

Individual land rights: Filling data gaps with the 50x2030 Initiative

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Abstract. Land rights of individuals, and women in particular, are believed to have a direct effect on numerous aspects of development, including shock resilience, technology adoption, access to credit, and empowerment, among others. This paper highlights the work of the 50x2030 Initiative in promoting sex-disaggregated data on land rights, specifically through the measurement of individual land tenure rights in the context of SDG Indicator 5.a.1 and the land rights encompassed therein. The 50x2030 Initiative aims to support partner countries in collecting the data necessary for SDG 5.a.1, the “(a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex” and “(b) Share of women among owners or rights bearers of agricultural land, by type of tenure”, by (i) incorporating a questionnaire module that was developed by FAO, the World Bank, and UN-Habitat to measure the two SDG indicators on individual land tenure rights (SDG 5.a.1 and 1.4.2) into its survey tools, (ii) providing support to partner countries in the adaptation and implementation of this instrument, and (iii) conducting methodological validation around the measurement of individual land rights, all with the aim of supporting high-quality, individual-level land tenure data at scale.

Keywords: 50x2030 Initiative, land, land tenure, gender, sustainable development goals, agricultural surveys

1. Introduction

The international development community considers strengthening women’s land rights as an important factor towards development and poverty reduction. For instance, the conceptual framework proposed in Meinzen-Dick et al. [1] and adapted from the Gender, Agriculture and Assets Project [2] underlines that women’s land rights are expected to have a direct effect on shock resilience, on technology adoption, implementation of effective natural resource management practices,¹ access to credit, government services and institutions, and empowerment. In turn, credit, government services and participation in institutions may have a positive impact on technology adoption and natural resource man-

agement while empowerment can increase access to government services and institutions.

However, as Meinzen-Dick et al. [1] demonstrate in their extensive and methodic literature review, the agreement of scholars on these linkages and the empirical evidence supporting the above-mentioned hypotheses is irregular. For example, they highlight that agreement and evidence are strong in the areas of bargaining power and decision-making on consumption, on human capital investment and intergenerational transfers. However, the high agreement around natural resource management, government services and institutions, empowerment and domestic violence, resilience and HIV risk, consumption and food security is supported by limited evidence. Similarly, the causal effect of women’s land rights on poverty reduction is insufficiently proven.

Such uneven empirical evidence is determined by several measurement issues. For instance, the fact that land rights are captured differently across countries or that they are inadequately measured. Equally important is the practice of measuring land rights at the household level or the habit to aggregate land with other assets [1].

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¹Includes medium and long-term investments on the land aimed to preserve the soil.

Goal 5 – Target 5.a		Goal 1 – Target 1.4
SDG INDICATOR 5.a.2	SDG INDICATOR 5.a.1	SDG INDICATOR 1.4.2
Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control	(A) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex (B) Share of women among owners or rights-bearers of agricultural land, by type of tenure	Proportion of total adult population with secure tenure rights to land, (a) with legally recognized documentation, and (b) who perceive their rights to land as secure, by sex and type of tenure

Fig. 1. SDG Indicators monitoring individual and women's land rights.

Although generalizations on the effects of women's land rights on development outcomes are still difficult, the literature has increased dramatically in the past twenty years, and substantial progress has been made on strengthening the theoretical consensus on the effects of women's land rights and on improving measurement practices. In particular, at the measurement level, several initiatives have demonstrated the importance of shifting from household-level data to individual data, they have advocated for the inclusion of individual level data in large-scale surveys and for the adoption of a self-reported approach.

This paper aims to document the contribution of the 50x2030 Initiative towards the measurement of individual land rights, notably women's land rights and SDG Indicator 5.a.1. Section 2 discusses how individual and women's land rights are addressed in the 2030 Sustainable Development Agenda, highlighting the key concepts and the measurement issues. Section 3 presents the collaborative effort made by FAO, UN-Habitat and the World Bank in developing a joint survey instrument serving the needs of SDG Indicators 5.a.1 and 1.4.2. Section 4 describes how the 50x2030 Initiative promotes the measurement of individual and women's land rights in data production and research activities. Section 5 concludes and indicates the ways forward.

2. Individual and women's land rights in the 2030 Agenda

The attention of academia, the private sector, farmer organizations, UN agencies, and national and international NGOs on women's land rights contributed to including individual and gender equitable land rights in the 2030 Agenda for Sustainable Development. Women's land rights are prominent in Target 5a, which directs countries to “undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms

of property, financial services, inheritance and natural resources, in accordance with national laws”. In addition, Target 1.4 puts emphasis on individual land rights, calling on countries to “ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance”.

Progress on Target 5.a is monitored through a legal indicator and an empirical indicator. The legal indicator (5.a.2) looks at the capacity of national legal frameworks to guarantee equal rights on land while the empirical indicator (5.a.1) portrays the actual gender parity on land tenure, with a focus on agricultural land and the agricultural population. Concurrently, advancement on Target 1.4 is monitored through an indicator (1.4.2) looking at legal documentation and perceptions over land tenure security (see Fig. 1).²

The inclusion of these indicators in the 2030 Agenda highlights the importance of tenure security and land rights, with emphasis on gender equality. Indeed, through these indicators, the 2030 Agenda recognizes that land is a key economic resource inextricably linked to access to, use of and control over other economic resources and livelihoods. In addition, it reminds that tenure systems are increasingly under pressure as population growth, urbanization, environmental degradation and climate change affect land use and productivity. As a consequence, the 2030 Agenda advocates for a better governance of land tenure, as a crucial element determining if and how people acquire rights and obligations over land and natural resources. In particular, through Target 5.a, the 2030 Agenda demands more tenure security for women and calls for eliminating the

²The other indicator monitoring Target 1.4 is indicator 1.4.1 “Proportion of population living in households with access to basic services”.

Box 1 – Conceptualizing land tenure as a bundle of rights*Right of access:* the right to be on the land and walk across it*Transformation right:* the right to change the land and take something from it*Economic right:* the right to make profit and loss*Exclusion right:* the right to prevent others from using the land and its resources*Alienation right:* rights to transfer the land, temporarily or permanently, through sales, rentals, gifts or bequeathing*Future interests on the land:* the right to inherit at some future point

Doss et al. [4]

traditional gender inequalities that put women at a disadvantage relative to men in their ability to participate in, contribute to and benefit from broader processes of development [3,4].

In addition to establishing such important principles and objectives, the inclusion of these indicators in the 2030 Agenda – particularly 5.a.1 and 1.4.2 – offers the opportunity to promote measuring land tenure in a comparable and meaningful manner worldwide, taking stock of methodological recommendations from subject experts, government entities, national statistical offices, the scholarly community, and researchers. What follows is a summary of the key measurement principles integrated into SDG Indicators 5.a.1 and 1.4.2.

The indicators go beyond the idea of ownership as conceived by Western societies and they consider all forms of tenure systems. In doing so, they recognize that: (i) land tenure is composed of a bundle of rights that are not necessarily held simultaneously (see Box 1); and (ii) measuring the bundle of rights helps to better understand women’s land rights as it reveals specific gender-based disparities. In addition, both the indicators recognize the importance of measuring land tenure through legal documentation as well as proxy measures (i.e., alienation rights in 5.a.1, perception on tenure security in 1.4.2). Most importantly, both indicators push to abandon household-level questions in favour of collecting information at individual-level, and encourage the use of a self-respondent approach.³

The importance of measuring women’s asset ownership through individual-level data has been tested, discussed and advocated for by several research projects and initiatives in the past 10 years. The *Gender Asset Gap Project* (GAGP) and the *Gender, Agriculture and Assets Projects* (GAAP) led respectively by ODI⁴ and IFPRI⁵ demonstrated the importance and the practicality of collecting individual-level data on women’s

and men’s access to and ownership of assets. They clearly questioned the “unitary model of the household – that is, the assumption that households are groups of individuals who have the same preferences and fully pool their resources” [6, p. 2]. To this model, they proposed a framework according to which household members frequently own assets individually, and the asset distribution across the household may affect the individuals’ intra-household bargaining power [6]. A few years later, the *Evidence and Data for Gender Equality* (EDGE) project of the UNSD and UN-Women and the *Global Strategy to Improve Agricultural and Rural Statistics* (GSARS) of FAO promoted the importance of integrating individual-level data into the regular production of official socio-economic and agricultural statistics [7,8]. At the same time, in 2016, the World Bank established the Living Standards Measurement Study – Plus (LSMS+) program with the goal to improve the availability and quality of intra-household, self-reported, individual-disaggregated survey data on economic opportunities and welfare.⁶ The research, guidelines and the empirical evidence generated through these and other projects testify to the paradigm shift in understanding and measuring women’s rights over assets, including land. The SDG indicators 5.a.1 and 1.4.2 embraced such a paradigm change, and they promote it further in the context of global monitoring.

In addition to supporting of the collection of individual-level information, the indicators recommend the adoption of a self-respondent approach when feasible. This innovative methodological approach, whereby individuals are interviewed separately and directly about their own rights, results from extensive research conducted under the umbrella of the GAAP, GAAP2, EDGE and LSMS+ projects, demonstrating that the collection of data on ownership and control of assets, including land, may be biased by the use of a proxy-respondent approach [7,11,12]. For example, Kilic, Moylan, and Koolwal [12], using data from two concurrent nationally representative surveys in Malawi – the

³In the proxy respondent approach, one person responds on behalf of other household members. In the self-respondent approach, each individual is asked specifically about his or her land tenure rights.

⁴Overseas Development Institute (UK).

⁵International Food Policy Research Institute.

⁶For reports on the LSMS+ surveys in Tanzania, Malawi, Ethiopia and Cambodia, see Hasanbasri et al. [8] and Hasanbasri et al. [9].

	INDICATOR 5.a.1	INDICATOR 1.4.2
Which Land?	Agricultural Land	All types of land (residential, used for businesses, etc.)
Reference Population	Agricultural Adult Population	Adult Population
Proxies	<ul style="list-style-type: none"> the possession of a legally recognized document in the name of the individual, <u>or</u> the individual's right to sell the land, <u>or</u> the individual's right to bequeath the land 	<p><i>For sub-indicator (a)</i></p> <ul style="list-style-type: none"> the possession of a legally recognized document in the name of the individual <p><i>For sub-indicator (b)</i></p> <ul style="list-style-type: none"> the fear of involuntary loss of the land within the next five years, and the individual's right to bequeath the land

Fig. 2. Key elements of SDG indicators 5.a.1 and 1.4.2.

LSMS+ survey which employed a self-respondent approach and the LSMS-ISA-supported Fourth Integrated Household Survey which employed a proxy respondent approach – find that the use of proxy respondents results in a higher proportion of men claiming exclusive reported and economic ownership relative to the recommended self-respondent approach. Using the same concurrent surveys, Deininger et al. [13] provide evidence of the relationship between women's land rights, in this case the right to sell and bequeath agricultural land, and long-term investment in the land, but also illustrate that this relationship is only observed when using self-reported data.

While this section highlighted the general elements common to SDG Indicators 5.a.1 and 1.4.2, the following section discusses in detail the methodology of the indicators and presents the integrated approach to measuring 5.a.1 and 1.4.2 developed by the custodian agencies (FAO for 5.a.1; WB and UN-Habitat for 1.4.2).

3. The integrated approach to measuring SDG 5.a.1 and 1.4.2⁷

As described above, SDG Indicator 5.a.1 measures gender equality in ownership and secure tenure rights over agricultural land through two sub-indicators.⁸ Sub-indicator (a) measures the prevalence of men and women in the agricultural population with ownership or tenure rights over agricultural land, while sub-indicator

(b) focuses on the individuals with tenure rights over agricultural land and reports the share of women among those.

The indicator focuses on agricultural land because this is a key economic input in low and low-middle income countries, where poverty reduction and development strategies are frequently based on the agricultural sector.⁹ Consequently, the reference population of the indicator is the agricultural population because tenure rights over agricultural land are relevant only for individuals whose livelihoods rely on agriculture.¹⁰ Following the methodological research conducted under the EDGE project, the Indicator 5.a.1 is based on the three proxies illustrated in Fig. 2. Therefore, an individual is considered to have secure tenure rights over agricultural land if his/her name appears on a legally recognized document as owner or right holder, or s/he has the right to transfer the land through sale or bequeath. The indicator intentionally combines legal documentation with the right to sell or bequeath recognizing that, in many countries with little land registration, individuals may have *de facto* the right to pass on the land even in the absence of legal documents. This methodological choice makes the indicator applicable in different contexts, ensures worldwide comparability, and allows a better understanding of women's land rights vis-à-vis men's rights.

⁷This section draws heavily from FAO, The World Bank, UN-Habitat [3].

⁸FAO is the sole custodian agency of Indicator 5.a.1, with United Nations Statistics Division (UNSD) and UN Women acting as contributing agencies.

⁹Agricultural land includes land under temporary and permanent crops; land under temporary and permanent meadows and pastures; and land that is temporarily fallow [13].

¹⁰In the context of Indicator 5.a.1, agricultural population is defined as the number of adult individuals living in agricultural households, i.e. households that operated land for agricultural purposes and/or raised livestock for their own account over the past 12 months, regardless of the final purpose of production.

Version 1	<ul style="list-style-type: none"> • The main survey instrument already includes a household member roster (with the sex of members) but it does not include a parcel roster. • The country intends to collect land tenure data at parcel-level and using a self-respondent approach. Therefore, the parcel-level module is to be inserted in the main survey questionnaire and administered to one or more randomly selected individuals or to all adult household members.
Version 2	<ul style="list-style-type: none"> • The main survey instrument already includes a household member roster (with the sex of members) and a parcel roster. • The country intends to collect land tenure data at parcel-level and using a self-respondent approach. Therefore, the existing parcel-level module shall be completed with the land tenure questions, and fed forward for interviews with one or more randomly selected individuals or to all adult household members.
Version 3	<ul style="list-style-type: none"> • The main survey instrument already includes a household member roster (with the sex of members) but it does not include a parcel roster. • The country does not intend to collect land tenure data at parcel-level, but wants to use a self-respondent approach. Therefore, the individual-level version of the module is to be inserted in the main survey questionnaire and administered to one or more randomly selected individuals or to all adult household members.
Version 4	<ul style="list-style-type: none"> • The main survey instrument already includes a household member roster (with the sex of members) but it does not include a parcel roster. • The country intends to collect land tenure data at parcel-level and using a proxy-respondent approach. Therefore, the parcel-level module is to be inserted in the main survey questionnaire and administered to a proxy-respondent replying for the entire household.
Version 5	<ul style="list-style-type: none"> • The main survey instrument already includes a household member roster (with the sex of members) but it does not include a parcel roster. • The country does not intend to collect land tenure data at parcel-level and wants to use a proxy-respondent approach. Therefore, the individual-level version of the module is to be inserted in the main survey questionnaire and administered to a proxy-respondent replying for the entire household.

Fig. 3. Versions of the joint module on 5.a.1 and 1.4.2.

Indicator 1.4.2 also measures tenure security through two sub-indicators.¹¹ Sub-indicator (a) focuses on certification of tenure rights through legally recognized documents; sub-indicator (b) focuses on security of tenure through a ‘perception-based’ measure (see in Fig. 2). The two sub-indicators do not need to coincide. On the contrary, a discrepancy between the two can provide a better understanding of a country’s tenure security landscape, highlighting contexts where part of the population feels tenure insecure despite valid legal documentation, or situations where individuals may perceive themselves as tenure secure even without legally recognized documentation. Unlike Indicator 5.a.1, Indicator 1.4.2 considers all types of land, regardless of their use, and it covers the entire adult population rather than the agricultural population only.

Although both indicators focus on individual-level rights to land and promote sex-disaggregated data, important differences exist between the two. They monitor different reference populations, they take into consider-

ation different types of land, and they measure tenure rights differently – 5.a.1 through legal documents and alienation rights, 1.4.2 with legal documents and perceptions. The indicators, therefore, complement each other, and together provide a unique opportunity to monitor a range of individual-level land tenure rights and associated tenure security, disaggregated by sex.

The two indicators share similar data requirements, despite them focusing on different aspects of land tenure security. In order to benefit from this overlap and minimize the burden on national statistical agencies, in 2018 and 2019, the custodian agencies of the two indicators (FAO for 5.a.1; WB and UN-Habitat for 1.4.2) worked together on a harmonized questionnaire instrument to collect the data required for both indicators simultaneously [3].

The instrument was designed for inclusion in nationally representative surveys, such as multi-topic national household surveys¹² and agricultural surveys. Given the various survey designs in which the instrument can

¹¹UN-Habitat and the World Bank are custodian agencies of indicator 1.4.2.

¹²E.g., National Household Budget Surveys, Living Standards Surveys, Household Consumption Survey, MICS, DHS, etc.

Version 1 -- Parcel-level data; self-respondent approach; no parcel roster elsewhere; assumes separate household member roster which records individual sex; administered to (a) one or more randomly selected individuals or (b) all adult household members.

Implementation / CAPI Notes: Use "currently" or set a specific date -- country level decision. Local/traditional area unit codes to be customized at country level. Codes to be customized at country level. Codes to be customized at country level.

Respondent Roster ID: _____

Q0. Do you use, own, or hold use rights for any parcel of land, either alone or jointly with someone else, irrespective of whether the parcel is used by your or another household, and irrespective of the use of the parcel (including dwelling plot, agricultural, pastoral, forest and business/commercial plots)?

YES...1 NO...2 >> END OF QUESTIONS

ENUMERATOR: AFTER CREATING THE ROSTER OF PARCELS, GO THROUGH THE ENTIRE MODULE ONE PARCEL AT A TIME.

1. PARCEL ID	2. PARCEL NAME	3. How was this [PARCEL] acquired?	4. Under which tenure system is this [PARCEL]?
	Please tell me about each parcel for which you currently use, own, or hold use rights for, either alone or with someone else. Please describe or give me the name of each parcel, starting with the parcel you reside on, if applicable.	What is the area of this [PARCEL]? CODDS FOR UNIT: ACRE.....1 HECTARE.....2 SQUARE METERS...3 OTHER (SPECIFY)...4	GRANTED BY CUSTOMARY/ COMMUNITY AUTHORITIES...1 ALLOCATED BY GOVERNMENT.....2 ALLOCATED BY FAMILY MEMBER...3 INHERITED BY THE DEATH OF A FAMILY MEMBER...4 PURCHASED.....5 RENTED IN, SHORT-TERM (< 3 YEARS).....6 >> 5 RENTED IN, LONG-TERM.....7 SHARECROPPED IN...8 >> 5 BORROWED FOR FREE.....9 BRIDE PRICE.....10 GIFT FROM NON-HOUSEHOLD MEMBER.....11 MOVED IN WITHOUT PERMISSION...12 >> NEXT PARCEL OTHER (SPECIFY)...13
		a. FARMER ESTIMATION AREA UNIT	b. GPS MEASURE AREA IN ACRES
1			
2			
3			
4			
5			

Color Codes: SDG 1.4.2 (blue), SDG 5.a.1 (red), Both 1.4.2 & 5.a.1 (green), Analytical purposes only (purple)

Fig. 4. Version 1 of the harmonized land tenure module (part 1).

integrated, and to maximize adoption of the harmonized instrument, five versions were designed, depending on whether:

- i. a proxy respondent approach or a self-respondent approach is used
- ii. data is collected at the parcel level or at an aggregated (household/farm) level.

In addition, a set of recommendations is provided for guiding statistical agencies in the selection of the most appropriate version for their surveys (Fig. 3).

All versions of the instrument have advantages and limitations; nonetheless, all of them allow capturing the numerator of Indicators 1.4.2 and 5.a.1.¹³ Consistent

¹³Since the denominator of Indicator 1.4.2 is the entire adult population, this indicator only requires the age of household members. On the contrary, the denominator of Indicator 5.a.1 requires a set

with the indicators' methodologies and the recommendations put forward by recent research, custodian agencies recommended interviewing either all adult household members or one randomly selected adult member, in a self-respondent manner, about their land rights. If a proxy-respondent approach is the only viable option, the custodians recommend strategies for the optimization of the respondent selection.¹⁴

Figures 4 and 5 illustrate version 1 of the harmonized land tenure module – i.e., the gold standard. All the

of screening questions to be administered in order to identify the agricultural households. This set of screening questions is obviously not necessary in agricultural surveys.

¹⁴For instance, in the case of a parcel-level survey instrument, the recommendation was to do a 'group interview' prior to administration of the module in order to identify which household member is 'most knowledgeable' on each parcel. In this approach, the same respondent would not necessarily be interviewed about every parcel.

VERSION 1 --Continued

	Named agencies and examples to be customized for context	Codes to be customized at country level - to include all legally recognized documents. Rental contracts of some form should be included, as long as rights are legally protected	skipped for short term rental, sharecropped in, & borrowed for free	skipped for short term rental, sharecropped in, & borrowed for free	
		Photo aid to be shown to respondents			

<p>5. What are current uses of this [PARCEL]?</p> <p>SELECT ALL THAT APPLY</p> <p>RESIDENTIAL...1 AGRICULTURAL...2 PASTORAL...3 FOREST...4 BUSINESS/COMMERCIAL...5 DONT'KNOW...6 OTHER (SPECIFY)...7</p>	<p>6. Is there a document for this [PARCEL] issued by or registered at the Land Registry/Cadastral Agency, such as a title deed, certificate of ownership, certificate of hereditary acquisition lease</p> <p>YES...1 NO...2 >> 8</p>	<p>7. What type of documents are there for this [PARCEL], and is your name listed on any of the documents as owner or right use holder?</p> <p>LIST UP TO 3, SHOW PHOTO AID</p> <table style="width: 100%; border: none;"> <tr> <td style="border: none;">CODES FOR DOCUMENT TYPE:</td> <td style="border: none;">CODES FOR NAME LISTED?</td> </tr> <tr> <td style="border: none;">TITLE DEED.....1</td> <td style="border: none;">YES.....1</td> </tr> <tr> <td style="border: none;">CERTIFICATE OF CUSTOMARY OWNERSHIP...2</td> <td style="border: none;">NO.....2</td> </tr> <tr> <td style="border: none;">CERTIFICATE OF OCCUPANCY...3</td> <td style="border: none;">DONT'KNOW...98</td> </tr> <tr> <td style="border: none;">CERTIFICATE OF HEREDITARY ACQUISITION LISTED IN REGISTRY...4</td> <td style="border: none;">REFUSAL...99</td> </tr> <tr> <td style="border: none;">SURVEY PLAN.....5</td> <td></td> </tr> <tr> <td style="border: none;">RENTAL CONTRACT, REGISTERED.....6</td> <td></td> </tr> <tr> <td style="border: none;">LEASE, REGISTERED.....7</td> <td></td> </tr> <tr> <td style="border: none;">OTHER (SPECIFY).....8</td> <td></td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="2">DOCUMENT #1</th> <th colspan="2">DOCUMENT #2</th> <th colspan="2">DOCUMENT #3</th> </tr> <tr> <th>DOC. TYPE</th> <th>NAME LISTED?</th> <th>DOC. TYPE</th> <th>NAME LISTED?</th> <th>DOC. TYPE</th> <th>NAME LISTED?</th> </tr> </thead> <tbody> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	CODES FOR DOCUMENT TYPE:	CODES FOR NAME LISTED?	TITLE DEED.....1	YES.....1	CERTIFICATE OF CUSTOMARY OWNERSHIP...2	NO.....2	CERTIFICATE OF OCCUPANCY...3	DONT'KNOW...98	CERTIFICATE OF HEREDITARY ACQUISITION LISTED IN REGISTRY...4	REFUSAL...99	SURVEY PLAN.....5		RENTAL CONTRACT, REGISTERED.....6		LEASE, REGISTERED.....7		OTHER (SPECIFY).....8		DOCUMENT #1		DOCUMENT #2		DOCUMENT #3		DOC. TYPE	NAME LISTED?	DOC. TYPE	NAME LISTED?	DOC. TYPE	NAME LISTED?																									<p>8. Do you have the right to sell this [PARCEL], either alone or jointly with someone else?</p> <p>YES.....1 NO.....2 DONT'KNOW...98 REFUSAL...99</p>	<p>9. Do you have the right to bequeath this [PARCEL], either alone or jointly with someone else?</p> <p>YES.....1 NO.....2 DONT'KNOW...98 REFUSAL...99</p>	<p>10. On a scale from 1 to 5, where 1 is not at all likely and 5 is extremely likely, how likely are you to involuntarily lose ownership or use rights to this [PARCEL] in the next 5 years?</p> <p>NOT AT ALL LIKELY...1 SLIGHTLY LIKELY...2 MODERATELY LIKELY...3 VERY LIKELY...4 EXTREMELY LIKELY...5</p>
CODES FOR DOCUMENT TYPE:	CODES FOR NAME LISTED?																																																										
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Fig. 5. Version 1 of the harmonized land tenure module (part 2).

variants and the guidelines can be found in FAO, The World Bank, UN-Habitat [3].

4. The Initiative's efforts to promote individual land rights data globally

The 50x2030 Initiative has been and continues to be contributing to the large-scale collection of data on individual land rights in a comprehensive manner. The questionnaire tools described in Section 3 were integrated into the reference questionnaires of the Initiative, and the customization and implementation of these questionnaires is supported by the Initiative in each partner country. In parallel, research on measuring land rights at the individual level is prioritized to ensure the data collection methods used by the Initiative are appropriate and well-understood. These three facets of

the Initiative's contribution to closing data gaps on individual land rights, through adoption of tools, support to country implementation, and methodological validation, are described below.

4.1. Adoption of the integrated approach in the Initiative's survey tools

The 50x2030 Initiative has developed a set of reference questionnaire instruments, which continue to be expanded and refined.¹⁵ These survey tools have been designed to include the module on measuring land rights at the individual level discussed in Section 3, encouraging the national level collection of these data

¹⁵Find the most recent 50x2030 survey tools online: <https://www.50x2030.org/resources/survey-instruments>.

in 50 countries by 2030. Before addressing the manner in which these questions on land rights were integrated into the Initiative's tools, a brief overview of the 50x2030 survey programs is provided.

As discussed in Villarino, Buenaseda Tejada, and Patterson [15], the survey programs supported by the 50x2030 Initiative are structured such that a series of survey tools, each with specific topical focuses, are implemented on a rotating basis while core questions on agricultural production are asked on an annual basis. The two programs, the Agricultural Survey Program and the Integrated Agriculture and Rural Survey Program (henceforth referred to as the *Integrated Program*), differ in that the Integrated Program expands the sample from the inclusion of household and non-household sector farms to also include rural, non-agricultural households.¹⁶ The survey tools developed by the Initiative are the same for both survey programs, with the exception of the tool on Non-Farm Income and Living Standards (ILS-HH) which is only administered in the Integrated Program. A summary of the survey tools is provided in Table 1, which is adapted from "A Guide to 50x2030 Data Collection: Questionnaire Design" [17].

As seen in Table 1, the placement of the questions for monitoring land rights at the individual level is dependent on the survey program being implemented. In the Agricultural Program, the questions are integrated into the Farm Income, Labor, and Productivity questionnaire (ILP-AG) tool, while they are included in the Non-Farm Income and Living Standards questionnaire (ILS-HH) in the Integrated Program. The rationale behind the distinction is that, in the case of the Integrated Program, the questions should be asked for both agricultural and non-agricultural land in order to also inform SDG 1.4.2 (albeit only for the rural population unless the sample is nationally representative). Since non-agricultural households are not administered the ILP-AG tool in the Integrated Program, it is necessary to administer the land related questions in the ILS-HH tool. For a heavily detailed discussion of the placement of the questions on land rights in both survey programs as well as the calculation of Indicator 5.a.1 using 50x2030 survey tools, see "A Guide to 50x2030 Survey Tools and SDG Indicator 5.a.1: Measuring Gender Parity in Ownership and Tenure Rights Over Agricultural Land" [18].

The survey tools of the Initiative incorporate the version of the questionnaire tool (discussed in Section

3) that allows for proxy respondents and collects data at the parcel level. The selection of the parcel level approach is a natural one, given the analytical value of having parcel-level data and the structure of the 50x2030 that already collect data at the parcel level (for agricultural production, for example). The allowance for proxy respondents in the reference tools was a decision taken based on considerations for the trade-offs between ease of implementation, budgetary constraints and data quality. Though the 50x2030 reference tools allow for proxy respondents, countries are encouraged to adapt this default protocol to collect self-respondent data for land rights, as feasible.

4.2. *Supporting the measurement in the Initiative's partner countries*

In addition to integrating the harmonized land tenure module into the Initiative's survey tools, the Initiative works to ensure that partner countries are assisted in the adaptation of the survey tools to their local context and survey needs. In the initial stages of collaboration with a partner country, advocacy and technical sessions are normally held to explain (i) the value collecting data on individual land rights and SDG 5.a.1; (ii) how the questions can be best integrated in the main survey tools; and (iii) how the data can be analyzed.

An initial step in this support phase is confirmation of whether SDG 5.a.1 is already monitored (or supposed to be monitored) by other survey programs in the country. For instance, Georgia initially excluded SDG 5.a.1 from the national agricultural survey program because the indicator was already planned for inclusion in the national household survey. However, the indicator was subsequently excluded from the household survey and GEOSTAT amended its plans and scheduled the inclusion of the data needed in SDG 5.a.1 in the 2023 agricultural survey.

A second important discussion point is related to the value of individual-level data vis-à-vis household-level data. Initial reactions to this issue vary considerably across country partners. In some countries, the awareness on the importance of sex-disaggregated data is very high. This is the case of Uganda, where the national statistical office collaborated with UNSD on the MEXA study¹⁷ and with FAO on the Global Strategy's pilots [8], and has a long tradition of collecting sex-

¹⁶For more detail on the sampling of the two survey programs, see Bako et al. [16].

¹⁷Methodological Experiment on Measuring Asset Ownership from a Gender Perspective (MEXA). For more information on MEXA, see Kilic and Moylan [10].

Table 1
Primary 50x2030 survey tools

Survey tool	Content	SDG indicator	Recommended frequency	Target population	50x2030 survey program
Core Agricultural Questionnaire (CORE)	Crops, livestock, aquaculture, fisheries, forestry production		Annual	Agricultural households and agricultural holdings in the non-household sector	Both Agricultural Program and Integrated Program
Farm Income, Labor, and Productivity Questionnaire (ILP)	Agricultural income, agricultural labor, and productivity; land tenure, gender decision-making	2.3.1 2.3.2 5.a.1 1.4.2*	Every 3 years	Agricultural households and agricultural holdings in the non-household sector	Both Agricultural Program and Integrated Program
Non-Farm Income and Living Standards Household Questionnaire (ILS-HH)	Household member socio-demographics, education, off-farm labor and time-use, housing, non-agricultural income, shocks and coping	5.a.1 1.4.2*	Every 3 years	Agricultural and non-agricultural households	ILS-HH only in Integrated Program**
Production Methods and Environment (PME)	Production Methods and Environment; Agricultural Sustainability	2.4.1	Every 3 years***	Agricultural households and agricultural holdings in the non-household sector	Both Agricultural Program and Integrated Program
Agricultural Machinery and Equipment (MEA)	Assets, Machinery, Equipment		Every 3–5 years	Agricultural households and agricultural holdings in the non-household sector	Both Agricultural Program and Integrated Program

*The ILP covers all items needed to measure SGD 1.4.2; however, to properly compute the indicator, a nationally representative sample of households would be needed, which the 50x2030 system does not require. **SDG 1.4.2 and 5.a.1 are measured through the ILS-HH in the Integrated Agricultural and Rural Survey Model. They are measured through the ILP in the Agricultural Model. ***The PME tool includes data collection for SDG Indicator 2.4.1, which is recommended to be measured every three years. Questions that do not pertain to Indicator 2.4.1 may be administered every six years, allowing for a lighter PME questionnaire in years which only 2.4.1 is measured.

disaggregated data. These countries are obviously more eager to include the required questions and more proactive during the customization process. Other countries are less sensitive to the topic and it takes time and effort to appreciate the value of shifting from household-level to individual-level data. In some cases, the enthusiasm on the topic depends on the institution in charge of the agricultural survey program. National Statistical Offices tend to be more receptive than Ministries of Agriculture due to their experience with other types of survey programs, such as national household surveys and multi-topic surveys.

Once countries decide to collect the data for SDG 5.a.1, the third and final ‘crossroad’ is about the method – i.e., whether to collect the data at the parcel or individual level and if a self-respondent approach is feasible. As expected, countries choose the level that fits better the main survey questionnaire. For instance, Uganda and Senegal collected data at the parcel-level because they already had a parcel module in their questionnaire; Cambodia inserted individual-level questions in the household roster, given the absence of parcel level data in the main questionnaire. With respect to the respondent approach, countries are generally reluctant to adopt the self-respondent approach. This reluctance is generally rooted in a limited awareness of the poten-

tial discrepancies between proxy-respondent and self-respondent data, and by the fear that the self-respondent approach could substantially increase the fieldwork duration and complexity, especially when considering the larger demands of the survey as a whole.

As mentioned above, mainstreaming 5.a.1 questions requires reaching the right balance between customization and standardization. The questions on land rights for SDG 5.a.1 (and 1.4.2) are standard and should remain as such in order to ensure comparability across time and space; nonetheless, the list of legally recognized documents and the tenure types are country specific and should be adapted without changing the original concept. For instance, the list of documents for a given country should be exhaustive and clear and should always allow the analyst to distinguish the legally recognized documents from the informal ones during the processing stage. Consulting tenure experts can become crucial, especially in countries where different tenure systems and types of documents exist.

The experience of the 50x2030 Initiative to date has illustrated that using a standard and constant set of questions is very important for the stability of the SDG estimates. For instance, the 5.a.1 sub-indicators remained very stable in Uganda in 2018 and 2019 using the same questions (see Fig. 6), whereas different statistics were

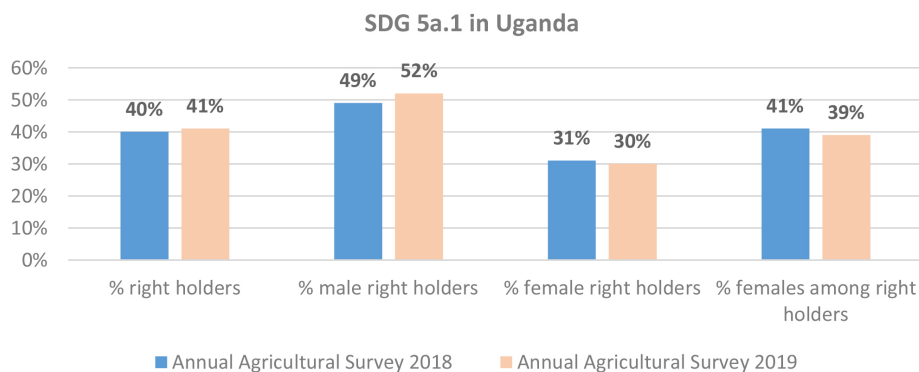


Fig. 6. SDG 5.a.1 in Uganda. Estimates derived from the Uganda Annual Agricultural Survey 2018 and 2019.

obtained in previous years using questions that diverted from the standard ones.

4.3. Methodological validation

Methodological validation, to test and understand the implications of different approaches to collecting data on specific topics, is central to the 50x2030 Initiative's mission to improve the quality and availability of agricultural data. The Initiative is purposefully designed to foster innovation and validate new tools and technologies for data collection, which are then documented in the form of public guidance tools and scaled up into national-level 50x2030 survey operations. The measurement of individual land rights is no exception.

Because multiple versions of the tool to collect data for monitoring SDG 1.4.2 and 5.a.1 were developed in an effort to allow integration into different types of surveys, it is necessary to conduct methodological validation around the different approaches. Though the different versions, as described in Section 3, are designed to ensure the questions are asked in a consistent manner despite the differences in the respondent approach and level of data collection, it is important to understand how the computation of the SDG indicators, as well as the resulting understanding of the specific land tenure rights included therein, vary with the implementation of the various versions.

Though the 50x2030 Initiative has already adopted a version of the land tenure module into its reference questionnaires, using the parcel level and proxy-respondent approach, which was selected with consideration for the demands of the larger survey as described in Section 3, these reference questionnaires can be adjusted based on findings from methodological research. Such findings can also encourage countries to adopt more refined approaches during the country customiza-

tion stage, including the use of a self-respondent approach. In countries where a self-respondent approach is not feasible, it remains important to understand the data quality trade-offs and potential biases in SDG estimates stemming from the use of the proxy-respondent approach.

The 50x2030 validation efforts around the collection of data on individual land rights, both for the computation of SDG indicators and for the analysis and understanding of various aspects of land tenure, build and expand on previous literature on the gender-differentiated impact of proxy respondents on the measurement of assets in general [7,11] and various aspects of land rights in particular such as Kilic, Moylan and Koolwal [12], Deininger et al. [13], and the studies included in the UN guidelines [7]. While these previous works focus on the impact of the respondent approach, research under the 50x2030 Initiative extends this work into another geographic context and includes the analysis of the impact of the level of aggregation of land tenure data. The design of and findings from the Initiative's initial methodological study, conducted in Armenia, are discussed below.

Armenia Land Tenure and Area (ALTA) Study: Design & Key Findings

The Initiative's first, but not last, methodological validation study on the measurement of individual land rights was conducted in Armenia, a 50x2030 partner country. Armenia was selected for the initial study based on country demand and interest in conducting such research. The World Bank, who spearheads the Methods & Tools Development Component of the Initiative, partnered with the Statistical Committee of the Republic of Armenia (ArmStat) and the International Centre for Agribusiness Research and Education

(ICARE) to implement the Armenia Land Tenure and Area (ALTA) study.

The ALTA study, which was fielded from September to December 2019, was conducted in three *marzes* of Armenia – Ararat, Kotayk, and Vayots Dzor. These *marzes* were purposefully selected to ensure the sample covered areas with variation in intensity and type of agriculture, topography, and population density. Within these three *marzes*, a total of 100 enumeration areas (EAs) were randomly selected, using the 2021 population census as the sample frame. A household listing operation was conducted in each selected EA, and from that listing, 12 households were randomly selected, resulting in a total sample of 1200 households. In order to achieve the objective of analyzing the implications of the various land tenure modules with respect to SDG computation and the underlying land tenure rights, households were randomly assigned to one of four questionnaire versions, or *treatment arms*. The assignment of treatment arm was done at the headquarters level directly through the computer-assisted personal interviewing application, the World Bank’s Survey Solutions program,¹⁸ to ensure there was an equal and random distribution of questionnaire versions and so that the assignment could not be altered by enumerators. The treatment arm assignment was randomized *within* EA, such that within each EA three households were administered each of the four versions of the questionnaire tested, to account for any differences at the EA level that could have affected responses to the land tenure questions, such as village-specific gender norms, for example.

The four questionnaires tested, and therefore the treatment arms, included all combinations of the respondent approach options (proxy or self) and the levels of land data collection (parcel level or aggregate), as defined in Table 2. In the arms employing a self-respondent approach, Arms 1 and 2, up to three adult household members were randomly selected for interviews, again directly through the Survey Solutions application to prevent biases introduced by selective assignment. Based on the amassing literature on the importance of self-respondents, and the a priori assumptions that individuals are best informed about their own rights, rather than the rights of other household members, and that reporting at the parcel level reduces cognitive burden through the elimination of the need for aggregation, we consider Arm 1 to be the best practice

¹⁸For details on the publicly available Survey Solutions CAPI software, visit: <https://mysurvey.solutions/en/>.

Table 2
ALTA treatment arms

Treatment arm	Respondent approach	Level of land data collection
1	Self-Respondent	Parcel
2	Self-Respondent	Aggregate
3	Proxy	Parcel
4	Proxy	Aggregate

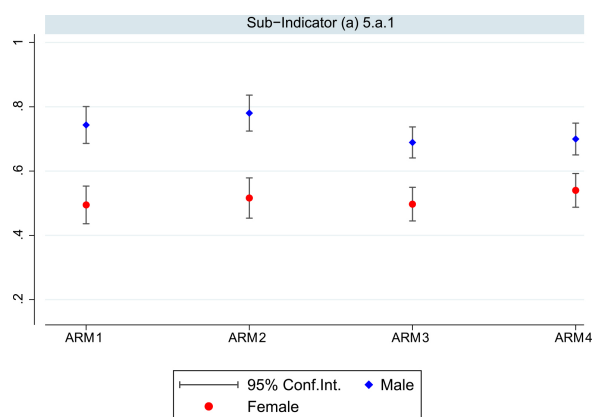


Fig. 7. SDG 5.a.1(a), by gender and Arm. Figure extracted from Gourlay et al. [19].

and therefore the benchmark against which the other arms are compared.

Given the experimental design of the ALTA study, we are able to draw conclusions on the implications of implementing each of the four questionnaire versions, in the context of Armenia, through descriptive analysis. The results discussed here are limited to those related to SDG 5.a.1 and the agricultural population, given the relevance to the 50x2030 Initiative and appropriateness of the Initiative’s sample strategy for complete monitoring of the Indicator, though ALTA results related to the urban and rural populations and SDG 1.4.2 can be found in Gourlay et al. [19].

Table 3 presents, by gender, summary statistics on the land tenure rights included in SDG 5.a.1, including legal documentation, the right to sell, and the right to bequeath, for the agricultural population, as measured by the different treatment arms. Immediately evident is the gender gap in and rights, with only 48% of women holding documented rights to land (in Arm 1) while 72% of men hold documented rights (in Arm 1) for example, reinforcing the need for the collection of individual land data. From a methodological perspective, the notable findings are the differences found in the measurement of these rights across treatment arm, and how those differences vary across gender. The estimates of the shares of men and women with legally documen-

Table 3
Land rights, by gender and treatment arm

	Self-respondent, parcel level (ARM1)	Self-respondent, aggregate level (ARM2)	<i>T</i> -test*	Proxy-respondent, parcel level (ARM3)	<i>T</i> -test*	Proxy-respondent, aggregate level (ARM4)	<i>T</i> -test*
	Mean	Mean		Mean		Mean	
Share of women with:							
Legal documentation	0.48	0.51	0.606	0.49	0.922	0.52	0.245
Right to bequeath	0.39	0.38	0.801	0.29	0.006	0.39	0.859
Right to sell	0.38	0.40	0.907	0.34	0.140	0.41	0.480
Share of men with:							
Legal documentation	0.72	0.78	0.194	0.67	0.123	0.69	0.558
Right to bequeath	0.62	0.65	0.523	0.41	0.000	0.53	0.040
Right to sell	0.64	0.68	0.441	0.51	0.001	0.55	0.040

Notes: **T*-tests are conducted against Arm 1, with *p*-values reported (bolded *p*-values indicate significant differences between Arm 1 and the respective Arm). Figures reflect only the agricultural population in the ALTA sample, as defined by SDG Indicator 5.a.1. For results of both the agricultural and non-agricultural sample, see Gourlay et al. (forthcoming).

Table 4
SDG 5.a.1 estimates, by treatment arm

	Self-respondent, parcel level (ARM1)	Self-respondent, aggregate level (ARM2)	Proxy-respondent, parcel level (ARM3)	Proxy-respondent, aggregate level (ARM4)
5.a.1 (a) – women	0.50	0.52	0.50	0.54
5.a.1 (a) – men	0.74	0.78	0.69	0.70
5.a.1 (b)	0.45	0.43	0.42	0.45

Notes: The point estimates of Arms 2, 3, and 4 are statistically similar to those estimated by Arm 1, for all sub-indicators reported here.

tation does not vary to any statistically significant degree across treatment arms. Alienation rights, however, do vary, but more so for men. While the share of men with the right to sell land significantly differs from the benchmark when estimated with Arms 3 and 4, there is no significant difference across Arms for women. The estimates of both men's and women's right to bequeath is sensitive to treatment arm, with the questionnaire version using a proxy respondent approach and parcel level data resulting in an underestimation of rights holders relative to the benchmark of Arm 1.

Though differences are observed across arms in the measurement of the alienation rights, the estimation of SDG Indicators 5.a.1 (a) and 5.a.1 (b) shows more consistency across treatment arm. Figure 7 depicts SDG 5.a.1 (a), *the proportion of total agricultural population with ownership or secure rights over agricultural land*, for men and women separately, by Arm. While the point estimates differ across treatment arms, the means are not significantly different in Arm 1 than in the other treatment arms (within gender). The same is true for the estimates of 5.a.1 (b), *share of women among owners or rights bearers of agricultural land*, which are estimated at 45%, 43%, 42%, and 45% in Arms 1, 2, 3, and 4, respectively, but with no statistically significant differ-

ence between the benchmark (Arm 1) and the other treatment arms. Point estimates for both SDG 5.a.1 (a) and 5.a.1 (b) are reported in Table 4.

The stability of the SDG 5.a.1 estimates across treatment arms, and therefore across proxy respondent approaches and levels of land data collection, lends support to the use of the proxy respondent version that is currently integrated into the 50x2030 reference questionnaires as well as the other versions made available to the public. This finding, however, is potentially driven by the relatively high rates of documentation in Armenia vis-à-vis other developing contexts, coupled with the manner in which 5.a.1 is estimated (whereby the presence of a legal document *or* alienation rights is sufficient for an individual to be considered as having secure tenure), and therefore extrapolation of this finding to other contexts should be done carefully. Previous research conducted in contexts with lower documentation rates, such as Kilic, Moylan, and Koolwal [12], have shown more significant biases stemming from the use of proxy respondents. Results of ALTA, however, do suggest consistency in the estimation of SDG 5.a.1 in the Armenian contexts, and potentially other contexts with a similar land tenure landscape. Despite the consistent SDG estimations, the understanding of spe-

cific land tenure rights, in particular the rights to bequeath and sell, is biased by the use of proxy respondents and data aggregation, with use of use of the proxy respondent modules resulting in underestimations of these alienation rights relative to the suggested self-respondent approach. These biases should be taken into consideration when selecting the appropriate method of collecting land tenure data for analysis of different land rights.

Future Methodological Research & Scale-up Avenues

The experience of the ALTA study contributes greatly to our understanding of the implications of various survey design decisions on the resulting SDG estimations and understanding of land rights, but it in itself is not sufficient to make conclusions at a global scale. Under the 50x2030 Initiative, additional studies such as ALTA will be conducted in different contexts, including in Africa and other Asian countries, to inform individual land data collection practices in those 50x2030 operations.

The ALTA study has informed the development of a guide for cognitive interviewing around the land tenure module, irrespective of the questionnaire version selected, that will facilitate cognitive interviewing around land rights prior to survey fieldwork, ultimately resulting in improved data on individual land rights Hovhannisyán, Gourlay, and Grigoryan [20].

Finally, parallel work of the Initiative on women's empowerment has recognized the importance of land rights and pushed forward with further adoption of land rights measurement. The International Food Policy Research Institute (IFPRI) and Emory University, together with the 50x2030 Initiative, are working on the Women's Empowerment Metric for National Systems (WEMNS) project to develop and validate a measure of women's empowerment, which includes critical questions individual land rights. Methodological validation of WEMNS tool is being conducted in Bangladesh, Malawi, and Nepal prior to large scale implementation.

5. Conclusions

The 50x2030 Initiative contributes to the large-scale collection of data on individual land rights through the adoption of tools, support to country implementation, and methodological validation. Together, this comprehensive approach coupled with the wide geographic reach of the Initiative will fill critical data gaps

around individual land rights, with a particular focus on women's rights, globally.

The survey tools of the Initiative have integrated the questionnaire module on measuring SDG 5.a.1 and 1.4.2 that was carefully designed through a collaboration of the custodian agencies [3], thereby encouraging adoption of these questions in all 50x2030 partner countries. To date, the Initiative has been successful in supporting partner countries in mainstreaming the collection of individual data on land tenure, specifically the data needed for measuring and monitoring SDG 5.a.1, in their country-specific survey instruments. Yet, additional effort is needed to encourage the adoption of self-respondent approach. Methodological research conducted under the UN EDGE and LSMS+ projects, for example, illustrate the biases introduced by the use of proxy respondents. The first of several methodological studies conducted by the Initiative itself, the Armenia Land Tenure and Area study, also revealed biases in the understanding of individual land rights when using a proxy respondent vis-à-vis a self-respondent. However, in the case of Armenia, the measurement of the SDG 5.a.1 Indicator was statistically unchanged with the use of the proxy respondent – a finding lending confidence to the allowance of proxy responding for SDG reporting in a context like Armenia with relatively high rates of documented rights.

To further advance the quality of data on individual land rights through the adoption of a self-respondent approach, awareness of partner agencies of the implications of proxy reporting ought to be increased through advocacy documents that present, in a digestible manner, the bias introduced by proxy responding on questions of individual land rights. Additionally, the common causes of hesitation among countries to adopting a self-respondent approach, such as perceived cost and fieldwork complication, could be mitigated through the development of a practical tool-kit explaining how a self-respondent module could be effectively embedded into a large-scale survey while minimizing the burden on enumerators and additional time in the field.

Going forward, the Initiative will continue to improve and scale-up the collection of individual land rights data, taking advantage of the Initiative's comprehensive approach that encapsulates methodological validation of data collection methods, national-level data production, and promotion of the use of data for informed policy making. It will be important to conduct other methodological studies like ALTA in countries characterized by tenure systems and document penetration different from the ones already observed, the findings

of which will be channeled into the future data collection efforts of the 50x2030 Initiative and its partner countries.

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