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How do practitioners characterize land tenure security?

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Abstract

Improving land tenure security (LTS) is a significant challenge for sustainable development. The Sustainable Development Goals and other recent global initiatives have renewed and increased the need to improve LTS to address climate change, biodiversity loss, food security, poverty reduction, and other challenges. At the same time, policymakers are increasingly interested in evidence-based policies and decisions, creating urgency for practitioners and researchers to work together. Yet, incongruent characterizations of LTS (identifying the key components of LTS) by practitioners and researchers can limit collaboration and information flows necessary for research and effective policymaking. While there are systematic reviews of how LTS is characterized in the academic literature, no prior study has assessed how practitioners characterize LTS. We address this gap using data from 54 interviews of land tenure practitioners working in ten countries of global importance for biodiversity and climate change mitigation. Practitioners characterize LTS as complex and multifaceted, and a majority of practitioners refer to *de jure* terms (e.g., titling) when characterizing it. Notably, in our data just one practitioner characterized LTS in terms of perceptions of the landholder, contrasting the recent emphasis in the academic literature on landholder perceptions in LTS characterizations. Researchers should be aware of incongruence in how LTS is characterized in the academic literature when engaging practitioners.

1. Introduction

Land tenure security (LTS) is increasingly on the agenda of organizations focused on the governance of natural resources and sustainable development. The Sustainable Development Goals (UNDP 2015), Paris Agreement (UNFCCC 2015), Reducing Emissions from Deforestation and forest Degradation (UNFCCC 2016), and other global initiatives have renewed and increased opportunities for addressing a broad range of sustainability challenges by improving LTS. Researchers and practitioners can play an important role using emerging evidence to inform such policies (Sackett et al. 1996; Pullin & Knight 2003; Pullin et al. 2004, 2016; Sutherland et al. 2004; Thorn 2007; Cook et al. 2010, 2013), but to do so requires a common understanding and sustained dialogue between researchers and practitioners about the challenge they are trying to solve. Increasingly nuanced frameworks for understanding the nature and dynamics of LTS are emerging in academia (van Gelder 2010; Arnot et al. 2011; Simbizi et al. 2014; Robinson et al. 2018) (see SI for more on evolution of LTS characterizations in the academic literature), marking notable advances that have the potential to inform practice.

For multidimensional and multidisciplinary topics like LTS, it is particularly important to understand whether characterizations of LTS are congruent between researchers and practitioners. Information on practitioner perspectives can provide insights into whether the growing body of research is actually being informed by, and incorporated into, the work done by practitioners. Incongruence could indicate that the existing avenues of research may have limited scope for application, or that there is little communication and diffusion of information between practitioners and researchers. But information on how “on-the-ground” practitioners characterize and operationalize LTS, or whether such nuanced frameworks are useful or reflect on-the-ground reality, is largely missing. The tendency to overlook practitioner perspectives could suggest limited collaborations (Amabile et al. 2001), and ultimately compromises policy innovation as well as academic efforts to better understand LTS. Incongruence in how concepts are characterized has also been called linguistic uncertainty (Regan et al. 2002), referring to uncertainty deriving from factors such as vague terminology, context-dependent language, and ambiguous definitions.

In this paper, we report on formative research using data from 54 interviews of land tenure practitioners working in ten tropical countries. We document and establish an understanding of how practitioners characterize LTS, with the goal of providing lessons for researchers seeking to better inform policy debates that aim to strengthen LTS.

2. Materials and methods

Our analysis uses data from 54 interviews with land tenure practitioner experts (hereafter referred to as practitioners) working in ten countries. Following research on academic-practitioner collaborations (Amabile et al. 2001; Rynes et al. 2001), we take a relatively broad perspective of practitioners in order to capture the diversity of those working on LTS issues. We define practitioners as individuals who have at least one year of field-based experience, intimate knowledge on land tenure issues in a particular location, a primary appointment at an organization engaged in a programmatic work to strengthen LTS, and have experience working in rural contexts in terrestrial systems. Our relatively broad definition of a practitioner defines some inclusion parameters, such as having some field-based and direct engagement with efforts to strengthen LTS. This is because our primary aim is to gather information from experts with field-based knowledge, and we did not want to artificially restrict the sample by applying a narrow definition of a practitioner based on the populations they engage with, the types of policies they utilize, or other factors. Because there is no central database or registry of practitioners, we used a snowball sampling approach (Biernacki & Waldorf 1981) to recruit practitioners. We first created a list of practitioners who have worked with our organizations in rural contexts in terrestrial systems. Based on this initial list and due to budget and time constraints, we focused on ten countries in the Global South with high levels of tenure insecurity and areas of high conservation concern: Brazil, Colombia, Ecuador, Guatemala, India, Indonesia, Liberia, Peru, Tanzania, and Uganda. We then appended this list of practitioners by examining the participant list from the World Bank's Land and Poverty Conference from 2013-2016 for practitioners working in at least one of the ten focal countries. In total, we emailed 213 practitioners as many as three times to request participation in a videoconference interview. Of those, 67 practitioners did not respond and 42 declined to participate. We were unable to complete 39 interviews due to scheduling constraints and unreliable internet connections. In total, we conducted 60 interviews. We removed six practitioners from the sample for this report because their primary appointments were academic.

A team of four enumerators conducted interviews between July – December 2016 in the practitioner's native language. The interview consisted of a series of open- and close-ended questions covering seven sections. Structured questions asked about a practitioner's background (e.g., education, training, work experience), the type of organization and sector the practitioner works in, detailed questions on the communities and countries they worked in, the tenure forms, rights, and associated challenges in those

communities, significant challenges to secure tenure within those communities, and solutions for securing tenure that their organization employs. Here, we focus on open-ended questions (for survey subsection see Supplementary Information) that asked respondents about how they characterize LTS, how they or their organizations assessed LTS, and top three challenges for achieving LTS. Our analysis here focuses on responses from an open-ended question asking, “How do you characterize land tenure security or insecurity in your work?” We purposely did not introduce any conceptual discussion about LTS prior to this question, but simply relayed that we were interested in how they work on LTS issues. Responses were transcribed by enumerators and translated into English when necessary.

We conducted thematic coding using in NVivo 11.4.3 to analyze open-ended responses. Coding was conducted iteratively by a primary coder to generate 12 codes that summarized and captured the essence of the responses (Saldana 2009) (Table S1 for example quotes and Figure S1 for word cloud). To validate the coding scheme, a second coder used the draft coding scheme to independently code all practitioner responses. The second coder reviewed and learned the codes before coding the interview data in NVivo, but the codes themselves were not discussed. The coded text generated by the primary and secondary coder were then examined for reliability (i.e. the reasonable expectation that coders with similar topical familiarity would assign the same codes to the same unit of text (Campbell et al. 2013)). We calculated Krippendorff’s alpha statistics for each code, and codes with an alpha value of 0.66 or higher were considered reliable (Krippendorff 1980). Coding matrices were exported from NVivo and imported to R to calculate alpha values using the *irr* package (Gamer et al. 2015). Codes that did not meet this threshold were jointly reviewed, and the coders resolved conflicting interpretations by either merging codes or refining code definitions.

3. Results

3.1 Practitioner characteristics

Practitioners in our sample worked primarily in one country, with Guatemala (n=13), India (n=10), Colombia (n=8), and Indonesia (n=6) being the most common (Table 1). Over three quarters of practitioners worked at non-governmental organizations where LTS was a primary programmatic component. Nearly half of our sample held a leadership role, such as an executive director position, and 40% described their role in their organization in a non-managing role, such as an analyst or lawyer. For those holding management positions, the majority (67% of those holding Executive Director positions)

belonged to local, implementing organizations (e.g., less than 20 staff) where all staff commonly engage in programmatic work. Approximately 25% of our sample held more than one organizational role. Of those in management positions, approximately 58% of managers held more than one position. Practitioners had, on average, 15 years of experience working on LTS issues (range: 3-45 years). Approximately 80% of practitioners in our sample used formal approaches (e.g., titling, formal community agreements) to strengthen LTS in their work. Seventy percent of respondents held a post-graduate degree, and 54% were in upper management positions (e.g., Executive Director or manager titles). Practitioners worked, on average, in 2.4 sectors. The most represented sectors were conservation (n=26), economic development (n=24), and agriculture (n=20). A few practitioners worked on other topic areas, such as gender (n=3) and conflict or dispute resolution (n=4). Note that practitioners self-selected the sector they worked in, so, for instance, it is possible that practitioners largely operated in the conservation sector but believed their work to strengthen LTS also affected outcomes relevant to the public health sector.

3.2 How practitioners characterize land tenure security

Practitioners by and large characterized LTS using de jure terms

Seventy-seven percent of practitioners characterized LTS using *de jure* terms (i.e., using terminology tied closely to *de jure* aspects of land tenure, such as titling, that are legally recognized and enforced), with 74% and 35% of practitioners mentioning land titling and recognition of rights, respectively. This was even the case with practitioners whose primary goals included advancing indigenous rights (n=22), a population that often lacks formal land rights. Eighty-six percent of these practitioners used only *de jure* terms in their LTS characterizations compared to 56% who also used *de facto* terms (i.e., using terminology tied closely to *de facto* aspects of land tenure, such as customary rights and systems that may not be legally recognized but are recognized and enforced by community norms or standards). *De jure* terms were, in some responses, mentioned nearly three times more than *de facto* terms in LTS characterizations. Seventy-five percent of practitioners declared that extant legal systems and frameworks were foundational for LTS. A practitioner working in India with seven years of experience stated, “tenure security is about documentation, self-possession, and also government recognition of that documentation.” Another practitioner with ten years of experience in Colombia recognized that title is not a panacea for tenure insecurity but still focused primarily on *de jure* issues: “We don't focus merely on

the existence of titles *per se*, but think about a whole series of rights that people have in relation to land.” We did not see any significant differences in LTS characterizations between practitioners from different sectors in our sample.

A few practitioners (9%) explicitly argued such *de jure* terms were insufficient for conceptualizing LTS. These practitioners, for instance, argued the security gained from a legal title was conditional on the strength of the legal system to uphold the conditions of that title and follow due process, thus creating uncertainty around LTS. Further, they noted LTS was possible without legal title or recognition, highlighting how *de facto* rights enforcement by local communities in areas with weak government enforcement could improve LTS. Some holding this view also discussed how rights recognized by the state did not always reflect on-the-ground realities. A practitioner who worked with indigenous communities and illegal colonists in Ecuador for four years stated LTS relies on “socially recognized... rights to management.” Another practitioner in Uganda with 21 years of experience stated, “In my context, [the law] doesn't apply to 80% of the population because they find themselves outside [of the legal tenure system], but that doesn't mean that there is not security of tenure.”

It is possible *de jure* terms may be more commonly used to characterize LTS because practitioners are utilizing elements of their methods for assessing and resolving tenure insecurity in their characterizations of LTS. For instance, 67% of respondents reported assessing LTS by evaluating legal documents, while the top two challenges to LTS identified by practitioners were government factors (e.g., bureaucracy, lack of recognition, lack of government funding) (60%) and lack of titles (44%). Methods for resolving tenure insecurity also focused on affecting *de jure* terms, such as improving formal governance capacity (23%) and negotiating formal community agreements (23%). Practitioners in our study commonly assumed formalization was a critical pathway for strengthening LTS, and a few practitioners (9%) expressed that formalization alone be insufficient for achieving LTS.

Practitioners recognized LTS as multidimensional, and therefore complex

Practitioners generally acknowledged the multidimensional nature of LTS. When asked what factors contributed to LTS, 98% cited more than one factor. Such factors include social and environmental issues for land tenure governance, social relations around land, and the size of land holdings and its relationship to livelihoods. One practitioner from Colombia with 10 years of experience summarized the challenge of characterizing LTS stating, “not all tenure insecurity is the same.” Practitioners conceptualizing LTS as

multidimensional generally de-emphasized *de jure* terms of LTS, and instead highlighted the importance of *de facto* terms, although our data did not indicate the converse was true (i.e., those with more uniform LTS characterizations not mentioning *de facto* terms). A Guatemalan practitioner with 20 years of experience emphasized the duration of a population living in an area as a way to conceptualize LTS stating, “In most cases the people don't have title to their land. I characterize [LTS] with how long you've been on the land - your title, presence, and activity on the land.” Recognition by non-state actors (e.g., local communities) was also a common theme highlighted by practitioners, with a practitioner in India with 30 years of experience stating LTS was a function of when “rights are both legally and socially legitimate.” Another practitioner from Peru with 20 years of experience stated LTS “stems from a combination of both legal frameworks and local customs and uses...[and] local cultural practices need to be taken into account.” Only one practitioner mentioned an individual’s own perception of their LTS when characterizing it. This practitioner worked primarily with women in contexts where changing *de jure* elements of LTS may be more challenging. Practitioners in our sample also pointed to the complexity of characterizing and improving LTS, noting it was embedded in complex power dynamics, which are often rooted in historical legacies that continue to manifest themselves via formal and informal institutions and affect land tenure security to this day. As a practitioner in India with 20 years of experience stated, “colonial[ism] and the process of land settlement, rent seeking, the process of settlement of revenue land, and the process of forests land..., this created an insecure land tenure context, which has affected [the community’s] livelihoods, making them more poor, more vulnerable.”

4. Discussion

Our formative research using data from practitioners indicates that they commonly characterized LTS by employing *de jure* terms, such as titling. Practitioners frequently mentioned the complexity inherent in LTS but, understandably given the variation between sites and interventions, were less consistent in articulating the reasons for this complexity. When characterizing LTS, practitioners often described the policies and programs they were familiar with in their own work, or spoke from personal anecdotes. Practitioners may have emphasized *de jure* terms because they form an important basis of their work, and they rely heavily on legal tools. Our data also suggest practitioners characterized LTS based on how they assessed tenure security in their work, their perspective on its primary drivers, and how they addressed it.

Examining practitioner perspectives provides insights into how policies aiming to strengthen LTS are being implemented. Recent organizational guidance from international and donor organizations appears to characterize LTS similarly to the academic literature, emphasizing perceptions of LTS and other *de facto* elements as an important component (Payne 2001, 2004; van Gelder 2007, 2010; Sjaastad & Cousins 2009; Burnod et al. 2012; Robinson et al. 2014; Gallup 2017). The Food and Agriculture Organization (2002), for instance, states LTS is “the certainty that a person’s rights to land will be recognized by others and protected in cases of specific challenges” (p. 18). The United States Agency for International Development (2013) also emphasizes perceptions, characterizing LTS as “the perception by people that rights to land will be recognized by others and protected in the event of specific challenges” (p. 7). In contrast, many of the organizations in our sample emphasized *de jure* factors in descriptions of their programmatic work (e.g., establishing community rights for dispute resolution, rights over development activities, establishing women’s land rights). Despite the apparent congruence in characterizations of LTS in funder’s organizational documents and the academic literature, we did not see this reflected in practitioner organizations programmatic work or interviews. Practitioners are often tasked with translating and applying organizational guidance and strategies. The way policies ultimately manifest on the ground depends on how policies are actually implemented (i.e., via “street-level bureaucrats”) (Lipsky 2010). Our data suggest that, despite wider organizational emphasis on perceptions, practitioners may still heavily rely on titling or affecting other *de jure* methods to strengthen LTS in their work. Even a majority (77%) of those stating they worked with indigenous communities – a group where we might expect greater use of *de facto* methods – utilized *de jure* methods. This may be rooted in path dependence – land titling, in particular, was widely embraced as the primary method for strengthening LTS by the World Bank and other development agencies in part due to De Soto’s (1989; 2000) seminal work (Bruce, 2012), among other factors (Williamson 2009). An important next step for ensuring research is being transferred and adopted by practitioners may be to conduct a crosswalk of primary challenges to LTS as seen by researchers, funding and implementing organizations, and practitioners heavily engaged in “on-the-ground” implementation activities. This may, for instance, be done by mirroring efforts to create common terms and a classification system of challenges, terms, and other factors that shape the way a community may frame conservation challenges and solutions (Akcakaya et al. 2000; Salafsky et al. 2008; Díaz et al. 2015).

This raises an important question about why perceptions of LTS are increasingly prominent in academic studies but not in local policies or programs that aim to strengthen LTS. It is possible that researchers are increasingly diving into an area of inquiry that has little scope for application. That is, how people perceive their tenure security may be of little consequence in the context of power dynamics that routinely ignore and overrule in the aggregation of perceptions, and as a result practitioners may deemphasize perceptions because they are of limited relevance in the realpolitik of on the ground tenure dynamics. Future research should investigate how policies can utilize the increasing research on perceptions of LTS.

Closer collaborations between practitioners and researchers may help develop new ways to assess and resolve LTS that go beyond reviewing legal documents, which was the most common method for assessing LTS in our sample. Initiatives, such as The Tenure Facility (<http://thetenurefacility.org/>) and Land Portal (www.landportal.info), are making collaboration between researchers and practitioners easier by facilitating global communities of practice, but further efforts to increase collaboration with those primarily work in the field may be needed. This is especially urgent given recent momentum behind decentralization and devolution of resource management by national governments and non-governmental organizations advancing conservation and sustainability agendas (Ribot et al. 2006; Poteete & Ribot 2011), and the emergence of sustainability goals that rely heavily on LTS (UNFCCC 2015, 2016; UNDP 2015) to achieve both environmental and human well-being outcomes through better land management. A large literature has examined knowledge transfers between researchers and practitioners (Rynes et al. 2001), which may provide further insights into ways collaborative arrangements can be most effective.

There are two key limitations to our study. First, our data are from open-ended questions, and as a result it is important not to interpret omission of key characteristics of LTS with disagreement of its importance in characterizing it. Even if a practitioner strongly believes in the validity and importance of *de facto* recognition of rights, the practical reality for many practitioners is that statutory recognition of those rights seems to be paramount for achieving durable LTS. Perceptions of LTS, for instance, is clearly seen as important for understanding progress in LTS, as efforts such as the Prindex (ODI & GLA 2018) have gained wider recognition and interest. Further, the format of the interview may have discouraged some respondents from sharing a full accounting of their work, although time constraints appear to not be an issue as interviews took, on average, several hours to complete. Second, we used a snowball sample of practitioners, which increases efficiency in identifying hidden or hard to capture populations, but relies

heavily on the initial list of practitioners (Biernacki & Waldorf 1981). Our inclusion criteria ensured practitioners directly engage on LTS issues, giving us confidence that responses are, in fact, practitioner perspectives. Still, our data lack broad geographic, demographic, and sectoral representation due to both the sampling approach and inclusion criteria. For instance, those working in peri-urban or urban contexts or marine systems may characterize LTS differently than those in our sample. We are also missing public sector practitioners working on LTS issues in our sample due to nonresponse. Practitioners working in these contexts or government ministries or departments may characterize LTS differently. For instance, 23% of respondents that were NGO workers mentioned *de facto* concepts in their characterization of LTS compared to 33% of non-NGO workers, although differences were not statistically significant. Our sample also skewed heavily towards those in management positions, and these practitioners may have a broader perspective on organizational objectives, fieldwork, and how funders are characterizing LTS. Our results should therefore be cautiously interpreted and applied to other populations that we may be missing. However, the primary aim of this study is to provide an initial discussion and illustrative set of responses from practitioners on how they characterize LTS. Future studies should aim to increase the representativeness of respondents. In order for research to be relevant and useful for practitioners, it is critical that researchers establish the relevance of research projects with practitioners who are targeted as the primary collaborator and consumer of the research project.

Our results highlight areas for collaboration and advancement of research given the possible incongruence in researcher and practitioner LTS characterizations. In many cases, practitioners in our sample showed a keen understanding of the nuanced interplay and interdependence of the robustness of the legal system, (consistent) statutory recognition of rights, local recognition of rights, and how these and other factors can affect LTS. As discussed above, few practitioners mentioned perceptions of LTS when characterizing it. It is possible that, while practitioners may recognize the various factors affecting LTS, the way in which they characterize LTS focuses on aspects they can influence, or are directly involved in affecting through their own work. Our results may be particularly insightful for practitioners and researchers working with marginalized subpopulations, such as women, indigenous groups, and recent migrants. For instance, in many rural contexts, there are clear social factors and statutory strategies that can weaken LTS for women in particular. In these contexts, one would expect *de facto* to be especially pertinent to characterizations of LTS, especially in contexts where there are no statutory pathways to strengthen LTS. A step to deeper collaboration may be to align characterizations of LTS

between stakeholders, practitioners, and researchers in these contexts for women, which could ensure there is a harmonized understanding of what LTS means.

5. Conclusions

The academic and practitioner communities are recognizing that the topic of LTS is increasingly relevant to sustainable development (e.g., Sustainable Development Goal 1.4.2), and work in this field can have a profound impact on land management decisions. The results presented here indicate that, while practitioners understand that LTS is complex and multidimensional, the emphasis on *de jure* characterizations indicates that the latest concepts and research examining the causes and consequences of LTS may not be informing, or being informed by, practitioners. Perceptions of LTS are driven by a multitude of factors, such as the strength of informal and formal institutions, conflict, power dynamics, macroeconomic conditions (Robinson et al. 2018), and it is possible that practitioners and researchers are focused on different factors influencing LTS. Researchers should also be cautious when their work is not in line with practitioners' framings, as these will have little chance of informing practical change without also changing the dominant mindsets used to implement projects. Given the interest in evidence-based policies (Sackett et al. 1996; Pullin & Knight 2003; Pullin et al. 2004, 2016; Sutherland et al. 2004; Thorn 2007; Cook et al. 2010, 2013), it is critical to understand possible discrepancies of LTS characterizations and work together to reconcile them.

References

- Akcakaya, H.R., Ferson, S., Burgman, M.A., Keith, D.A., Mace, G.M. & Todd, C.R. (2000). Making Consistent IUCN Classifications under Uncertainty. *Conserv. Biol.*, 14, 1001–1013.
- Alchian, A.A. & Demsetz, H. (1973). The Property Rights Paradigm. *J. Econ. Hist.*, 33, 16–27.
- Amabile, T.M., Patterson, C., Mueller, J., Wojcik, T., Odomirok, P.W., Marsh, M. & Kramer, S.J. (2001). Academic-Practitioner Collaboration in Management Research: A Case of Cross-Profession Collaboration. *Acad. Manag. J.*, 44, 418–431.
- Annot, C.D., Luckert, M.K.K. & Boxall, P.C.C. (2011). What is tenure security? Conceptual implications for empirical analysis. *Land Econ.*, 87, 297–331.
- Biernacki, P. & Waldorf, D. (1981). Snowball Sampling: Problems and Techniques of Chain Referral Sampling. *Sociol. Methods Res.*, 10, 141–163.
- Bruce, J.W. (2012). Simple solutions to complex problems: Land formalisation as a “silver bullet.” In: *Fair Gov. How to Leg. L. rights Rural Dev.* (eds. Otto, J.M. & Hoekema, A.). Leiden: Leiden University Press, pp. 31–56.
- Bruce, J.W. & Migot-Adholla, S.E. (1994). *Searching for Land Tenure Security in Africa. Search. L. tenure Secur. Africa.*
- Bruce, J.W., Wendland, K. & Naughton-Treves, L. (2010). Whom to pay? Key Concepts and Terms Regarding Tenure and Property Rights in Payment-based Forest Ecosystem Conservation. *Land Tenure Center Tenure Brief.*
- Burnod, P., Andrianirina, N., Boue, C., Gubert, F., Rakoto-Tiana, N., Vaillant, J., Rabeantoandro, R. & Ratovoarinony, R. (2012). Land Reform and Certification in Madagascar: Does perception of tenure security matter and change? *Annual World Bank Conference on Land and Poverty.*
- Campbell, J.L., Quincy, C., Osserman, J. & Pedersen, O.K. (2013). Coding In-depth Semistructured Interviews. *Sociol. Methods Res.*, 42, 294–320.
- Cook, C.N., Hockings, M. & Carter, R.W. (2010). Conservation in the dark? The information used to support management decisions. *Front. Ecol. Environ.*, 8, 181–188.
- Cook, C.N., Mascia, M.B., Schwartz, M.W., Possingham, H.P. & Fuller, R.A. (2013). Achieving conservation science that bridges the knowledge-action boundary. *Conserv. Biol.*, 27, 669–678.
- Cronkleton, P. & Larson, A. (2015). Formalization and Collective Appropriation of Space on Forest Frontiers: Comparing Communal and Individual Property Systems in the Peruvian and Ecuadorian

- Amazon. *Soc. Nat. Resour.*, 28, 496–512.
- Deininger, K. (2003). Land policies for growth and poverty reduction. *World Bank Policy Research Report*. Washington, DC.
- Demsetz, H. (1967). Toward a Theory of Property Rights. *Am. Econ. Rev.*, 57, 347–359.
- Díaz, S., Demissew, S., Joly, C., Lonsdale, W.M. & Larigauderie, A. (2015). A Rosetta Stone for Nature’s Benefits to People. *PLoS Biol.*
- Durand-Lasserve, A. (2006). Informal settlements and the Millennium Development Goals: Global policy debates on property ownership and security of tenure. *Glob. Urban Dev.*, 2, 1–15.
- Durand-Lasserve, A. & Royston, L. (2002). Holding Their Ground: Secure Land Tenure for the Urban Poor in Developing Countries Chapter 1: International Trends and Country Contexts – From Tenure Regularization to Tenure Security. In: *Holding Their Ground: Secure Land Tenure for the Urban Poor in Developing Countries*. London: Routledge.
- Food and Agriculture Organization. (2002). *Land Tenure and Rural Development*. Rome, Italy.
- Gallup. (2017). *Global Property Rights Index 2016: Testing of a New Survey Module on Perceptions of Land Tenure Security in Nine Countries*.
- Gamer, M., Lemon, J. & Singh, P. (2015). Package “irr”: Various Coefficients of Interrater Reliability and Agreement.
- van Gelder, J.L. (2007). Feeling and thinking: Quantifying the relationship between perceived tenure security and housing improvement in an informal neighbourhood in Buenos Aires. *Habitat Int.*, 31, 219–231.
- van Gelder, J.L. (2010). What tenure security? The case for a tripartite view. *Land Use Policy*, 27, 449–456.
- Holden, S. & Yohannes, H. (2001). *Land redistribution, tenure insecurity, and intensity of production: A study of farm households in southern Ethiopia* (No. 21). CaPRi Working Paper.
- Overseas Development Institute & Global Land Alliance. (2018). *PRIndex Analytical Report 2017: Findings from 3-country test*.
- Krippendorff, K. (1980). Validity in Content Analysis. *Comput. für die Kommun.*, 69–112.
- Lipsky, M. (2010). *Street Level Bureaucracy: Dilemmas of the Individual in Public Services*. New York: Russell Sage Foundation.
- Naughton-Treves, L. & Wendland, K. (2014). Land Tenure and Tropical Forest Carbon Management.

World Dev., 55, 1–6.

- Payne, G. (1997). *Urban Land Tenure and Property Rights in Developing Countries: A Review*. London: IT Publications and Overseas Development Administration.
- Payne, G. (2001). Urban land tenure policy options: titles or rights? *Habitat Int.*, 25, 415–429.
- Payne, G. (2004). Land tenure and property rights: An introduction. *Habitat Int.*, 28, 167–179.
- Poteete, A.R. & Ribot, J.C. (2011). Repertoires of Domination: Decentralization as Process in Botswana and Senegal. *World Dev.*, 39, 439–449.
- United Nations Development Program. (2015). *Sustainable Development Goals*. New York.
- Pullin, A., Frampton, G., Jongman, R., Kohl, C., Livoreil, B., Lux, A., Pataki, G., Petrokofsky, G., Podhora, A., Saarikoski, H., Santamaria, L., Schindler, S., Sousa-Pinto, I., Vandewalle, M. & Wittmer, H. (2016). Selecting appropriate methods of knowledge synthesis to inform biodiversity policy. *Biodivers. Conserv.*, 25, 1285–1300.
- Pullin, A.S. & Knight, T.M. (2003). Support for decision making in conservation practice: an evidence-based approach. *J. Nat. Conserv.*, 11, 83–90.
- Pullin, A.S., Knight, T.M., Stone, D.A. & Charman, K. (2004). Do conservation managers use scientific evidence to support their decision-making? *Biol. Conserv.*, 119, 245–252.
- Regan, H.M., Colyvan, M. & Burgman, M.A. (2002). A taxonomy and treatment of uncertainty for ecology and conservation biology. *Ecol. Appl.*, 12, 618–628.
- Ribot, J.C., Agrawal, A. & Larson, A.M. (2006). Recentralizing While Decentralizing: How National Governments Reappropriate Forest Resources. *World Dev.*, 34, 1864–1886.
- Robinson, B.E., Holland, M.B. & Naughton-Treves, L. (2014). Does secure land tenure save forests? A meta-analysis of the relationship between land tenure and tropical deforestation. *Glob. Environ. Chang.*, 29, 281–293.
- Robinson, B.E., Masuda, Y.J., Kelly, A., Holland, M.B., Bedford, C., Childress, M., Fletschner, D., Game, E.T., Ginsburg, C., Hilhorst, T., Lawry, S., Miteva, D.A., Musengezi, J., Naughton-Treves, L., Nolte, C., Sunderlin, W.D. & Veit, P. (2018). Incorporating Land Tenure Security into Conservation. *Conserv. Lett.*, 11, e12383.
- Rynes, S.L., Bartunek, J.M. & Daft, R.L. (2001). Across the great divide: Knowledge creation and transfer between practitioners and academics. *Acad. Manag. J.*, 44, 340–355.
- Sackett, D.L., Rosenberg, W.M., Gray, J., Haynes, R.B. & Richardson, W.S. (1996). Evidence Based

- Medicine: What it is and what it isn't. *BMJ*, 312, 71–72.
- Salafsky, N., Salzer, D., Stattersfield, A.J., Hilton-Taylor, C., Neugarten, R., Butchart, S.H.M., Collen, B., Cox, N., Master, L.L., O'Connor, S. & Wilkie, D. (2008). A Standard Lexicon for Biodiversity Conservation: Unified Classifications of Threats and Actions. *Conserv. Biol.*, 22, 897–911.
- Saldana, J. (2009). *The Coding Manual for Qualitative Researchers*. Thousand Oaks, CA: Sage Publications.
- Simbizi, M.C.D., Bennett, R.M. & Zevenbergen, J. (2014). Land tenure security: Revisiting and refining the concept for Sub-Saharan Africa's rural poor. *Land Use Policy*, 36, 231–238.
- Sjaastad, E. & Cousins, B. (2009). Formalisation of land rights in the South: An overview. *Land Use Policy*, 26, 1–9.
- Soto, H. de. (1989). *The other path: The invisible revolution in the Third World*. New York: Harpers and Row Publishers Inc.
- Soto, H. de. (2000). *The Mystery of Capital: Why Capital Triumphs in the West and Fails Everywhere Else*. New York: Basic Books.
- De Soto, H. (1989). *The Other Path*. New York: Harper and Row.
- Sutherland, W.J., Pullin, A.S., Dolman, P.M. & Knight, T.M. (2004). The need for evidence-based conservation. *Trends Ecol. Evol.*, 19, 305-308.
- Thorn, B.E. (2007). Evidence-based practice in psychology. *J. Clin. Psychol.*, 63, 607-609.
- United Nations Framework Convention on Climate Change. (2015). *Adoption of the Paris Agreement. Report No. FCCC/CP/2015/L.9/Rev.1*.
- United Nations Framework Convention on Climate Change. (2016). *Key decisions relevant for reducing emissions from deforestation and forest degradation in developing countries (REDD+)*.
- United States Agency for International Development. (2013). *Land Tenure and Property Rights Framework*. Washington, DC.
- Williamson, J. (2009). A Short History of the Washington Consensus. *Law Bus. Rev. Am.*, 15, 7–23.

Table 1: Descriptive statistics for practitioners

	Mean	SD
Female (%)	37	49
Years of experience	15	9.4
Highest education completed (%)		
High school	6	23
College	24	43
Post-graduate	70	46
Organizational role^a (%)		
Executive director	48	50
Board member	1.9	14
Coordinator	19	39
Manager	26	44
Technician	9.3	29
Analyst	21	40
Lawyer	3.7	19
Organization type (%)		
University	9.3	29
Non-governmental organization	77	42
Private	3.7	19
Independent	7.4	26
International governmental organization	1.9	14
Focal country^a (%)		
India	19	39
Indonesia	11	32
Tanzania	4	19
Uganda	6	23
Brazil	2	14
Peru	7	26
Ecuador	9	29
Colombia	15	36
Guatemala	24	43
Liberia	4	19
Focal sector^a (%)		
Conservation	48	50
Water and sanitation	11	32
Education	17	38
Humanitarian	19	39
Agriculture	37	49
Public health	7	26
Indigenous-specific	41	50
Economic development	44	50
Gender	6	23

Conflict	7	26
Policy or governance	6	23
<i>n</i>	54	

^a Respondents could select more than one response type. As a result, values in columns do not add to 100%. Organizational roles were self-identified.

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Data availability statement

Data are available upon reasonable request by the corresponding author.

Ethics statement

Survey protocols were reviewed and exempt by Institutional Review Boards at the University of Maryland Baltimore County and McGill University.

Authors' contributions

YJM, BER, MBH, ACK designed the research. ACK and YJM conducted the data analysis, and YJM, BER, MBH, ACK interpreted data analysis outputs. YJM, BER, MBH, ACK, CB, MC, ETG, CG, TH, SL, DM, JM, LN, WDS, and PV wrote the paper.