



Responsible Land Governance: Towards an Evidence Based Approach

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USING INNOVATIVE RESEARCH METHODOLOGIES TO UNCOVER NUANCE AND DIVERSITY: THE RESULTS OF HOUSEHOLD DIARIES IN ODISHA, INDIA

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ABSTRACT

In this paper we discuss a methodology called household diaries (hereafter Diaries). The method brings together quantitative and qualitative research collected in nine visits to 150 households in Odisha between November 2015 and November 2016. Our findings highlight that 1) The number of parcels of land that households relied on with varying tenurial arrangements was higher than expected; 2) Conceptualizations of ownership are ambiguous and subjective; 3) Households consistently relied on undocumented plots; 4) The number of plots relied on by each household fluctuated over time; 5) Diversification was crucial for poor households who often struggled to meet basic needs and had to rely on land and non-land based activities; 6) The Diaries improved accuracy of data on plots of land.

The findings help our programming in two ways. It would help inform programming on what would be needed if beneficiaries of land programs are to experience increased food security and agricultural production and therefore reduce poverty, key outcomes of interest to development practitioners. Second, it will help us to improve our evaluation approach going forward. Our past efforts at evaluation focused mainly on homestead plots and to some extent the other plots that households owned.

Key Words

Land ownership, Land Access, Perceptions of Ownership, Evaluation Methodology

Introduction

Homestead land allocation and regularization programs are expected to yield a wide range of short, medium and long term outcomes. However examination of outcomes is often difficult and can be hindered by 1) the limitations of standard data collection methods and 2) our understanding of the complex relationships households have with not just their homestead plots, but with all the other land that they own and access, as well their reliance on activities not related to land.

Findings from a large survey, as well as qualitative research in Odisha conducted by Landesa in 2015, suggest that poor households and women who were the beneficiaries of homestead land and titling programs experienced increased tenure security and empowerment. However, the material outcomes of microplot programs such as income, food security, agricultural production, and investments were harder to pinpoint (Landesa, 2016). One reason may be that households have multiple livelihood strategies and often use multiple plots of land. Furthermore, within these strategies, land may be only one aspect of their livelihoods and homestead plots may contribute only a relatively small amount to their overall livelihood outcomes.

In this paper we discuss a methodology called household diaries (hereafter Diaries) and present our findings on the data collected using this tool. The method brings together quantitative and qualitative research collected in nine visits to households between November 2015 and November 2016. The Diaries tool is based on the Financial Diaries methodology of collecting periodic comprehensive quantitative and qualitative data on households' financial lives. This methodology was first developed by a team of international researchers who sought to understand the financial lives of poor households. They studied households who were earning less than \$2 a day in India, Bangladesh, and South Africa.

In the Diaries, we collected detailed information about the lands households rely on. We also collected data on the diverse bundle of livelihood activities that all members of the household engaged in and the changes they experienced seasonally or otherwise including agricultural production, cash incomes and so on. Using the Diaries we were able to explore the kinds of shocks poor rural households deal with, including the loss of valuable livestock to disease, death or sickness of a family member, marriage of a daughter, and so on. We also collected information on households' investments in their lands and their food security situation over time. In this paper we limit our findings to 1) the number, nature and perceptions of lands that households rely on; and 2) the diverse livelihood strategies based on land and non-land activities that poor households use to cope with the precarity in their lives. We hope to share our other findings on food security, assets, and agricultural production in future publications

Our findings based on data gathered using the Diaries highlight these five important points:

- 1) Lands relied on: the number of parcels of land that households relied on with varying tenurial arrangements was higher than expected. For example, in addition to their homestead plot, households relied on agricultural lands which most have used for generations. On average a household relied on between 3 to 4 plots of land. Households accessed additional land by leasing, sharecropping, borrowing, and encroaching. Households also routinely used forests for agriculture and to forage for subsistence foods such as leafy greens, products to sell such as *mahua* flowers and *kendu* leaves for *beedies*, fodder, and firewood.
- 2) Conceptualizations of ownership: Conceptualizations are ambiguous and subjective. In general households equate ownership with possession of formal documents within the immediate household or extended family. However, “not owned” plots, that are also defined as “accessed” plots might also have documents in extended family members’ names. *These “not-owned” plots were as integral to their livelihoods as their “owned” plots.*
- 3) Undocumented plots: Households consistently relied on undocumented plots such as those that were encroached on government land or government forests, leased in or sharecropped plots, and larger areas of public lands.
- 4) Fluctuations in plots relied on: The number of plots relied on by each household fluctuated over time as 1) some households acquired titles to plots already in their possession, 2) inherited plots, 3) occupied or encroached on land for cultivation, 4) cleared new land in the forest for settled or shifting cultivation (*podu*), or 4) leased in or leased out plots.
- 5) Reliance on land and non-land based activities: Diversification was crucial for poor households who often struggled to find consistent work as well adequate support to produce on their lands, create assets, and meet their basic needs. Income variability is high and households received more than 50 percent of their incomes from non-agricultural livelihoods.
- 6) The Diaries improved accuracy: Accuracy of data on plots of land improved over the course of nine visits. Successive visits also added more complexity to households’ activities related to the lands they relied on.

Based on these findings, we argue that land ownership may represent only one contribution to households overall economic and social well-being and that *land may be necessary, but not sufficient* to improve the lives of the rural poor.

We suggest that there are implications of these findings to evaluations of land programs. First, theories of change directly linking discrete plots of land to outcomes such as tenure security, food security, and

investments in land at the household level may not adequately take into account households subjective perceptions of ownership, the diversity of lands relied on, the importance of non-owned lands, as well as the extent of households' reliance on non-land based activities. Second, given the challenge of collecting accurate data on land and the fluctuations experienced by households over time, evaluations based on surveys and discrete qualitative studies may not be able to capture the nuances and complexity and therefore may be limited in their ability to measure impact in a comprehensive way.

These findings help our programming in two ways. First, it helps us better understand what is at stake for households who rely on land for their livelihoods. It would help inform programming on what would be needed if beneficiaries of land programs are to experience increased food security and agricultural production and therefore reduce poverty, key outcomes of interest to development practitioners. Second, it will help us to improve our evaluation approach going forward. Our past efforts at evaluation focused mainly on homestead plots and to some extent the other plots that households owned. The Diaries allow us to explore the more ambiguous terrain of the lands that households accessed in numerous other ways and to understand how non-land based livelihoods contribute to their economic well-being.

Conceptualizing Property Rights: Land Ownership and Access

At the heart of the problems of measurement and analysis of land programs are conceptualizations of property rights. Creating essentialized categories of “owned” and “accessed” land based on whether legal title exist do not capture how communities conceive their property rights which are complex and reflect the nature of individuals, households and communities relationships to their lands they rely on. This section reviews literature on how ownership and access are conceptualized in the context of how of rural households use land.

Rural communities in most parts of the world depend on agriculture and access to natural resources. The basis of their livelihoods rests on access to land for cultivation, forests, and grazing lands. In the face of economic fluctuations and shocks, rural households diversify their livelihood options and as a result they need to access different types of land and resources. Research demonstrates that livelihood strategies are often diversified across land types and that “more subtle tenure niches may overlap these categories and vary by resource and season” (Maxwell & Weibe, 1999, p.827). These diverse livelihood strategies often spread across multiple types and plots of land, but may not be appropriately captured through traditional data collection efforts.

Households in rural areas access land through inheritance, transfers from the state (as in homestead and agricultural land programs in Odisha), tenancy arrangements, land purchase, membership within a

community, and so on. These can be in the form of ownership or rights of use (access), with different levels of control such as the ability to mortgage, sell, or bequeath land, the ability to lease or sharecrop land, and the ability to use resources on land that they do not have exclusive control over (Agrawal, 2002). For example, they may derive benefits from fields that they do wage work on such as gathering fodder from others' plots after harvest or grazing their animals.

Several studies highlight that it is useful to think about the lands households use and own in the context of an overlapping bundle of property rights (Meinzen-Dick & Mwangi, 2009; Gregorio et al., 2008).

Ownership, as it is understood by many as exclusive use and control of a resource, forms only one type of land that households rely on. Households also rely on land not they do not own but use exclusively as well as land not in continuous and exclusive possession. For example, the use of public forest land, communal land and private lands are accessed for multiple livelihood activities such as foraging, shifting cultivation, and grazing. Furthermore, individuals, groups, the state and other actors may have overlapping rights to use resources or make decisions over the land (Gregorio et al., 2008).

These bundle of rights are linked to claims over resources and relationships between claimants. These can be dynamic due to changing policies, the politics of control over lands, as well ecological, social and livelihood changes (Meinzen-Dick & Pradhan, 2002). The existence of overlapping regimes over the same land such as customary norms overlaid with formal land legislation can lead to property regimes that are negotiable and fluid with multiple institutions competing to authorize claims (Sikor & Lund, 2009). One example can be seen in the Forest Rights Act used to provide titles to forest lands formerly used customarily by primarily Scheduled Tribe households. While the titles are given to individual households, their property rights prior to regularization were often a combination of communal and individual household rights. For example in a study done on forest property rights in Kandhamal District in Odisha, the community made decisions on how the land would be used but the forests plots were managed individually (Singh et al., 2016). In this case the rights to land are bound up in community belonging or identity. An added complexity is that the FRA sought to individualize holdings to households and promote a different system of land use than was practiced under customary regimes. For example customary use of the forests was in large part done under a system of *swidden* or shifting cultivation, where land was cleared for cultivation and left to fallow in rotation ranging from 1 to several years. While regularization sought to do away with what were thought to be environmentally degrading practices, many households continued to practice shifting cultivation although the practice was lessening (Singh et al., 2016).

Legal rights to land may not result in access to the land if people hold rights that are not enforceable. This highlights that ownership and “effective rights” many not always overlap, or may not overlap completely. Findings from our recent survey highlighted situations where this was the case. Households who had received fresh land for homestead plots were not able to benefit for them because they 1) did not know where the lands were, 2) they continued to be occupied by other actors, 3) they did not have the necessary infrastructure in place to use them, and many other constraints (Landesa 2016). Cousins (1997) called this “real” rights, Verdery (2003) called it “effective ownership” (quoted in Sikor & Lund, 2009, Pg 6).

The lesson here is that ownership has to go with the “ability to benefit” (Sikor & Lund 2009, quoting Ribot & Peluso, 2003). Sikor and Lund (2009) highlight that owning property is not enough, that they also have to be able to access it. Ribot and Peluso (2003) differentiate between property (ownership) and as “the right to benefit” and access as “the ability to benefit” (p 160). They also pose the question of whether ownership even if ineffective, may be better than those who have no rights at all, because even if rights have no value in the current situation, the very existence of those rights indicate that they are recognized by some socio-political institutions and circumstances may change or these rights can be used to make other claims (Sikor & Lund, 2009).

It is important to underscore that the above discussions of ownership and access are applicable to those who suffer exclusions based on their gender or social status. For example, just because a household has legal or other forms of access to land, it does not mean that all members within the household have equal rights, usually women have to negotiate access through husbands, in-laws or community elders. The same goes for “community”. A community owning or accessing land is no guarantee that all members of the community will have equal levels of access to the land even if they have equal rights to the land.

Methodology

With funding through the Bill and Melinda Gates Foundation (BMGF), Landesa had a unique opportunity to enhance understanding through the collection of monthly data by interviewing a small sample of households in Odisha every month for nine months. The tool was designed in a way that would allow us to gain a longitudinal and nuanced perspective of land use and related activities across our sample households over time.

Our Diaries tool was created to collect additional detailed and nuanced information on households’ livelihood activities including land ownership, fluctuations in land use and access, agricultural practices, fluctuations in agricultural productivity, investments, and fluctuations in income and food security. The

design sought to assess the relative strategic importance given to the homestead plot in light of other land available to the household.

The Diaries has five “modules” to collect quantitative data on demographics, plots used, investments made, agricultural production, and food security. Enumerators made nine successive visits between November 2015 and November 2016. Observational notes were collected on every visit. The last visit, the 9th round, occurred in November-December 2016. In this round enumerators collected additional qualitative data on the history of land use, details on “owned” and “not-owned” plots, constraints faced by households to invest in kitchen gardens and livestock, and their desired future investments.

With each visit, enumerators drew maps of all the households plots as well as public lands access and access to water and other resources. The maps served as a visual snapshot of each visit and served as an important method of triangulating information collected using the quantitative part of the tool. In the 9th round enumerators took photographs of homestead plots if respondents consented.

This short-interval panel methodology is intended to improve upon the available knowledge about land-related topics by:

- 1) Developing a nuanced understanding of various dynamic activities related to the land: Large scale surveys, similar to that used to gather the quantitative household data, are often unable to capture accurate and nuanced information about various topics of high-priority interest such as agricultural productivity, financial management, and household status. For example, land use and agricultural seasonality, income variability and shocks, and other changes in the composition of the household are often not captured within one-time surveys, and within discrete qualitative studies.
- 2) Improving accuracy of information: The details required to gain a grounded perspective of land use, agricultural, and financial outcomes are often hindered by respondents’ recall ability. This is particularly the case in the areas in which we work since families tend to engage in a combination of income-generating activities and tend to grow several crops which follow different agricultural cycles and often have the dual-intent to support household consumption as well as provide income.
- 3) Increasing trust between the respondent and the interviewer: The lack of familiarity between a one-time visit by an enumerator or researcher with the respondent often fosters a justifiable unwillingness to disclose full and accurate information about issues such as true extent of landholdings and household finances. Through repeated conversations, comfort and familiarity with the interviewer and the interview process should increase, positively affecting the veracity of the data provided.

Sample Description

Respondents were selected from a larger sample of beneficiaries that participated in the previously administered survey across six districts of Odisha involving 1400 households. This strategy was employed as a time saving mechanism, since the first round of data collection would have already been completed, as well as to provide opportunity to assess the veracity of the data collected through the larger one-time survey effort.

In Odisha 150 respondents who participated in the Endline survey were selected from two districts of the State – Rayagada and Nabrangpur. These districts were selected based on the recommendation of Landesa program staff who took into consideration accessibility of villages, better implementation of land programs, more consistent presence of Landesa, higher vulnerability of households, higher tribal populations, and variation in geography between the two districts.

Rayagada: Around 57percent of the population in this southern district are categorized as scheduled tribe (ST). The district is mountainous, and about a third of the districted is forested. The district is rich in natural resources, minerals and hydropower potential has been the locus of a massive anti-land grab movements. Agriculture is primarily subsistence, with heavy dependence on forested areas for subsistence and other needs by tribal groups. Some tribal groups like the Dongoria Kondh live in more geographically isolated areas and are considered highly marginalized and vulnerable, while others are more integrated into the mainstream. The Naxalite Maoist movement is strong in these areas due largely to the high levels of underdevelopment, land alienation and exploitation of the tribal peoples. The geography combined with the sensitive political situation, led to the decision to under sample in this district.

Nabrangpur: This district is located in the southwest corner of Odisha and is one of the largest commercial corn-producing regions in the country. Geographically it is made up of both hills and plains and about half of the district is forested. While it is one of India's poorest districts, it is more economically developed than Rayagada and commercial cultivation is rapidly growing in the area. About half the district's population are Scheduled Tribe, and 15 percent are Scheduled Castes.

Beginning in November 2015, monthly interviews were conducted by enumerators with 112 Vasundhara and 38 FRA beneficiary households across two districts of Odisha: Nabrangpur and Rayagada. These were subsets of households from the Endline survey. All respondents were adult females from whom the enumerators collected information about topics such as household demographics, land access, use, and ownership, livelihoods, land-related investments, and the household's economic and food security.

As the programs targeted landless households, generally these are households of low economic and social status. The table below highlights the vulnerabilities of targeted households, from dependence on wage labor, to disadvantage and stigma as marginalized social castes, and very low literacy levels. Also included in the table are other respondent demographics like the marital status.

Table 1: Socioeconomic Profile of Sample

	Nabarangpur N=100	Rayagada N=50
Caste		
SC	10%	4%
ST	82%	74%
OBC	8%	10%
GEN	0%	12%
Employment		
At least one person is employed	90%	82%
Marital Status		
Unmarried	0%	4%
Married	92%	84%
Widow	8%	12%
Education		
Have never been to school	92%	78%
Average size of homestead plot (acres)	0.19	0.73
Average number of plots relied on	4	3

Findings

I. Plots of Land

Our findings highlight 4 key points on a households land use: 1) Most households relied on several plots of land for their livelihoods; 2) Land ownership perceptions were ambiguous and subjective - land perceived as owned were linked to the existence of documents within the immediate and extended family, however households did not consistently accessed lands with documents of family members which they sometimes perceived as owned; 3) Households accessed more plots of land that they owned, 4) For some households the number of lands accessed were dynamic and fluctuated over the course of the study.

Number of Plots

It may be surprising to learn that many beneficiaries of homestead land programs *relied on several different plots of land and with varying levels of tenure*. On average, households relied on between 3-4 plots of land, in addition to accessing other public and private lands for grazing, foraging or firewood and so on.

Table 2: Owned and Not-Owned Plots

	Total plots	Total plots owned	Total plots not-owned
Nabrangpur	360	226	134
Rayagada	147	98	49

A majority *owned* more than one plot of land. In Nabrangpur for example, 75 percent owned more than one plot, 59 percent owned more than two plots. We were surprised to see that 25 percent owned 4 or more plots, with some households owning as many as 8 – 9 plots. In Rayagada, 56 percent owned more than one plot and 32 percent owned more than 2 plots.

Beneficiaries became owners of plots four main ways. 1) Beneficiary households were targeted for homestead plot programs because they were either landless or land poor – owning less than one standard acre of land¹; 2) Many Scheduled Tribe (ST) households also benefitted from FRA regularization programs for agricultural plots on land categorized as forests; 3) Beneficiaries inherited land from parents or spouses 4) A few beneficiaries bought land.

In addition to the owned plots, households accessed “not-owned” or accessed plots either through family members, encroachment on government or forest land and in households’ exclusive possession, or leased in for a finite period of time ranging from one season to several years. Most of these additional plots were used for agriculture, but a sizable number of households in Rayagada also accessed additional plots for livestock sheds, given the limited size of their homestead plots. These will be discussed in detail later.

Unpacking Perceptions of Land Ownership

Respondents generally perceived ownership over plots if legal documents (*patta*) existed. Most titles were either in household members’ names, or in the names of parents/ in-laws. In the case of homestead and agricultural plots received through government programs such as GKP, Vasundhra and FRA, titles were

¹ One standard acre is the equivalent to 1 acre of irrigated land or 3 acres of non-irrigated land.

often held jointly with spouses reflecting the government’s commitment to a gender inclusive land reform strategy.

In addition to land received through government programs, many households owned agricultural plots through inheritance. Most often these plots were titled in male in-laws names. Sometimes these plots were owned jointly with extended male family members. In some cases these jointly held plots were also cultivated with extended families. It is interesting to note respondents usually perceived ownership over the entirety of these shared family plots, even though they would eventually inherit only a portion based on the number of (usually) male siblings they had. In some cases respondents had already inherited their plots but had not taken steps to change the titles stating that the high transaction costs of changing names on titles and legally dividing property was a disincentive for them to them to do so.

A key finding is that *perceptions of ownership correlated to possession of formal documents*. Several households were in possession of plots they had encroached on, sometimes for generations, but they did not report them as owned. These findings indicate that households perceive significant meaning in having a title. The almost complete overlap between having titles and perceiving ownership was somewhat surprising given that, till relatively recently, most poor tribal and lower caste communities accessed land without documents either through customary rights or through encroachment and prolonged possession. One reason for this could be that recent government titling programs have been so widespread and may have changed normative ideas of ownership. It also suggests that households are aware of the benefits afforded by legal documents and trust in the power of the state to enforce their rights. In a separate qualitative study conducted with a sample of beneficiaries similar to the Diaries subjects, a majority of respondents believed that their titles would protecting them from dispossession from the state or would provide them with rights to compensation, should they be dispossessed.

Table 3 below highlights this fact. For example, in Nabrangpur, 227 plots are reported as owned, of these 226 have documents. One plot was reported as owned where households did not have a formal document, but had an informal document as proof of ownership. Similarly in Rayagada, 98 plots were reported as owned and 97 had titles. One household bought a homestead plot from a private owner and had not yet received their title.

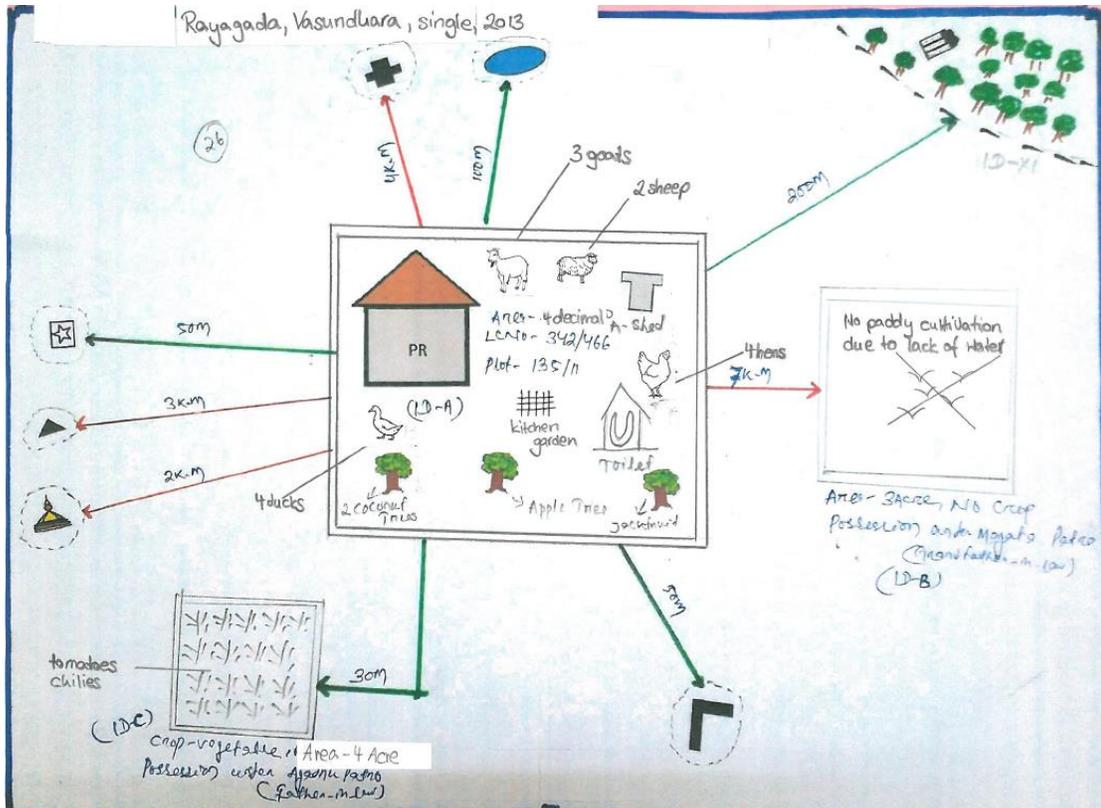
Table 3: Ownership Associated with Formal Documents

	Plots reported as “owned”	Number of “owned” plots with titles*
Nabrangpur	226	225
Rayagada	98	97

*Titles in family/ extended family members names

The following vignette about Anjali, a widow living in Rayagada, describes a typical case of land ownership in the area:

Anjali is a widow and lives on her 4 decimal homestead plot with her two unmarried sons. She received patta for her homestead plot in 2013 under the Vasundhara scheme. She remembers that initially her homestead plot was forested and that her in-law's family cleared the land and started living here.



On her homestead plot, she has a house, toilet, kitchen garden, animal shed and piped water-source. She received money under the Indira Awas scheme to construct the house. Behind her house, she cultivates a small kitchen garden.

In addition to her homestead plot, Anjali also owns two agricultural plots. Both have been in her husband's family for generations. Plot 2 (in map) is 3 acres and about a two-hour walk from her homestead plot. The title for Plot 2 is in in Anjali's husband's grand-fathers name. They generally grow paddy on this plot in the rainy season. At first Anjali told the enumerators this plot was encroached government land. We believe this was because she feared revealing the true extent of her holdings. During the 4th visit to her household Anjali admitted that she did in fact have the patta for this plot. This year they did not cultivate anything Anjali's sons are working on outside jobs and the land is far from their village. They also struggle to find money for

agricultural inputs. Anjali says that she wants to invest in a borewell because she can cultivate this plot year round.

Plot 3 is in her father-in-law’s name and is about 10 minutes away. This plot is 4 decimals and Anjali uses this land to grow vegetables. She has planted tomatoes and chili and will plant some more vegetables in the future. As of now, everything she grows there is for her own consumption. However, if there is more produce, she will sell it. Anjali only revealed that she owned this plot in the 8th visit to her household.

Relying on Land that is “Not Owned”

As stated earlier, almost half the households in Nabrangpur and 56 percent of households in Rayagada relied on plots that they did not own. These plots were considered as “accessed” and were on a continuum of tenurial arrangements from those who accessed plots with titles in the names of other family members, to those who had encroached on land, and those who had leased or sharecropped land.

48 percent of households in Nabrangpur and 56 percent of households in Rayagada accessed not-owned plots. Of the plots they accessed, most were through encroachment on government or forest land. Of note is the high number of households who have plots without titles in forests and government lands in Rayagada. In Nabrangpur most not-owned plots were accessed through family members.

Table 4: How not-owned plots were accessed

	% Households accessing "not-owned" plots	Total "not-owned" plots	% Not-owned plots with <i>patta</i> (in family name)	% Not-owned Plots with no <i>patta</i>			
				Encroached on Govt. Land	Encroached on Forest Land	Lease/ Share-cropped	Other
Nabrangpur	48	134	52	23	5	16	1
Rayagada	56	49	10	41	35	10	0

The ambiguity of perceptions of owned versus accessed should be highlighted here and is somewhat in contradiction to how households perceived ownership. As Table 4 indicates above, more than half of the accessed plots in Nabrangpur were in the names of extended family members, such as in-laws and parents, yet some households considered these plots as accessed, while others defined them as owned. In Rayagada, this occurred with less frequency, where only about 10 percent of household were “accessing” plots belonging to family members.

The remaining plots reported as accessed did not have patta. These accessed plots were either encroached on, borrowed, leased in, or sharecropped and had varying tenurial arrangements. Most often these accessed plots were used for cultivation and tended to be larger agricultural plots, but there were a significant number of households in Rayagada (30 percent) that relied on accessed land for housing livestock because their homestead plots were too small. In a small number of cases lands were also accessed to grow kitchen gardens or used as homestead plots.

Around 8 percent of households in Rayagada and 14 percent of households in Nabrangpur accessed land through leasing or sharecropping arrangements. Households leased or sharecropped land to cultivate paddy, vegetables, and millets. The length of leasing arrangements varied from one season to several years, and size of plot also varied greatly. For example some households leased as little as 2-3 decimals, but most leased larger plots suitable for cultivation of crops. Interestingly, two households leased very small plots 2-3 decimals to grow a kitchen garden, one “borrowed” portion of a neighbors plot for an animal shed and two households reported that their homestead plots were leased. Some households leased more than one plot of land. One household leased the same plot of land for the summer and winter season for several years, turning it back to the owner to cultivate in the rainy season. Vignette 4 below describes their leasing arrangement in detail.

Dynamic nature of land accessed

While the number of plots households relied on and the nature of tenurial arrangements were one of the most important findings of the Diaries tool, the other important and somewhat unexpected findings are the *fluctuations in the numbers of plots that households rely on in the course of a year*. Table 5 and 6 below shows the number of plots that households relied over the course of eight monthly visits to households. The table is disaggregated by plots. For example during the first visit to households in Nabrangpur in November/December, 10 households relied on only one plot, 13 households relied on 2 plots and so on. By the 8th visit in June/July, the numbers changed, and 6 households relied on 1 plot, but 16 households relied on 2 plots. Only nine households revealed that they had five plots of land. With repeated visits that number increased to 14 by the 8th round.

Table 5: Number of Plots Accessed by Households in Nabrangpur over 8 visits

Number of plots relied on	Visits							
	Nov/Dec	Dec/Jan	Jan/Feb	Feb/Mar	Mar/Apr	Apr/May	May/June	June/July
1	10	9	9	8	7	6	6	6
2	13	13	13	13	14	15	16	16
3	36	35	35	36	36	36	35	35
4	25	25	25	25	24	24	24	22
5	9	11	11	11	12	12	12	14
7	5	5	5	5	5	5	5	5
9	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1

Table 6: Number of Plots Accessed by Households in Rayagada over 8 visits

Number of plots relied on	Visits							
	Nov/Dec	Dec/Jan	Jan/Feb	Feb/Mar	Mar/Apr	Apr/May	May/June	June/July
1	23	22	20	18	16	16	15	10
2	19	20	18	20	21	21	16	14
3	6	6	7	7	8	8	11	12
4	1	1	4	4	4	4	6	9
5	0	0	0	0	0	0	1	2
6	0	0	0	0	0	0	0	2
8	1	1	1	1	1	1	1	1

Fluctuations occurred for any one of these reasons: 1) The improved accuracy of information with successive visits to the households suggesting the increased trust built with the respondents; 2) The temporary nature of access to leased and sharecropped lands where households did not have continuous possession of them during the nine visits; 3) Households did not have titles for their homestead plots and received them during the year the Diaries were conducted, 4) Households were bequeathed lands, 5) Households bought or sold plots, 6) Households cleared forestland to create new plots, 7) Households encroached on government land to create new plots.

Fluctuations occurred more in Rayagada than they did in Nabrangpur. For example, 16 percent of households experienced fluctuations in Nabrangpur and 58 percent in Rayagada. Improved accuracy of information on land was more noticeable in Rayagada than in Nabrangpur, The fluctuations in Rayagada were more to do with getting accurate data (65 percent) and less about fluctuations in plots accessed (35 percent). Rayagada was a much more challenging environment for data collection. Villages were smaller, more remote and often closer to forests. Tribal households were not very forthcoming with their land use patterns at first.

As discussed earlier, trust was a key factor in getting more accurate data, but it was not the only issue. In some cases, the women respondents did not always know the true extent of the households' holdings and enumerators were able to get more detailed information from other family members. For example, in one visit to a household in the eighth round, we learned that the household had two plots that the female respondent did not reveal and it was revealed that they had two more plots only in the eighth round, when the respondent's son was present at the interview.

The following vignettes illustrates the dynamic relationships that households can have with their accessed lands where the household cultivates on several plots of encroached government land.

Batima lives with her husband, two adult sons, daughter-in law and two granddaughters in a village in Nabrangpur. Their livelihoods are based on agriculture and agricultural wage work. Batima and her husband have a joint patta for their 1 decimal homestead plot which they received under the Vasundhara program in 2012. They also share 6 plots of agricultural land with Batima's husband's family. Of these, two plots have titles in Batima's in-laws names, and the other four are encroached government land with no documents. In addition to these plots, they use a nearby relatives plot to house their 4 oxen. Below we describe each plot and the activities conducted on them. Table XX below describes how each plot was used over the course of 9 visits to Batima's household.

Plot B is half an acre and was encroached by Batima's in-laws family about 3 generations ago. It takes them 1 hour and 45 minutes to reach this plot. The plot has bamboo trees and over the course of 1 year they first cultivated vegetables from December to February. In the hottest and driest months of March to May the plot was fallow and in the the rainy season from June to September they planted maize (corn). The vegetables were mostly consumed by the household and about 30 percent was sold. Maize is a commercial crop and is generally sold by households.

Table 7: Batima's land use over 9 visits

Plot id/ Type	Size acre	Visits to household								
		Dec '15	Jan '16	Feb '16	Mar '16	Apr '16	May '16	Jun '16	Jul '16	Oct/ Nov '16
B Encroac hed	0.50	Bamboo brinjal, onion, potato, tomato	Bamboo brinjal, onion, potato, tomato	Bamboo brinjal, onion, potato, tomato	Bamboo	Bamboo	Bamboo	Bamboo maize	Bamboo maize	Flowers, tomato
C Encroac hed	0.40	Paddy	No crop	No crop	No crop	No crop	No crop	Maize	Maize	Harveste d crop
D Encroac hed	0.30	Maize	No crop	No crop	No crop	No crop	No crop	No crop	No crop	Black gram
E Encroac hed	0.30	Green/ Black gram	No crop	No crop	No crop	No crop	No crop	Paddy	Paddy	Harveste d crop
F In-laws	1.00	Paddy	No crop	No crop	No crop	No crop	No crop	No crop	No crop	No crop
G In-laws	1.13	Paddy	No crop	No crop	No crop	No crop	No crop	No crop	No crop	No crop

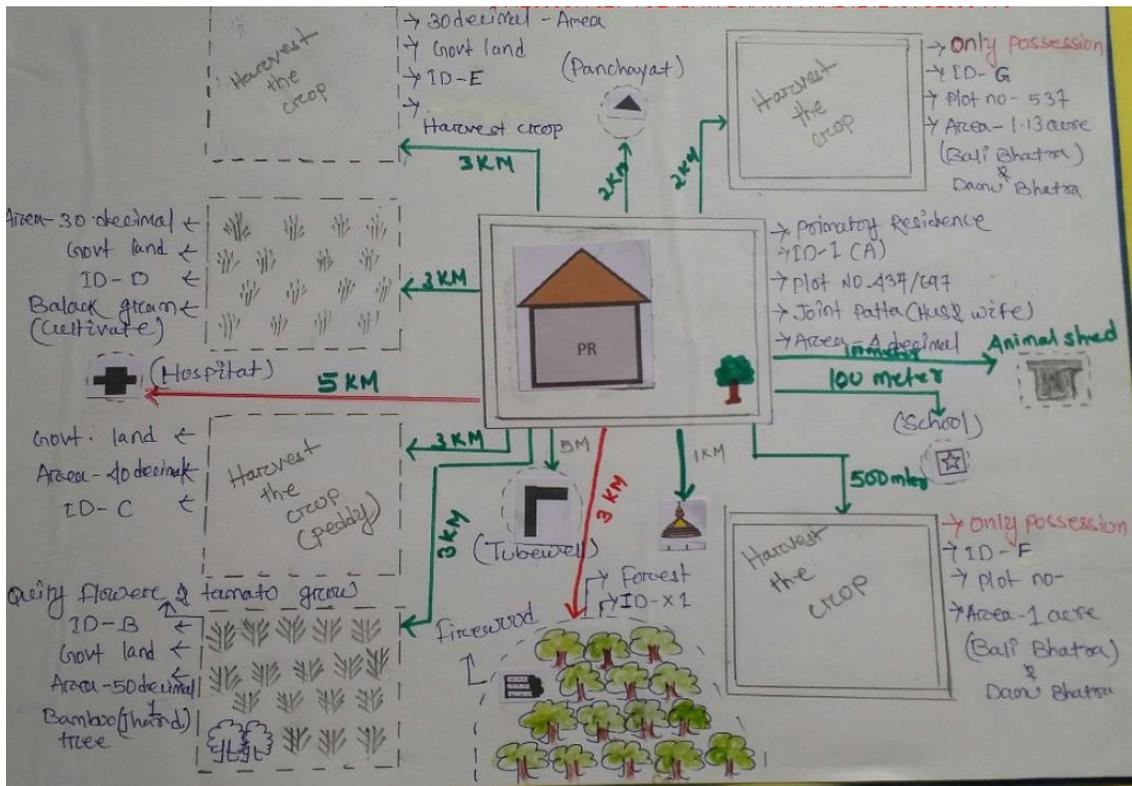
Plot C is also encroached government land and is 40 decimals in size. They cultivated paddy in the rainy season, left the land fallow after the paddy was harvested in December and rotated crops to plant maize in the next rainy season. The paddy was used for the household's subsistence and a portion was sold. The maize was sold.

Plot D and Plot E are a little closer to the homestead land. It takes Batima one hour to reach the land from their homestead plot. Her in-laws' have used Plot D for 1 generation and Plot E for 2 generations. Plot D is rotated every rainy season with maize and black gram and Plot E is rotated with paddy and black/green gram. They consume about half the black/green gram and sell the rest. The entire harvest of maize is sold.

In addition to the 4 plots that are encroached and without patta, the household uses 2 more plots, one with documents in Batima's husband's brothers name and one in the husband's fathers name. Plot F is 1 acre and is located about 20 minutes away and Plot G 1.13 acres and is 1 hour away. They grew paddy from June to December 2015 on both plots and left the land fallow in the dry season from January to May. Batima says they grow enough paddy for their year-round subsistence needs.

Batima and her family also use the forest for firewood.

Map:



Reliance on Forests and Public Lands

In addition to these discrete plots of land, almost all households relied on forests for products such as firewood, *sal* leaves for making plates, *kendu* leaves for rolling *beedies* (local cigars), fodder, and seasonally to collect tubers, mushrooms, wild greens, tamarind, *mahua* flowers, and other edibles that they use for both subsistence and sale. In addition households with livestock also accessed government lands, and private lands not currently under cultivation for grazing cattle and collecting fodder. These activities conducted in forests and other public lands were challenging to follow on a monthly basis, as households often failed to report on these because everybody in the village participated in them. Some products such as firewood were collected regularly by almost all households, whereas other products were seasonal and not all households collected them.

Forests provided an important source of subsistence and income for women and the poorer households, especially in the dry season when fields were fallow and wage work was scarce. Sati is a good example of how poor households rely on the forests to supplement their income. Sati is a widow and collects leaves from the forests near her village to make leaf plates (*khali*) which she sells once a month. She manages her household expenses with her pension and the little money she earns from making leaf-plates.

In addition to foraging, some households also reported practicing cultivation within forests growing crops such as millets, corn, and dryland paddy as well as vegetables. A few households had cashew trees. Whether some of this cultivation was shifting cultivation was not possible to determine. Often households would not volunteer information about forest plots unless they were specifically asked if they were growing anything in the forest. This is partly due to the fluid relationship households have with their forests and the nature of shifting cultivation where lands are rotated by households and may not be in their continuous possession and therefore don't think of as "their" plots. Furthermore, the practice of shifting cultivation has been criminalized and is one other reason why households may be reluctant to reveal the true extent of their use of forests for cultivation. With the Forest Rights Act (FRA), many households received titles for land they were previously using for shifting cultivating. This led to a more settled agriculture. However since all households did not receive titles, many continued to use forests in their traditional ways.

This section discussed at length the land use practices of households highlighting the complex relationship that households had to several plots of land. The next section sheds more light on household livelihood activities as they relate to the lands they rely on as well as non-land based agricultural activities.

II. Diversification and Income Variability

In this section we discuss how households rely on land and non-land based livelihood activities. The purpose of describing their activities is to present a full picture of rural livelihood strategies adopted by the poorest households as well as to gain a deeper understanding on how rural households in Odisha cope with precarity and income variability.

Diversification of Livelihood Activities

Diversifying livelihoods is one way poor rural households reduce vulnerability in their daily lives. Tables 8 and 9 below list the different livelihood activities engaged in by rural households, as well as shows the percentage of households that derived an income from these activities. Of these activities agricultural labor and non-land related activities generated income. Those such as agriculture, livestock rearing, and kitchen gardens contributed more to a household's subsistence.

An important takeaway from this table is that even in primarily agricultural areas *households cannot rely solely on their lands and engage in a wide range of income earning activities*. In fact a majority of households relied on non-agricultural labor for most of the rounds in Nabrangpur. This was not the case in Rayagada where options to work outside agriculture are few with the area being more isolated and agriculture more focused on subsistence.

The tables also highlight the seasonal nature of land-related livelihoods and the *fluctuations in income* as a result. In Odisha, most agricultural work occurs in the rainy season from June to October. This is because most households practice rainfed agriculture and do not have irrigated lands. In the dry season households often need to supplement their income using other means. The absence of agricultural work in the dry season was more noticeable in Nabrangpur than Rayagada.

Table 8: Land and non-land based livelihood activities in Nabrangpur

		Visits to Households								
		% households (n 100)	Nov/ Dec	Dec/ Jan	Jan/ Feb	Feb/ Mar	Mar/ Apr	Apr/ May	May/ Jun	Jun/ Jul
Land-based livelihoods	Agricultural labor	82	43	18	8	7	10	11	30	64
	Own agriculture	45	39	7	2	1	2	8	3	1
	Livestock	12	2	0	1	3	2	2	1	4
Non-land	Non-ag labor	88	47	45	52	67	64	61	50	33

based liveli- hoods	Salaried Job	6	3	3	5	4	4	6	5	5
	Self - employed	28	11	13	11	13	12	9	13	13

Table 9: Land and non-land based livelihood activities in Rayagada

		Visits to Households								
		% households (n 50)	Nov/ Dec	Dec/ Jan	Jan/ Feb	Feb/ Mar	Mar/ Apr	Apr/ May	May/ Jun	Jun/ Jul
Land- based liveli- hoods	Agricultural labor	84	76	78	74	80	72	78	64	62
	Own agriculture	14	8	0	0	4	0	0	0	2
	Livestock	28	0	0	0	4	4	2	2	8
Non- land based liveli- hoods	Non-ag labor	38	6	6	4	0	0	0	16	26
	Salaried Job	20	4	4	4	6	8	8	8	16
	Self - employed	14	10	10	8	6	6	6	6	6

Income Variability

Income variability is another aspect of precarity that households deal with. Today rural economies in Odisha are based largely on cash. While some households still grow food for subsistence and earn income through crop wages for certain agricultural activities such as grazing, agricultural wage labor and some traditional livelihoods, most households need cash to survive. Table 10 below indicates that some households have zero cash incomes in certain months. While many do have produce from their own lands, gardens and livestock, most households say that they buy food with cash.

Table 10: Percent Households with No Cash Income in Nabrangpur and Rayagada

% Households which had no income	Visits to Households								
	Nov/ Dec	Dec/ Jan	Jan/ Feb	Feb/ Mar	Mar/ Apr	Apr/ May	May/ Jun	Jun/ Jul	
Nabrangpur (n = 100)	6	13	14	10	10	7	6	2	
Rayagada (n = 50)	2	4	4	0	6	4	10	10	

The vignette below illustrates that even households that have access to several plots are quite vulnerable because they lack irrigation and/or adequate work in the summer and their other livelihood activities may not contribute substantively in times of scarcity.

Discussion

Advantage of the Diaries as a Methodological Tool

Our findings speak to the advantage of the Diaries as a methodological tool when compared to one time surveys or even discrete qualitative studies. We expected that with successive rounds respondents would reveal more accurate information, but we are surprised by the number of plots households relied on and the fluctuations over time. As stated earlier, relationships built between enumerator and respondents led to increased trust and more openness about their lives. The Diaries also give us insight into the nature of precarity of livelihoods of poor rural households that are beneficiaries of microplot programs.

Concerns and Limitations of the Methodology

Despite the obvious benefits of this research, which include the increased nuance and detailed information about the usage of land amongst these communities, there were some limitations with the tool and the methodology that are worth consideration.

First, because of the small sample bias, the study may not represent the conditions or circumstances affecting the rural poor across Odisha, or even across the two districts. Due to resource and time restrictions, the sample size was limited to 150 households.

Second, the use of Diaries proved to be expensive and also needed an unexpected amount of oversight from Landesa, even though we hired a research consulting firm. Enumerators needed to be trained more than once, in fact because the information on land was so complex, two additional field visits and trainings were conducted by Landesa to improve accuracy of the information gathered.

Third, our data was triangulated using three different methods to collect the same information, the quantitative tool, qualitative narrative and observations, and maps. This led to a certain amount of confusion as sometimes key information on plots was reported in the qualitative section, but was not updated in the quantitative section. Sometimes maps and the quantitative section on plots did not correlate, where some plots were either not represented or the information was different. This led to an unexpected amount of back checking of data.

Fourth, regardless of how well we explained the intent of the Diaries data collection exercise was, households, especially the very poor ones, expected to accrue benefits either financial or otherwise from our repeated visits. An important lesson learned from using the Diaries is the realization that community buy in to the process is important and a more purposive sampling strategy used in order to select respondents to cooperate more fully with the repeated visits.

Fifth, livelihoods in the tribal villages, especially those closer to forests, are highly dependent on forests and depending on the season, entire households can spend all day or sometimes days in their forests cultivating and foraging. This posed challenges to enumerators who sometimes needed to make several visits to remote villages to meet with households for each diary visit. An important learning from this challenge is the benefit of using local enumerators, who understand the rhythms of tribal life, the nuances of their relationships with the land, and have buy in from the local people.

Conclusion

This paper described the complex nature of households' reliance on lands, their subjective perceptions of owned and non-owned lands, as well as the nature of their diversified livelihoods. Our findings highlight that 1) Schedule Tribe and other lower caste households in Odisha rely on several plots of lands as well as access communal and government lands for their livelihoods; 2) Perceptions of ownership are subjective. While perceptions of ownership overlapped almost completely with possession of titles, plots with titles in extended family members' names, such as parents and in-laws were sometimes perceived as owned, but not always; 3) Households consistently relied on undocumented plots such as those that were encroached on government land or government forests, leased in or sharecropped plots, and larger areas of public lands; 4) Lands relied on are dynamic and fluctuate over time; 5) Even in areas that are highly agricultural, and even amongst households that rely on several plots of land, poor households need rely on non-agricultural activities to support their livelihoods.

Another key finding points to the use of the Diaries as a methodology for evaluating programs. Key barriers to understanding livelihood outcomes associated with land programs and tenure security are often caused by methodological challenges of accurately capturing information about how communities, households, and individual members rely on land. Traditional research methods, namely one-time household surveys, find it difficult to explore critical nuances and variances on the dynamic nature of relationships to land, fluctuation in types of land and resources relied on seasonally, the diversity of land in use, agricultural productivity as well as non-agricultural livelihood strategies employed by households.

Given these complexities enumerated above, we argue that the Diaries methodology as an evaluation tool would collect more comprehensive information than surveys and one time qualitative studies and might be needed in addition to surveys.

Our findings therefore raise the issue of 1) How to best design evaluations of homestead plot programs, given the complexity of households relationships with different plots and types of land; and 2) How to design programs that support households in ways that takes into account their diverse livelihoods and

lands. When designing a program or an evaluation, as practitioners we understand that it is challenging to incorporate diversity and complexity in theory of change pathways that link land programs with outcomes such as tenure security and food security, to name a few. While it is assumed that beneficiaries of land programs would experience positive outcomes, these outcomes may not link directly to the discrete plots of land that households received titles to, given that households rely on other lands as well as non-land based activities. The degree to which one plot of land would impact outcomes of interest would be very challenging to study. However information should be gathered to allow for an accurate picture of the diversity.

In the case of programs specific to Landesa such as the microplot homestead programs, these findings raise questions on what assumptions can be realistically made when households receive small plots of fresh land or titles to plots already in their possession. One example that highlights this issue clearly is that small plots of land may be too limited to directly support livelihood activities such as kitchen gardens and livestock. However, even with very small plots, household in Rayagada for example, managed to house livestock on other non-owned plots of land and grow vegetables on other plots. Programs crafted to support these beneficiaries with supplemental services should therefore take into account the other lands that households rely on to be more effective. A tool such as the Diaries, could help move programs in this direction.

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