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## Land Tenure Center

AN INSTITUTE FOR RESEARCH AND EDUCATION ON SOCIAL STRUCTURE, RURAL INSTITUTIONS, RESOURCE USE, AND DEVELOPMENT



# TENURE BRIEF

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## REWARDS FOR ECOSYSTEM SERVICES AND COLLECTIVE LAND TENURE: LESSONS FROM ECUADOR AND INDONESIA

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In an attempt to help protect the environment and spur economic development, programs that provide rewards in exchange for ecosystem services offer theoretical advantages over past mechanisms but also pose challenges, including determining who should be rewarded and how incentives should be structured when the ecosystem services are state- or community-owned. Case studies from Ecuador and Indonesia highlight key land tenure issues to be mindful of when planning programs that offer rewards for ecosystem services.



### Incentives to conserve

ATTEMPTS TO CONSERVE biodiversity and other ecosystem services have been carried out through a number of policy instruments over time. Initially, a strict regulatory approach—often referred to as command and control—was the favored tool. The 1980s and 1990s saw a shift toward indirect strategies that linked conservation to local development. The most popular tool in this category has been integrated conservation and development projects, also referred to as community-based conservation.

Today, many conservationists are turning to direct incentives for environmental

protection—this includes creating markets for ecosystem services and directly paying individuals for the ecosystem outcome of interest. RES (rewards for ecosystem services) is the latest in this line of direct policy instruments. Engel, Pagiola, and Wunder (2008) identify two main types of RES programs:

- “user-financed,” in which the buyers are the direct users of ecosystem services,
- “government-financed,” in which governments, conservation groups, or other external sources act on behalf of the ecosystem service users.

While RES is often used as an overarching term for many types of direct incentive programs, in this brief I adopt a more strict definition (see box, next page). RES is



### RES criteria

- (1) a voluntary transaction
- (2) involves a well-defined environmental service
- (3) the service is “bought” by at least one buyer
- (4) the service is “provided” by at least one provider
- (5) the transaction is conditional on provision of that service

*Wunder (2005)*

intended to address a specific type of ecosystem service problem: that in which the benefits of ecosystem services to users outweigh those to ecosystem managers.

The solution offered by RES schemes is for the users of services to provide sufficient rewards to local owners or stewards so that they supply more of the service. Typically, this increased supply is linked to a change in the ecosystem manager’s land-use practices. Thus, the design of an RES program requires careful consideration as to who owns and manages the land.

Approximately 80% of the world’s forests are state-owned according to national law (White and Martin 2002; Agrawal, Chhatre, and Hardin 2008). Yet, in many of these forests, indigenous and other community groups are the ones using and actively managing the resource.<sup>1</sup> Decentralization is rapidly increasing the formal management rights granted to these community groups. Some nations are taking more aggressive steps, reforming land laws to recognize private community-based property rights.

Overall, communal management and ownership of forests is more important in developing countries than in developed countries, with more than 20% of forests in developing countries formally recognized as

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<sup>1</sup> While forest-based RES programs are the most common, and thus the focus in this brief, many other ecosystems that might be targeted for a RES scheme—e.g., rangelands or fisheries—also are predominately state-owned according to national law but managed by indigenous or community groups.

community reserves or community-owned. About 60% of the legal reforms to recognize community-owned forests have occurred in the last 15 years (White and Martin 2002).

Thus, many of the forest ecosystem services that society is interested in conserving are found on lands managed and/or owned by local communities. In most of these places informal or weak property rights are the norm. In this brief, I discuss RES projects occurring in two such areas.

### **Ecuador: Rewards for biodiversity conservation and the creation of the Gran Reserva Chachi<sup>2</sup>**

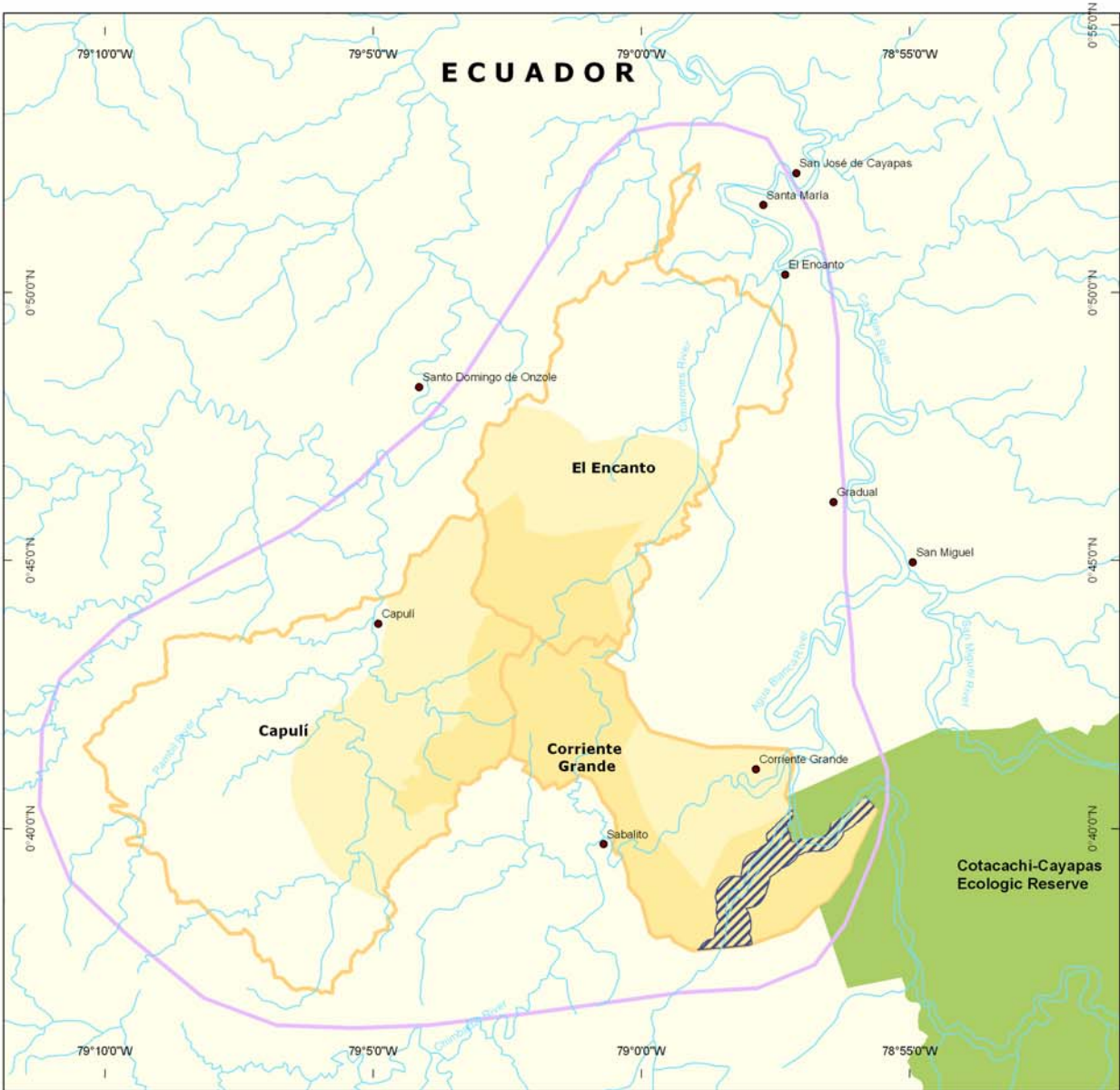
In northwestern Ecuador, the Gran Reserva Chachi (Figure 1)—established through direct payments for biodiversity conservation—comprises a 7,200-hectare community-managed protected reserve and an 11,500-hectare multiple-use area. The reserve lies in an area of extraordinary biodiversity and faces increasing pressures from timber companies and the expansion of oil palm plantations, with more than 60% of Ecuador’s timber coming from this region. Heavy extraction threatens biodiversity and provides little economic benefit to the local communities.

In 2004, in an effort to provide communities with alternative livelihood options and to maintain the integrity of the ecosystem services, GTZ and Conservation International approached three communities, comprising approximately 300 households, to discuss creating a biodiversity reserve. The idea was to provide economic incentives for biodiversity conservation that were competitive with other land use alternatives.

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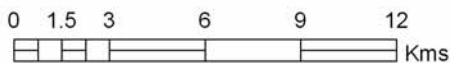
<sup>2</sup> Information on this project comes from discussions with project staff and from Suárez 2008. A special thanks to Luis Suárez and Aaron Bruner for their assistance. For more information on this project: Luis Suárez, Executive Director, Conservation International, Ecuador. [l.suarez@conservation.org](mailto:l.suarez@conservation.org).

Figure 1. Gran Reserva Chachi



**Legend**

- Project site
- Community reserve zone
- Community reserve buffer zone
- Community
- Sustentable use zone
- Community
- Rivers
- Protected Area



Graphic Scale: 1:140000  
Projection: Geographic  
Datum: WGS 84  
Information Scale: 1:50000

Source:  
-Conservation International  
Ecuador, 2005.  
-Ecoiencia, 2005.  
-Environmental Minister, 2007.



Elaborated by: Lorena Falconi L

The first year of this project was devoted to consultations with local communities and participatory land use planning in order to assure that there was informed consent prior to any payments. Once this was achieved, a contract was agreed upon that established a biodiversity reserve on the land of the three communities in exchange for payments of US\$5 per hectare per year. The money goes into community accounts allocated to development projects chosen by the communities, including support for health, education, small enterprise, and institutional strengthening.

Funding for these payments and related activities comes from a number of donors, including GTZ, Conservation International, USAID, Coldplay, and Forest Trends. An endowment is being established to ensure the long-term sustainability of the financing.

In 2005, monitoring and enforcement activities began in the reserve, as well as payments into the community development accounts. The project operates on a year-to-year basis. Once the communities and the funders are satisfied with the operation of the payment mechanism, distribution of benefits in the communities, and enforcement of rules within the reserve, a long-term contract will be defined and implemented.

The three communities had state-issued communal land titles before the project began. These were issued under a USAID/Ecuador-supported project called Sustainable Uses for Biological Resources (SUBIR). Even when national opportunities exist for obtaining formal land titles, it is uncommon for rural communities to have them due to a lack of financial and technical resources. SUBIR was critical in getting land tenure clarified and titles issued in this region of Ecuador.

If formal titles had not been issued, administrators of the RES project state that they would have facilitated the land titling process themselves because a number of overlapping land claims existed in the region. Thus,

clarification of land boundaries through formal titling helped legitimize the establishment of the biodiversity reserve. Major steps taken by SUBIR to clarify land tenure included community consultations, capacity building, and boundary mapping using geographical positioning systems. This was done in collaboration with the state land-titling agency.

Formal land titles also increased the communities' ability to enforce property rights and exclude encroachers. Since the establishment of the reserve, illegal takings by logging companies and their intermediaries have declined. However, one challenge to secure tenure in northwestern Ecuador and many other forested regions is that the reach of the state is limited, and even formally titled land is vulnerable to incursions. Thus, when contesting land claims arise, the legal apparatus to deal with them is missing.

This has been a critical issue in the Gran Reserva Chachi since external threats are aggressive. To counter these threats, the Chachi Federation of Esmeraldas, GTZ, and Conservation International work together to mediate the legal process when land invasions occur. This has been a costly process but likely will continue to be a necessary investment. As a more permanent solution, the RES project is strengthening relationships with legal agencies in the area to facilitate the resolution of these types of land tenure issues in the future.

In addition to threats posed by outsiders, the Gran Reserva Chachi continues to face illegal logging and hunting pressures from some community members and neighboring citizens. Many local residents earned income from logging during the recent timber boom and others have long hunted wildlife for subsistence. Changing these behaviors takes time. The fact that some individuals are tempted to break the reserve rules underscores the difficult nature of negotiating contracts that meet the needs of heterogeneous communities.



Not surprisingly, there have been mixed outcomes during the first three years of the project. Two of the three communities have significantly curtailed logging on their land. The third has had problems stopping individuals from cutting timber or selling concessions to logging companies, perhaps because its forest is most accessible to logging and has the least land. Given that the rules for payment are the same for all three communities, this contrast suggests that local socio-ecological conditions strongly shape RES results.

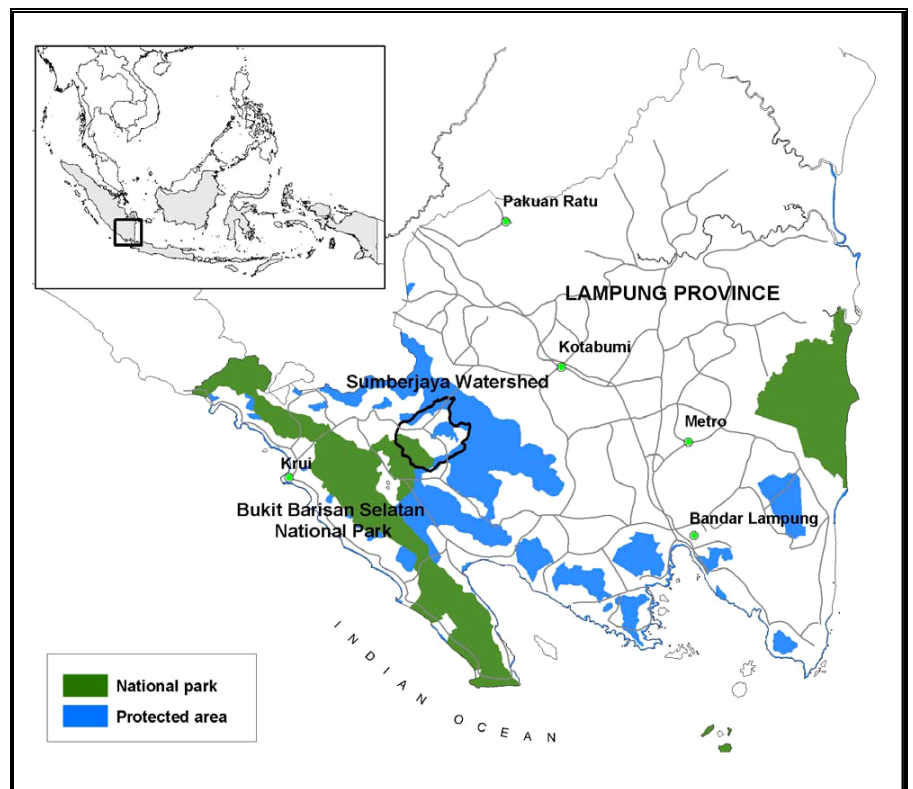
The case of Gran Reserva Chachi reveals that RES can be successfully implemented in marginalized communities residing in biodiverse forests provided investments are made in titling land, providing legal support for subsequent incursions, and building local capacity to negotiate and monitor outcomes. A notable sign of success is that one of the participating communities recently petitioned to expand the amount of protected forest in order to earn more for local education.

Adjacent communities, including the Awa and AfroEcuadorian groups, are now requesting similar RES projects in their areas, and the Chachi project has drawn attention from national forest agencies that hope to promote pro-poor RES programs.

## Indonesia: Payments for watershed services in Sumberjaya, Lampung Province<sup>3</sup>

Sumberjaya watershed in northern Lampung Province (Figure 2) is a rural, hilly area where approximately 90,000 people live. More than half transmigrated from other parts of the country. The watershed has relatively fertile soils and people grow coffee and rice among the hills; it also provides important watershed

Figure 2. Sumberjaya watershed



Source: Ekadinata et al. 2007.

services, such as sediment regulation, which directly impact the functionality of a hydroelectric plant built downstream. In 1990, the government designated one-third of the

<sup>3</sup> Information on this project comes from Suyanto 2008, Arifin 2005, Ekadinata et al., 2007, and Suyanto's "Site profile," "Sumberjaya Brief No. 1," "Sumberjaya Brief No. 2," and "Synthesis Notes No. 4." I thank Suyanto and Melinda Firds for their assistance.

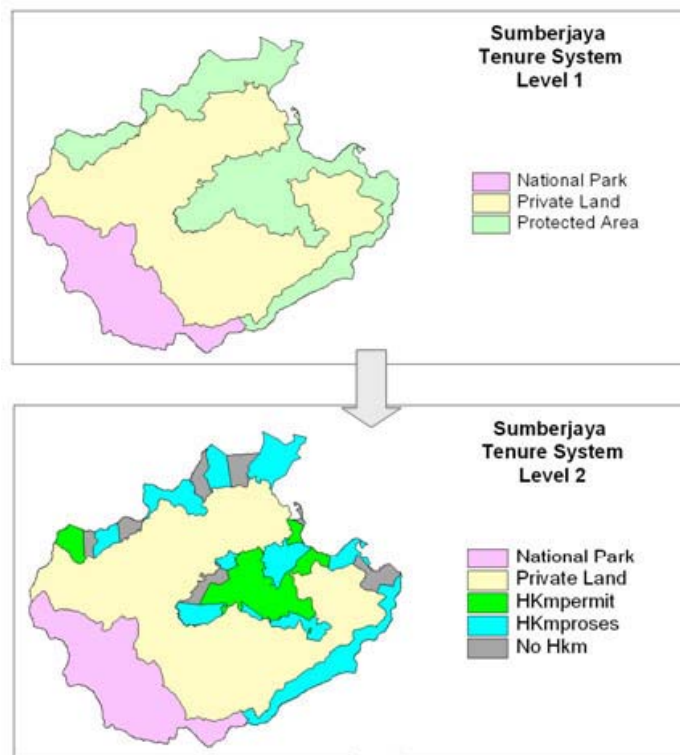
watershed a protected area, leading to the current land mix of national park, protected area, and privately owned land within the watershed (Figure 3).

Designation of a protected area created conflicts between the migrant farmers and the government and eventually led to a series of evictions. Beginning in 1998, political reformation in Indonesia led to a reassessment of these types of evictions and the creation of a social forestry scheme, called Hkm, that applies specifically to protected areas. Under Hkm, farmer groups can apply to the Forestry Service for a 5-year permit to manage land inside a protected area. In Sumberjaya, in exchange for an Hkm permit, farmer groups have to commit to stopping further deforestation on the 10% of land that remains forested and to plant trees in their coffee agroforestry plots. After the initial five years, a farmer group can apply to extend their permit for an additional 35 years.

As of 2004, only five farmer groups had obtained Hkm permits in Sumberjaya. The Hkm permit process can take up to four years to complete and imposes high transactions costs on farmers. A study documenting these transactions costs found that to establish, manage, and run an Hkm group required approximately US\$55 per household in 2005 (this figure includes time spent monetized at local wage rates). This represents more than half the average annual income of rural households in the province.

In 2004, the Rewarding Upland People for Environmental Services (RUPES) project started working in the area, helping an additional 18 farmer groups obtain their Hkm permits. RUPES aided farmer groups in participatory mapping, developing forest management plans, and establishing tree nurseries. Conditional permits now account for about 70% of the protected forest and involve almost 6,400 farmers. RUPES found that granting conditional land permits can act as the “reward” for forest management and protection

**Figure 3. Sumberjaya land mix**



Source: Ekadinata et al. 2007.

in the watershed. In essence, this project allows the state to maintain permanent ownership of the land while granting farmer groups’ temporary but secure use rights to manage the land.

In addition to granting conditional land tenure for changes in forest management, RUPES has started a trial program in which monetary payments are made to farmers for reducing sediments in the watershed. Organized under the name RiverCare, community members are currently paid by the RUPES project in proportion to the amount of sediments reduced. The goal is to sell these sediment reductions to the hydroelectric plant.

There have been challenges to this project component because definitive scientific information on sediment generation is lacking, and so RUPES has had to research what factors contribute to sediments in the watershed and what actions can be taken by

farmers to address these issues. There also are challenges to measuring the change in sediment since storm events can create sudden influxes within a watershed. These investments of money and time are necessary, however, in order to build transparent and credible mechanisms to account for service provision so that these benefits can be marketed directly to ecosystem service users.

The tenure situation in Sumberjaya is similar to many other areas where people have migrated to forested areas for political, economic or environmental reasons. Thus, granting of even temporary permits represents a major milestone for the farmers in Sumberjaya since they have no customary claims to land and recently faced eviction from these areas.

An evaluation of the impacts on farmer groups found that incomes had increased by almost 30%, mostly because farmers no longer have to pay bribes to keep from being evicted. Additionally, empirical evidence shows much lower deforestation rates within the protected area where farmer groups have an Hkm permit. Thus, the Sumberjaya project shows that conditional land tenure can be used as the reward for improved ecosystem service management, while simultaneously improving the livelihoods of people who lack claims to land. Despite these achievements, an ongoing concern of this RES project is whether it will be ethical to take away tenure once the contracts expire. A related concern is whether using conditional tenure as the reward will be sufficient to induce forest management behaviors on an annual basis.

### **Lessons related to land tenure and RES**

*Land clarification may be a necessary component.* In most customary land tenure systems, loose boundaries are the norm until the economic returns to land justify defining more strict property rights. This increase in

land value can result from increasing population pressures, new technologies, or new land use opportunities. RES projects are likely to increase land values to a point where contesting claims to land will arise or increase in intensity. This was observed in the Ecuador case study and has been documented recently in an attempted RES project in Indonesia (Wunder et al. 2008). To help mitigate land contestations in a RES project, land clarification will need to occur before a project is implemented. This might include community consultations on land boundaries, land transects, and boundary mapping.

*Secure land tenure and RES projects may be self-enforcing.* Secure land tenure is a multifaceted concept and is not readily observable. Sjaastad and Bromley (2000) suggest that the true measure of tenure security involves individual perceptions on the probabilities that one or more of his or her bundle of rights will be upheld by the state. Investments in land are one method of claiming more secure land rights. RES schemes may provide similar outcomes if through investments in ecosystem service production managers increase the value of their land to the point where they are more likely to enforce property rights (Engel and Palmer 2008). In a review of Latin American case studies, Grieg-Gran, Porrás and Wunder (2005) find that project investments in land management activities increased tenure security.

A similar phenomenon seems to have occurred in the Gran Reserva Chachi. The legitimacy of having formal land titles, combined with the increased economic value from having the reserve, led the communities to take action against illicit loggers and encroachers.

*Formal land titles are not required for a RES project to proceed.* While issuing formal land titles can be one part of the land clarification process, titles are neither necessary nor sufficient for secure land tenure. Land titles can even decrease tenure security and harm some types of resource users, particularly if

private titles are favored over communal claims and/or customary claims are ignored. Whether or not a RES project will benefit from obtaining land titles or operating in a system that has land titles will be context specific. In Ecuador, a national titling process was in place and the communities received titles. Having these land titles facilitated conservation organizations entering into discussion with communities and negotiating contracts without having to deal with contestations over land claims. The cost of these land titles, however, was not trivial. Thus, before a project is

their own property rights (Engel and Palmer 2008). However, as discussed in the Ecuador case study, when external forces are too strong—or dangerous—for local communities to handle all incursions themselves, external organizations involved in the RES project may have to intercede. This can be time-consuming and add additional costs to the RES project. In Ecuador, the project is taking steps to increase the long-term capacity of the legal processes in the area. Thus, RES projects may need to plan for legal mediation as an ongoing investment, not a single expenditure.

### Key lessons

Clarification of land ownership is critical to RES projects since RES will increase the value of land and therefore land contestations.

RES projects must work with national and local governments in recognizing customary land claims so that local communities are not alienated through these projects.

Where customary land claims do not exist, RES projects must find creative solutions to avoid excluding resident communities. Access to temporary tenure agreements and management contracts are possible solutions.

Incursions and illicit activities may persist regardless of whether land boundaries have been clarified or formal land titles exist. Thus, RES schemes should budget for long-term legal support of the rights of communities to manage and protect forests.

*Property rights do not have to be permanent for a RES project to be implemented.*

In many places where ecosystem services are important, the government is the legal owner of the land and is not interested in devolving this right. Additionally, there are many migrant communities living in forests that cannot legally claim ownership rights to that land. The Indonesian case study is one example of how a RES scheme can be designed in such a context and successfully provide benefits to ecosystem services and local people.

implemented, the pros and cons of working with or without formal land titles should be assessed. An important component of this assessment will be whether the state has the ability to enforce such titles.

*Most RES projects will be hampered by weak property rights, but this does not mean the project cannot succeed.* With or without formal land titles, how secure land rights are will depend on the reach of and respect for the national legal processes. In some RES schemes, weak property rights may not be a factor if project investments serve to increase the likelihood that participants will enforce

Thus, access to more secure land tenure, even on a temporary basis, can offer people living on state-owned land important opportunities to improve their livelihoods and result in ecosystem service outcomes. In Indonesia, temporary use rights are acting as the “reward” for ecosystem service production. However, more research is needed to understand how such contracts should be structured over the long term and whether land permits alone can sustain changes in land management practices.



## Community involvement

Indigenous groups and communities inhabit the vast majority of remaining forests important for ecosystem services, and many manage that land as common property. This is especially true in remote forests important for biodiversity. Without ignoring the challenges that can arise from working with community groups, there are several possible advantages to implementing RES projects in these contexts that deserve further empirical testing.

*Communal land tenure may lower project costs.* Several authors have pointed out that working with one large landholder versus many small landholders will decrease transactions costs (Wunder 2005; Grieg-Gran, Porras and Wunder 2005). The same could be said for working with a community group versus individual contracts in areas of communal land tenure. In addition, monitoring and enforcement costs may be lower in common property systems. This is because the group may internalize many of the costs of compliance. Finally, costs associated with land clarification through consultation and mapping should be reduced when working with a group versus individual smallholders.

*Communal tenure systems may provide the necessary spatial arrangements for certain ecosystem services.* Working with community-managed land might be advantageous for ecosystem services that require large, contiguous spatial arrangements, such as biodiversity and watersheds. This is because offering individual contracts can result in a spatially fragmented arrangement of protection. While a single, large landholder could also provide access to a contiguous tract of land, most remaining forestland is state- or community-owned.

*Community contracts may be more resilient for ecosystem service outcomes.* While negotiating RES contracts may appear more involved and complicated in the communal context, there may be greater adherence to these contracts

and sustained behavioral changes as a result of social networks and sanctions. This type of resiliency of communal contracts has been documented in previous assessments of common resource management systems. RES schemes that work with existing communal tenure systems may benefit from similar processes.

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