGE COUNCIL...2 DISTRICT COUNCIL...3 GOVERNMENT...4 OTHER (SPECIFY)...5	YES...1 NO...2	YES...1 NO...2
			HECTARES			
1	Grazing land					
2	Forest land					

3. Institutional arrangements related to land

3.1 Land markets

1. Are land rental transactions with individuals (from outside the village) allowed?
2. Are land sales transactions with individuals (from outside the village) allowed?
3. In the last 12 months, have there been any land sales transactions with outsiders (yes, by individuals; yes by village authorities, no)?
4. How is the majority of land sales documented (not at all; yes, there with local witnesses; yes, with village elders/chiefs; yes, with the formal system)?
5. How far is it to the next public registry where land transactions can be formalized (km or don't know)?
6. Have there been any land transfers or more than 10 ha with outsiders (yes/no)?
7. If yes: How many of these transactions have happened (#)? What is the total area involved (ha)? Who was the main decision-maker (Individual farmers; village authorities; village institutions; other ___)?

3.2 Marriage and inheritance

1. What is the standard marriage regime (matrilocal, patrilocal, neolocal)?
2. In case of intestate death of a male head of household with one spouse and one male and one female child, how is land *ownership rights* distributed (% for spouse; % to male child; % to female child; % to members of the male's original family)? Is this distribution different from that for *use rights* (e.g., the widowed spouse will be able to retain use rights to some land? If yes, provide shares (% for spouse; % to male child; % to female child; % to members of the male's original family).

3.3 Perceived tenure security and expropriation

1. Has there ever been any expropriation of land in the village (y/n)?
2. If yes, when was the last one (year)? What was the total area affected over the last 5 years (ha) for agricultural, residential, and forest land?
3. Has there ever been any expropriation of land in the village (y/n)?
4. Are people in this village concerned about their land rights being challenged (5 categories)?
5. If yes, what is the main source of insecurity (outside agric. investors; urban expansion or infrastructure construction; outsiders buying up land for speculative purposes).

3.4 Land-related fees

1. What is the distance to the nearest office land transfers can be formally registered? ___ km
2. What is the fee for formally registering a land sale (or if sales are not allowed a long-term lease) that does *not* involve a subdivision? ___ LCUs if fixed fee or ___% of land value.
3. What is the fee for subdividing a parcel of land in this locality due to inheritance? ___ LCUs
4. What is the fee for formally registering a land sale (or if sales are not allowed a long-term lease) that does *not* involve a subdivision? ___ LCUs if fixed fee or ___% of land value.
5. What is the cost of obtaining the lowest form of formally recognized document (title) for a piece of land that had not been registering before? ___ LCUs if fixed fee or ___% of land value. Of this, what percentage is for survey? ___%

3.4 Land taxation

1. Do households have to pay any taxes or fees to the Government for *residential* land (yes all; no, none; yes, some. If some, please explain (e.g., only formally registered parcels) ___)
2. If yes, what is the average level (Local currency/m² or % of land value)?
3. If yes, who sets the rates? Who collects? Who keeps the proceeds? (in each case Local Gov't; Central Gov't; joint)?
4. Do households have to pay any taxes or fees to the Government for *agricultural* land (yes all; no, none; yes, some ___)?
5. If yes, what is the average level (Local currency unit/ha)?
6. 3. If yes, who sets the rates? Who collects? Who keeps the proceeds? (in each case Local Gov't; Central Gov't; joint)?
7. Do households have to pay any taxes or fees to the Government for *commercial* land (yes all; no, none; yes, some ___)?
8. If yes, what is the average level (Local currency unit/ha)?
9. If yes, who sets the rates? Who collects? Who keeps the proceeds? (in each case Local Gov't; Central Gov't; joint)?

3.5 Land use planning

1. Does the village have a land use plan (y/n)? If yes, when was the plan last updated (year)? Is the plan in digital format (y/n)? Was the plan made public before being approved (yes/no)? Who approved the plan (village assembly, village committee, central government, other experts)?
2. Who enforces the land use plan (nobody, village committee, village assembly, central government)?
3. Is a permit needed to construct a commercial building in this location?
4. Is a permit needed to construct a residential building in this location?
5. Is permission needed to convert agricultural to residential land (y/n)?
6. How much land has been converted from agricultural to non-agricultural use with permission (ha)? How much was converted in total (ha)?

ANNOTATIONS TO THE PARCEL QUESTIONNAIRE

P.2. A complete list of all the parcels of land belonging to the household or used/occupied by a member of household during the last 12 months should be obtained before moving to other questions. The first row should be devoted to the homestead/residential parcel. It is important to provide a distinctive name/description of the parcel that will enable to identify each parcel during a revisit in a panel data on the parcels to be collected. Ideally the name/description should refer to geographical/physical characteristics rather than crops grown as these are subject to change.

P.3. This question collects information on the relative location of the parcel vis-à-vis the village where the household currently resides. It also links the location of the parcel with the birthplace of the head of the household and his (her) spouse. Although it depends on the context of the country where the survey is going to be conducted, such type of information will provide important insights on women land rights and perceived land tenure security which, in turn, will have implications for intra-household decision making and resource allocation. This question is particularly relevant if information on the GPS coordinates of all the parcels are not going to be collected.

P.4. This question gives a self-evaluation of the parcel area by the respondent. The unit codes for land area often vary by country, and hence they should be customized in consultation with the appropriate institutions of the country under study. Note that landholders may have difficulty to estimate the dimension of their parcels particularly when they are irregularly shaped. It is thus highly recommended to include an explicit parcel measurement component to the survey. Recent experiences show that the use of a GPS device could give a much more precise estimate, although its accuracy might be relatively low for small parcels. For small parcels one suggestion is the use of a measuring tape even if it will be a time taking exercise. The alternatives have to be pre-tested and a strategy has to be designed based on the results of the pre-test.

P.5. This question aims at capturing the primary and secondary uses of the parcel. It is particularly important for urban areas where mixed use is a common phenomenon, and hence gathering such type of information will have relevance for policy in areas related to land-use planning. Agricultural uses refer to farming related activities, including crop and forestry production and livestock rearing while commercial uses refers to any business related uses (including industrial uses) other than agriculture. Institutional uses refers to public and semipublic uses such as government services, educational, health, religious and other non-profit services. Note that the response codes need to be adapted to the situation of the country of study and the area that will be covered by the survey (e.g., urban vs. rural areas).

P.6-P.8. These questions obtain information on the land ownership right of households, and their participation in the land-rental market to meet their demand for agricultural and non-agricultural land. For parcels with rental arrangements, a follow up question is asked on the annual lease payment to the owner of the land. Despite the fact that the response depends on the subjective assessment of the respondent, the question on who owns land among household members will provide information on women's access to land rights. Basic information can also be collected on non-household members who jointly own land with the household members.

P.9-P.11. These questions collect basic information on the year the household acquired the land, the mode of acquisition and the associated ownership rights for parcels owned by any member of the household. The codes regarding the mode of acquisition, and the type of ownership rights must be customized to the circumstances of each country. The question on the tenure system of the parcel (the system of owning land) is relevant mainly for African countries where different systems of owning land (e.g., freehold, customary, leasehold, etc.) provide different rights to the owners.

P.12-P.13. These questions intend to provide information on the existence of formal ownership documents that confirm legal ownership rights of the household to the parcels reported to be owned by any members of the household. The codes for the type of legal document recognizing ownership rights should be adapted to the legal framework of the country under study. During field staff training, it will be important to provide enumerators with samples of various legal documents that can be used to prove land ownership which could be subsequently shown to respondents when necessary. Having formal ownership documents can be a good indicator of tenure security, and help assess its effects on households' investment and land market participation decisions. The question on who is listed on the formal documents are relevant beyond identifying the official owners of the parcels, namely; (i) to establish gender disaggregated secure land ownership indicator, and (ii) to understand the extent of informality in the official land records system.

P.14- P.15. Given that the range and strength of property rights enshrined in formal documents could be different from that of informal documents subsequently affecting households' behavior differently, information about informal and semi-formal documents need to be collected separately. These questions thus collect information on such type of documents (particularly for those with no formal documents) that households might use to prove their land ownership rights. The list of potential in(semi-)formal documents needs to be adapted to the context of the country in question. During training of field staff, it will be important to provide enumerators with samples of such documents -that can be used to prove land ownership rights- to subsequently show to respondents whenever it is necessary.

Questions P.16-P.20 aim at establishing a measure of perceived land tenure security at the parcel level by combining the incidence and nature of current land-related disputes and perceived risk of future disagreements with private parties and/or expropriation by government authorities. The information that will be collected using these variables can help to broadly assess the land's investment climate of the country under study, and, in particular, to examine households' incentives to make long-term investments to enhance productive capacity of land or to transfer land from less to more productive users.

P.16 – P.17 This set of questions collects information regarding the incidence and nature of current land disputes during the past 12 months. The reference period can be adapted to the local conditions, and the sample design of the survey under consideration.

P.18. This question captures perceived risk of land expropriation by government authorities, i.e., whether the household will be able to keep the same parcel of land, say, in the coming 5 years. Note that the phrasing of such type of questions (including the reference period) depend on the land policy environment of each country. The scale varies from *not at all* (0%) all the way to *certainly for sure* (100%) and hence there is a need to put emphasis on how to collect information using such type of scales at the time of field staff training.

P.19-P.20. This set of questions focuses on perceptions of households as to whether and to what extent they are concerned about future disagreements on ownership and use rights of their parcels of land with private parties in the coming 5 years. The reference period and the list of concerns can be adapted to the local context.

P.21-P.26. These questions help gather information that would allow to create links between tenure security and different types of land-related investments. Doing this requires knowledge of the local practices, as the types of land-related investments to be considered should be customized to the circumstances of the country. Information should be collected parcel-by-parcel because the investment decision of households would vary across plots depending upon parcel level tenure and other physical characteristics. Three types of investment are considered: (i) presence of permanent and semi-permanent structures and their main uses (**P.21-P.22**); (ii) presence and types of soil and water conservation structures (**P.23-p.24**); and (iii) presence and types of irrigation related practices (**P.25-P.26**). The last two are relevant mainly for agricultural land, and could be dropped if the planned survey is going to be conducted only in urban areas.

P.27-P.28. Getting reasonably accurate estimates of hypothetical annual rental and sale values is challenging particularly in countries where such markets are not yet well developed or in cases where land sales are completely prohibited. There is thus a need to have a good understanding of the local situation before including these questions into the survey. Depending upon the context, these questions can be rephrased to ask, for instance, about the replacement cost the permanent structures on the parcel, the amount of acceptable compensation values if it were to be expropriated or how much a similar property would be sold in the community. Nonetheless, it is critical to pre-test alternative approaches and assess the quality of the estimates, as hypothetical sales and rental values are highly likely to be prone to significant measurement errors and systematic bias.

P.29. This question is about the main crops cultivated on each parcel, and it is relevant only for agricultural parcels. As the number of seasons and type of crops vary from country to country, they should be tailored for the country specific situation. Note that this question can be deleted if the survey has a detailed crop production module at the parcel level.

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