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Tenure Security Perception Patterns among Amazonian Communities in Peru: Gender and Ethnicity

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Abstract: This study delves into perceptions of land and forest tenure (in)security among Indigenous and mestizo populations in the Peruvian Amazon. Despite all having collective lands, the selected communities vary in their formalisation processes. This research seeks to enhance comprehension of tenure security perceptions in the Peruvian Amazon by investigating sources of security and insecurity across key tenure components. A combination of descriptive, bivariate, and multivariate analyses is employed, based on fieldwork conducted between July 2015 and December 2017 in 22 Native and Peasant Communities in Loreto and Madre de Dios, utilising 1006 intra-household surveys, 52 in-depth interviews, and 44 focus group discussions. The results reveal similarities and differences in (in)security sources between titled and untitled communities. The study also explores the influence of gender and ethnicity on these perceptions, finding ethnicity-based variation in security perception over the past 20 years (1995–2015). Recognising these differences in perception is critical for assessing the robustness of exercising acquired collective rights.

Keywords: Amazon forest; ethnic group; land titling; indigenous land rights; multivariate analysis



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1. Introduction

The international community has prioritised the legal recognition of land and natural resource claims by forest-dependent and Indigenous peoples, which has significant implications for climate change policies and actions [1–3]. This recognition is believed to bolster tenure security, slow deforestation rates, and combat degradation, thereby supporting environmental goals and climate negotiations [4,5]. It is also argued that formalising these rights through various mechanisms can enhance livelihoods, alleviate poverty, encourage long-term sustainable investments [6,7], and reduce forest degradation [8–11]. In Latin America, land titling has been extensively promoted as part of incentive-based schemes like REDD+ [4]. For example, Brazil's Programme Terra Legal, established by Federal Law 11952 (2009), regularised possession and issued land titles in the Amazon, incentivising participation in REDD+ project sites [12]. Similarly, Ecuador promoted conditional tenure, focusing on areas adjacent to protected areas [13,14]. In both cases, the introduction of new rights or the formalisation of existing ones aimed to alter land-use practices (Brazil) or impose restrictions (Ecuador) [15]. Since 2014, Peru has incorporated international funding for titling and land regularisation projects into REDD+ initiatives, which include different forms of tenure clarification, land rights recognition, and titling for forest-dependent communities, predominantly Indigenous Communities in the Peruvian Amazon [10,16].

The presence of a title or some form of formal documentation is frequently seen as crucial to the perception of tenure security [11,17]. Land titles are often associated with tenure security, partly due to misconceptions that a title ensures security and possibly because of the availability of easily quantifiable data that can act as a surrogate for security [18–21]. However, studies have indicated that while a title may be a significant component, numerous other factors influence both security and insecurity for communities and individual men and women within specific communities [22–25].

In order to determine whether land titles or other tenure interventions contribute to tenure security, we concentrate on three components, as per the academic literature: content, duration, and robustness of rights [18,19,26]. The content of rights pertains to the bundle of rights acquired, i.e., the types of rights held by individuals or groups [20]. In statutory law, the content of rights outlines who has access to which resources or benefits under what conditions [27], including the ability to use, manage, decide, and transfer land and natural resources through selling, leasing, and inheritance [28,29]. Of particular importance is the right to exclusion, which is the right to prevent others from using land and resources [27], or at least to control others's access. Duration refers to the period over which these rights are granted [30]. Robustness, arguably the most complex aspect to analyse, pertains to the assurance of rights. This means that rights and existing claims over rights are recognised and enforced when they are challenged or threatened by external (such as government) or internal (such as community) institutions [31]. Robustness not only involves the recognition of rights but also the ability to exercise and benefit from these rights and to feel secure even when faced with threats [23].

According to Meinzen-Dick and Mwangi [32], tenure security is defined as an individual's or a community's ability to continually possess resources, guaranteed by law or other local or customary governance systems, even if they may not be formally recognised. Tenure security can be dissected into three components: (1) the legal foundations of rights; (2) the exercise and/or practice of rights; and (3) the perceptions of social stakeholders [33]. Overlapping rights to different resource systems and rights holders can obstruct the ability to exercise and/or benefit from acquired rights, leading to potential conflicts. For instance, a community might hold a land title that grants them the right to extract forest resources from a specific location, while the state may simultaneously possess the legal right to award a mining or petroleum concession in the same forest. In such a scenario, the community might perceive their rights as insecure, viewing their legal recognition as insufficient and inadequate.

Analysing tenure security relies not only on the legal and social systems and institutions that shape the rights but also on their practical application, which includes knowledge about the rights, the ability to exercise them, and the scope of the rights, as well as existing perceptions surrounding these aspects [34,35]. While significant research has been conducted on how tenure interventions recognise the content and duration of rights [11,36,37], there is less information available on perceptions of tenure security and insecurity [21,38,39]. Studying the sources of tenure security and insecurity allows for a nuanced understanding of the factors that influence social perceptions. Understanding perceptions enables the integration of individual and collective experiences and knowledge of environmental, socioeconomic, and cultural conditions into the management and governance of resources [20,40,41]. This study aims to advance our understanding of tenure security perceptions among residents of the Peruvian Amazon, examining perceptions regarding sources of security and insecurity through three key components of tenure definition: content, duration, and robustness of rights. The research establishes three specific objectives: (1) to identify the main threats to tenure security as perceived by the studied communities; (2) to examine the sources of tenure security and insecurity across the three components of tenure security; and (3) to analyse the perception of tenure security over time, considering factors such as gender, ethnicity, and formalisation status.

Formalisation of Collective Land Rights in the Peruvian Amazon

In Peru, Indigenous peoples organise into Native and Peasant Communities. Native Communities, originating from tribal groups in the jungle and cloud forest regions, consist of families bound by language, culture, and common land tenure (Law of Native Communities, Decree Law No. 22175). Peasant Communities, legally recognised entities, are formed by families with communal land ownership, democratic governance, and socio-economic ties (Law of Peasant Communities, Law No. 24656). Not all Peasant Communities are Indigenous; many include mixed-origin people or mestizo populations. Unlike Native Communities confined to the Amazon region, Peasant Communities are found across Peru's natural regions. Both laws provide the framework for the organisation and governance of each type of community.

The formalisation of collective land rights for communities commenced in the 1970s. As of now, 6728 Indigenous Communities (out of 8562 legally recognised communities), including Native and Peasant Communities, have been titled [42], with the rate of progress varying across regions. Between 2016 and 2020, at least ten initiatives funded by international sources focused on clarifying and securing the tenure rights of Indigenous Communities. This was achieved through the legal recognition of their communities, the demarcation of communal villages and forests, and the documentation of existing rights granting collective property titles in agricultural lands as a part of the formalisation process [16]. However, the recognition of collective property rights is not a simple process in practice. Despite statutory law recognising the collective land rights of Indigenous Communities, there remain at least two challenges, particularly for lands claimed as overlapping with forests.

Firstly, since the nationalisation of Peru's forests in 1975, no individual, community, or company can own forestlands; instead, access rights are acknowledged through usufruct contracts. In practice, while all areas claimed as Indigenous Community lands are demarcated, soil evaluations determine the best use of land, whether it be for forest, agriculture, or pasture lands. Consequently, Indigenous Communities in Peru receive legal recognition of their collective rights in a differentiated manner, partly through an agrarian title and partly through a usufruct contract to forestlands (the right granted by the state to the community to use and benefit from forest resources, without necessarily having ownership of the land), following a soil use classification process [43]. These are two distinct processes that follow separate procedures and involve different government institutions. Recently, there have been various changes in both the regulatory and institutional frameworks since the formalisation of collective rights began, leading to shifts in the government authority responsible for implementation at various points [16].

Secondly, the rights granted to communities in the Amazon encompass the rights to use and access resources on titled lands. However, Law No. 29763 on Forestry and Wildlife, along with its regulations, lays out specific guidelines for the commercial management of timber and non-timber resources. This suggests that the exercise of rights to exploit other resources is subject to further regulations. Communities possess the right to determine who can enter their respective territories (right of exclusion), but they face restrictions in extracting resources for commercial purposes (management right). Simultaneously, they are incapable of halting illegal extraction and addressing external pressures without governmental support.

2. Materials and Methods

This paper utilises data gathered by the Global Comparative Study on Forest Tenure Reforms, carried out by the Center for International Forestry Research (CIFOR) in Peru from 2014 to 2018. This comparative study amalgamated research, engagement, and capacity building to yield insights into the factors that shape the emergence and implementation of forest tenure reforms. The data used in this study were collected from fieldwork activities conducted between July 2015 and December 2017 in 22 Indigenous Communities located in the departments of Madre de Dios and Loreto in the Peruvian Amazon.

The two regions, Madre de Dios and Loreto, were chosen to compare formalisation processes. The measurement of formalisation included assessing the extent to which communities completed various processes, such as agrarian land titling, demarcation (which involved georeferencing and soil evaluation), and forestlands usufruct contracts. For this paper, we narrowed down our focus to Native and Peasant Communities with and without land titles, which we will refer to as titled and untitled communities. It is noteworthy that during the research, the number of titled communities changed as some completed their formalisation process due to the presence of land titling projects.

In Madre de Dios, 27 out of 34 recognised Native Communities had been titled, whereas in Loreto, 754 out of 1209 Native Communities and 61 out of 149 Peasant Communities had been titled [42]. The research sites were selected based on three criteria: community consent, social composition of communities (including Indigenous and mixed ethnicity), and the state of tenure rights formalisation (i.e., titled and untitled communities). Work was conducted in Madre de Dios with 10 titled Native Communities located in the provinces of Tambopata and Manu, which belong to the Harakbut, Yine, Matsigenka, Ese eja, Shipibo-konibo, and Kichwa Indigenous peoples. In Loreto, work was conducted in 12 Communities (8 of them Native, of which 7 are titled, and 4 of them Peasant, of which 3 are titled) located in the provinces of Mariscal Ramón Castilla and Maynas, which primarily belong to the Bora, Yagua, Murui-muinani, and Kichwa ethnicities.

2.1. Data Collection

This research employed a mixed-methods approach, amalgamating various quantitative and qualitative data collection tools to gather data at the village level. Key informant interviews (KIIs), intra-household surveys (HHQs), and focus group discussions (FGDs) were utilised to generate information and foster the participation of local stakeholders in discussions about the origins and nature of formalisation outcomes, irrespective of whether communities were titled. The three methodological tools utilised structured guides with standardised guidelines and questions for all sites of the Global Comparative Study on Forest Tenure Reforms. KIIs, HHQs, and FGDs played a pivotal role in the data analysis, focusing on questions that brought out sources of tenure security and insecurity. These were designed to collect sex-disaggregated data, thereby facilitating a deeper understanding of perceptions surrounding implementation processes. Special emphasis was placed on discerning whether gender or ethnicity influenced these perceptions.

In the villages, data was collected to comprehend how forest tenure systems have impacted land administration, management, and usage practices and whether regulations have evolved or been formalised. A total of 44 FGDs were conducted, with two sessions held for each community separately for women and men. In total, 267 men and 284 women participated in these discussions. The purpose was to gather insights on the group's perception of the extent of rights granted to the communities, the implementation of these rights, the benefits they yield, and the challenges faced in exercising them. These FGDs also provided valuable insights into how the communities collectively addressed the specific interests of men and women, the challenges they faced in implementing the reforms (recognition and titling of their lands), and the strategies they devised to enhance local rules and practices.

Intra-household surveys (HHQs) were employed to collect information about perceptions of tenure security, the distribution of rights and benefits, and the outcomes of formalisation processes. The sample selection took into account the representation of single male- and female-headed households, households located near or far from the village centre, poor and non-poor households, and households engaged in various livelihood strategies. A total of 1013 intra-household surveys were conducted, with 514 men and 499 women participating. In each community, both a male and female head of household were surveyed separately at the household level to capture diverse viewpoints and experiences. Information from focus groups and key informant interviews was used to characterise the communities and identify the main threats to tenure security. The intra-

household survey questions used in this paper included a list of sources of tenure security and insecurity, a ranking of the most significant reasons behind the perception of tenure security versus insecurity, and changes in perception around land and forest tenure security over the past 20 years in the community. The information provided by key informants to construct a timeline during focus group discussions (FGDs) served to contextualise the question and guide the interviewees' opinions on whether the situation of land tenure and forest security has changed over the past 20 years. This timeframe was a criterion in the Global Comparative Study because it encompasses the period during which most of the changes in legislation occurred worldwide regarding land formalisation. Further details on these aspects are provided in subsequent sections.

2.2. Qualitative and Quantitative Analysis

Communities were profiled based on their legal and socioeconomic status during KIIs and FGDs with participants. HHQs were utilised to pinpoint the primary sources of land and forest tenure security and insecurity in each community. For the analysis, respondents were asked to list and rank the three most important sources of security and insecurity from a provided list. Respondents were also given the flexibility to provide a different response if necessary. The HHQ data was then analysed using descriptive statistics to organise and present the data (through frequencies and histograms), and bivariate analysis was employed to identify the correlation between perception, region, or gender and their significant values. Seven incomplete surveys were discarded, resulting in a total of 1006 informant interviews (comprising 835 titled and 171 untitled local communities) for multivariate analyses. The household surveys allowed respondents to select from 12 primary sources of tenure security and 18 sources of tenure insecurity. These lists were compiled following an extensive literature review of the Global Comparative Study on Forest Tenure Reforms and were contrasted against results from KIIs and FGDs. Post-analysis, an additional 18 sources of tenure security and 24 sources of insecurity were included after coding responses that were not initially considered. We employed the multidimensional scaling (MDS) technique to assess similarities across informants' responses between the sources of tenure security and insecurity. This technique organises information spatially based on the comparison of objects or stimuli, providing a graphical representation of perceptions and preferences. For instance, if a respondent perceives options A and B as the most important, the MDS technique will place these options closer together on the graph, indicating a smaller distance between them compared to any other pair of options. Since our analysis involved qualitative (nominal) data, we used non-metric multidimensional scaling (nMDS) and binary Euclidean distances [44].

The stress and the resulting RSQ (square correlation coefficient) produced by nMDS serve as indicators of the model's goodness-of-fit. The larger the disparity among the disparities and distances, the higher the stress, and consequently, the poorer the model. The minimum value of stress is 0, and if it exceeds 0.2, the model is considered poor. Additionally, the RSQ provides information about the proportion of the initial data's variability that the model explains. This ranges from 0 to 1, where values close to 1 indicate a good model and values close to 0 suggest a poor model [45].

Additionally, we utilised multiple correspondence analyses (MCA) to identify relationships among the modalities of various variables. This method, which has been employed to integrate the analysis of biophysical aspects, local forest perceptions, and socio-cultural factors, allowed us to explore whether factors such as gender, ethnicity, and titling condition influence responses [46,47]. As part of the survey, respondents were asked to assess if tenure security had improved, remained the same, or worsened over a 20-year timeframe. The values obtained serve as measures of discrimination for each variable and dimension. In the results, higher values of the discrimination measure for a given variable in each dimension indicate the greater importance of that variable within that dimension. The value of the discrimination measure ranges between 0 and 1, with 1 contributing 100% to the percentage obtained in that dimension. MCA is suited to cases where one variable

represents objects or individuals and the remaining variables are qualitative or ordinal, representing specific characteristics [45]. Analyses were conducted both collectively and separately by region, watershed, and gender for both titled and untitled communities using SPSS version 25 [48]. Only pertinent results are included.

3. Results

3.1. Characterisation of the Communities Studied

The communities under study in Madre de Dios (MD) and Loreto (L) are ethnically diverse and are at various stages of land formalisation. Formalisation encompasses both the legal recognition of the community and their formalisation status. The communities included in this analysis received legal recognition and/or titles progressively between 1974 and 2016 (See Table 1). As per current regulations, titled Native and Peasant Communities possess the right to organise and establish governance systems to formulate rules for land and resource management. While all communities must establish communal boards to complete the titling process, most have set up nested structures, including communal boards, committees, and groups that manage other resources or activities, such as tourism and timber. Our work in these 22 communities revealed that the evolution of Indigenous governance systems is diverse and nascent. The level of socio-economic development is low, as indicated by the availability of basic services. Public services are scarce and of poor quality: out of the 22 communities studied, 8 have individual or community piped drinking water (MD = 7, L = 1), 6 have electricity (MD = 3, L = 3), 9 have a communal electricity generator (MD = 4, L = 5), 10 have a school offering preschool, primary, and secondary education (MD = 5, L = 5), and 14 have a medical post (MD = 9, L = 5). Regarding economic activities, all communities report engaging in agriculture and logging activities of varying intensity; only 2 report livestock rearing, and 10 are involved in subsistence fishing. Five of the communities studied are at least three hours away from the nearest market, while seven others are between three and six hours away. The status of land formalisation is described in Table 1 below.

Table 1. Land formalisation status in communities studied in Madre de Dios and Loreto based on FGDs and KIIs ¹.

Native and Peasant Communities (Province, District)	Majority Ethnic Group and Population (# of Families)	Tenure Situation
Madre de Dios		
CN. Shintuya (Manu, Manu)	Harakbut (48)	Recognised 1974, titled 1979, request for enlargement in progress
CN. Shipetiari (Manu, Manu)	Matsigenka (24)	Recognised 1990, titled 1996, request for enlargement in progress
CN. Diamante (Manu, Fitzcarrald)	Yine y Matsigenka (100)	Recognised 1984, titled 1986. Enlargement demarcation approved in 2003
CN. Isla de los Valles (Manu, Fitzcarrald)	Yine y Matsigenka (21)	Recognised 1998, titled 2003
CN. Puerto Azul (Manu, Fitzcarrald)	Harakbut (35)	Recognised 2002, titled 2011, request for enlargement in progress
CN. Infierno (Tambopata, Tambopata)	Ese eja, mestizo (87)	Recognised 1976, titled 1976, request for enlargement in progress
CN. Puerto Arturo (Tambopata, Tambopata)	Kichwa (35)	Recognised 1984, titled 1988, request for enlargement in progress
CN. Palma Real (Tambopata, Tambopata)	Ese eja (85)	Recognised 1974, titled 1976, request for enlargement in progress
CN. Sonene (Tambopata, Tambopata)	Ese eja (25)	Recognised 1984, titled 1988
CN. Tres Islas (Tambopata, Laberinto)	Shipibo-konibo, Ese eja (103)	Recognised 1992, titled 1994

Table 1. Cont.

Native and Peasant Communities (Province, District)	Majority Ethnic Group and Population (# of Families)	Tenure Situation
Loreto		
CN. Boras de Pucaurquillo (Mariscal Ramón Castilla, Pebas)	Bora (93)	Recognised and titled in 1975, first enlargement approved 1991, second enlargement approved in 2015
CN. Santa Lucía de Prefecto (Mariscal Ramón Castilla, Pebas)	Yagua (21)	Recognised, not titled
CN. San José de Piri (Mariscal Ramón Castilla, Pebas)	Yagua (54)	Recognised in 1978, titled in 1992, enlargement in progress
CN. Brillo Nuevo (Mariscal Ramón Castilla, Pebas)	Bora (64)	Recognised and titled in 1975, first enlargement approved in 1991, second enlargement approved in 2015
CN. Santa Lucía de Pro (Mariscal Ramón Castilla, Pebas)	Yagua (48)	Recognised, titled in 1991, enlargement approved in 2015
CN. Estirón de Cuzco (Mariscal Ramón Castilla, Pebas)	Murui-muinani (45)	Recognised, titled in 1975, enlargement approved in 2015
CC. Porvenir de Inayuga (Maynas, Napo)	Mestiza y Kichwa (77)	Recognised 1998, not titled *
CN. San Lorenzo (Maynas, Napo)	Kichwa (45)	Recognised 1978, titled 1979. Thinking of requesting enlargement
CN. Santa María de Loreto (Maynas, Napo)	Mestiza y Kichwa (28)	Not recognised **, not titled
CC. San Felipe (Maynas, Napo)	Mestiza (45)	Recognised 1997, not titled
CC. Esperanza-Paleta (Maynas, Napo)	Mestiza (36)	Recognised in 1995, titled in 1998
CN. Negro Urco (Maynas, Napo)	Murui-muinani (91)	Recognised and titled in 1975

¹ The formalisation of land in Peru is a protracted and intricate process [29]. Table 1 only delineates four key stages. Initially, land is recognised as belonging to either a Native or Peasant Community. Subsequently, this territory may or may not receive official title from the Peruvian government. If titling is secured and the respective community demonstrates a need for enlargement of its territory to meet its needs and preserve its ancestral customs, without overlapping with other landholders or territories classified as Permanent Production Forests, it may petition for an enlargement from the state following a procedure akin to that of titling its lands. * Titled in 2016, ** Recognised in 2016.

3.2. Main Threats to Tenure Security in the Communities

A list of threats, compiled after coding responses from KIIs and FGDs, is included in Table 2 along with the number of communities that mentioned these threats. For example, illegal logging was cited by 4 out of 10 communities in Madre de Dios and 11 out of 12 communities in Loreto. The results indicate that all studied communities perceive threats to tenure security, often associated with external pressures. The most frequently mentioned threats involve extractive activities (such as mining, petroleum extraction, and illegal extraction of timber and other forest resources) and conflicts with neighbouring communities due to unclear boundaries and overlaps with other residents or concessions. In Madre de Dios, threats from mining are common, while in Loreto, petroleum is most often mentioned, and illegal logging is a widespread issue in both regions. The absence of titling initiatives or the inability to complete the formalisation process is also perceived as a threat by community members.

Table 2. Main threats to tenure security and number of communities reporting, as identified by key informant interviews and focus group discussions.

Threats	Madre de Dios (n = 10)	Loreto (n = 12)
Mining/petroleum	6	11
Conflicts with adjacent areas	5	10
Illegal extraction of resources/invasions	4	9
Logging companies/illegal logging	4	11
Little presence of the state/prioritisation of extractive activities	5	4
Restriction on use of resources	6	2
Little availability of land	2	0
Overlapping of lands/rights	5	1
Natural phenomena	1	2
Internal organisation/internal management	4	4
Lack of completed title clearance/titling	6	2
Others *	8	7

* In addition to the aforementioned threats, other risks were identified, including internal conflicts within the communities, natural disasters, poor quality of basic services, livestock farming, palm cropping, and illicit crop cultivation. REDD+ projects, insufficient dissemination of customs and language, and the construction of the Amazon waterway were also cited as potential threats.

3.3. Ranking Sources of Tenure (in)Security According to Formalisation Status

The results from the Household Questionnaire (HHQ), based on 835 interviewed responses, revealed that the most frequently mentioned source of insecurity in “untitled communities” was “not having a title” (57%). Conversely, the most significant source of security was “having a communal title” (82%). Interestingly, “not having a title” was also the most important source of insecurity in “titled communities” (58%), although “having a communal title” was only mentioned as a source of security by 23% of those surveyed. When asked about the most important sources of tenure security, “having a communal title” was ranked highest by both women and men, with slight differences between 35% (497) of women’s responses versus 30% (509) of men’s responses.

3.4. Analysis of the Sources of Tenure (in)Security across the Three Components of Tenure Security

Our analysis of tenure (in)security examined its three components: the content of rights, their duration, and their robustness. Using nMDS analysis, we organised all identified sources across two dimensions, reflecting their relative similarities (Figure 1). These dimensions help categorise information around the three components of tenure security: (1) recognition of rights through formalisation via titling or existing formal or informal rules; (2) the ability to exercise these rights; and (3) the protection and enforcement of rights when threats challenge their benefits (Table 3). Interestingly, two sources, “need for more territory (i19)” and “having sufficient territory (s14)”, could not be mapped to any of the three components. These sources, indicating tenure insecurity and security, respectively, pertain to land claims of Native and Peasant Communities that extend beyond titled land or land in the process of titling.

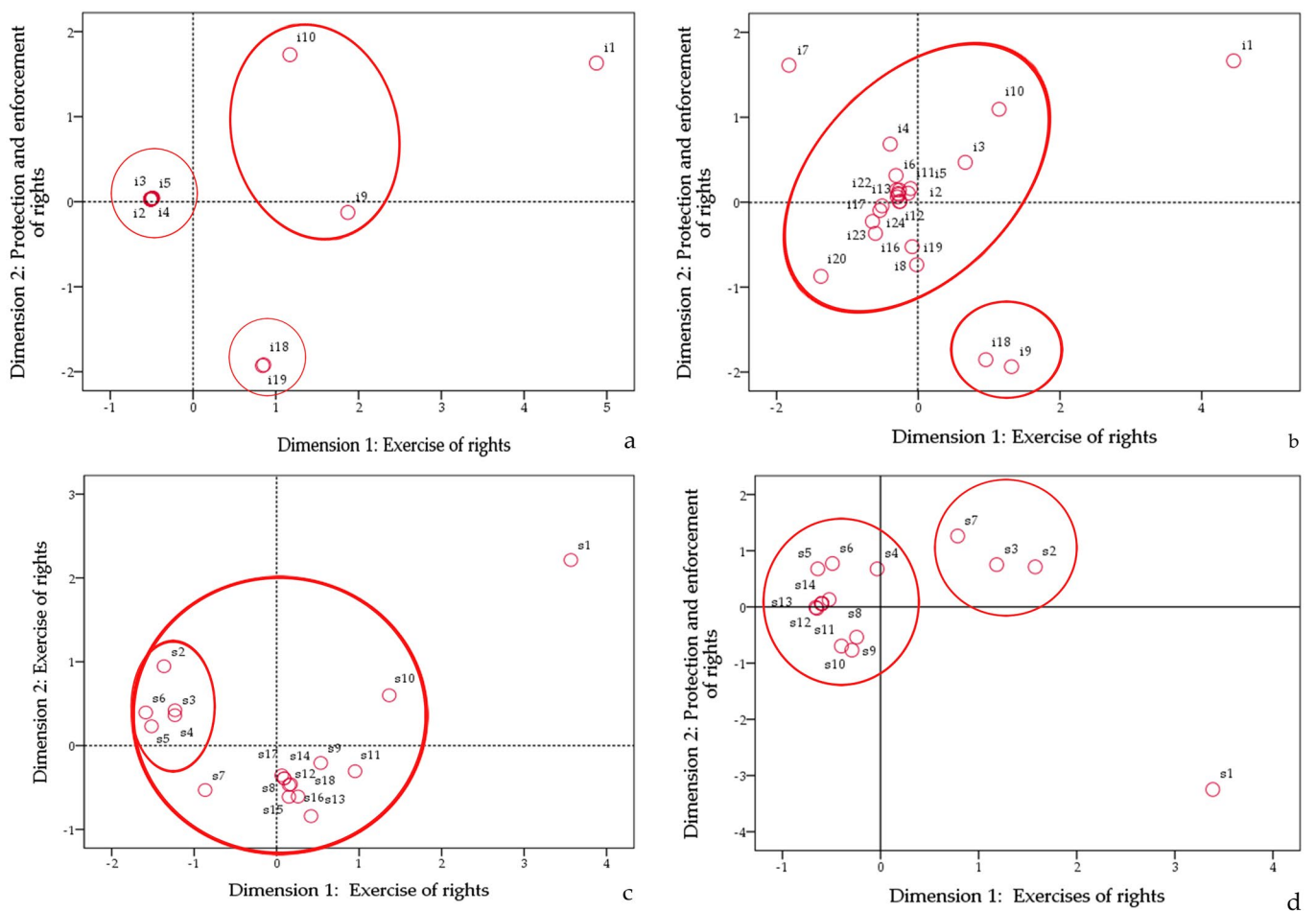


Figure 1. Two-dimensional visualisation of non-metric multidimensional scaling (nMDS, using the ALSCAL algorithm) with binary Euclidean distance (after 999 iterations). This representation is based on the primary sources of (a) tenure insecurity in untitled communities (stress = 0.01; RSQ = 0.99), (b) tenure insecurity in titled communities (stress = 0.16; RSQ = 0.94), (c) tenure security in untitled communities (stress = 0.06; RSQ = 0.98), and (d) tenure security in titled communities (stress = 0.07; RSQ = 0.98).

Table 3. Organisation of perceptions of tenure (in)security across three components of tenure security in untitled and titled communities of Madre de Dios and Loreto.

Component of Tenure Security	Sources of Insecurity	Sources of Security	Reasons that Influence Perception of Rights:		
			Recognition	Exercise	Protection and Enforcement
Content of rights	Not having title (i1)	Having title (s1)	X	X	
	The land is loaned or rented (i2)			X	
	Government restrictions on soil use (i7)				X
	Exclusion of women and/or youths (i15)		X	X	
Duration	Individual property title (i20)	Having individual property * title (s18) *	X	X	
		Progress in titling (s16) *	X		
		Being part of the conservation area (s17) *		X	
Duration	The land is loaned or rented (i2)			X	
	Rights over the land and forest can be revoked at any time (i4)	The rights will not change over time, imprescriptibility (s6)		X	
	Rights to the land and forests are only temporary (i6)	The rights are permanent, cannot be embargoed (s5)		X	
	Competition with neighbouring communities (i9)			X	X
	Competition with private investment (i10)			X	X

Table 3. Cont.

Component of Tenure Security	Sources of Insecurity	Sources of Security	Reasons that Influence Perception of Rights:		
			Recognition	Exercise	Protection and Enforcement
Robustness	Not having title (i1) With no clear limit (i3) Rights over the land and forest can be revoked at any time (i4)	Having title (s1)	X	X	X
		The limits are clear (s2)		X	X
		There are no conflicts within the community (s3)		X	X
	Land and forest rights are not complied with (i5)	There are no conflicts with actors outside the community (s4)		X	X
		There are no conflicts with actors outside the community (s4)		X	X
	Competition between community members (i8)	Communal authorities are autonomous and respect customary systems (s7)			X
		Development of highways/infrastructure (i11)		X	
	Existence of overlapping rights (i12)	There are no overlapping laws (s8)			X
		The legal foundation of customary rights is respected (s9)			X
	No legal basis for recognising customary rights (use by unwritten custom) (i13)	National legislation supports adequate local claims and formalises them into existing regulations (s10)	X		
		Lack of national legislation to support demands of local rights (i14)	X		
	Conflicts are not resolved (i16) Lack of capacity to exercise and defend the rights (i17) Lack of capacity by the implementation agencies to enforce the reforms (i18)	Local institutions are robust in exercising the rights of defence (s11)		X	X
		Sustained external support exists to safeguard the rights (s12)		X	X
				X	X
	Extractive activities (i21) * Extreme natural events (i22) * Invasions (i23) *	Land worked by the community (s15) *		X	
Progress in titling (s16) *		X	X	X	
			X		
Sources not corresponding to the three components of tenure security	Need for more territory (i19) *	Sufficient territory (s14) *	X	X	

* Tenure (in)security sources integrated into fieldwork and analysis.

In the nMDS analysis, the dimensions for insecurity perception were identical in both titled and untitled communities. Dimension 1, labelled “Exercise of rights” (X axis), and pertains to sources linked to the capacity to address threats when the ability to benefit from those rights is challenged. Dimension 2, labelled “Protection and enforcement of rights” (Y axis), relates to sources associated with the ability to enforce rights, either by the government or within communities, against external actors. For titled communities, the dimensions for security perception mirrored those for sources of insecurity, with Dimension 1 as “Exercise of rights” (X axis) and Dimension 2 as “Protection of rights” (Y axis). Interestingly, for untitled communities, all sources of security were encapsulated within a single dimension, “Exercise of rights” (axes X and Y, Figure 1).

3.4.1. Main Sources That Community Members Associate with Tenure Insecurity in Communal Lands

The nMDS results for untitled communities (Figure 1a) reveal three clusters of “insecurity sources (i)” within each dimension based on respondents’ perceptions. In the “Exercise of rights” dimension, the absence of a title was deemed the most significant source of

insecurity, emphasising the importance of a title as a gateway to both benefitting from and protecting rights. Two other sources, competition with neighbouring communities (i9) and private investment (i10), emerged as major sources of insecurity in respondents' views. In the "Protection and enforcement of rights" dimension, the primary source was the inability of implementation agencies to enforce reforms (i18). These findings underscore the challenges faced by government institutions in terms of capacity as well as the limitations of the formalisation process in addressing existing land claims.

For titled communities (Figure 1b), two clusters of insecurity sources were identified. In the "Exercise of rights" dimension, the most significant source of tenure insecurity was the absence of a title (i1). In the "Protection and enforcement of rights" dimension, the primary source was competition with neighbouring communities (i9). Two distinct groupings emerged: one comprising competition with neighbouring communities (i9) and the lack of capacity by implementation agencies to enforce reforms (i18), and a second group consisting of all other sources, excluding not having title (i1) and government restrictions on soil use (i7).

3.4.2. Main Sources That Community Members Associate with Tenure Security in Communal Lands

The nMDS results for untitled communities (Figure 1c) reveal two clusters of "security sources" within the "Exercise of rights" dimension. The first cluster includes clear limits (s2), the absence of conflicts within the community (s3) and with external actors (s4), the permanence of rights that cannot be embargoed (s5), and the imprescriptibility of rights, meaning they will not change over time (s6). The second cluster comprises the remaining sources, excluding having title (s1).

In titled communities, the nMDS reveals two groupings of security sources within the two dimensions labelled "Exercise of rights" and "Protection of rights" (Figure 1d). The first group is associated with a lack of conflicts in the community (s3), clear boundaries (s2), autonomous communal authorities, and respected customary systems (s7). The second group includes all other sources except s1. Excluding s1 from the analysis forms a third group that includes the following security sources: respected juridical foundation of customary rights (s9), permanent and unembargoable rights (s5), and rights that are imprescriptible, i.e., they will not change over time (s6).

3.5. Changes in Perception of Tenure Security over Time, by Gender, Region, and Formalisation of Land Status

The HHQ evaluated whether land and forest security have improved, remained the same, or deteriorated over the past two decades. The perception of tenure security demonstrated significant variation between the two studied regions ($p = 0.00$). Although 44% of respondents in both regions believe the situation has improved, a larger percentage of respondents in Madre de Dios (27%) compared to Loreto (11%) perceive it has worsened (Figure 2). A gender difference was observed ($p = 0.04$), with men in both regions expressing a more positive perspective regarding changes in tenure security than women. This difference is particularly pronounced in Madre de Dios, where nearly twice as many men (58%) compared to women (29%) report that tenure security has improved.

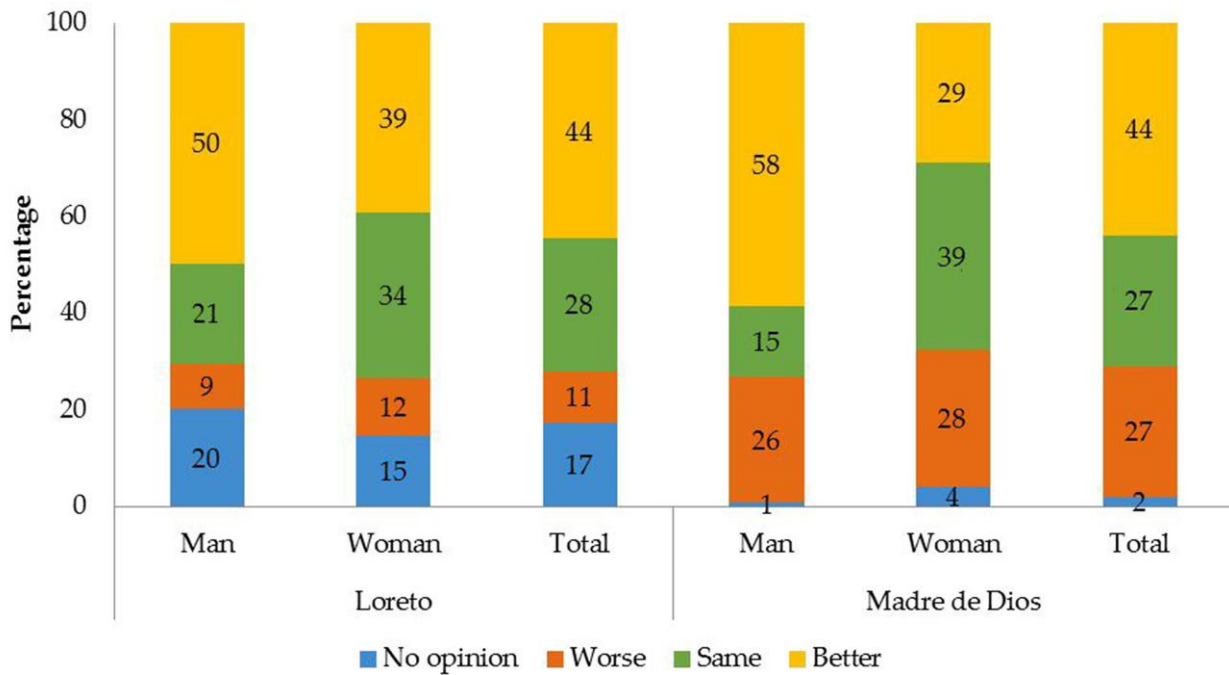


Figure 2. Change in perception of land and forest tenure security over time, by gender and region.

3.6. Perception of the Change in Land and Forest Tenure Security over Time, by Gender and Region

When comparing titled and untitled communities, the difference is also significant ($p = 0.00$). In untitled communities, 43% perceive the situation as unchanged from 20 years ago, and only 28% consider it better, compared to 48% in titled communities reporting improvement and 24% perceiving no change. Women in untitled communities are much less likely to perceive improved security (15%) compared to men in untitled (40%) and women in titled (39%) communities compared to men (57%) (Figure 3).

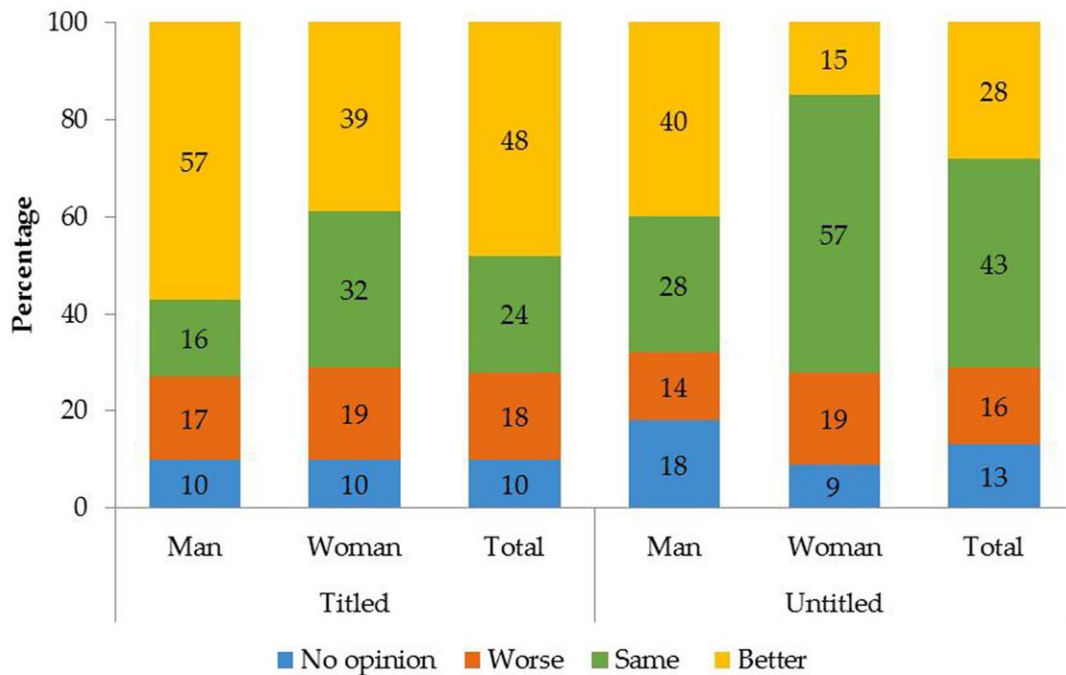


Figure 3. Change in perception of land and forest tenure security over time, by gender and formalisation of land status.

3.7. Representation of the Relationship between Ethnicity, Gender, Tenure Security Perception, and Formalisation Status over the Last 20 Years

The results of the multiple correspondence analyses (MCA), presented in a two-dimensional representation (Figure 4, Table S1, Figure S1), highlight two significant dimensions: formalisation status and tenure security perception, which together account for 73% of the total respondent variation. The X-axis (40.37%) represents the influence of formalisation status, whether the community is titled or not, on perceptions. The high discrimination value (0.72) is associated with the presence of titled versus untitled communities, followed by ethnicity (12 different ethnic groups) contributing 0.696. The Y-axis (32.81%) represents changes in perception over time of whether tenure security has worsened, improved, or remained the same. A high discrimination value (0.67) indicates the extent to which the perception of tenure security has worsened (Figure 4). Our results also indicate that gender plays a complementary role along the Y-axis in explaining differences in tenure security perception.

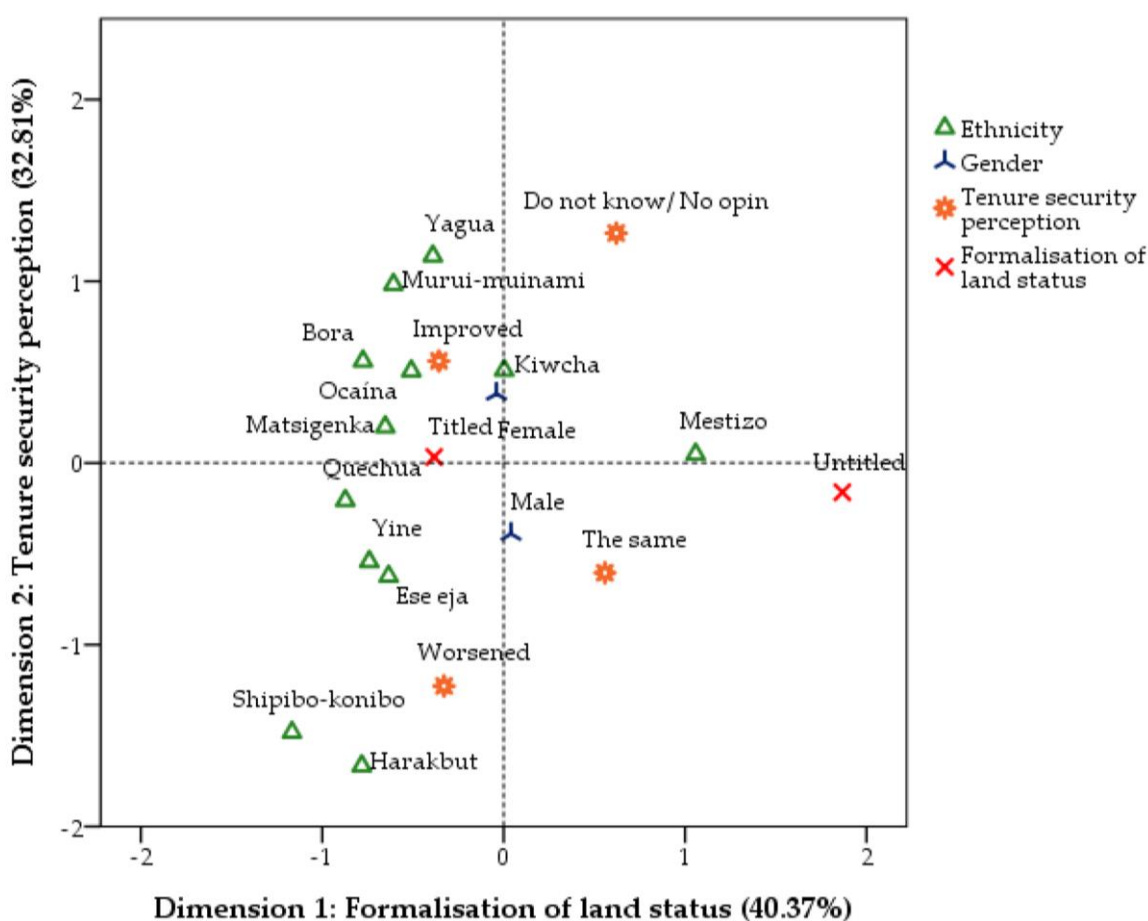


Figure 4. Two-dimensional solution of the multiple correspondence analysis (MCA). Data derived from female and male intra-household surveys (n = 1004 *), analysing ethnicity, gender, formalisation of land status, and perceptions of tenure security over the past 20 years. * Two Aymara interviewees identified in surveys were excluded due to their non-representativeness of the study area.

Respondents from the Bora, Kiwcha, Murui-muinami, and Yagua Indigenous groups have a more positive perception of tenure security compared to those from the Quechua, Matsigenka, and non-Indigenous mestizo groups. Conversely, respondents from the Yine and Ese eja Indigenous groups indicate that the situation has either remained the same or worsened. Interestingly, members of the Harakbut and Shipibo-konibo Indigenous groups reported significant changes in their perception of tenure security, with both groups

indicating that tenure security has deteriorated. When assessing the influence of gender on perceptions of tenure security, men generally have a slightly more optimistic perception (0.15) compared to women, who perceive security as having remained the same. There is a clear distinction between titled communities (on the left side of Figure 4) and untitled ones (on the right side). Most of the Indigenous Communities are titled, with the exception of some Kiwcha and Yagua communities that are currently undergoing formalisation processes. A few non-Indigenous mestizo groups are in titled communities, but the majority are in non-titled communities.

4. Discussion

4.1. Sources of Tenure Security and Insecurity

In Peru, in line with previous research [10], communities involved in this study consider the absence of a title as the primary source of insecurity, while possession of a communal land title is seen as the greatest source of tenure security. However, other sources of tenure security also emerge in both titled and untitled communities, shedding light on how titles can sustain tenure security after the formalisation process is completed. Further analysis of factors influencing perceptions allows us to move beyond the analysis of recognition through formalisation to examine how other factors influence the ability to benefit from, and the protection and enforcement of, rights over the long term.

Overall, both titled and untitled communities grouped sources of security in a similar way, but with a few notable differences. In untitled communities, concerns about rights being permanent, inalienable, and imprescriptible are grouped together with having no conflicts with external actors, respect for customary systems and communal authorities, and clear borders. In titled communities, however, clear borders are grouped together with the absence of conflicts within the community and respect for customary systems. This suggests that in titled communities, there is a distinct grouping that highlights key aspects of internal community governance, while in untitled communities, respect for customary systems and communal authorities also highlights key governance aspects of sustained tenure security.

In both titled and untitled communities, common sources of insecurity emerge within the groups formed. Notably, a smaller subgroup characterised by only two factors stands out in both scenarios. This subgroup typically encompasses the lack of capacity within implementing agencies to enforce reforms, highlighting a prevalent perception of the problematic role of government. While in titled communities, this group is paired with competition from neighbouring communities, in non-titled communities, it is intertwined with the need for expanded territory. These groupings would appear to combine concerns about government capacity with the role of government in ensuring the protection and enforcement of rights [49]. These aspects of governance and coordination of government implementers are further detailed in Myers et al. [50] and Larson et al. [21]. For titled communities, it is suggested that issues with neighbours over borders are not resolved solely by titling, a fact confirmed by the occurrence of conflicts even after titling [21]. This is corroborated by an analysis of in-depth interviews and focus groups, which report the community's perception that once communities are titled, the state does not assume responsibility for ensuring that communities can exercise their collective rights, especially with respect to external pressures. A significant response in titled communities underscores the need to fortify internal community organisations to address these external threats and to manage communal forest resources effectively, thereby improving livelihoods.

Apart from the main groupings, both titled and untitled communities highlight additional sources of insecurity beyond the lack of title. In untitled communities, these distinct sources include competition with neighbouring communities and private businesses. Conversely, in titled communities, government restrictions on soil usage are associated with conflicts and the ability to leverage other resources. These factors underscore the importance of meeting community expectations regarding the benefits of titling and their disappointment when such expectations are unmet [49].

These findings suggest that while the presence or absence of a title holds distinct significance, specific challenges arise in their exercise, particularly in the protection and enforcement of rights, impacting tenure security perceptions. Titled and untitled communities tend to categorise sources of security and insecurity similarly, yet differences highlight three key features of Indigenous Community titling processes in the Amazon. Firstly, concerns arise regarding restrictive regulations, specifically in resource management, linked to the utilisation of rights to enhance livelihoods. Secondly, there is a noticeable lack of government capacity to uphold rights and safeguard community property rights against conflicting interests. Lastly, the significance of community governance emerges as a critical factor. On the other hand, while territory is crucial for the exercise of the content component of rights [51], 'the need for more territory' (i19) and 'having sufficient territory' (s14) were not included in any of the three components of tenure (in)security. This could be a result of the fact that these territories are not currently under their possession and therefore do not entail any rights over them; rather, they express a desire for the future.

From a methodological standpoint, our analysis has underscored that tenure security extends beyond mere land ownership [21]. The clustering of security sources around proposed dimensions suggests the potential to develop indicators for measuring changes in tenure (in)security perceptions. Consequently, governments, researchers, development entities, and non-governmental organisations should consider these dimensions to better comprehend how different sources of (in)security are impacted and to identify interventions that can bolster tenure security in practice, both before and after the formalisation process.

4.2. Changes in Perceptions of Tenure Security over Time

Comparisons of responses regarding changes in security over time reveal significant variations by region, gender, and formalisation status. As expected, titled communities have a more favourable perception of tenure security over time compared to untitled communities. However, in Madre de Dios, the region with the most advanced titling processes in the entire Peruvian Amazon, 27% of respondents argue that tenure security has deteriorated over the past 20 years, a much higher percentage than in Loreto. This raises critical concerns about the extent to which formalisation or titles alone can result in tenure security outcomes. It underscores significant gaps in terms of the state's role in enforcing exclusion rights—the ability to prevent others from accessing community resources and to strengthen mechanisms to address conflict. In titled communities, it also raises concerns about whether living conditions have improved since the completion of the titling process.

In the context of formalisation in collective land tenure regimes, significant differences emerge between women's and men's perceptions. Women are less likely to perceive that security has improved and more likely to perceive it as having remained the same or worsened. This highlights the need for further assessment of how collective tenure regimes can contribute to gender equality outcomes. These findings are supported by the fact that men typically participate more in rule-making, decision-making, and forest management committees, are thus better informed, and may benefit more [25,52]. While women's focus groups reported that participation in community life has improved over the years, with a few communities electing women as leaders, substantial gender gaps persist.

Regarding ethnicity, our results reveal two distinct situations: when the ethnic group is the majority, perceptions vary mainly by location or other distinct community-level dynamics; when the ethnic group is the minority, perceptions diverge from those of the broader community. The differences observed across ethnic groups may be due to the stage of formalisation. For instance, Harakbut groups in Madre de Dios have been titled for more than 20 years, while Bora and Kiwcha communities in Loreto have recently completed or are undergoing enlargement of the titled areas (Table 1). The negative opinions of the Harakbut and Shipibo-Konibo Indigenous peoples align with their location and the existing level of pressure on their communal territories. Both groups are in Madre de Dios and face common threats such as conflicts with neighbouring communities, invasion by settlers, and illegal resource extraction, particularly mining. In contrast, the positive opinions of the

Murui-muinami, Bora, and Yagua peoples, all located in Loreto, appear to be related to the enlargement of their territories in 2015. According to in-depth interviews and focus groups, the positive perception of change in tenure security among the Kichwa is because they perceive that titling guarantees that the exercise of their rights to land and resources is protected, strong, and secure.

The results differ notably for inter-ethnic and mestizo communities. This is particularly evident with the Quechuas, highland Indigenous groups that have migrated to the Amazon. They form a minority within their respective communities in Madre de Dios, with most gaining community rights through marriage rather than birthright. Their perception of tenure security differs from the rest of the community, despite in-depth interviews and focus groups suggesting minimal differences in the exercise of rights over land and forest resources. "Outsiders" are not automatically granted membership, and in almost all studied communities, they must undergo a trial period, typically ranging from 6 months to 5 years, during which they must adhere to internal community norms without enjoying the same rights as other members. The diverse perceptions among non-Indigenous mestizos reflect the wide range of situations they encounter. Mestizos are found in nearly all communities in Loreto and Madre de Dios, including Peasant Communities where they form the majority, inter-ethnic communities, and as minorities in some Native communities.

These results highlight the importance of adopting an intersectional approach that further analyses variations across and within groups. This approach enhances our understanding of how forms of social differentiation influence perceptions in the analysis of formalisation processes [53]. It also emphasises the need to address gender concerns, ethnicity issues, and conflict resolution as crucial capacities for those implementing these titling processes [54]. In our study, pending tasks include assessing the economic benefits associated with land tenure, its role in promoting environmentally sustainable practices, and the critical role of Indigenous Communities in the conservation of natural resources.

5. Conclusions

This article underscores the importance of examining tenure security beyond mere land titles and formalisation processes. In Peru, our findings reveal various dimensions at play. Sources of (in)security differ across non-titled and titled communities. Respondents categorise these sources based on their context, assessing them in similar, but not identical, ways. This emphasises the need for a multi-dimensional analysis of tenure security, ensuring that evaluations extend beyond the legal facets of formalisation to encompass the exercise and practice of rights. Moreover, the protection and enforcement of rights are crucial to ensuring communities can benefit from formalisation.

Our results contribute to a deeper understanding of other factors influencing the ability to benefit from, and the protection and enforcement of, rights over the long term. Our analysis of sources of (in)security highlights three aspects of Indigenous Community titling processes in the Amazon that could be addressed to strengthen tenure security in collective tenure regimes: the need to address restrictive rules impeding livelihood improvement, the need to enhance the government's capacity to enforce rights against conflicting interests, and the importance of strengthening community governance.

Our analysis of changes in tenure security perceptions over time reveals that formalisation alone cannot guarantee long-term tenure security outcomes. This highlights the need to strengthen state actors in enforcing exclusion rights to prevent outsiders from challenging community rights in conflict situations. This paper also demonstrates that in the analysed Native and Peasant Communities, women are less likely to report improved tenure security, highlighting the importance of assessing how collective tenure regimes can contribute to gender equality. Furthermore, our results show that different ethnic groups will have varying perceptions of tenure security. This highlights the importance of an intersectional approach that further analyses how social differentiation influences perception during land formalisation processes. Specifically, the results indicate the need to move beyond approaches focusing solely on the recognition of rights and pay greater attention to the

robustness of these rights, including the ability to benefit from, and to protect and enforce, rights. By focusing on perceptions, we can gain a nuanced understanding of the factors influencing tenure security across different social groups.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/land13060760/s1>, Table S1: Discriminate measures MCA; Figure S1: Representation of discriminant measures for each dimension from the MCA result.

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Institutional Review Board Statement: The study was conducted in accordance with The International Society of Ethno biology (ISE) Code of Ethics, and the protocol of research project was approved by the Research Ethics Committee for Scientific Investigation of UNALM (CEI-UNALM) (Certificate of Good Research Practices 001-2022, approved 18 March 2022).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

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