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Quantitative Indicators for Common Property Tenure Security

Daniel Wilusz

CAPRi

INTERNATIONAL LAND COALITION

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COALITION

About ILC

The International Land Coalition (ILC) is a global alliance of civil society and intergovernmental organizations working together to promote secure and equitable access to and control over land for poor women and men through advocacy, dialogue, knowledge sharing and capacity building. Its vision is that secure and equitable access to and control over land reduces poverty and contributes to identity, dignity and inclusion. Currently, ILC is composed of 83 member organizations in over 40 countries. The Coalition is supported by a Secretariat, hosted by the International Fund for Agricultural Development (IFAD) in Rome, Italy, and regional nodes in Africa, Asia, and Latin America. For additional information, please visit www.landcoalition.org.

About CAPRi

The Systemwide Program on Collective Action and Property Rights (CAPRi) is one of several intercenter initiatives of the Consultative Group on International Agricultural Research (CGIAR) created to foster research and collaboration among the CGIAR and national agricultural research institutes on the institutional aspects of natural resource management. CAPRi contributes to policies and practices that reduce rural poverty by analyzing and disseminating knowledge on the ways that collective action and property rights institutions influence the efficiency, equity, and sustainability of natural resource use. The CAPRi Secretariat is hosted by the International Food Policy Research Institute (IFPRI) in Washington, DC. For additional information, visit www.capri.cgiar.org.

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Preface

Today, there is a growing consensus on the cross-cutting contribution of resource rights to reducing poverty, achieving food security, resolving resource conflicts and providing incentives for sustainable resource management and as a contribution to democratic development. The International Land Coalition (ILC) is a network of organizations united by a shared vision that promoting secure and equitable access to and control over land for poor women and men reduces poverty and contributes to dignity and inclusion.

One of the core ILC principles is ***recognizing flexible and plural tenure systems.*** Land access in rural areas is commonly derived from multiple tenure arrangements in order to accommodate the needs and shared use of the land by different users. These arrangements are flexible and allow for the operation of pluralistic tenure systems. Where individual titling displaces common user practices and realities, the poorest land users may be further disadvantaged, both socially and economically. Security of access to land should be granted in ways that allow overlapping, flexible and plural tenure systems to operate.

This paper is addressed to people concerned with ***common property tenure security***, especially researchers, and examines one core activity of the ILC that is foundational to many of the wider activities that ILC undertakes: monitoring secure access to land. It examines the ways in which monitoring access to land provides a basis for action by a variety of organisations within and beyond ILC's membership, and emphasises the diverse roles in monitoring land governance played by different stakeholders.

The activity is conducted in the frame of the ***Land Reporting Initiative,*** an ILC initiative started in 2004. This paper is based on research completed by the author, Daniel Wilusz, in 2006 and composed of a review of existing initiatives and a field study in Peru. The paper was finalised with the close collaboration of the International Food Policy Research Institute (IFPRI) and discussed during the 2006 biennial meeting of the International Association for the Study of the Commons (IASC; formerly the International Association for the Study of Common Property - IASCP). Inputs coming from this discussion have been integrated into this paper.

Annalisa Mauro
LRI Programme Manager
ILC Secretariat

Foreward

Measurement matters. The increasing use of statistical indicators as measures of progress, exemplified by the Millennium Development Goals, highlights the importance of looking at the content of such indicators.

This is also true for land tenure statistics. But while land under private, and even public, property, is relatively easy to measure, common property is more difficult to measure. The commons are left out of official land statistics in most countries, and the lack of standard measures prevents comparability across countries.

The consequences are not just academic: The lack of measurement is broadly linked to less official attention and support for common property. Lack of external recognition also reduces the security of tenure in common property. The growing attention to global and national statistics on land tenure security has focused on private property; indeed many of the cases of expansion of private property and the exclusive rights associated with private property have been at the expense of the commons. This has implications for the millions of people who depend on the commons, but the latter consequences are largely undocumented.

Therefore, it is important to develop measures of the extent and security of tenure of common property. But this, in turn, requires identifying indicators that capture the complexity of the commons. This publication represents an important step in laying out the options for indicators, assessing the content and cost of measurement of each. The study draws upon the literature as well as discussions with members of the International Land Coalition as well as the International Association for the Study of the Commons. We hope it will stimulate further discussion and measurement, and, ultimately, contribute to greater tenure security for those who depend on common property.

Ruth Meinzen-Dick
Coordinator
CGIAR Systemwide Program on Collective Action and Property Rights (CAPRi)

List of abbreviations

CAPRi	CGIAR Systemwide Program on Collective Action and Property Rights
CEPES	Centro Peruano de Estudios Sociales
CIFOR	Center for International Forestry Research
CPA	Common property association
CPDP	Common property dependent person
CGIAR	Consultative Group on International Agricultural Research
CPR	Common pool resources
FDP	Forest Dependent People
HH	Households
IASC	International Association for the Study of the Commons
IBC	Instituto del Bien Común
IFC	International Finance Corporation
IFPRI	International Food Policy Research Institute
IFRI	International Forest Resources and Institutions
IGO	Intergovernmental organization
ILC	International Land Coalition
LEAP	Legal Entity Assessment Project
LGAF	Land Governance Assessment Framework
LRI	Land Reporting Initiative
MDGs	Millennium Development Goals
NGO	Non-governmental organization
UN-HABITAT	United Nations Human Settlements Programme
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme

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1. Introduction

1. Introduction

"If it is not counted, it tends not to be noticed." – J.K. Galbraith

Secure access to natural resources through systems of common property forms the basis for the livelihoods of many of the world's poor. Nonetheless, civil society organizations and others have voiced concerns that state and private interests are increasingly infringing on poor people's rights and access to the commons. The recent surge in transnational investor interest in land in developing countries ("land grabbing") and associated commercial pressures on land resources have only enhanced this threat. Such investments often focus on land previously marginal to intensive agricultural production, including forests and pastures, and which is often regarded as "idle" or "undeveloped" land. It is now widely recognised that such land is, in fact, very likely to already be in use by local people, very often under a common property tenure regime.

While many case studies have confirmed the trend of increasing infringements on poor people's rights and access to the commons, there has been no systematic global monitoring of how the poor access resources through common property, or of common property tenure security. Reliable global data would be critical in highlighting the importance of common property regimes in supporting livelihoods, food security and sustainability goals, and in evaluating the impact of land policy and governance on this critical form of access to land.

The International Land Coalition (ILC) brings together over eighty member organizations, among them civil society, intergovernmental and research organizations, to work for greater and more secure access to land for the world's poor. ILC's Land Reporting Initiative (LRI) works to enhance the monitoring of land issues, in particular by facilitating greater collaboration and information sharing on monitoring initiatives involving all sectors, and by advancing the development of key indicators of secure access to land.

This report focuses on the need for improved quantitative indicators for assessing the tenure security of common property. It asks: what are the most promising indicators for global monitoring of common property tenure security and what are the pros and cons of each? In answering this question the report will also explore (1) the demand for information gathering on common property tenure security and (2) how to develop a consistent approach to data collection. This report is based on case study research on common property tenure security in Peru – including key informant interviews with stakeholders in that country on the demand for and feasibility of indicators on common property – as well as on a desk review of existing literature to take stock of existing indicator development.

2. Why we need to measure common property tenure security

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The importance of common-pool resources and common property to poor people's livelihoods

Common-pool resources are the natural resources such as pastures, forests and fisheries that are typically governed by common property regimes. They have two essential characteristics (Dolšak and Ostrom 2003): It is expensive to exclude others from using them, and use by one actor diminishes the resources that can be used by another. This means that heavily used common-pool resources are vulnerable to over-exploitation and degradation.

Common-pool resources also provide the foundation for the livelihoods of many of the world's poor (see Table 1). One study estimates that common-pool resources currently contribute some US $5 billion a year to the incomes of poor households in India (Beck and Nesmith 2001). The World Bank estimates that 90% of the world's 1.1 billion poorest people depend on forests for at least some of their income (World Bank 2002). Moreover, the importance of common-pool resources is not only economic; they are also central to many cultural and social activities of poor communities (Beck and Nesmith 2001).

Table 1.
Estimates of the importance of common-pool resources to livelihoods.

Common-pool Resource	Global Impact
Pastures	Just less than half the world's usable surface is covered by grazing systems, with 703 million people living in the grazing system area (de Haam, Steinfeld and Blackburn 1997).
Forests	1.6 billion people depend on the forests, with 60 million wholly dependent and 350 million dependent to a high degree (Angelsen and Wunder 2003).
Fish	Excluding fish farmers, there are over 28 million fishers around the world (FAO Fisheries and Aquaculture Department 2004).

While experts generally acknowledge the importance of common-pool resources, information on common-pool resources and on their importance to livelihoods is felt to be unreliable and inadequate. For example, the UK Department for International Development commissioned a study in 2000 to access existing sources of information on forest dependent people (FDP) (Calibre Consultants and Statistical Services Centre 2000). The study concluded that "there are currently no reliable regional or global sources of data on FDP" but that the number appeared sufficiently large to warrant the necessary data collection.

Given the significance of common-pool resources, the property regime that governs them has a big impact on the livelihoods of poor people. Common-pool resources may be governed by one of four basic property regimes: open-access, state, private and common (Heltberg 2002). Open-access denotes a lack of ownership and control such that anyone may use the common-pool resources freely without distinction or hindrance. State property denotes formal state control, for which the state enforces access and conservation rules. Private property refers to property vested in the individual or corporation. Common property refers to property that is owned, managed and/or used collectively by several users, either simultaneously or sequentially,[1] regardless of the property regime formally applicable to it.[2]

In many cases, common-pool resources are more efficiently managed as common property than as open-access, state or private property. Open-access management of valuable common-pool resources often results in over-exploitation and the "tragedy of the commons" (Hardin 1968). Well-regulated common property can enforce rules to prevent environmental degradation (Ostrom 1990). State management often emanates from political centres far away from the resource and ignorant of local common-pool resource conditions. The fact that the manager (a bureaucrat) is distinct from the owner (the public) diffuses accountability and promotes negligence. Common property management on the other hand is local and the managers share ownership. Finally, private property management of common-pool resources can be prohibitively expensive due to the high cost of excluding access with policing, fencing, and land surveying, etc. Therefore, common property can be more efficient because the cost of exclusion may be lower and can be shared by all group members (Deininger 2003).

Numerous case studies confirm that many common-pool resources are managed as common property, especially in developing countries; however, the exact percentage is unknown. In India, where perhaps the best data has been collected, one researcher concluded that the information was still insufficient to fully describe of community management and the institutions governing them (Kadekodi 2004). Furthermore, the existing common property case studies use disparate methodologies, making their conclusions difficult to compare and aggregate. As a result, we have little reliable information about total number and importance of common-pool resources managed as common property (Orwell et al. 2005).

Tenure security is important for poverty reduction (World Resources Institute 2005). World Bank studies have shown that private property tenure security fosters more efficient land investment, engenders better access to credit markets and promotes a more stable civil society (Deininger 2003). Although most research on tenure security focuses on private property, case studies have shown that common property tenure security positively impacts people's long-term investment in modern management practices like improved livestock feeding practices and integrated pest control (Meinzen-Dick et al. 2002). The extent to which a person can benefit from common property can thus depend greatly on his or her tenure security.

As reported in the World Resources Report 2008, secure tenure is also linked to the success of community-based natural resource management. A 2006 study of 49 community forest management cases worldwide found a significant association between a community's security of forest tenure and the project's success. By contrast, when users' rights and benefits were insecure, community forest management was more likely to fail.

[1] Note that this definition excludes customary tenure systems where group members are assigned use and management rights over some unit of the CPR resource. These schemes often amount to private property.

[2] Note that this definition includes resources which are de jure (nominally) state or private property but de facto (actually) common property. For example, many state-owned forests that indigenous communities have accessed and managed for years are de facto common property.

Common property tenure, like all forms of land tenure, has multiple dimensions. One commonly-used framework describes three facets: breadth of tenure rights, duration of rights and assurance of rights (Place et al. 1994). Breadth of rights refers to the range of rights held, such as right of use and withdrawal, right to decide who may access the resource, right to decide the manner in which management and withdrawal should take place and the right to transfer ownership (Schlager and Ostrom 1992). Duration of rights refers to time limitations (or absence thereof) on the rights held, such as a fixed-term lease, seasonal limitations on hunting or scheduled rights to extract water. Assurance of rights refers to the degree of certainty people have that their tenure rights will not be violated. The breadth and duration of rights therefore describe rights of access to resources that make up the "bundle of rights". Assurance of rights refers to the security of these tenure rights.

Figure 1.
Diagram of a common property regime

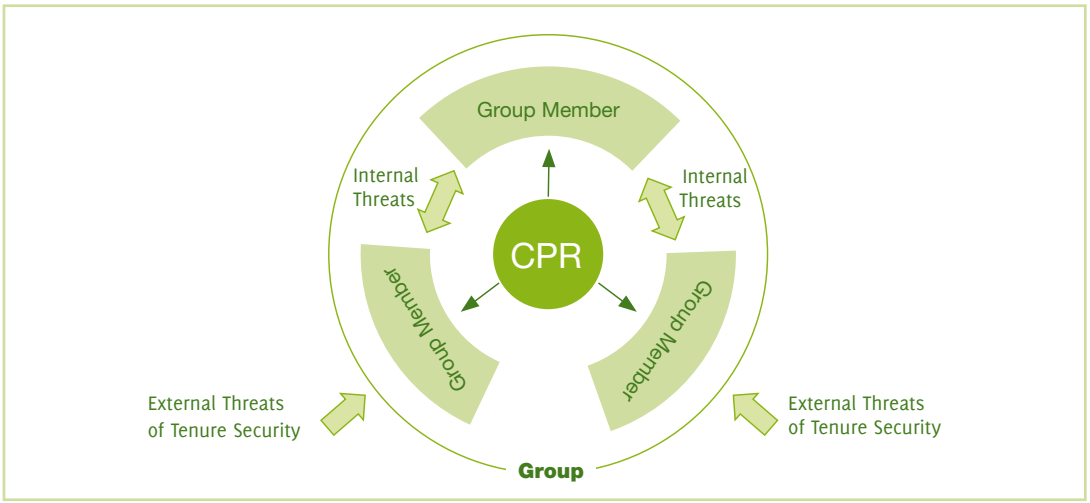

Figure 1 provides a diagram of a common property regime with reference to tenure security. Individual group members exercise their individual rights to access and use the common-pool resource (CPR) according to the group rules and regulations.[3] The group itself has a set of tenure rights that may be recognised by outside actors (such as other communities or the state). Threats to their tenure rights come from internal and external forces. Internal threats include unsustainable levels of extraction and conflict between group members. External threats include theft by non-group members and government expropriations. The combined extent of the internal and external threats determines a group member's tenure security.

Threats to common property tenure security are increasing

Many experts believe that common property tenure security around the globe is declining. Research shows that people are increasingly being excluded from common-pool resources by

[3] In theory, common property does not only pertain to common pool resources. However, in practice, excluding customarland tenure systems, most common property relates to a common pool resource.

privatisation and commercialisation (Beck and Nesmith 2001). Commercial pressure on land is posing increasing threats to the commons. At the same time, there is a trend toward decentralisation of natural resource management with community institutions becoming more influential in the management of local resources (World Resources Institute 2005). Therefore, common property tenure security is simultaneously becoming more important and more threatened.

Development agencies have supported many programs designed to improve tenure security. For example, the World Bank has made the strengthening of tenure security a development priority because "it has been clearly shown that secure tenure and trustworthy registration systems allowing rapid and secure transactions are essential for economic prosperity" (World Bank 2004 [1]). However most of these programs only target private property tenure security. Although the importance of common property tenure security is widely recognized, it receives relatively little attention from governments, development agencies and researchers.

3. The need for indicators of common property tenure security

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Indicators help fight poverty

In the year 2000, the United Nations approved a set of Millennium Development Goals (MDGs) that aspire to "reduce by half the proportion of people living on less than one dollar a day" and to "achieve significant improvement in the lives of at least 100 million slum dwellers by 2020."[4] In order to monitor progress on these goals, the UN set forth specific indicators and provides annual updates on their progress. According to the United Nations, the MDGs have "galvanized unprecedented efforts to meet the needs of the world's poorest." [5]

Quantitative indicators like the MDGs are one tool to provoke action to reduce poverty. When published, they raise awareness and invoke responses from government officials; if they reflect poor performance, the poor performance is expected to be improved. According to the International Institute for Sustainable Development, "indicators quantify and simplify phenomena to help us understand complex situations."[6] Famous indicators include the gross national product and the unemployment rate. Components of a good indicator are discussed in Box 1.

Box 1. Components of a good indicator

Two key components of a good indicator are accuracy and resonance. Accuracy refers to how well the indicator explains the relevant phenomena. Resonance reflects how easily people can understand the indicator. There is usually some trade-off between accuracy and resonance; indicators that are easier to understand may lose touch with the concept they hope to describe. Besides accuracy and resonance indicators should also have the following traits (Anderson 1991):

- Based on easily and cheaply available data
- As easy as possible to calculate
- Able to be broken down into components
- Available regionally and nationally
- Internationally comparable

[4] http://www.un.org/millenniumgoals/goals.html
[5] http://www.un.org/millenniumgoals/index.html
[6] see www.iisd.org

The need for indicators of common property tenure security

Despite the importance that common property tenure security has for poor people, researchers do not have a complete picture of the number of people who depend on common property for their livelihood. Better indicators that monitor common property tenure security would identify who currently has rights of access to the commons and would assess the security of those rights.

In Peru, common property advocates expressed interest in better indicators for common property tenure security. They commented that local lawmakers viewed common property as being archaic and in need of modernization, and that reliable statistics on the number of people who depend on common property and the threats they face could shock governments into updating their perceptions and taking an interest. They also felt that better information about areas struggling to provide common property tenure security could help policy makers allocate more resources to those areas (see section 7).

The World Resources Report 2005, a collaborative effort of the United Nations, the World Bank and the World Resources Institute, recently argued for the need for better indicators to monitor the global commons and called for a rewording of the MDGs (World Resources Institute 2005). They suggested adding the following indicators:

- The extent and condition of communal fisheries (coastal and inland).
- The extent and condition of forested areas held in common.
- Watershed conditions on communally held land.
- Proportion of rural households with access to secure tenure.

Their recommendations underscore the importance of common property tenure security for poverty reduction. However, these indicators are still relatively high-level; the report does not provide more guidance on how they can be measured.

There are two main areas of focus that could be important for indicators: first, assessment of the extent of dependence on common property regimes; and, second, assessment of the security of common property rights. It was suggested that assessing the extent of dependence on common property would involve looking at the numbers of dependent persons or households, the degree of dependence and the different ways in which resources are accessed and used. Broadly speaking, such indicators refer to the breadth and duration of rights held; they refer to the extent and nature of access to land resources. It was felt that indicators documenting and measuring dependence on common property might strengthen the position of communities in advocating for secure rights and attaining greater interest from policy-makers.

Indicators of common property tenure security might focus on four key areas, namely:

- State recognition of common property (e.g. the legal possibility of registering rights in common, the recognition of indigenous peoples' territorial claims);
- Awareness of statutory rights by common property dependent people, as well as their ability to defend their rights in practice;
- Effective administration of rights (whether by the state or community management institutions, covering issues such as record-keeping, transfer of rights, establishment of use regulations, adjudication and dispute resolution); and

- The existence of counter-claims and conflicts, both within common property regimes and with external actors (this may also be a measure of whether communities are able to exercise statutory rights in practice).

The following sections of this report build on these initial suggestions in investigating potential indicators and highlighting their relative strengths and weaknesses. The focus is first on measuring dependence on common property, and second on measuring common property tenure security.

4. Measuring dependence on common property

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Who is dependent on the commons?

This section focuses on the question, "Who holds what rights to common-pool resources under common property regimes?" In other words, "Who has access to resources held in common, and how important is this access to livelihoods, identity and well-being?" Given the diversity of both de jure and de facto common property tenure systems, there is no simple way to identify people with tenure rights to common property. The four approaches considered here are self-identification, common-property association membership, user-group membership and economic behaviour.

Self-identification

The simplest method is to regard any person who identifies himself or herself as dependent on a shared resource as a common property dependent person. This approach is easy to implement and aggregate, but it is not clear under what conditions a person would identify himself or herself as dependent. Furthermore, there is a risk of including people who are, in fact, dependent on an open-access system of resource exploitation, which may bring them into conflict with common property resource users. For example, recent migrants to a grazing area may be dependent on unregulated exploitation of pastures at the expense of pastoralists accessing these resources through a common property regime.

Membership in common property associations

This approach classifies all members of common-property associations and similar institutions as common property dependent people. Common-property associations are groups with organized institutions that act collectively to manage common property. They may or may not be formally recognized by the government. Typical examples include forest associations, pastoralist associations and fishing associations. There are at least two ways to identify common property dependence using such associations:

- Association membership lists and other documentation – Unfortunately in many cases there are no lists of members, nor lists of the associations themselves. This is especially likely to be true where associations enjoy no formal recognition.
- Self-identification as an association member – This approach is easy to operationalize because common property associations are known and identifiable organizations.

One drawback to this approach is that association membership does not necessarily mean that the person uses the common property. Some organizations only exist on paper (Meinzen-

Dick et al. 2004). Furthermore, people who rely on common property but are not members of organized associations will not be captured. In Peru the majority of people dependent on common property are members of an association, but nobody knows the exact percentage that is not (see section 7).

User group membership

Another approach, adapted from the International Forestry Resources and Institutions programme at the University of Michigan, is to classify all members of "user groups" as dependent on common property. User groups are identifiable individuals who share a way of using common-pool resources such as the forest (e.g., hunters, bark collectors, forest farmers) (Colter et al. 1999). Several user groups may belong to the same association. For example, pastoralist associations in Ethiopia consist of primary, secondary and tertiary users that would constitute three different user groups (Aredo 2004). Alternatively a user group does not have to belong to an association at all. People who have accessed a forest for generations without acting collectively still constitute a user group. The biggest challenge with user groups is that they can be difficult to identify. They are often not documented and members may not identify themselves as such. In some cases, it may require an outsider to make the correct classification, which requires training and makes repeatable data collection more difficult (Poteete and Ostrom 2003).

Economic behavior

Another alternative is to infer common property dependence from economic behaviour. For example, a study in India used a 1998 National Sample Survey of over 78,000 rural Indian households to estimate the percentage of average annual consumption that each household derived from goods collected from the commons (Kadekodi 2004). Researchers could use a similar analysis to set a "dependency threshold" for annual percent consumption, such that any person who consumed more from the commons than the threshold would be designated as dependent on them.

Unlike the two previous approaches, economic behavior does not depend on the existence of documentation and avoids arbitrary definitions of common-property association or user group affiliation. Furthermore, unlike the other approaches, it offers compelling evidence of economic dependence. However, it has several shortcomings:

- The method does not distinguish between legal and illegal extraction from common-pool resources. Furthermore, past research has not distinguished between resources appropriated from common property versus state, public or open-access property.
- It can be difficult to value goods extracted from the commons, especially when these resources are located in rural areas with imperfect markets. For example, in Peru a kilo of potatoes grown on common property costs US$0.07 in local markets verses US$1.10 in the capital city. This large disparity illustrates the difficulty of valuing the products of common property regimes.
- The method will tend to underestimate people's economic dependence because it ignores positive externalities associated with collective action (Meinzen-Dick et al. 2004). For example, in Nepal, forest leasehold groups are also a point of organizing for micro-finance and literacy activities (Shrestha 2005).
- The annual percentage consumed cannot reflect short-term increases in dependency and therefore may underestimate the importance of the commons. For example, in Muzarabani

district of Zimbabwe, common property fruit trees are more valuable during the dry season when other nutritional sources are scarce (Chidhakwa 2005).

- Collecting reliable consumption survey data is difficult, time-consuming and expensive.

The table below summarizes the four approaches. Although each choice has relative advantages and disadvantages, using self-identification of association membership is arguably the most promising option (Option 2 in Table 2).

Table 2.
Comparison of options for identifying common property dependent persons

Options for Identifying common property dependence	Advantages	Disadvantages
1. Any person who identifies himself / herself as dependent on the commons.	• Inclusive of formal and informal common property.	• Does not distinguish between legal and illegal extraction. • People have different concepts of 'dependent'.
2. Any person who identifies himself / herself as a member of a common property association.	• Classification clear and easy to understand.	• Excludes people not in an association but dependent on commons. • Does not distinguish between legal and illegal extraction.
3. Any person who is a documented member of common property association.	• Classification clear and easy to understand.	• Few associations have membership documented. • Excludes people not in an association but dependent on commons.
4. Any person who is identified by researchers as a user group member.	• Can potentially include all people dependent on commons.	• Difficult to keep user group classification consistent across time and space.
5. Any person who derives more than X percent of their consumption from the commons.	• Can potentially include all people dependent on commons. • Does not depend on potentially arbitrary group classification or self-identification.	• Does not distinguish between legal and illegal extraction. • Difficult to accurately value extracted resources. • Data collection is relatively difficult.

Assessing the breadth of rights

After identifying the population dependent on common property, we must determine their current breadth of tenure rights. We can classify tenure rights into the categories listed below (World Resources Institute 2005).

- The right to use the resource.
- The right to profit from use of the resource.
- The right to control how it will be used.
- The right to exclude others from unauthorized use.
- The right to sell one's tenure rights to others, permanently or for a limited time.
- The right to pass down these rights to one's successors.
- The right to protection from illegal expropriation of the resource.

The three basic methods to identify a common property dependent person's breadth of rights are self-reporting, documentation and history of use.

- Self-reporting asks people if they do or do not have specific tenure rights. This technique provides reliable results to the extent that people are aware of their rights.
- Documentation looks at community and government paperwork to see what rights have been documented.
- Tenure rights history asks people to recall whether or not they have exercised a specific land right in the recent past.

It is interesting to note that studies in China have found only a weak correlation between self-reported land rights and history of use (Li 1998). This suggests that having a right is only one of many factors influencing the use of that right.

Given the paucity of documentation for common property tenure rights, the author recommends using a combination of self-reporting and tenure rights history to determine breadth of rights.

5. Quantitative measures of common property tenure security

5. Quantitative measures of common property tenure security

On the basis of both the interviews conducted in Peru and the review of past and ongoing initiatives, it is possible to suggest a number of quantitative indicators of common property tenure security. These can be grouped into three categories:

- **Indicators that use past performance.** If common property tenure rights have been violated in the past it is more likely they will be again in the future. Likewise, if resource extraction has been unsustainable in the past, the condition will probably continue.
- **Indicators that use perceptions of the future.** The perceptions of common property dependent persons will combine their understanding of past events and their estimation of the robustness of common property institutions to make predictions about their future tenure security.
- **Indicators that estimate tenure security based on common property association characteristics.** Certain characteristics increase the likelihood that an association will be able to protect against internal and external threats to tenure security.

For the sake of simplicity, the analysis will focus on the security of rights to "use" resources; which is likely to be the most common and important of the "bundle of rights" implied by common property. However the indicators can equally be applied to measure the security of other tenure rights.

Indicators that use past performance

Past trends are good predictors of future performance. Trends relevant to the security of tenure rights include the number of common property dependent persons and the history of conflict, access, investment and resource sustainability.

Trends in the number of common property dependent persons

One of the most basic measures of common property tenure security tracks the percent change in the number of people dependent on common property. Similar calculations have been done before; for example, one researcher estimated that between 26% and 52% of poor households in West and South India lost access to common-pool resources between the mid-1950s and 1980s (Jodha 1986). A significant change in the number of people dependent on common property can itself adversely impact tenure security. For example, recent immigration into the Muzarabani district of Zimbabwe has increased the local population dependent on common-pool resources and weakened the institutions that manage common property (Chidhakwa 2005).

History of conflict

A history of conflict also presages less secure tenure rights for the future. Conflict does not necessarily result in a disruption of use rights, but it does weaken one's ability to fight threats to security. Conflict is common in common property regimes. According to one survey resource, conflicts in sub-Sahara Africa are more prevalent than earlier in the last century and are likely to increase because it is difficult for communities to afford the high costs of resolving conflicts like border disputes, costs which sometimes take the form of bribes to government officials (Blench 1997). This survey also recorded the number and type of conflicts reported in different common property associations. This kind of study could be used to measure an indicator such as the percentage of common property dependent persons in conflict over use rights in the past X years.

Box 2.
UN-HABITAT and tenure security indicators

A recent UN-HABITAT document suggested three component indicators to measure tenure security in urban slums (UN-HABITAT 2003):

- The proportion of urban households with documentation that can be used as evidence of tenure.
- The proportion of women and men evicted from residence in the past ten years. (The importance of collecting such indicators for men and women is stressed since "securing tenure for households does not necessarily mean securing tenure for women and children in households") (UN-HABITAT, undated).
- The proportion of households who believe they will not be evicted from their residence in the next five years.

In 2002 an expert panel recommended a more elaborate set of sub-indicators for the development of a composite index. These sub-indicators incorporate additional measures of documentation and enforcement of tenure rights as open-ended questions about legal protections and policy frameworks.

History of access

At its worst, conflict over common property can result in a loss of use or other tenure rights. For example, in Botswana, privatisation and concentration of pastoral resources resulted in poor cattle farmers losing access to grazing pastures (Taylor 2005). Therefore, another indicator of common property tenure security is the percentage of common property dependent persons who have been denied their common-pool resource rights in the past five years for non-ecological reasons. This is comparable to the UN-HABITAT indicator on forced evictions (see Box 2), which is equally applicable to common property.

History of investment

A large body of literature confirms that tenure security for private property is correlated with investment in the resource (Deininger 2003). For example, farmers in Nicaragua increased agricultural investment in their land after receiving secure land titles from the government (Deininger and Chamorro 2002). A smaller set of studies have shown that common property tenure security also increases investment. For example, a study of villagers in Ethiopia used eight indicators to measure tenure security and showed that high tenure security increased investment in stone terraces on community land (Gebremedhin et al. 2003).[7] Given the correlation between investment and tenure security, a possible indicator might use investment in the commons as a proxy for common property tenure security.

History of ecological sustainability

Poor management threatens the ability of common property dependent persons to appropriate resources from common-pool resources. An overfished lake or overgrazed pasture will eventually become useless and render tenure rights irrelevant. For example, in India, population increase has led to overexploitation of the commons and a decline in the quality and quantity of the services they yield (Jodha 1995).

Indicators have been developed to evaluate the sustainability of specific common-pool resources. For example, CIFOR developed a set of indicators to evaluate the health of forests. The following are the first two of over fifteen (Prabhu et al. 1998):

- Landscape pattern is maintained.
- Change in diversity of habitat as a result of human interventions should be maintained within critical limits.

Unfortunately these indicators require technical expertise to understand and measure. Furthermore, for a global assessment of common property we need ecological indicators applicable to all types of common-pool resources. Given the variation in types of resource involved, finding one-size-fits-all indicators for ecological sustainability is difficult. One researcher in Peru highlighted this as a significant problem that should be overcome with separate indicators for each common-pool resource type (see section 7).

However, researchers can evaluate how ecological sustainability impacts people's ability to exercise their tenure rights. For example, according to the Millennium Ecosystem Assessment, the worldwide availability of capture fisheries is declining due to over-harvest. As a result, some common property dependent people have lost de facto tenure rights to fish in impacted lakes and rivers. Researchers could evaluate this phenomenon with an indicator of the proportion of common property dependent persons who have been denied tenure rights due to resource scarcity in the past five years. This does not require technical expertise to measure and is generic to all common property.

Indicators using future perceptions

Perception is one of the most common ways of estimating tenure security. The study previously

[7] The common property tenure security indicators related, in this case, to the communities' history of access and perceptions.

mentioned in Ethiopia found that villages who reported higher tenure security invested more in communal lands (Gebremedhin et al. 2003), which suggests that perceived tenure security can proxy actual tenure security. UN-HABITAT (see Box 2) and the World Bank (see Box 3) have both used indicators similar to "percentage of people who believe their tenure rights will not be violated in the next five years" to approximate tenure security.

Perception-based indicators combine all of a person's relevant experiences and therefore provide a lot of information that would otherwise be difficult to measure. However, a problem is that respondents cannot account for unknown information. Rural respondents are often particularly unaware of distant threats to their tenure security. For example, in Peru, people's perceptions may reflect threats "on the ground" like pressing conflicts with neighbours. They are less likely to reflect threats from legislators or mining companies in far-away Lima.

Box 3.
The World Bank and tenure security indicators

Until recently, the World Bank used indicators of tenure security principally in the monitoring and evaluation of specific projects. For example, a 2004 land reform project in Indonesia proposed the following indicators to measure the project's impact on tenure security (World Bank 2004 [2]).

1. Strengthened perception of land tenure security.
2. Increased access to formal credit.
3. Increase of formal market activities.
4. Increased investment in agricultural land and property development.
5. Increase in land values.

World Bank studies have measured these indicators using regression analysis of carefully designed household surveys (Deininger and Chamorro 2002).

However, some critics question the meaningfulness of the indicators measuring property rights, arguing that formalization of property rights does not necessarily promote increased tenure security and in many cases does the opposite (Cousins et al. 2005).

The World Bank is now currently piloting a Land Governance Assessment Framework (LGAF), which focuses on standards of government land administration, and which may be scaled up to a global level. The proposed indicators include a focus on whether "group rights" are legally recognised and enforced (World Bank 2009).

Indicators using common property association characteristics

Most common property dependent persons are members of associations that create rules and regulations to protect against internal and external threats to tenure rights. Associations with certain characteristics generally protect themselves better than those without these characteristics. The indicators discussed below test for the presence of those characteristics.

Common property dependent persons with association membership[8]

The formation of a common property association, whether formal or informal, requires some level of collective action. Common property users who are members of an association are therefore likely to have more secure tenure than those who are not (Agrawal 2001).

Common property dependent persons aware of legal rights

Case studies have found that many association members do not understand the processes to legally own land. Research in rural villages has shown that awareness of rules increases compliance (Nkonya et al. 2005). This suggests that awareness of legal rights will increase their application. For example, in Tanzania the Pastoralist Land Rights Protection Programme reduces land grabbing and conflicts by raising awareness of pastoral land rights.

The challenge is finding a way to measure awareness of legal rights. Some initiatives have used a qualitative approach. The Legal Entity Assessment Project (LEAP) in South Africa has used action research methods to assess a number of indicators, including awareness of rights by association members (South Africa Department of Land Affairs 2002). A quantitative approach could be used to measure the percentage of association members who self-report being aware of their legal rights and how to defend them. Alternatively, many NGO and government programs try to educate poor land users about their rights, so another indicator could be the percentage of association members who have received training about their legal rights and how to defend them.

Common property dependent persons in an association where leaders are aware of legal rights

It is important that common property association leaders are also aware of their group's tenure rights and know how to defend them when necessary. In many cases, more powerful interests exploit group leaders who don't know their rights. For example, in Peru, leaders of associations have sometimes negotiated unfavorable contracts with mining interests on behalf of communities (Burneo de la Rocha and del Castillo 2005). Again, the problem is finding the right proxy for awareness of legal rights. The author suggests the same two indicators as for association members: percentage of leaders self-reporting awareness and percentage of leaders trained.

Common property dependent persons with documentation of tenure rights[9]

Individuals with documentary evidence of their common property tenure rights can better protect against internal threats to tenure security. This can be captured by the UN-HABITAT proposed indicator "proportion of total common property dependent persons with documen-

[8] Note that if association membership is the defining characteristic of common property dependent persons then this indicator will be be 100%.

[9] Note that this indicator can be applied to those who are not members of common property associations.

tation proving tenure rights" (see box 2). However, most common property associations do not distribute documentation of rights to members. In theory, association members can hold individual documentation or have their names listed in association documentation. More research is needed to determine the full extent of available documentation. Another problem is that different types of documentation bestow different degrees of tenure security.

Finally, although documentation is important, it is by no means a prerequisite for tenure security. In South Africa, researchers found that, even without a formal title, 90% perceived their land tenure as reasonably secure (Cousins et al. 2005). In fact, sometimes the push for better documentation erodes common property tenure security; formalizing ownership for some weakens others' informal collection and use rights (Di Gregorio et al. 2004).

Common property dependent persons in an association with documented group tenure rights

Just as individuals are better protected when they have documentation of their tenure rights from the common property association, the association itself has better tenure security when it has documentation of its tenure rights from the appropriate authority, usually the national government. In at least some cases, the government keeps data on the number of communities titled and untitled; in a 2002 survey of 20 countries in Africa, 10 permitted common property associations to register group property (Alden-Wily 2002). Therefore, the percentage of total common property dependent persons living in associations with documented group tenure rights is a promising indicator. One limitation is that not all documentation is of equal value. A community with one type of title may have less tenure security than a community with a different type of title. However, an indicator that distinguishes between different types of documentation would not be suitable for all regions.

For example, group documentation is provided in Peru, where the national government provides titles to communities that share property. According to government statistics, almost 80% of communities with shared land have titles, and these communities enjoy higher tenure security (Centro Peruano de Estudios Sociales 2005). However, most of these registries do not clearly delineate the boundaries of property, so neighbours often dispute borders. Furthermore these communities hold different types of documentation and they do not all confer the same degree of tenure security, in part because several attempts at land reform in recent history have created several sets of land registries. For example, La Comunidad Campesina de Sechura held ancestral titles to its property dating back to colonial times. Nevertheless, in the past century the government has reclaimed over 90% of its territory, because it does not respect the old title.

Performance standards

Performance standards for bureaucratic processes like the cost of titling or adjudication are another potential indicator of tenure security. In Ekutheleni, South Africa, some people cannot attain titles for their land because the process is too expensive (Hornby 2005). In theory, performance standards can be applied either to internal association processes (i.e. cost for group member to get title from the association) or for external processes (i.e. cost for an association to get title from the State). In practice, internal processes vary so much that researchers would have trouble aggregating the results. Processes between common property associations and the State are more consistent.

The use of land administration performance standards as proxies for tenure security is relatively common. The time and cost of property registration is an indicator in the World Bank/

IFC Doing Business Survey. The World Bank is incorporating similar indicators in its Land Governance Assessment Framework. In the context of common property regimes, the following indicators could be suggested:

- Proportion of common property dependent persons (CPDP) satisfied with bureaucratic processes (i.e. getting permission to exercise tenure right, settling dispute in legal system) related to tenure rights.
- Proportion of CPDP with costs related to bureaucratic processes less than X dollars.
- Proportion of CPDP with waiting time related to bureaucratic processes less than Y days.

Additional research could determine reasonable values for the cost X and time delay Y.

Common property dependent persons in an association with gender equality

Gender discrimination is a key hindrance to tenure security for women in developing countries (UNDP et al. 2005). For example, many common property associations in the Peruvian Andes have policies that prevent women from sitting at the front of community assemblies (see Section 7). In village forest management groups in India and Nepal, women are likely to be relegated to a peripheral role (Shyamsundar et al. 2004). Women's disadvantaged status weakens their tenure security. Therefore, indicators for the guarantee of tenure rights should capture gender discrimination. Examples include:

- Proportion of CPDP in an association that does not have discriminatory tenure rights, including right to inherit.
- Proportion of CPDP in an association that does not have discriminatory governance. Proportion of CPDP in a country with national legislation prohibiting discriminatory policies against women.

Other important characteristics of common property associations

Finally, an increasing body of literature looks to identify other enabling conditions for internally stable common property associations. Once identified these conditions could be used as indicators for tenure security. While many studies have attempted to identify significant relations between such factors and common property association sustainability (Meinzen-Dick et al. 2004), the large number of relevant factors and the adaptive nature of collective action makes it very difficult to demonstrate causal relationships. At least 32 different factors have been suggested in the literature, from mobility of the resource to enforceability of rules (Agrawal 2001). Although thus far no statistically significant factors have been identified for all situations, case studies and empirical data do suggest the relationships shown in Box 4 (see page 34).

Summary of indicators for tenure security

Table 3 (see page 43), below, summarizes the indicators discussed. The indicators have been categorized along three dimensions related to implementation feasibility: survey population, data availability and history of application.

- The Survey Population field relates to the relative cost of measuring the indicator. Indicators with a larger survey population are more expensive to measure. The most expensive indicators survey the entire population and the least expensive only survey the national government.

Box 4.
Critical enabling conditions for sustainability on the commons (Agrawal 2001).

Resource System Characteristics

- Small size
- Well-defined boundaries
- Low levels of mobility
- Possibilities of storage of benefits
- Predictability

Group Characteristics

- Small size
- Clearly defined boundaries
- Shared norms
- Past successful experience – social capital
- Appropriate leadership
- Interdependence among group members
- Heterogeneity of endowments
- Low levels of poverty

Relationship Between Group and Resource

- Overlap between user group location and resource location
- High levels of dependence by group members on resource
- Fairness in allocation of benefits
- Low levels of user demand
- Gradual change in levels of demand

Institutional Arrangements

- Rules are simple and easy to understand
- Locally devised access and management rules
- Ease in enforcement of rules
- Graduated sanctions
- Availability of low-cost adjudication
- Accountability of monitors and other officials to users.
- Restrictions on harvests matched to regeneration of resources.

External Environment

- Low-cost exclusion technology
- Time for adaptation to new technologies related to commons
- Low levels of articulation with external markets
- Gradual change in articulation with external markets.
- Central government does not undermine external environment
- Supporting external sanctioning institutions
- Appropriate levels of external aid to compensate local users for conservation activities
- Nested levels of appropriation, provision, enforcement, governance.

Table 3.
Summary of indicators for tenure security

	Indicators for tenure security	Survey Population	Data Availability	History of Application
	Indicators that use past performance			
1	% change in the number of common property dependent people (CPDP)	All HH	Limited	Case Study
2	% of CPDP without conflict over use rights in past Y years	CPDP HH	None	Case Study
3	% of CPDP not denied use rights in past Y years	CPDP HH	None	UN-HABITAT
4	% of CPDP not denied use rights right due to ecological degradation in past Y years	CPDP HH	None	Case Study
	Indicators using perceptions of future			
5	% of CPDP who believe their use rights will not be violated in next Y years	CPDP HH	Limited	WB
	Indicators using common property association (CPA) characteristics			
6	% of CPDP with self-reported CPA membership	CPDP HH	None	None
7	% of CPDP with documented CPA membership	CPDP HH*	Limited	None
8	% of CPDP who self-report awareness of legal rights	CPDP HH	None	None
9	% of CPDP who self-report having received training of legal rights	CPDP HH	None	None
10	% of CPDP in CPA with leadership who self-reports awareness of legal rights	CPA	None	None
11	% of CPDP in CPA with leadership who self-report having received training of legal rights	CPA	None	None
12	% of CPDP in CPA with self-reported individual tenure rights	CPDP HH	None	None
13	% of CPDP in CPA with documented individual tenure rights	CPDP HH*	Limited	UN-HABITAT
14	% of CPDP in CPA with documented group tenure rights	CPA	Limited	WB
15	% of CPDP satisfied with processes related to tenure rights	CPDP HH	None	WB
16	% of CPDP with costs for process X less than Y dollars	CPDP HH*	None	WB
17	% of CPDP with waiting time for process X less than Y days	CPDP HH*	None	WB
18	% of CPDP in CPA that does not discriminate against women in tenure rights	CPA	None	None
19	% of CPDP in CPA that does not discriminate against women in governance	CPA	None	None
20	% of CPDP in country with national laws prohibiting gender discrimination	State	None	None
21	% of CPDP in country with critical enabling condition X	CPA	None	Case Study

Survey Population: All households (All HH), CPDP households (CPDP HH), Communal Property Associations (CPA), CPDP HH or CPA (CPDP HH*), national government (State)

Data Availability: No aggregated data (None), limited aggregated data from case studies (Limited)

History of Application: Indicator never used (None), used in case studies (Case Study), similar indicator used by UN-HABITAT (UN-HABITAT), similar indicator used by World Bank (WB).

- The Data Availability field indicates whether any data for this indicator is likely to already be available and aggregated. In almost all cases the data is unavailable. However, in some cases governments do keep reliable data on documented common property associations. For example, in Peru, the government has published data on the number of group titles granted and people living in the groups. More research needs to be done to see if the available data is sufficient to contribute to indicator development.
- Finally the History of Application field indicates the relative experience of the international community with each indicator. While some of the indicators have never been realized, a few have been adopted by intergovernmental organisations. These indicators may more easily garner support for adoption.

Two other important dimensions are indicator accuracy and resonance; these are less objective but can be inferred from the previous discussions.

Indicator recommendations

No one indicator captures all of the elements of tenure security; whenever possible, multiple indicators should be used, including indicators to determine the root cause of tenure insecurity (see Box 5). Furthermore, given the complexity in predicting the future of people's tenure rights, the evaluation of indicators will inevitably involve some subjectivity. However, if only a few indicators can be selected, the author recommends including at least one from each of the three categories: past trends, perceptions and common property association characteristics. A reasonable set of four could be the following.

- Trends in the number of common property dependent persons (CPDP). This indicator provides a good case for giving common property the attention it deserves.
- % of CPDP without conflict over use rights in past X years. Most people agree that conflict undermines security of tenure.
- % of CPDP who believe their use rights will not be violated in next X years. Perceptions incorporate many different aspects of tenure insecurity.
- % of CPDP in an association with documented group tenure rights. Despite criticisms, property titling is still a priority for many influential organizations in the development community, and efforts to increase titling can attract donor funds.

It is no coincidence that this selection is similar to the indicators that UN-HABITAT has selected for measuring tenure security in slums (see Box 2). These indicators have been tested and resonate with people and policy makers.

Box 5.
Finding the root cause of common property tenure insecurity

Knowing that the tenure security is low, high, increasing or decreasing does not necessarily tell us why. Knowing why is important for policy makers who want to recommend strategies to improve or maintain tenure security. While measuring the root cause of tenure insecurity is beyond the scope of this report, below are ideas on some possible indicators.

Diagnostic indicators. "Diagnostic indicators" do not give information about the level of tenure security but rather help diagnose its root cause. Examples include the reasons most reported by common property dependent persons for ecological degradation or conflict. Creating answer categories can help researchers aggregate data. A recent survey of global common property tenure systems by ILC suggested the following classifications for causes of tenure insecurity: environmental degradation or change, privatisation or nationalisation, commercialisation, migration, state development projects, ambiguities in national policies and elite capture (Fuys et al. 2006).

Descriptive Indicators. Linking data on tenure security with information on common property resource type, size and condition would help policy makers direct policy intervention. One possible taxonomy for resources held as common property is agricultural lands, forests, pasture, water resources, fishery resources and biodiversity (Kadekodi 2004).

Reframing Indicators. To focus on people, sthis report has presented indicators in terms of the proportion of common property dependent persons. However, we may want information in terms of the proportion of common property associations. For example, we could find that only 10% of associations practice gender discrimination but 90% of affected people live in associations that practice gender discrimination. This suggests that a small number of large associations requiring policy interventions.

6. Collecting the data

6. Collecting the data

Data collection options

The previous sections focused on the selection of a small range of indicators. All of the suggested indicators could be calculated from close-ended survey questions (see Appendix for sample survey questions). In this brief section the author explores how the survey data could be collected.

There are two basic sets of data that need to be collected. The first set looks at measuring the number of common property dependent persons and requires sampling the entire rural population. The second set assesses common property tenure security and focuses on the sub-population of common property dependent persons.

Table 4.
Summary of data collection techniques (Adapted from Calibre Consultants and SSC)

Option for Data Collection	Advantages	Disadvantages
1. Estimate indicators through key informant interviews in countries of interest.	• Relatively low cost. • Simple implementation.	• Imprecise. • Hard to distinguish good information from guesswork.
2. Analysis of raw data collected by existing household surveys.	• Relatively low cost. • Data already collected.	• Methodologies vary from country to country. • Questions important to tenure security not asked. • Most surveys have bias toward urban areas. • Most countries do not provide access to data.
3. Adding a 'module' of questions to an existing household survey.	• Less costly than a specialized survey. • An add-on to an agricultural survey could reach a rural sample. • The questions can be custom selected to give more reliable data.	• Most surveys have bias toward urban areas. • The quality of the data would be constrained by the nature of the existing survey.
4. Running a special-purpose survey designed to calculate indicators	• The questions, sampling scheme and field staff can be custom-selected, giving more reliable data.	• Most expensive option. • Not necessarily conducive to regularly repeatable measurements.
5. Adding a 'module' onto existing qualitative research conducted by development organizations.	• Less costly than a specialized survey. • The questions can be custom selected to give more reliable data. • Respondents trust organizations resulting in more reliable data.	• The selection of sites would be dictated by the requirements of existing projects. • The quality of the data would be constrained by the nature of the existing research.

The role of ILC and the Land Reporting Initiative

Given the challenges and opportunities, NGOs that work with local communities may be well-positioned and have an incentive to collect data for advocacy. ILC can play an important role in motivating, advising and documenting their data collection efforts.

ILC can learn from two other organizations that have managed or facilitated collection of data related to common property tenure security: International Forestry Resources and Institutions (IFRI) in the United States and the Instituto del Bien Común (IBC) in Peru. IBC (which became an ILC member in 2009) has mapped and surveyed at least 900 native communities in the Peruvian Amazon and created a database with 262 fields of information on location, legal-administrative status, population, authorities, educational and health services, economic activities and principal products sold. Local advocates are using IBC's maps and data to advocate for new and expanded group titles (Smith et al. 2003). However, IBC data collection is expensive. IBC estimates a cost of US $900 per community studied, of which travel constitutes a large proportion.

Since 1993, the IFRI network of collaborating research centers has used a common set of methods to study forests, forest users and forest management. As of 2001, IFRI had a database with 141 sites, 231 forests, 233 user groups, 94 forest associations and 486 products in 12 countries. Researchers use this data to better understand how collective action can provide tenure security. IFRI emphasizes the need for good training to ensure comparable data is collected. The consistency is reinforced through an annual nine-week training program in the United States and less frequent regional training programs (Poteete and Ostrom 2003)

7. Peruvian case study on common property tenure security indicators

7. Peruvian case study on common property tenure security indicators

Background and summary

The research discussed below was conducted in March 2006 in Peru as a series of interviews with experts,[10] including key actors within government and non-government organizations.

The research focused on the two most important common-pool resources in Peru: agricultural land shared by Andean communities and forests shared by native Amazon communities. The government estimates that about seven thousand communities comprising five to six million people depend on these resources for their livelihood. Some NGOs felt that these figures are unreliable. Furthermore, nobody has measured the importance of these resources relative to other income sources. Such measurements are confounded by the difficulty of valuing resources extracted from common property.

There is general agreement that the most important factor underlying people's tenure insecurity is their lack of titles documenting group rights. Approximately 20% of the communities have no title to their shared lands, and many existing titles do not specify boundaries or specify them incorrectly. A second important threat to tenure security is national and international pressure to promote individual titling. This has the potential to benefit a few community members while marginalizing many more. A third important threat comes from mining companies that expend significant resources to obtain access to common-pool resources.

It seems that the best indicators to measure common property tenure security are the proportion of users with group titles, the percentage perceiving tenure security, the proportion who have not experienced conflicts and the percentage with leaders knowledgeable about tenure rights. Unfortunately, current infrastructure and resource availability do not enable the collection of the requisite data to calculate these indicators. Monitoring these indicators would help NGOs and government agencies lobby for more funds and better allocate existing funds to the neediest areas.

Peruvian common-pool resources: The Amazon and the Andes

The research focused primarily on common-pool resources in two main ecological zones: the mountain region of the Andes and the tropical forest region of the Amazon. In the Peruvian Andes there are approximately 6000 communities. Each community can generally be divided

[10] People interviewed were: Zumela Burneo de la Rocha and Laureano Del Castillo at the Centro Peruano de Estudios Sociales (CEPES); Dr. Alejandro Diez Hurtado, professor of anthropology at the Pontificia Universidad Catolica del Peru; Dr. Richard Smith, executive director of the Instituto del Bien Común; and officials from the Proyecto Especial de Titulación de Tierras y Catastro Rural PETT and Amazonian and Afro-Peruvian Peoples (INDEPA).

into three regions. Low-altitude lands (<2500 m) are irrigated and most often are farmed individually on family plots. Middle-altitude lands (2500-3500 m) are not irrigated but receive sufficient rain to produce part of the year. These are still managed individually, but the community exerts more control over the type of farming that occurs. Finally, the high regions (>3500 m) are generally used as pastures for livestock. The community shares this resource and sets rules governing its use. The high regions account for approximately 75% of the total areas held by communities (Rocha, undated).

An agricultural committee within each community is usually responsible for managing the agricultural area, and it seems that their involvement varies significantly from community to community. They may impose significant restrictions on what can and cannot be planted, or in some rare cases redistribute the land every few years to ensure that families have equal access to the best lands (Burneo de la Rocha and del Castillo 2005). A livestock committee usually manages the pastures. They may charge community members per head of livestock that they graze (Diez 2006).[11]

In the Amazon forest region in the eastern part of Peru it is estimated that approximately 1500 communities depend on shared access to forest for their livelihoods, practicing such activities as hunting, fishing and logging. The Ministry of Fisheries nominally manages fisheries, but in many cases community committees provide de facto resource management, in part because the government has historically not been interested in community management (Smith 2006). It seems there is an inverse relationship between abundance of fish and fishery management. Until recently the rivers and lakes contained a plethora of fish so management was unnecessary from either the government or the communities.

The state, the native communities and private operators (loggers) share responsibility for managing the forests. The state officially owns most of the forest, but has allocated 40-year concessions for large parcels to logging companies that agree to implement sustainable forest management. In addition, some native communities occupy their own community property and, in some cases, realize forest management both inside and outside their borders. Right now there is "chaos in the forestry sector", such that the majority of the forests now are de facto open access.[12]

Nobody knows the number of people dependent on common property

There are no reliable government estimates of the number of people who live in the Andean communities. Official estimates hold that there are approximately 6000 communities containing approximately 5 million people.[13] However, others question the veracity of these government statistics because of the inconsistent counting methodology.[14]

The number of people who depend on the shared resources of communities for their live-

[11] Most communities record this information in a booklet.

[12] This is because of the way that the concessions were distributed in the 1990s. Any bid required a large up-front capital invement that excluded most small and native businesses that had been using the forests previously. This eroded any support for the forestry reform and sparked a race to exploit the forests.

[13] There are also people who are not members of the community who depend on common-pool resources.

[14] In some villages, only heads of households were counted; in other villages, both men and women heads of household were counted; and in other instances all people over 18 were counted. However, the aggregated numbers assume that only household heads were counted across all the villages. Therefore, the aggregated figure probably overestimates the actual number of households/inhabitants.

lihood is even more uncertain. People in the communities garner income from a variety of sources, including agricultural sales from familial and community plots, livestock sales from familial and community pastures and remittances from family members in other areas. Similarly, nobody has estimated the dependence of people in the Amazon region on shared forests and fisheries. The national census does a reasonable job of counting the number of people who live in the Amazon. However, the last census was done over 10 years ago and it does not report on the extent to which these people depend on common-pool resources. IBC has surveyed indigenous communities and estimates that approximately 1500 of them manage common property. However, there is no data on the number of people that live in each community, or to what extent they rely on the forests. With regards to fishing, only about 10% of fishermen register with the state, and no studies have been conducted to determine, on a regional level, how many people are dependent on fisheries and how many institutions exist to manage the fisheries.

No easy way to count common property dependent people

A promising indicator to measure common property dependence is a ratio of the annual value of the resources extracted from the commons to annual household consumption. This information could be collected with a survey. However, several interviewees raised doubts about its feasibility. The experts from CEPES thought it would prove difficult to monetize the value of foodstuff and other necessities extracted from the common property because of large variations in prices across regions.[15] Moreover, people often undervalue their possessions in surveys, thus making such estimates unreliable.

However, in the specific context of the Andes, the altitude of a household could be used as a proxy for dependence on common property. It can reasonably be assumed that households living at low altitudes depend on family lands, households at high altitudes depend on common pastures and households at mid-altitudes depend equally on both. The altitude of people's homes can be found in the registries. Unfortunately this method ignores other sources of income, which could be especially significant in the high regions.

The biggest threats: lack of group title, privatization and mining

It seems the lack of group titles is the most important threat. A secondary threat is global pressure to provide individual titles to what has historically been communal land. While this may be good for the person who receives the individual title, it may unfairly prevent other community members and non-community members from using the resource. The CEPES team gave the example that in some communities, the plots are redistributed every two years so that all farmers can share the most productive plots. Individual titling would not allow this kind of sharing. A third threat is pressure from companies to acquire land for mining. The following sections elaborate on these threats as they pertain to specific indicators for tenure security.

Documentation doesn't guarantee tenure security

The most obvious method for measuring common property tenure security for land resources is evidence of documentation proving group ownership. In Peru, such evidence is available

[15] For instance the price of a kilo of potatoes in remote rural areas is .20 soles per kilo verses 3.5 soles per kilos in the city.

because the government does grant land titles to communities. Furthermore, communities holding title to shared land are better able to defend their use rights than communities lacking titles. CEPES felt that the absence of title was the greatest factor limiting a community's tenure security.

A significant proportion of common property for Amazon communities is not titled. Officially, seven percent of the 1,265 native communities do not have a common property title, while another source of information estimates that over 20% of approximately 1500 native communities lack titles, and one-third of the communities hold titles that do not cover the full extent of their traditional lands. The disparate government and NGO estimates demonstrate a need for more consistent measurements.

The proportion of communities holding group titles in the Andes is even smaller. Officially only 72% of the 5,818 officially recognized communities have a property title to their land. In any case, the large proportion of untitled common property lands makes the presence of title a potentially meaningful indicator for tenure security.

However, there are several problems limiting the usefulness of an indicator on documentation. First, communities hold different types of documentation, which confer varying degrees of tenure security. Furthermore, the history of land titling in Peru is complex and several attempts at land reform have created several land registries. Most of these registries do not clearly delineate the boundaries of property, so neighbours often dispute borders.

Other indicators like perception, investment, and conflict

Perception indicators such as "proportion of users who think they will still have access to common property in five years" provide information about what is happening at that moment in time within the community, but they say little about the external threats that may exist in Lima or elsewhere. For example, this indicator may reflect the status of border conflicts with neighbours but not the threat of distant mining companies seeking to occupy the land.

The presence of conflicts could be considered as a good potential indicator for tenure security. CEPES lamented the huge costs that communities in conflict must pay to resolve border disputes. CEPES provided documentation of previous attempts to try and measure the number and type of conflicts reported in different communities. It showed, for example, that 25 communities had reported border conflicts and eight had reported conflicts with mining companies.

Another way of measuring conflict could be by using the indicator "proportion of users who have been denied access to their property in the past five years."

In the case of Peru, there is less optimism about indicators that look at investment in common property as a proxy of tenure security, because people generally do not invest in common property resources. Exceptional cases of investment occur when an NGO funds a project or a charismatic leader encourages collective action.[16]

Discussions of the differences between communities that successfully protect their rights and

[16] CEPES commented that this could work on land that produces products for export, but that these were generally private and not common properties.

communities that cannot protect their rights revealed several possible indicators.

- A community could better defend its rights when it had an educated leader aware of these rights and the processes available to protect them.
- Better-organized communities could better defend themselves against threats to their tenure security.
- User groups with a more homogeneous income distribution were better able to defend their rights.

It is extremely important to highlight some ways of measuring the tenure security of women compared with men in a community. For example, in some communities, widows had to share inherited land with their sons, and in other communities women had to sit on the floor in the back during assemblies. Differences between communities could be exploited to create indicators that capture the proportion of communities with policies favourable to women.

Reliable data will be expensive and difficult to collect

There are numerous difficulties in conducting the surveys needed to calculate these indicators. The best existing infrastructure in Peru for collecting this kind of data is the national census, which does a reasonable job of reaching all the impacted groups. Unfortunately the census only occurs every 10 years, and the national government has not shown great interest in inserting these kinds of questions. Therefore, researchers would probably need a new survey to measure these indicators. The cost of running such a survey depends on the region and the number of people involved.

High cost is not the only challenge to collecting good data. In many cases, villagers are unwilling to give information to strangers. When IBC conducted interviews of native communities they were always accompanied by a representative from the local community associations. In cases where they did not have the association's support, they did not survey the community.

The information would be helpful to civil society

NGOs agree that knowing which people face threats to their tenure security would enable them to better allocate their limited resources and increase government awareness. CEPES gave the example of an Andean community that sold its land to a gold mining company for what they believed to be a fair sum. However, they soon realized that the payment could not replace the sustenance that the land provided. An education program could have helped prevent this error, and the right indicators could have helped CEPES to identify which communities to target for such education programs. In the case of the Amazon, better statistics on the number of people dependent on the forests could encourage government officials in Lima to take a greater interest in developing policies and services supporting the livelihoods of this group.

8. Conclusions

8. Conclusions

A significant, unknown percentage of the world's poor depend on common property for their livelihoods. At the same time, numerous case studies show that factors like ecological degradation, overpopulation and privatisation increasingly threaten their common property tenure security and risk pushing them deeper into poverty. In spite of this, little comparable national or international data is being collected that could increase awareness and permit better allocation of donor funds; this is one area that ILC's Land Reporting Initiative seeks to address. This report outlines options for ILC in terms of indicators and data collection.

It is important to know how many people are dependent on common property and in what ways, and also to know how secure their tenure is. Assessing access to resources through common property regimes entails quantifying "common property dependent persons" and identifying the particular tenure rights that are held by individuals and households. This report presents multiple approaches to measure both of these issues and the pros and cons of each. One practical option is to focus on measuring the tenure rights of members of organized common-property associations and to deduce their tenure rights from direct survey questions about their tenure rights and experience using them.

With regard to assessing common property tenure security, the report splits indicators into three categories: indicators that use past trends, indicators that use perceptions and indicators that look at the robustness of common-property associations. The author believes four of the most promising indicators are (1) population trends of common property dependent persons, (2) presence of conflict, (3) perceptions of future rights, and (4) documentation of rights. Most of the indicators require expensive surveys at the household or association level. Nobody has aggregated the data needed to calculate them, with the possible exception of indicators for documentation. Many of the indicators have not been tested, although a few have been used by IGOs in some cases for monitoring private property tenure security.

Finally, several options for collecting the data have been reviewed. The author believes that the option to add a module of survey questions to existing qualitative research best takes advantage of research centers and NGOs dedicated to land and resource access. Many of these organizations are already working with local communities and may be well-positioned to collect this data for advocacy.

Appendix

Sample Survey Questions

Category	Description	Survey Sample	Survey Question
Identifying CPDP	Any person who identifies themselves as dependent on the commons	All rural HH	Do you consider yourself dependent on any shared resource?
	Any person who identified themselves as a member of a CPA	All rural HH	Are you a member of an organization that acts together to manage a shared resource?
	Any person who is documented member of CPA	All rural HH	Can you show me documentation proving membership to an organization that acts together to manage a shared resource? (See note 1.)
	Any person who identified by researchers as a user group member	All rural HH	(Identified by researcher.)
	Any person whose receives more than X percent of their income from the commons	All rural HH	(Multiple question consumption survey.)
Identifying Breadth of Rights	% CPDP with self-reporting tenure right X	CPDP HH	Do you have the right to X?
	% CPDP with documented tenure right X	CPDP HH	Can you show me documentation showing me the right to X?
	% CPDP with exercised tenure right X	CPDP HH	Have you done X in the past Y years?
Measuring Guarantee of Tenure Security	Change in the % of population of CPDP	All rural HH	(Calculated based on CPDP data.)
	% CPDP with exercised tenure right X	CPDP HH	(Calculated based on CPDP data.)
	Change in the % of CPDP with tenure right X	CPDP HH	Have you been in conflict over resource Z in the past Y years?
	% of CPDP not denied tenure right in past Y years	CPDP HH	Have you been denied use rights to available resource Z in the past Y years?
	% of CPDP not denied tenure right due to ecological degradation in past Y years	CPDP HH	Do you think your use rights to resource Z will be violated in the next Y years?
	% of CPDP with documented CPA membership	CPDP HH	Can you show me documentation proving membership to an organization that acts together to manage a shared resource?
	% of CPDP with self-reported CPA membership	CPDP HH	Are you a member of an organization that acts together to manage a shared resource?
	% of CPDP in CPA with documented group tenure rights	CPA Leader	Can you show me documentation showing me the group's right to use resource Z?
	% of CPDP who self-report awareness of legal rights	CPDP HH	Are you aware of your rights to resource Z and how to defend them?
	% of CPDP who self-report having received training of legal rights	CPDP HH	Have you received training about your rights to resource Z and how to defend them?

	% of CPDP in CPA with leadership who self-reports awareness of legal rights	CPA Leader	Are you aware of your group's rights to resource Z and how to defend them?
	% of CPDP in CPA with leadership who self-report having received training of legal rights	CPA Leader	Have you received training about your group's rights to resource Z and how to defend them?
	% of CPDP satisfied with process X related to tenure rights	CPDP HH	Are you satisfied with the processes to defend your tenure rights?
	% of CPDP with costs for process X less than Y dollars.	CPA	How much does process it cost?
	% of CPDP with waiting time for process X less than Y days	CPA	How long does it take to complete process X?
	% of CPDP in CPA that does not have worse tenure rights for women	CPDP HH	Do women and men have the same tenure rights to resource Z?
	% of CPDP in CPA that does give less governance to women	CPDP HH	Do women and men have equal opportunity to govern the group that manages resource Z?
	% of CPDP in country with national laws prohibiting gender discrimination	State	Does the country have a national law prohibiting gender discrimination?
	% of CPDP in CPA with critical enabling condition X	CPA	Does the CPA have critical enabling condition X?

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