



Sharing the Benefits of REDD+

— LESSONS FROM THE FIELD —



The Nature
Conservancy 
Protecting nature. Preserving life.™

Erin Myers Madeira, Lisa Kelley, Jill Blockhus, David Ganz, Rane Cortez, and Greg Fishbein

This report was made possible by the generous support of the Government of Norway.

COVER, TOP: A cacao pod is broken open to reveal the ripe seeds inside (the seeds are used to produce chocolate) in the fog-shrouded cloud forest of La Amistad International Park, Costa Rica. © Ami Vitale; BOTTOM: Community outreach in Lore Lindu National Park, Sulawesi, Indonesia. © Jez O'Hare

RIGHT: A cable bridge crosses the Río Tsqui River. The indigenous Bri Bri people have lived in this pocket of rainforest in La Amistad International Park for centuries. © Ami Vitale

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Coastal forests encircle the islands of Micronesia. © Ami Vitale

Table of Contents

Summary and Key Points	5
Overarching Considerations for REDD+ and Benefit Generation.....	7
Aligning Actor Interests to Address Drivers of Deforestation	7
Timing and Benefits: Positive Incentives Deliver Benefits through All Phases of REDD+	10
Design Elements for Benefit-Sharing Mechanisms	13
Key Factor 1: Targeting.....	14
Key Factor 2: Tailoring.....	17
Key Factor 3: Financial Structure	19
Key Factor 4: Legitimacy	22
Key Factor 5: Alignment, Scaling, and Adaptability.....	23
Conclusion	25
ADDENDUM	
Going Deeper: 10 Case Studies.....	27
Case Studies	
Costa Rica’s National Payments for Environmental Services Program (PSA)	28
Mexico’s Nature Conservation Fund (FMCN).....	32
Brazil’s Ecological Tax (ICMS-E).....	35
Indonesia’s Kecamatan Development Project (KDP)	39
Botswana’s Multi-Year Approach to Budgeting Diamond Extraction Revenues	43
Brazil’s Amazon Fund	47
Oddar Meanchey: Community Forest REDD+ Project in Northwest Cambodia.....	52
Distribution of Mineral Revenues in Colombia.....	56
China’s Clean Development Mechanism Guangxi Reforestation Project	59
Bolsa Floresta: Amazonas State, Brazil	61
References.....	65



Young boy with a pig outside a hut in Veinte de Noviembre, an ejido or self-governing land cooperative, in the Maya Forest of Mexico's Yucatan Peninsula. © Ami Vitale

Summary and Key Points

REDD+ goals must be aligned with development goals

In the context of REDD+¹, discussions about “benefit sharing” often focus on distributing revenue from monetizing emissions reductions. There is a broad opportunity, however, to create benefits from upfront programmatic investments—in, for example, sustainable livelihoods; improvements in governance, security, and other elements important for human well-being; as well as ex-post, or performance-based, payments for demonstrated success. In this report, we look at the full set of opportunities to generate benefits from REDD+.

The drivers and agents of forest loss are strong, entrenched, and based on economically profitable or politically advantageous activities. REDD+ programs must meet emissions reduction targets while contributing to countries’ overall development and creating improvements in local well-being. To achieve these goals, REDD+ programs need to help countries shift their development pathways toward a low-carbon future that achieves economic and social development objectives through sustainable natural resource management. Below are some key points:

- REDD+ programs need to target key drivers and various actors operating at different levels with tailored incentive arrangements that motivate these groups to change their behaviors. These arrangements do not always have to be financially focused, and can include regulatory enforcement and positive incentives. In all cases, they require an understanding of stakeholders’ divergent priorities and constraints in order to deliver benefits that are meaningful to the different stakeholder groups.
- REDD+ should be a bridge strategy, providing limited-term investment capital to help countries transition to sustainable development trajectories that do not



Forest planner looks for mature trees to tag for harvest at the number four concession logging area in the Kalimantan region of Borneo, Indonesia. © Bridget Besaw

equate economic growth with deforestation and forest degradation. As a result, investments in REDD+ should contribute to supporting growth and development while reducing impacts on forests—for example, by improving practices in natural resource industries, making better use of degraded lands, and creating new low-carbon enterprises.

- In the near-term, most funding for REDD+ will come from the public sector² and will focus on building readiness, piloting key policies and measures that support this development pathway, and demonstrating how REDD+ will work on the ground. These upfront investments in REDD+ can deliver real, meaningful benefits, such as securing stakeholders’ access to resources and land, empowering communities to participate in land-use decisions, and creating new “green” enterprises that can be economically sustainable on their own.

¹ By “REDD+” we refer to initiatives to reduce emissions from deforestation and degradation and enhance forest carbon stocks.

² Public funding may come from domestic sources within REDD+ countries and/or international sources from donor countries.

The financial structure of REDD+ will depend on each program's focus and host-country circumstances, including existing institutions, forest tenure regimes, and financing sources. REDD+ programs will include broad policy measures as well as site-level actions, and there is no one-size-fits-all financial mechanism that can mobilize funds for the breadth of different needs. REDD+ programs will therefore be likely to utilize various financing mechanisms, such as targeted funds, budgetary measures, and decentralized approaches to channel resources to priority activities at different levels. To be successful, these different mechanisms need to be aligned with broader environmental and development objectives.

A REDD+ program is unlikely to be successful without broad constituent support. In structuring incentive arrangements and delivering benefits, a REDD+ program must balance the need to efficiently and effectively reduce emissions with the need to develop a legitimate program that has support from a breadth of stakeholders. As a result, REDD+ benefit-sharing mechanisms will likely need to distribute benefits more widely than if structured only to provide performance incentives.

In addition to motivating actors currently causing deforestation and degradation to change their behavior, REDD+ programs must also create incentives for those actors who have a history of conserving forests to continue to do so. One approach to achieve this is the “stock-flow approach”³, which rewards emissions reductions from areas with historic rates of deforestation and degradation, and creates a stabilization fund to support the continued conservation of forests in areas that have historically low rates of deforestation.

³ See an explanation of the stock-flow approach in Box 1.

BOX 1. The Stock-Flow Approach as an Option to Target Multiple Objectives through Distinct Channels (adapted from Griscom et al. 2011)

STOCK-FLOW APPROACH

The *stock-flow approach* is one potential method for funding multiple objectives of REDD+ programs through separate, targeted channels.

The stock-flow approach proposes that effectiveness, efficiency, and legitimacy are best achieved through separate channels because trade-offs exist between the three objectives and attempting to address them with a single accounting structure will compromise the efficiency and environmental integrity of a REDD+ mechanism.

According to this line of thinking:

- Actors that reduce their emissions from deforestation and degradation below a historical reference emissions level would be eligible for results-based payments and/or other benefits—they are rewarded for reducing flows of emissions;
- A portion of the results-based rewards would accrue to a stabilization fund that would be used to support actors who have historically maintained low rates of deforestation;

The stabilization fund would:

- Support the maintenance of existing forest carbon stocks;
- Motivate broad support of the program; and
- Avoid displacement of deforestation pressure to areas with high stocks and historically low deforestation.

The stabilization fund could be supplemented by public funding sources aimed at promoting long-term stabilization of tropical forests. Further, this approach could accommodate additional funds that would target other social priorities.

Overarching Considerations for REDD+ and Benefit Generation



LEFT: Residents of Bethania ejido, a communally owned territory in Quintana Roo, México, use a portable sawmill to cut planks of wood from trees they harvest. The planks can then be carried out of the forest with minimal impact. © Erika Nortemann/TNC; RIGHT: Cattle ranching is a growing business in São Félix do Xingu, a municipality in the Brazilian Amazon, where The Nature Conservancy works with ranchers to avoid forest clearing while increasing production. © Peter Ellis/TNC

Aligning Actor Interests to Address Drivers of Deforestation

To create positive incentives that will catalyze lasting changes in forest use, a REDD+ program must address the root causes of deforestation and degradation, which are present across local, national, and global levels. Currently, there are numerous existing incentives to clear forests. In some cases, policy failures result in illegal forest exploitation and inefficient land-use decisions. Further, subsidies that support agricultural expansion create increased economic pressure to clear forests. Markets do not adequately value the environmental and social services provided by forests, instead making these ecosystems more valuable for commercial timber or agricultural land, even as they deliver crucial climate, watershed, and livelihood services.

To be successful, a REDD+ program must address drivers at multiple levels through a portfolio of positive incentives and policy measures that correct market and policy failures and prioritize sound forest management. To address these drivers, it is important to understand the motivations of actors at different levels in order to develop the right combination of regulations and incentives to change land uses. Table 1 provides an example of major drivers in the case of cattle ranching in the Brazilian Amazon, and illustrates how actors' interests at different levels are aligned with deforestation.

TABLE 1. Aligning the Interests and Activities of the Ranching Industry in the Brazilian Amazon with the Need to Address Deforestation and Forest Degradation

Driver of Deforestation	Actors and Interests at Different Levels
<p style="text-align: center;">Cattle ranching in the Brazilian Amazon</p>	<p>Internationally, the growing global population and emerging middle classes created increasing demand for beef.</p> <ul style="list-style-type: none"> • Demand-side measures need to focus on shifting demand toward sustainable beef through eco-labeling and new industry standards.
	<p>Nationally and subnationally, regulations that limit allowable forest clearing by landholders were not being enforced.</p> <ul style="list-style-type: none"> • The federal government in Brazil increased enforcement of these regulations and created an incentive for subnational governments to actively support these regulations by cutting off credit lines for worst offenders. • Subnational governments have been working with landholders to map and register their land and create plans to comply with environmental regulations.
	<p>Locally, in the absence of enforced regulations, individual landholders had every incentive to maximize clearing of their land in order to increase their ranching operations and revenues; generally, this group faces a lack of economic alternatives and no training in alternative ranching techniques.</p> <ul style="list-style-type: none"> • As regulations are increasingly enforced, landholders have begun mapping and registering their land, and developing plans to come into compliance. • Because limiting the amount of forest cleared also limits the potential revenue from conventional ranching practices, landholders need technical and financial support to intensify production on smaller areas of land in order to sustain and improve their income. Improving production on less land is important to achieving regional economic growth and meeting increasing demand for beef, which prevents pushing demand pressure to other forested areas (known as “market leakage”).

The example in Table 1 illustrates the need for REDD+ programs to assess drivers and the relevant actors at multiple levels, and to mobilize resources to address these drivers. In most countries, deforestation and forest degradation are caused by a number of drivers and, over time, REDD+ programs need to address all of these. Initially, however, focus should be given to the most important ones—and investments should be made to understand the interests of different stakeholder groups in order to determine the most effective means of changing behaviors. A REDD+ program that focuses only on reforming the spatial planning process or correcting policies that create perverse incentives to clear land will not successfully halt deforestation and degradation unless it also mobilizes resources to create economic alternatives for local stakeholders. Similarly, if a REDD+ program focuses only on channeling resources to reward local land managers for changing their practices, the land managers' efforts may not be successful and they may not be able to access those rewards unless the policy and governance drivers operating at higher levels are simultaneously addressed.

Discussions about benefit sharing at the local level must be linked to how actions are being taken at higher levels to ensure local success. The inverse is also true: considerations of policy and spatial planning reform must articulate how resources will flow to motivate local actions and benefit local stakeholders. This will include investments to support their transition to new models of land use, and in many cases may not include credits or ongoing payments.

A good example of the need for incentives across multiple levels is the beef sector in Brazil, outlined in Table 1. At the national level, Brazil has in place a command-and-control regulation that requires landholders in the Amazon to maintain 80% of their land in forest cover. This law has been on the books for years, but recently the federal government has begun a serious enforcement effort to ensure that landholders are complying. As part of this push, the national government published a list of the municipalities in the Amazon with the highest deforestation rates and cut off credit lines for those jurisdictions. This move effectively spurred state and municipal



Nutmeg harvesting in Maluku, Indonesia. © Jez O'Hare

government involvement in making changes. At the subnational level, private landholders began to map and register their land and create plans to comply with the environmental regulations. Despite increased enthusiasm for compliance, landholders are demanding positive incentives to complement the command-and-control measures. The landholders can stop deforesting, but they cannot continue to have a sustainable livelihood without technical and financial assistance to improve their practices, such that they can increase profitability per hectare. Finally, at the international level, the increasing demand for beef will strain the ability of even the best policies to succeed. Demand-side measures are needed to ensure the long-term success of sustainable ranching.



A chiclero stands with his ponies outside his home in the ejido Veinte de Noviembre, situated in the Maya Forest of Mexico's Yucatan Peninsula. © Ami Vitale

Timing and Benefits: Positive Incentives Deliver Benefits through All Phases of REDD+

REDD+ programs must deliver positive incentives throughout their development and implementation. Costs associated with initial stages should also fund the provision of near-term benefits, such as the creation of sustainable forest enterprises and streamlined regulatory processes. These near-term benefits are concrete and real to the stakeholders affected, and make key contributions to the long-term goal of reduced emissions.

When discussions about benefit sharing focus exclusively on revenue distribution from carbon payments, they ignore the potential that some of the most meaningful benefits from REDD+ may be generated throughout the development and implementation of the program—before any monitoring, reporting, and verifying (MRV) takes place. Because

benefits can be generated during all phases of REDD+, equal attention should be paid to how early actions and readiness activities can generate benefits as to revenue distribution resulting from pay-for-performance schemes.

Each phase of REDD+ can and should be designed and implemented to maximize benefits to key stakeholders—such as indigenous peoples, local communities, small holders, and other partners—while maintaining the effectiveness and efficiency of the program. Early benefits are necessary to build support and maintain interest and momentum during the longer process of establishing new markets for sustainable products and carbon. Some analyses of integrated conservation and development programs (ICDPs) have found that providing visible and sustainable benefits for communities at an early stage results in improved outcomes (Chan et al. 2007). Nonmonetary development benefits that are visible and community-wide are more likely to generate long-term benefits that mobilize community buy-in (Blom et al. 2010). For example, investing in

securing recognized management and land rights for forest-dependent communities, empowering communities to participate in land-use decision processes, and education programs will yield long-term social benefits. These investments in early phase benefits are “no regrets” in that they yield real, permanent improvements in well-being that will persist even if large-scale pay-for-performance schemes take a long time to materialize. Once performance payments do come into play, they can be invested in activities that reinforce this shift to sustainable economic activities.

Table 2 demonstrates the types of activities undertaken during different phases of REDD+, and the benefits that can be delivered through these activities. As illustrated, earlier phases of REDD+ will be critical to transitioning

to low-carbon development pathways, building the public will necessary for latter stages, and generating benefits for key stakeholders. It is essential that the necessary governance conditions and institutions are established in these earlier phases to ensure equitable sharing of revenues that result from performance-based payments for quantified emissions reductions and removals in the latter phases.

REDD+ programs can deliver benefits through multiple pathways, by creating material opportunities, enhancing a population’s security, and facilitating the empowerment of communities to participate in decisions affecting local land use and development (Lawlor et al. forthcoming; Sen 1999). Box 2 is drawn from Lawlor et al. (forthcoming) and demonstrates how REDD+ benefits can contribute to multiple development pathways.

TABLE 2. REDD+ Phases and Opportunities for Benefit Generation

<p>Scoping, Development & Readiness</p>	<p>Activities: REDD+ readiness, capacity building, development of REDD+ strategy.</p> <p>Benefits: Improved forest governance; Improved stakeholder participation in land-use planning; Enhanced tenure and access security when mapping efforts help resolve tenure disputes and identify areas of social importance.</p>
<p>Demonstration, Policies & Measures</p>	<p>Activities: Institutional strengthening; Policy reforms and measures; Demonstration activities that pilot site-based mitigation strategies; Improved monitoring systems and participatory processes for stakeholders.</p> <p>Benefits: New enterprises and improved performance of existing enterprises, including some focused on accessing niche markets for sustainable goods; Improved tenure and access security as tenure disputes are resolved and mapping efforts mature; Better land-use decisionmaking; Improved forest governance resulting from cross-sectoral spatial planning, improved data, and regulatory streamlining; Pay-for-performance funding may be piloted during this phase.</p>
<p>Full Implementation</p>	<p>Activities: Widespread implementation of strategies, policy reforms, and creation of new low-carbon industries; Robust MRV system; Quantified and verified changes in greenhouse gas emissions and/or removals that generate payment for results.</p> <p>Benefits: Improved institutional architecture; New enterprises and low-carbon industries; Payments for performance; Technical capacity and partnerships; Increased clarity around tenure and rights.</p>

BOX 2. Multiple Pathways to Generate Benefits from REDD+

(Summarized from “Community participation and benefits in REDD+,” Lawlor et al. forthcoming)

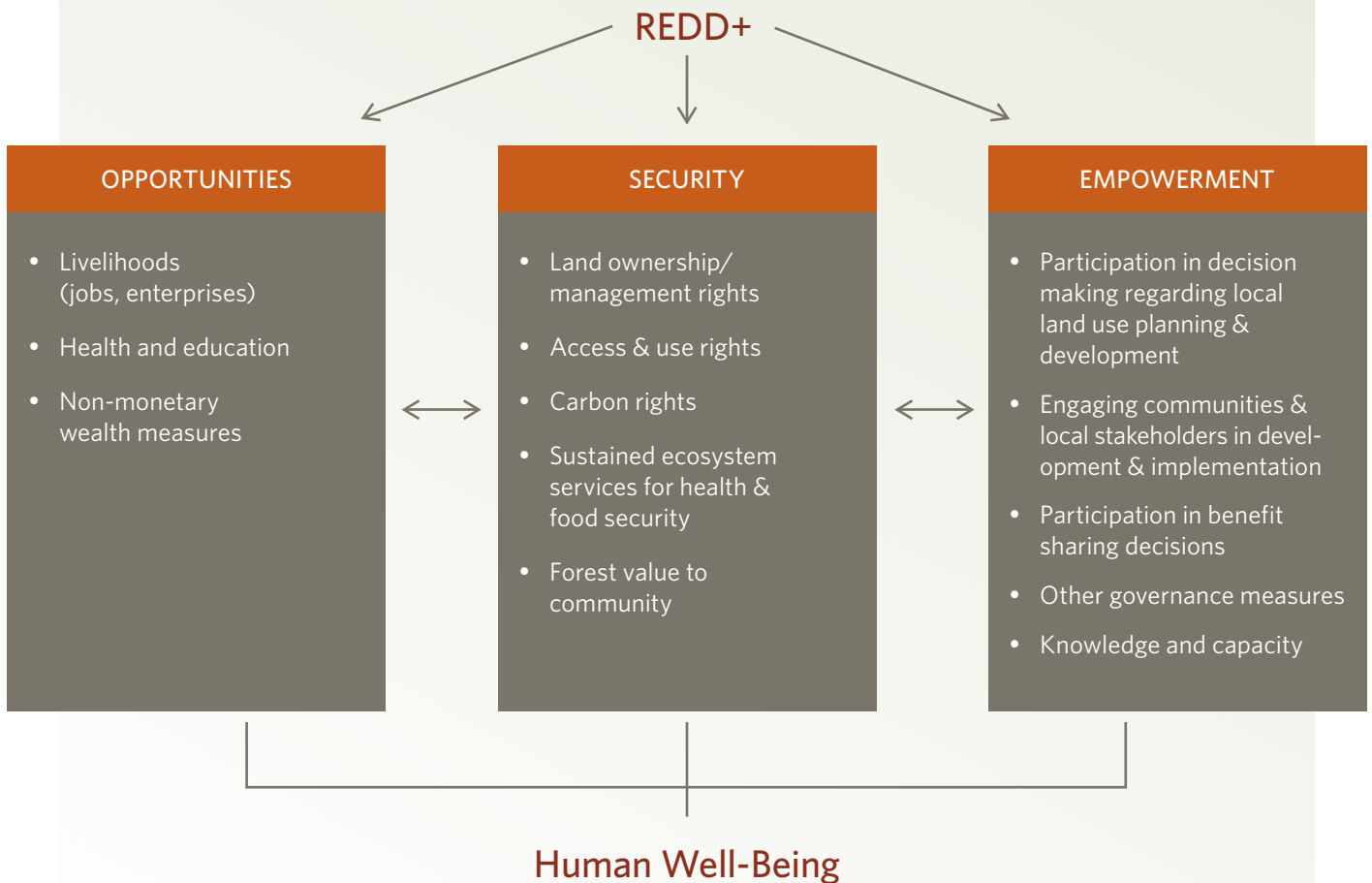
Lasting improvements in human welfare require investments in three interacting and complementary components of well-being: opportunity, security, and empowerment. In the context of REDD+, programs can contribute to these three pathways by:

1. creating material **opportunities** for wealth creation and well-being, such as jobs, revenue streams, infrastructure, and improved educational conditions;

2. enhancing populations’ **security**, including tenure security, food and water security, livelihood security, and adaptability to climate change; and

3. facilitating the **empowerment** of individuals and communities to participate in decisions affecting local land use and development.

To generate sustainable development benefits, REDD+ programs should generate benefits in all three components.



Design Elements for Benefit-Sharing Mechanisms

This section summarizes the major conclusions from a background report that synthesizes lessons from existing benefit-sharing mechanisms by Kelley et al. (2012).⁴ The report identified five key factors that must be considered when designing any benefit-sharing mechanisms for REDD+. The authors examined 10 existing benefit-sharing mechanisms used in the management of different natural resources, analyzing how they addressed these key factors and formulating lessons for REDD+ programs. The case studies are included as the Addendum to this report.

The key factors that must be considered when designing any benefit-sharing mechanisms for REDD+ are:

- **Targeting:** Prioritizing key actors and activities to change land-use behavior in a way that will maximize program goals of reducing emissions;
- **Tailoring:** Creating customized incentive arrangements for key actors that will motivate a change in behavior;
- **Financial Structure:** Identifying the right combination of dedicated funds, budgetary measures, and decentralized approaches to facilitate the flow of financial resources to key activities at different levels;
- **Legitimacy:** Stakeholders have the ability and power to participate meaningfully in REDD+ programs, and shape their design and outcomes, including how benefits are generated and shared; and
- **Alignment, Scaling, and Adaptability:** REDD+ goals should be integrated into mainstream government priorities and should affect how the government functions in other sectors; REDD+ programs should not be stand-alone entities that can be sidelined.



TOP: Woodcarvers, Madang, Papua New Guinea. © Ron Geatz/TNC
BOTTOM: A local naturalist guide examines Ivory-nut palm (*Phytelephas aequatorialis*) source of “tagua” fruit (also called “vegetable ivory,” popular for making jewelry), in the moist high-elevation forests in Manabí Province near Ecuador’s Pacific coast. © Mark Godfrey/TNC

⁴ For more information about the background report, please contact Erin Myers Madeira: emadeira@tnc.org

TARGETING

Targeting is the process of directing incentives to specific actors to motivate them to undertake activities that contribute to program goals. Targeting helps to maximize desired results when resources are limited and can be used to enhance a mechanism's effectiveness at achieving its goals and purpose, whether those are defined by emissions reductions, area conserved, poverty reduction or number of people benefiting from the mechanism.



The bow of a dugout canoe glides through coastal waters where land and sea intertwine in a tangle of mangrove forests that encircle the islands of Micronesia. © Ami Vitale

For REDD+ to effectively address the drivers of deforestation and forest degradation and enhance carbon stocks, REDD+ programs will need to target the most relevant stakeholders at any given level, including government entities, land managers, businesses, and smallholders, among others. This is especially important because funding for REDD+ is limited, particularly in its early phases. REDD+ also has to effectively align incentives across levels.

Targeting needs to be balanced with efforts to foster legitimacy. REDD+ programs need to create sufficient incentives for actors to actually change land-use practices that drive deforestation and degradation. If a program is too narrowly targeted, however, and focuses on just a few key actors, it risks not being sufficiently broad enough to align incentives, cultivate support, build legitimacy, and prevent leakage. The stock-flow approach, explained in Box 1, is one possible method that can facilitate targeting priority activities while also generating funds for other social priorities that enhance legitimacy.

Key Lessons from the Case Studies

- Targeting requires data on key variables of interest, such as poverty levels, environmental services, and conservation value—and if utilized, can provide higher returns than a completely untargeted approach. For example, the effectiveness of Mexico's Nature Conservation Fund (FMCN) stems from its ability to successfully target different priorities through distinct sub-funds, rather than targeting too many priorities at once.
- Geographic targeting with spatially explicit data can help overcome the three inefficiencies generally associated with payment for environmental service (PES) schemes: a lack of additionality, overpayment relative to the benefits provided by an action, and underpayment relative to the benefits provided by an action. An example of geographic targeting comes from Indonesia's Kecamatan Development Project (KDP), which targeted the poorest sub-districts for community-development grants using nationally available, spatially explicit data on poverty statistics.
- Precise targeting methods have generally been most successful when undertaken in smaller, subnational projects and programs because the data requirements and number of stakeholders are more manageable.



Three clan leaders in the village of Urumarav, Papua New Guinea, with their official land use plans and maps. © Erin Myers Madeira

- Although some recent REDD+ mechanisms fund activities at multiple levels (For example, see the Amazon Fund as detailed in the Addendum), most mechanisms target stakeholders at a single level (e.g., community groups, individual landholders, or sub-national governments). This single-level focus may reflect some of the complexity in effectively targeting activities at one level—and speaks to the challenge of trying to tackle multiple levels. Our research found that most mechanisms target activities at the site level and do not have the capacity to also target policy-level activities. A REDD+ program will include a portfolio of policies, measures, and site-level activities, and will likely require separate, dedicated mechanisms or sub-programs targeting key priorities at different levels.
- Targeting results in trade-offs with efficiency, effectiveness, and legitimacy:
 - » *Efficiency vs. effectiveness*: Efforts to target benefits at very discrete levels require investment in data

generation, management, and utilization, which can add transaction costs that detract from the efficiency of a program. Programs that use lower levels of precision in targeting the most effective activities may, in fact, be more efficient. For example, although MRV carbon fluxes at very local levels could allow for precise measurements of different stakeholders' contributions to emissions reductions, the cost of this precision would likely outweigh any potential benefits. A more efficient approach could be to perform MRV at a larger scale and develop proxies for local performance.

- » *Effectiveness vs. legitimacy*: More effectively targeting any one service or outcome often comes at the expense of broad participation, which can be an element of equity and legitimacy. Both effectiveness and legitimacy are keys to the success of any REDD+ program and may require different types of mechanisms to achieve both.



Members of the Bethania ejido, a communally-owned territory in Quintana Roo, México, have built a carpentry shop to turn their sustainably-harvested wood into finished products to sell.
© Erika Nortemann/TNC

- Many national programs provide an example of the trade-offs associated with targeting. Their focus on efficiency and legitimacy ultimately allows these mechanisms to operate with wider scope and purpose, but it can be to the detriment of effectively achieving the desired behavioral change (for example, see Costa Rica's Payments for Environmental Services Program as detailed in the Addendum).
- REDD+ programs will have multiple broad objectives related to economic development and reducing emissions. However, each specific sub-program or mechanism should have a primary set of objectives. Secondary objectives can be helpful in refining the selection of activities, but should not dilute the ability to target the key priorities. Programs that target multiple priorities through separately focused windows or sub-funds (such as Mexico's FMCN) generally have higher effectiveness, whereas mechanisms that combine multiple thematic priorities at once, such as Costa Rica's Payments for Environmental Services Program that targets poverty reduction and biodiversity conservation in the same window, have experienced reduced effectiveness and are arguably too untargeted. (See Box 1 for a description of the stock-flow approach, which proposes funding different priorities through different channels.)
- REDD+ programs may be able to engage in more successful targeting than other programs because monitoring effectiveness will be an integral component of the program. Monitoring systems for REDD+ should include assessments of effectiveness of incentives to enable adaptive management if targeting is not initially successful.

TAILORING

REDD+ programs need to tailor incentive arrangements to deliver meaningful benefits to different stakeholder groups. To effectively catalyze a shift to lower-carbon land-use practices, a REDD+ program must create customized incentive arrangements for key stakeholders that motivate different groups to change their behavior. These arrangements do not always have to be financially focused but do require understanding of stakeholders' divergent priorities and constraints. For example, an incentive package to stop deforestation by small, agricultural landholders could include technical assistance to increase productivity per hectare, allowing these landholders to sustain and improve livelihoods on less cultivated land. Non-monetary incentives have been used successfully in rewards-for-performance schemes such as that in Los Negros, Bolivia, where beehives and apiculture training are delivered in exchange for sustained forest conservation (Asquith et al. 2008), and the PROFAFOR carbon sequestration scheme in Ecuador, where participants are partially rewarded with seedlings, training, and all harvested products (Wunder and Alban 2008), to name two.

A breadth of monetary and non-monetary benefits are relevant to different stakeholders and can be used to best align groups' different interests with the long-term goal of shifting land-use practices. Though some benefits to governments and local stakeholders may take the form of cash payments, a number of important benefits will be non-monetary. Direct monetary incentives have been shown to carry considerable risks, such as elite capture (Blom et al. 2010; Robertson and Wunder 2005), and even foster rivalry, as was seen in Papua New Guinea where non-beneficiaries in a turtle conservation program killed protected leatherback turtles out of spite (Borrell 2010). Additionally, some non-monetary benefits may help establish the enabling conditions required for the program to move forward—clarified land tenure, for example, is a key component of multiple REDD+ projects

in Indonesia that are working to achieve official recognition for community rights to manage forests as a first step in implementing the project (Madeira et al. 2010). In this way, non-monetary benefits may be instrumental in helping achieve a fundamental shift in business-as-usual land use. With an understanding of the interests of different stakeholders, REDD+ programs can utilize non-monetary benefits to motivate or enable changes in behavior and provide concrete benefits to stakeholders on the ground.

Key Lessons from the Case Studies

- REDD+ must create compelling value propositions for different stakeholders that are tailored to their needs, interests, burdens, and abilities to tolerate risk. Tailored benefit packages will be different for different stakeholders and should ultimately help to align their various interests with low emissions goals. Tailoring requires an upfront investment in understanding the needs and interests of different stakeholders. Often non-monetary incentives may be more powerful in generating meaningful stakeholder benefits, but are not obvious without making efforts to better understand the land-use patterns and priorities of different stakeholders.
- Non-monetary incentives that focus on creating opportunities, enhancing security, and facilitating empowerment can be transformational to local economies and deliver long-term development benefits. For example, one of the most lasting benefits of the Noel Kempff Mercado Forest Carbon Project in Bolivia was the establishment of official tenure rights for 360,565 hectares of indigenous territory (TCO) for the Central Indígena Bajo Paraguá (CIBAPA), the legal entity representing the indigenous communities around the park, which was officially granted through land title in 2006 (Noel Kempff 2009; Lawlor et al. forthcoming).

- Reward-for-performance mechanisms are most effective at achieving discrete behavior changes. Rewards can be monetary or non-monetary, but conditionality is key to effectiveness. Reward-for-performance mechanisms must account for geographic variation and are most effective for programs that cover smaller areas because of variations in costs and competing land uses across large areas, such as entire countries.
- Ex-ante benefits (prior to performance) create momentum and buy-in early and generally do not intend to achieve behavioral change in the short or long term. Even in reward-for-performance programs, some ex-ante benefits are often necessary to cover start-up costs and mitigate risks, especially for vulnerable stakeholder groups. For example, the COMSERBO program in Bolivia is a reward-for-performance system where communities receive half of the incentives up front to support the establishment of low-carbon enterprises and other social priorities. The remaining incentives are contingent on demonstrated performance (Pando 2011). See, also, the Bolsa Floresta Case Study in the Addendum.
- Effective reward-for-performance mechanisms exist at different levels ranging from programs focused on individual land users to programs focused on subnational governments. Reward-for-performance programs focused on individuals offer more precise targeting and more customized tailoring of incentives, but impose higher transaction costs related to monitoring, enrollment, and disbursement. Programs that evaluate performance at higher levels (e.g., at the level of a subnational government) generally have lower transaction costs. However, they require that the actors receiving funds (who have only indirect control over the desired behavioral change) invest in a tailored portfolio of activities that motivate the stakeholders whose behavior actually generates performance changes. For example, Brazil's Ecological Tax program rewards municipalities for conservation activities. Municipalities must then create incentives for individual landholders who have direct control over the forest.



In Bethania ejido, Quintana Roo, México, where many families cook their food over an open fire in traditional thatched-roof homes without running water, The Nature Conservancy has worked with partner Organización de Ejidos Productores Forestales de la Zona Maya S.C., to support sustainable forest management and income-producing activities. © Erika Nortemann/TNC

FINANCIAL STRUCTURE

A REDD+ program's financial structure will depend on the country context, including existing institutions and tenure regime, financing source, and the program's focus. Regardless of the differences, any financial structure for a REDD+ program should help align incentives across levels and must be able to accomplish the following core functions:

- Receive and manage upfront financing;
- Allocate funds for program implementation across horizontal and vertical scales;
- Design incentive agreements and negotiate contracts;
- Design payment form and timing;
- Monitor performance of individual stakeholders and of the benefit-sharing mechanism overall;
- Spread and manage risk;
- Help align incentives across levels of government; and
- Accommodate stakeholders with different types of rights and legal standing.

Two important questions shaping the design of a financial structure are what actors at which levels have direct access to funding, and to what degree is the financial mechanism integrated into existing government structures? Based on these variables, we have grouped the financial mechanisms discussed in this section into three types of arrangements: 1) dedicated funds, 2) budgetary approaches, and 3) decentralized approaches.

1. DEDICATED FUNDS: Funds are held, managed, and disbursed from a structure separate from the national budget.

Key Lessons

Previous studies have helped highlight some conditions under which funds are an effective mechanism for channeling benefits to local stakeholders and for accomplishing varied social and environmental goals. A seminal review of conservation trust funds (CTFs), (conducted by the Global Environment Facility in 1999 and repeated in 2008 by the Conservation Finance Alliance) identified four essential conditions for success (GEF 1999; CFA 2008):

- A commitment of at least 10–15 years;
- Active government support, if outside of government control;
- An engaged “critical mass” of people from diverse sectors; and
- A basic fabric of legal and financial practices in which people have confidence.

The Conservation Finance Alliance's (CFA) review also cautioned that CTFs can lose their effectiveness if they adopt too broad a focus; that improving monitoring and evaluation processes can be closely linked to improving grant selection and project design; and that clear goals, indicators, and baseline data are central to a funded project's effectiveness.

CTFs are well-suited to direct funds to regional or local levels—places where national governments generally devote less attention. They are also appropriate options when transparency is lacking in budgetary spending or when existing financial structures do not facilitate efficient financial flows to local programs. Fischer (2007) highlights that CTFs can be inefficient if a government is well-functioning, because they generally mean the government sacrifices some flexibility to respond to changing demands.

2. BUDGETARY APPROACHES: Funds are disbursed via existing budgetary structures and pathways.

Key Lessons

In practice, numerous observers have found that the effectiveness of a budgetary approach in meeting its goals depends on national commitment (e.g., Knoll 2008; Koeberle and Stavreski 2006; Lawson et al. 2005). Koeberle and Stavreski (2006) have identified some preconditions for success, including:

- Demonstrated national commitment and capacity;
- Clear strategy;
- Transparent budget, i.e., clarity about what money goes where;
- Commitment to a strong public financial management system; and
- Agreement between donors and the recipient country on policies and priorities when donor funds are programmed through budgetary approaches.

The dilemma with budgetary approaches is that national ownership is both a precondition to, and a goal of, successful general budget support. In many cases, budgetary approaches are used to direct resources and distribute benefits from federally generated revenues, such as Botswana's approach to managing revenues from diamond extraction and Brazil's Ecological Tax (see Addendum for case studies).

To some extent, the need to selectively channel budget support to countries with a preexisting track record for capable management can also lead to a structural inequity: the countries most in need of support are also those with the most serious governance weaknesses. The World Bank (2005), however, has found that budget support can be used effectively even in very fragile countries such as Timor-Leste. Here, risk was mitigated because there was strong government commitment to strengthening institutions and clear priorities for spending.

Although it can be used effectively in multiple contexts, reviews of budget support by Killick (2004), Knoll (2008), and USAID (2005) have found that the benefits of general budget support are more modest in practice than in theory. Budget support can impose high

transaction costs, at least initially as donors and countries synchronize their disbursement and reporting processes. Lawson et al. (2005) also point out that it may not be as effective at reforming institutions and processes as argued.

Finally, while there has been some significant progress in improving donor coordination and harmonization (e.g., Evans and Coyle 2002; Knoll 2008), this still appears to be a weakness. Surveys from the Strategic Partnership with Africa Budget Support Working Group (SPA-BSWG), indicate that among 10 countries in Africa where it tracks general budget support donors only fully harmonized disbursement in Ghana (SPA-BSWG 2005). This unpredictability can, in turn, affect the ability of recipient countries to plan and prioritize investments.

3. DECENTRALIZED APPROACHES (also called "project-based approaches"): Subnational and project-level actors can directly access funds, whether through donor-funded projects or programs or private sector investment. The central government may play a regulatory role but does not play a financial role, at least initially. However, the central government may collect a levy on revenues generated to cover its costs related to regulating activities and/or to fund social priorities. Decentralized approaches range from individual projects to public-private partnerships, and are appropriate for smaller-scale or more targeted and localized programs or projects. Examples include donor-funded projects, sale of certified goods into niche markets (e.g., Fair Trade cocoa or Forest Stewardship Council-certified timber), and monetizing emissions reductions through the Clean Development Mechanism or voluntary carbon markets.

Key Lessons

Alignment with broader environmental policy objectives is key to the success of decentralized approaches. If part of a broader suite of policies and programs, decentralized approaches can play a key role in affecting meaningful change on the ground. However, in the absence of alignment with broader policies, decentralized approaches are unable to bring about fundamental changes on their own.

A second key lesson has been that "context is king," i.e., that a project's success depends on the project being closely fitted to existing socioeconomic, institutional, and cultural



Dancers participate in traditional singing welcoming ceremony at Tarobi village on the Kimbe Bay coast in West New Britain, Papua New Guinea. © Mark Godfrey

conditions (e.g., Martin 2009; Wunder et al. 2008). Related to this, projects must explicitly consider equity in their design if they are to successfully avoid reinforcing existing inequities, or possibly even becoming a poverty trap (e.g., Asquith et al. 2002; Bond et al. 2009; Leisher et al. 2010). Many decentralized approaches suffer from high inequity, and literature from PES programs and community forest management suggests that some inequities may stem from high transaction costs for smallholders, inflexible tenure arrangements and benefits that are too low relative to requirements for participation (e.g., RECOFTC 2007; Pagiola et al. 2005; Wunder et al. 2008). Further, decentralized approaches may risk carrying forward biases and constraints of the existing resource management regime, thus reinforcing rather than addressing underlying drivers and inequities (Madeira et al. 2010).

High transaction costs have also meant that many projects or regional programs rely on intermediaries who, in turn, may capture the majority of the benefits, instead of the actors generating the service. A large number of intermediaries not only poses an equity challenge but an efficiency challenge; if intermediaries capture a large share of the profits, they can weaken the incentives available for distribution locally (e.g., Linhjem et al. 2009; World Bank 2009). Rørstad et al. (2007) and Vatn et al. (2009), for instance, have found that when many actors

are involved in PES schemes where the services are hard to demarcate, a state-based system of subsidies may actually be more cost-effective.

Finally, the CDM literature suggests that a decentralized approach is subject to the same structural inequity vis-à-vis the private sector as general budget support is vis-à-vis donors, wherein independent project developers are more likely to situate projects in more developed “sure bet” countries (Arens et al. 2007).

A nested approach has been proposed to take advantage of the benefits of directing incentives to both the national and subnational levels (e.g. Cortez et al. 2010). In a nested approach, a national carbon accounting framework, monitoring system, and certain policy approaches would complement the implementation of REDD+ activities at the sub-national and local level. Under this approach, a benefit-sharing framework would need to create incentives for national and local actions, and might use different financial structures to incentivize action at the different levels. For example, budgetary approaches may be used to address policy-related drivers while a conservation trust fund could be formed to target specific activities at the local level. While conceptually elegant, the specifics of how to integrate multiple activities at different levels have yet to be figured out.



A wooden boat resting on the river bank at Cururu, Bolivia (located at the South East of Bolivia in part of the moist tropical forests of the country). ©Ami Vitale

— KEY FACTOR 4 —

LEGITIMACY

A REDD+ program is unlikely to succeed without broad constituent support. In structuring incentive arrangements and delivering benefits, a REDD+ program must balance the need to efficiently and effectively reduce emissions with the need to develop a legitimate program that has buy-in from a breadth of stakeholders.

Additionally, a benefit-sharing mechanism should not have negative human rights and livelihood impacts, and must fairly compensate stakeholders for costs associated with the REDD+ program.

Legitimacy means that stakeholders have the ability and power to participate meaningfully in REDD+ programs and shape their design and outcomes, including how benefits are generated and shared. Participation is important to both government and individual stakeholders, and

there must be pathways that allow different stakeholder groups to participate in the design and implementation of REDD+ programs and to provide key inputs that may affect decisions about resource allocation. Further, there must be solid channels for information sharing and dissemination of information on the development of REDD+ programs.

To foster legitimacy, a REDD+ benefit-sharing mechanism likely needs to share benefits more widely than if only providing performance incentives. If only certain groups or actions are rewarded or targeted to receive benefits, others may view the mechanism as inequitable and illegitimate. That said, if too many are rewarded, the incentives available for those that do deliver on some “performance” will be diluted.

ALIGNMENT, SCALING, AND ADAPTABILITY

A REDD+ program must be aligned with a country's overarching environmental and development policies. REDD+ is ultimately a bridge strategy, providing investment to catalyze longer-term transitions in how forest resources are used. To be successful, a REDD+ program must be part of an overall package of measures, reinforcing and reinforced by a country's development strategy. Further, economic incentives must accompany policy reforms and regulatory measures, including enforcement. If enforcement is not strong, the benefit of non-compliance and illegal activities will likely remain higher than the benefit of adopting alternative practices.

A REDD+ program must be able to adapt as lessons are generated from early implementation and as the international policy environment evolves. Longer-term success also depends on a country's ability to scale and adapt a REDD+ program over time. A REDD+ program may initially focus on discrete demonstration activities that must be scaled up to the national level; benefit-sharing structures must be able to scale up accordingly or nest into larger national mechanisms that are developed as the program matures.

Key Lessons from the Case Studies

- Measures that improve the alignment of a benefit-sharing mechanism with broader national strategies and plans include:
 - » Coordination with and participation of the central government in the mechanism;
 - » Coordination across different ministries (environment, agriculture, finance, etc.) in the design and implementation of the mechanism;
 - » Dedicated planning committees that coordinate between different sectors;

- » Improvements in planning capacity at multiple levels;
- » Funding priorities established with government input through consultations and implementation partnerships; and
- » Explicit integration of local levels of government to build local ownership and alignment.

In its approach to managing diamond revenues, Botswana successfully aligned their disbursement of revenues with broader national priorities through a dedicated ministry and multi-year planning tool to manage the allocation of funds to different line ministries.



A local villager examines cacao pods hanging from a tree in the Adelbert Mountain Range of Papua New Guinea's Madang Province. The seeds from the cacao, or cocoa pod, are used to produce chocolate, an increasingly important source of revenue for small villages in the Adelbert Mountain range. © Mark Godfrey



A villager gets freshwater for cooking from a rainwater collection unit in the small village of Turutapa in the Adelbert Mountain Range of Papua New Guinea's Madang Province. Turutapa, which can only be reached on foot, installed the storage tanks with the help of The Nature Conservancy, relieving the villagers of the need to walk long distances to collect freshwater. © Mark Godfrey

- Benefit-sharing mechanisms can scale up to achieve large impacts by:
 - » Building on, utilizing, reinforcing, or adapting existing institutions and programs to allow them to scale to larger impacts much more quickly than if they were building a program from scratch. Further, discrete mechanisms are most effective if they are part of a larger portfolio of policy measures and programs that all contribute to the same objective. For example, Costa Rica's PSA was aligned with broader national policies and measures to prioritize forest conservation, creating a "carrot" to balance some of the regulatory "sticks" and command-and-control measures.
 - » Outsourcing certain key functions associated with building strategies, budgets, and long-term targets to external organizations until internal capacity is higher. Outsourcing can also increase the efficiency of the mechanism's administration and management and allow it to operate with relatively low overhead.
- Benefit-sharing mechanisms can facilitate learning and adaptation by investing heavily in diverse channels of communication. This lesson is provided by some of the most successful and enduring mechanisms, such as Indonesia's Kecamatan Development Project (KDP) and Mexico's Nature Conservation Fund (FMCN).
- It is important to avoid fundamental structural problems that will be hard to change; to build strong feedback channels into the mechanism; and to set up good systems for monitoring, evaluation, and information management. For example, the mechanism for distributing mineral revenues in Colombia has struggled to be effective because it did not first establish strong participatory, monitoring, and evaluation processes.

Conclusion



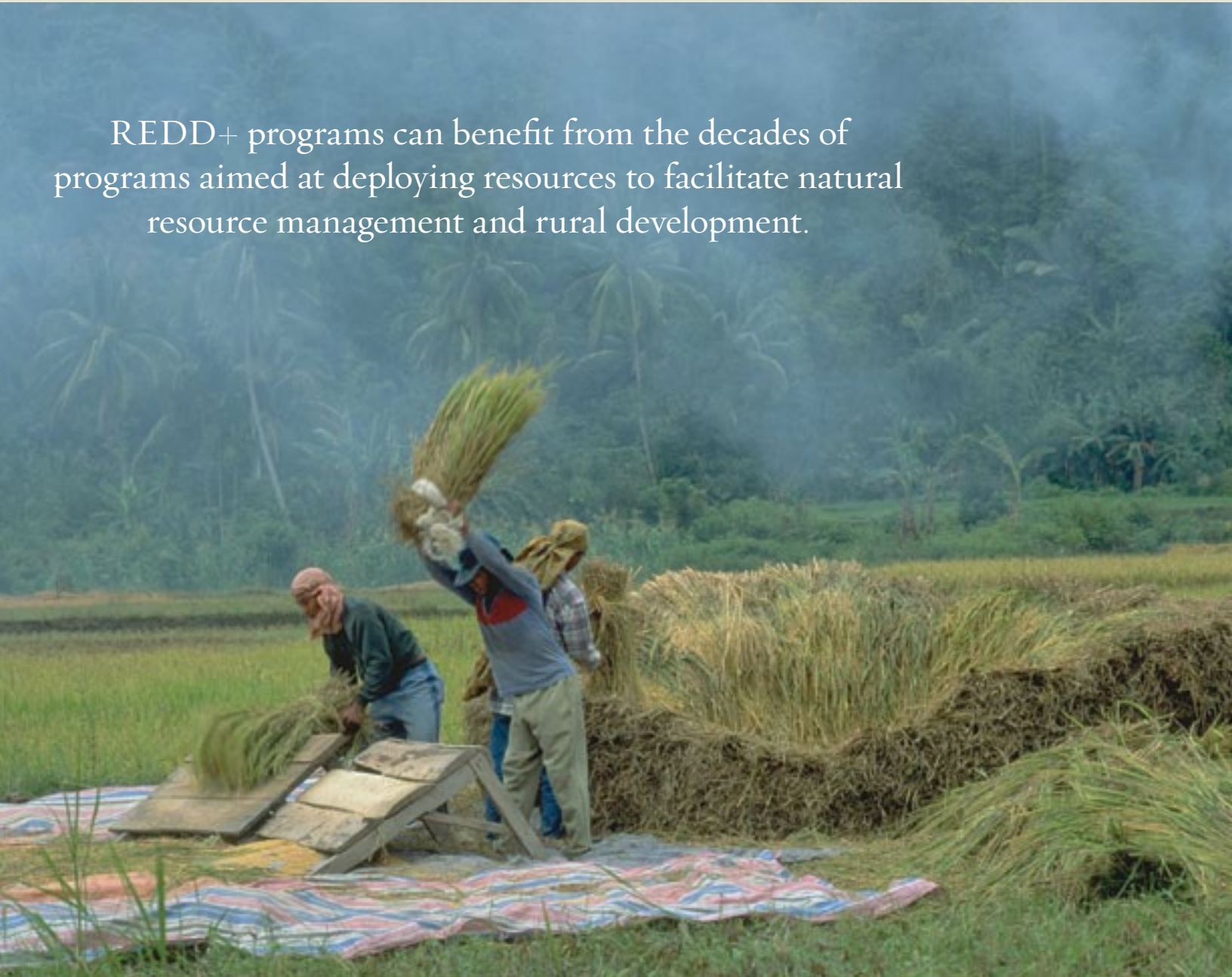
A resident of Yunnan Province, China, gathers mushrooms and berries while hiking in the fields and forests that line the Yangtze River. © Ami Vitale

REDD+ programs can benefit from the decades of programs aimed at deploying resources to facilitate natural resource management and rural development.

The following Addendum includes case studies of 10 such mechanisms. REDD+ programs will want to build off of the lessons from these existing mechanisms and, in some cases, try to integrate aspects of these mechanisms into their program.

For more information about lessons for REDD+ from these 10 case studies, see the background report by Kelley et al. (2012) for a comprehensive synthesis of how different natural resource management mechanisms tackle issues of targeting, tailoring, financial structure, legitimacy, and alignment with broader national programs.

REDD+ programs can benefit from the decades of programs aimed at deploying resources to facilitate natural resource management and rural development.



Rice harvest in Lore Lindu National Park, Sulawesi, Indonesia. © Jez O'Hare

Going Deeper: 10 Case Studies

Benefit-Sharing Mechanisms from the Natural Resource Management Sector and their Lessons for REDD+

Lisa Kelley, Erin Myers Madeira, Jill Blockhus, David Ganz, Keegan Eisenstadt, and Fernanda Carvalho

INTRODUCTION

REDD+ programs can benefit from the experiences of the many existing mechanisms aimed at managing natural resources, creating incentives for sustainable management, and distributing the benefits generated by these natural resources.

Below are 10 case studies of very different mechanisms. Each case study includes an overview of the program, lessons relevant to REDD+ programs, and details of key design aspects, such as targeting, tailoring, financial structure, legitimacy, and alignment. Three cases are related to REDD+, while the majority come from the management of other natural resources.



Chickens in Bethania ejido in Quintana Roo, Mexico, where many families live in traditional thatched roof homes. © Erika Nortemann/TNC

COSTA RICA'S NATIONAL PAYMENTS FOR ENVIRONMENTAL SERVICES PROGRAM (PSA)

Costa Rica's Pago por Servicios Ambientales (PSA) is one of the best-studied and longest-running payments for environmental services programs. Though it had institutional antecedents in various initiatives, such as Forest Credit Certificates, it truly began in 1997. It has effectively helped reverse deforestation rates as part of a package of measures, but it has limited effectiveness as a stand-alone measure due to weak incentives. The program's inability to raise funds limits its sustainability and scalability.

In the context of identifying lessons for a REDD+ mechanism, the PSA system is a good example of adaptability. One of PSA's key strengths has been its ability to adapt when gaps are observed—for example, by incorporating biodiversity and socioeconomic priorities through increased targeting of the program over time. PSA was also well aligned with broader national policies and measures prioritizing forest conservation, which contribute to its effectiveness.

Given that PSA was part of a broader national effort, the program's additional impact on reducing deforestation is questionable and some estimate that the majority of the land enrolled in the program was not actually under any threat of deforestation, suggesting that incentives are too weak in the areas that should be targeted. Further, PSA's long-term sustainability and scaling ability are questionable. Though PSA has funding from a tax on fossil fuels and from an increasing number of user contracts, the program is still dependent on external loans.



Revenue Management and Administration

GOVERNANCE STRUCTURE and OVERVIEW

Costa Rica's Forest Law 7575 established the nation-wide payments for environmental services program in 1996, Pago por Servicios Ambientales (PSA). PSA had several institutional antecedents, including Forest Credit Certificates, but these were financed through the national budget. Forest Law 7174 in 1990 enabled the General Forestry Executive Division to establish a trust fund to finance forestry activities and, in 1996, Forest Law 7575 created FONAFIFO. FONAFIFO is a fully decentralized institution within the State Forestry Administration that exists with relative autonomy to administer its core operations—namely, running PSA. This autonomy

enables it to establish trust funds for efficient administration. FONAFIFO presently manages the four trust funds related to the PSA program through the Banco Nacional de Costa Rica (FONAFIFO 2011).

PSA is ultimately administered by the Government of Costa Rica, which sets FONAFIFO's priorities annually by executive decree and determines payment levels, and by the Ministry of Finance, which approves FONAFIFO's budget annually (Pagiola 2008). However, day-to-day operations are governed by a Board of Directors, which includes three representatives from the public sector and two from the private sector. All board members serve two-year terms. The Board of Directors oversees six operating departments (Environmental Services, Forest Credit, Administration, Legal Counsel, Resource Management, and Information Systems) (FONAFIFO 2011).

TARGETS, BENEFITS and OPERATIONS

FONAFIFO administers funds to support individual, collective, and indigenous reserve contracts for three purposes:

- Forest conservation;
- Reforestation; and
- Agroforestry.

To participate in PSA, landowners first have to hire a *regente*, or licensed forester, to prepare a management plan describing relevant information regarding the land's natural characteristics (e.g., physical access and drainage) and risk aversion (e.g., plans to prevent forest fires and illegal harvesting). If FONAFIFO approves the management plan, landholders then receive the first payment after beginning contracted practices. Contracted practices often include fencing off protected areas and maintaining firebreaks and access trails (Calvo-Alvarado et al. 2009).

Statistics at a Glance

COSTA RICA'S NATIONAL PAYMENTS FOR ENVIRONMENTAL SERVICES PROGRAM

DATE: 1996 to present.

LOCATION: Costa Rica.

SCOPE: Nation-wide, with over 450,000 hectares (ha) enrolled by 2006.

PURPOSE: To recognize and reward forest owners and users for providing environmental services (for example, greenhouse gas mitigation, improved hydrological services, biodiversity conservation, and scenic beauty).

FUNDING SOURCE:

- National levies: 3.5 percent of revenues from an "ecotax" on fossil fuel sales (roughly US \$10 million/year) accrue to FONAFIFO, the National Fund for Forest Financing (Fondo Nacional de Financiamiento Foresta) that is the implementing agency for the PSA program. The Costa Rican government introduced a conservation fee and water tariff in 2005 that is expected to generate roughly US \$20 million/year when fully operationalized (Pagiola 2008).
- Various loans and grants: PSA has attracted substantial external funding including a US \$11.2 million grant from the German Development Bank for forest conservation in Huetar Norte, a package worth US \$8 million in grants from Global Environment Facility (GEF), US \$32.6 million in loans from the

World Bank, and US \$8.6 million in matched investment from the national government (known as the Ecomarkets Project). A second Ecomarkets Project is underway, which has focused on establishing a sustainable biodiversity fund to provide an ongoing source of funds (FONAFIFO 2011).

- User contracts: As of 2005, FONAFIFO had secured more than a dozen agreements with water users to finance watershed conservation but these were still comparatively marginal, amounting to roughly US \$500,000/year (Sills 2005). FONAFIFO's website does not indicate whether new contracts have since been signed (FONAFIFO 2011).

STRUCTURE: Funds accrue to and are disbursed from four trust funds independent from the national budget and managed by FONAFIFO. The functions of each specific fund are detailed on FONAFIFO's website⁵; four funds, rather than one, are used because different accounts generally have different sources of funds and finance somewhat different contracts.

5 FONAFIFO. 2011. "Organizational Structure." Accessed January 2012. http://www.fonafifo.go.cr/paginas_espanol/fonafifo/e_fo_estruc_organizativa.htm

PHOTO CREDIT, "STATISTICS AT A GLANCE" BOXES: Sunlight through water droplet on a plant in the tropical rainforest of Costa Rica's Osa Peninsula. © Sergio Pucci/TNC

The specific payment amount and schedule varies depending on the type of contract held. Reflecting high start-up costs, reforestation contract holders receive 50 percent of their payments upfront. In contrast, forest conservation contract holders receive payments in equal installments of 20 percent of their contract value over five years. Most contract holders receive payment directly, but payments to indigenous reserves are first processed through an intermediary, the ADI or Asociación de Desarrollo Integral—the representative entities of indigenous reserves to the Government of Costa Rica. Subsequent annual payments are made after compliance has been verified by *regentes*. Within the past five years, a database has been established to track contract compliance (Pagiola 2008).

Contracts create legal easements for set time periods (typically 5 to 20 years) attached to the land title, and owners transfer mitigation credit rights to the government. The time period varies depending on the contract type: conservation contract holders commit to a five-year easement, whereas reforestation contract holders commit to a 15 to 20-year easement depending on the tree species. To reward this transfer of rights and management practices, forest conservation contract holders are paid US \$320/ha over five years; reforestation contract holders are paid US \$980/ha over five years; and agroforestry contract holders are paid US \$1.30/tree over three years (FONAFIFO 2009). However, landholders pay *regentes* up to 15 percent of this for the *regentes*' preparation of management plans and for annual monitoring (Pagiola 2008).

Initially, PSA was a completely untargeted program. To improve biodiversity conservation as well as equity, FONAFIFO now prioritizes areas where biodiversity conservation hotspots have been identified as well as counties where there is a Social Development Index lower than 35 percent. Applicants within these areas are given priority enrollment (Sills 2005; Pagiola 2008).

FONAFIFO has also adapted by developing a standardized instrument to streamline and increase enrollment in forest conservation (known as Certificados de Servicios Ambientales, or CSA). Since developing this tool, the number of agreements with water users has sharply increased because FONAFIFO no longer has to



Boat-billed Heron (*Cochlearius cochlearius*) cleans its wings in the rainforest of Costa Rica, which covers only 0.01 percent of Earth's landmass, but is believed to host approximately five percent of its biological diversity. © Ami Vitale

negotiate each agreement individually but can instead sell users a set number of certificates (Pagiola 2008). Use of CSA has also improved equity by reducing transaction costs for smallholders. Initially, agreements were with individual farmers who were dispersed widely, with each farmer having to go to the capital to prove land ownership. Now one lawyer is able to process requests collectively using this standardized tool (Pagiola 2008; and per communication with Felipe Carazo and Irene Suarez-Perez, April 2011).

FONAFIFO handled fewer of the day-to-day operations between 1997 and 2003, devolving responsibility for contracts to NGOs like FUNDECORE and other government agencies including SINAC (Sistema Nacional de Areas de Conservación). As of 2003, FONAFIFO assumed more responsibility, establishing eight regional offices to handle applications, sign contracts, and monitor implementation (Pagiola 2008). As

mentioned, FONAFIFO has five operating departments (Environmental Services, Forest Credit, Administration, Legal Counsel, Resource Management, and Information Systems) that operate under the Board of Directors. FONAFIFO also established a dedicated Office on Joint Implementation, which manages transactions related to carbon emissions reduction credits. FONAFIFO's management is financed by a five percent levy on fund flow (Pagiola 2008).

FONAFIFO arranges annual independent, external audits, which include an audit of certain contracts for compliance. Various donors (e.g. the Global Environmental Facility and World Bank) also regularly evaluate the program's administration.

Costa Rica's PSA was also designed to complement an existing law banning clearing of forest land. Though PSA's incentives are relatively weak on their own, observers argue that payments have made other restrictions more broadly palatable; that is, that Costa Rica's success in reversing deforestation rates may come from this combination of command-and-control regulations and incentives in the form of contractual payments (Pagiola 2008). Protected area buffer zones also help to increase the program's effectiveness (Calvo-Alvarado et al. 2009) and, overall, deforestation rates have reversed in Costa Rica.

Despite this success, and though PSA has funding from a tax on fossil fuels and from an increasing number of user contracts, the program is still dependent on external loans, and tax revenues are more precarious if energy prices rise (Pagiola 2008). Carbon financing offers a potential long-term stream of income but FONAFIFO has been unable to sell conservation certificates to the voluntary market despite efforts to package these certificates in a uniform and streamlined way. On the basis of its limited ability to fundraise, FONAFIFO has been unable to scale, and over the past 5 to 10 years, has seen more applications than it is able to take. There is a large list of applicants waiting to enroll (per communication with Felipe Carazo and Irene Suarez-Perez, April 2011), and the potential exists for this to damage its reputation and undermine its legitimacy in the long run.

ADDITIONAL INFORMATION

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Sánchez-Azofeifa, A., A. Pfaff, J.A. Robalino, and J.P. Boomhower. 2007. Costa Rica's payment for environmental services program: Intention, implementation and impact. *Conservation Biology* 21: 1165–1173.

MEXICO'S NATURE CONSERVATION FUND (FMCN)

Beginning in 1994, the Mexico Nature Conservation Fund (FMCN) replaced an ineffective project approach to protecting biodiversity. It is now one of the largest and most successful conservation trust funds in the world (CFA 2008; GEF 1999; Spergel and Wells 2009). It has managed to balance strong national ownership with strong legitimacy and maximize its effectiveness by clearly articulating and defining institutional arrangements through broadly participatory processes.

FMCN offers many lessons for a REDD+ mechanism. FMCN demonstrates how a fund predominantly under private management can align its activity with national strategies. FMCN did this by investing heavily in consultations with government officials in its early stages. FMCN also demonstrates how a portfolio of distinctly targeted activities can be managed under a singular structure. In so doing (i.e., targeting different priorities through distinct sub-funds), it also managed to maintain effectiveness and avoid diluting incentives targeted at any one intervention by targeting too many priorities at once. Finally, one of the most important things FMCN has done has been to invest in clear operating guidelines that provide both the basis for accountability in the case of disputes and the basis for regular performance evaluation.



Statistics at a Glance

MEXICO'S NATURE CONSERVATION FUND (FMCN)

DATES: 1994 to present

LOCATION: Mexico.

SCOPE: Nation-wide; US \$100 million endowment, with over US \$25 million disbursed for conservation projects and protected area management.

PURPOSE: To support and strengthen efforts to conserve biodiversity in Mexico and ensure sustainable natural resource use (FMCN 2011).

FUNDING SOURCE: USAID and the Government of Mexico endowed the fund initially with US \$19.5 million and US \$10 million, respectively. The Global Environment Facility and the World Bank have endowed a subsidiary parks fund (focused on filling gaps in the protected areas system) with US \$39 million. Other donors, including the David and Lucile Packard Foundation and the Ford Foundation, have invested in other funds under the umbrella structure of FMCN.

STRUCTURE: FCMN is an umbrella structure for several subsidiary funds, but its primary structure is an endowed fund. Subsidiary funds generally target different specific conservation initiatives or regions. For example, the Natural Protected Areas fund is solely focused on financing Mexico's system of protected areas.



An indigenous man sorts beans at the ejido Veinte de Noviembre in the lush Maya Forest of Mexico's Yucatan Peninsula. © Ami Vitale

Revenue Management and Administration

GOVERNANCE STRUCTURE and OVERVIEW

The design of Mexico's Nature Conservation Fund (FMCN) began in 1993, steered by a 21-person consultative committee that included leading conservationists in Mexico. FMCN was legally incorporated as a private civil association in 1994, and from 1994 to 1996, it was capitalized with an initial endowment of US \$19.5 million from USAID and US \$10 million from the Mexican government. The first Board of Directors was also established in 1994, formed of 18 people drawn from various professions and regions that serve on a pro bono basis, with only one board member drawn from the government (Mexico's Secretary of the Environment). The Board of Directors reviews FMCN's strategic plan, budget, and project portfolio annually (FMCN n.d.).

FMCN has fundraised substantially since its inception and now has an overall capital endowment of roughly US \$100 million, making it one of the largest conservation trust funds in existence (see, e.g., Spergel and Wells 2009). It invests this endowment conservatively through government bonds and bank certificates of deposit. Six specialized technical committees have been formed to oversee specific components of FMCN's operations.

These committees are chaired by board members but otherwise comprised of external stakeholders, and include:

- An investment committee of successful Mexican financiers who advise FMCN's investment strategy;
- An international affairs committee that liaises with international conservation and donor communities;
- A conservation committee of experts that provide technical guidance and networking support to FMCN grantees; and
- Three committees to oversee three subsidiary funds,
 - » The Natural Protected Areas Fund,
 - » The Fund for the Conservation of the Gulf of Mexico, and
 - » The Gulf of California Marine Fund.

TARGETS, BENEFITS, and OPERATIONS

FMCN was originally conceived as an endowment fund that would deliver strategic support to conservation priorities across Mexico. This was its exclusive function during its first five years of operation and is still one of FMCN's core functions (CFA 2008). In its first eight years of operation, it funded over 350 projects with more than US \$14 million dollars (FMCN 2001; FMCN n.d.). Only 5 percent of FMCN's annual budget is retained for management and administrative costs (CFA 2008).

FMCN has also developed funds that exist under the same management structure as its primary endowment. The largest of these, and a key focus of FMCN, is the Natural Protected Areas Fund, established in 1997 as a separate endowment fund to provide a specific and targeted stream of money to help defray the basic management and operations cost of protected areas in Mexico. This parks fund is governed by one of the above-mentioned technical committees. It was initially endowed with US \$16.5 million from the Global Environment Facility and on the basis of its success, the World Bank and the Global Environment Facility increased the fund's endowment by an additional US \$22.5 million.

The Natural Protected Areas Fund uses investment earnings from its endowment (approximately US \$1 million/year) to allocate funds to 22 protected areas in Mexico and has disbursed approximately US \$12 million since 1998 (FMCN n.d.). The specific allocation of funds is based on how large the protected area is, the size of its resident population, and how well the area has performed in the past under the program. Over time, FMCN "graduates" specific protected areas from their support, helping to develop alternative funding sources (e.g., user fees) or building the capacity of park staff to fundraise independently. FMCN also creates some separate endowments (about US \$2 million) for some individual protected areas. Graduated protected areas no longer receive support from FMCN (CFA 2008).

In general, FMCN solicits proposals for activities in line with annually established priorities and finances selected community groups and local and national initiatives using investment earnings from its core endowment (approximately US \$2 million/year). Specific subsidiary funds and initiatives target specific objectives and/or geographic areas. In some cases, this is because donors earmark the funding for specific purposes. An example of this is the US \$1 million donated through the Global Conservation Fund from the Moore Foundation specifically to finance conservation in the Mexican Baja California region.

Another example is the two phases of USAID-earmarked funds for the Fire Management and Restoration Program (PPIRA). In its first five years (1999 to 2004), this program disbursed US \$4.29 million for 46 projects related to fire prevention, restoration,

training, and environmental education. Its second phase will disburse an additional US \$4.5 million, primarily focused on increasing participation in the restoration of areas and in the prevention of fire (FMCN n.d.). FMCN also worked with Private Agencies Collaborating Together, Inc. (Pact) and The Nature Conservancy (TNC) to establish the Mexican Conservation Learning Network (IMAC) in 2000. This network is focused on building the capacity of existing conservation organizations.

FMCN is supervised by an assembly comprised of past and present members of the Board of Directors. The assembly reviews annual financial statements as well as the composition of the present Board of Directors (FMCN 2011).

Overall, FMCN has not been found to have large gaps or weaknesses. However, while processes are standardized at the national level, one review found that norms, criteria, and standards could be defined with greater precision locally or regionally. Allowing subnational actors the freedom and flexibility to administer funds has resulted in experimental approaches, e.g., experimental management approaches specific to individual protected areas financed by the parks fund. While successful so far, this could also lead to practices that are ineffective or difficult to reverse over the long run. Putney et al. (2000) also found that FMCN may be able to improve its effectiveness in priority areas by increasing fiscal and economic incentives for landowners.

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Buttress of a large rainforest tree in the Amazon watershed, Acre, Brazil. © Haroldo Palo, Jr.

BRAZIL'S ECOLOGICAL TAX (ICMS-E)

Municipalities in Brazil have historically earned tax revenue through “value-added” land developments. Because of this, restrictions on land use related to conservation had limited most municipalities’ ability to earn tax revenues. To remedy this, and to compensate municipal actors for their conservation efforts, 15 states in Brazil now incorporate ecological indicators into tax allocation (Ring et al. 2010). This program, ICMS-E, is one of the few that directly rewards the conservation activities of local governments and it does so with minimal transaction costs.

ICMS-E offers interesting lessons for a REDD+ mechanism given that performance is measured and rewarded at the municipality level, and yet success depends on the performance of individual landholders. Municipalities enrolled in the program are rewarded for their environmental performance. While most conservation activity has utilized public lands, municipalities also attempt to create a portfolio of activities to incentivize private landholders to undertake conservation. This portfolio of activities includes education and awareness-raising programs, as well as techniques to motivate actors who control the land to maintain or improve environmental performance. The municipalities also publicly disclose the benefits of the program to build broad support.

The program has primarily been effective at encouraging conservation on public lands, though this effect varies depending on the comparative value of agriculture, the state’s ability to inform municipalities about the program, and the extent to which conservation efforts are monitored (Bernardes 1999; Grieg-Gran 2000; May et al. 2002; Ring et al. 2010). It also seems to depend on the extent to which the program reinforces and is reinforced by existing measures within the state. While these factors somewhat limit its overall impact, ICMS-E is nonetheless an interesting effort that could likely be replicated in many places as part of an overall portfolio of REDD+ measures.

Revenue Management and Administration

GOVERNANCE STRUCTURE and OVERVIEW

As discussed, the ICMS is a national tax on goods, services, energy, and communications. In 1990 and 1991, the federal government passed laws allowing states to consider ecological indicators in distributing the ICMS, creating a so-called ICMS-Ecológico, or ICMS-E program (Bernardes 1999). Paraná was the first state to adopt ICMS-E in 1992, and an ICMS-E is now in place in 15 states (Ring et al. 2010). In participating states, the portion allocated to the municipalities for conservation performance is disbursed based on ecological criteria selected by that state and comes from the 25 percent of the Municipalities' share of ICMS that is allocated by the state based on indicators. Generally, different conservation management categories have different weights. Some indicators include conservation units (registered protected areas), watershed protection areas, sewage disposal systems, and control of slash and burn agriculture

(Ring 2010). Paraná also uniquely assesses the quality of protected areas and includes this information in its calculation (May et al. 2002).

TARGETS, BENEFITS and OPERATIONS

Revenues accrue to municipalities to compensate them for the costs they incur in protecting areas (e.g., for foregone tax revenues for areas that would otherwise be developed) (Ring 2004). Relevant areas may include biological reserves, ecological stations, extractive reserves, or sustainably managed forests. If an area meets the state's criteria, it must be legally defined and registered to be counted toward the municipalities' environmental performance score (Grieg-Gran 2000).

States typically use a set methodology to calculate a municipality's overall ecological index and calculate what percentage of a state's overall conservation factor any given municipality contributes. Funds for the ICMS-E are then transferred to the municipality on a weekly basis (Ring 2004). The total sum that accrues to municipalities can

Statistics at a Glance

BRAZIL'S ECOLOGICAL TAX (ICMS-E)

DATES: Varies by state. ICMS established in 1990. First ICMS-E legislation adopted in Paraná in 1992. Currently operational in 15 states.

LOCATION: Brazil.

SCOPE: Established by the Federal Constitution as a state tax (ICMS), with adoption in 15 states.

PURPOSE: To reward local governments for conservation activities.

FUNDING SOURCE: The ICMS (Impostos Sobre Circulação de Mercadorias e Prestação de Serviços) is a national tax on goods, services, energy, and communications that comprises 90 percent of state tax revenues, analogous to a value-added tax elsewhere.

States allocate 25 percent of these revenues to municipalities. Of the portion municipalities receive, 25 percent is based on indicators chosen by each state; the remainder goes to municipalities based on more traditional value-added tax redistributions (e.g., based on the revenues from development of industry or other revenue-generating activities) (Grieg-Gran 2000). ICMS-E rewards municipalities for their conservation performance (instead of revenue-generating performance) and is financed by the portion that municipalities receive from the state based on indicators (25 percent); it is contingent on the specific ecological criteria determined to be relevant by a state.

STRUCTURE: ICMS-E utilizes existing budgetary structures for fund disbursement.

form a significant part of a municipality's earnings, particularly if a large portion of the municipality is managed for protection. An average US \$20.5 million was transferred annually between 1994 and 2000 to municipalities within Paraná through ICMS-E. Results are scattered but this is said to have allowed at least one municipality to increase its earnings by 84 percent and to have formed nearly 18 percent of another municipality's budget (May et al. 2002; Ring 2004).

Municipality participation is voluntary and generally contingent on how well states convey information about the program to municipalities, as well as on how competitive agricultural value is in the area (Bernardes 1999; Grieg-Gran 2000). Municipalities have full discretion over how ICMS-E funds are spent. In the past, municipalities have devoted some resources to environmental activities such as cleaning and landscaping urban areas and investing in environmental education, but funds can also be used for activities unrelated to environmental services, such as general maintenance expenses, road construction, well-drilling, and so on.

Although municipalities have an incentive to participate (in the form of ICMS-E payments), in some cases, they are not in direct control of the land-generating environmental services. As a result, municipalities must figure out how to motivate the actors who control the lands to maintain or improve environmental performance for the municipality to continue to receive the ICMS-E funds. This is an example of where incentives are linked to performance at one level (the municipality), requiring the creation of a portfolio of activities to generate performance from key actors at a lower level. Often municipalities focus on indirect incentives such as education, awareness-raising, and promotion techniques aimed at motivating actors who control the land and are responsible for that performance. They also publicly disclose the benefits of the program to build broad support (May et al. 2002). While revenues do not accrue to participating landowners, landowners are said to benefit from additional support from their respective municipalities and local populations reportedly now perceive conservation as an important activity within municipalities (May et al. 2002; Ring 2004). In particular, the ICMS-E program may be benefiting the relationship between municipal

actors and inhabitants in and around protected areas because municipal actors are said to provide more support for these actors (Bernardes 1999).

Some municipalities also use direct incentives to target key landholders. Municipalities in the states of Paraná and Minas Gerais have developed legislation that creates incentives for private landholders to create private natural protected areas (RPPNs), or public-private partnerships, on land that buffers public protected areas. For example, once an RPPN is created, municipal actors specifically target benefits to the landowners that created the area, such as by building road drainpipes to improve access to those areas. RPPNs also reinforce existing command-and-control legislation.

For example, in the Atlantic forests in Brazil, at least 20 percent of private land is legally required to remain forested and RPPNs are an option to generate financial returns with support from the municipality on these lands (i.e., RPPNs can act as an additional incentive to adhere to land-use restrictions). While RPPNs are also exempted from the rural land tax, this is anecdotally far less important to private landowners than municipal service support or the possibility of additional income from ecotourism and other enterprises in those areas. However, this method of incentivizing participation has been somewhat contentious because it tends to benefit relatively few and better-off actors; larger landowners are generally the only ones capable of creating RPPNs. This is not only because they are able to accommodate the transaction costs associated with legally defining and registering the area for inclusion in the program, but also because their plots of land generally contain more of the requisite biota, which is a defining condition of an RPPN (May et al. 2002; Ring 2004; Globe International Secretariat 2010).

In an effort to foster continued buy-in in the program, some revenues from the ICMS-E are invested in environmental education in an attempt to increase awareness of the importance of conservation. Municipalities also engage in campaigns to publicly disclose benefits from the program. Higher awareness is said to have motivated some farmers to undertake water conservation efforts, and helped reinforce the public perception of conservation as a valuable activity (May et al. 2002).

While redistribution has not been a focus of the mechanism, May et al. (2002) document some cases where the ICMS-E has significantly supported traditional economic activities and one case in which transfers were used to support 17 settlements of landless workers to create legal reserve areas in land-reform states. Because the mechanism is connected to a fundamentally redistributive tool (taxes), it may be possible to make poverty alleviation a more explicit goal in other iterations.

Forest exploitation is commonly seen as an easy way to generate local public revenues through taxes, and intuitively there is scope to make forest conservation a similarly easy means of generating local public revenues elsewhere in a manner like ICMS-E (Ring et al. 2010). It places limited administrative burden on countries, both mobilizing and disbursing funds through existing structures. However, one factor that limits replicability is its current dependence on political will, in that states must first decide to use ecological indicators in deciding how to disburse ICMS funds to municipalities. Only then will municipalities be able to earmark the funds for investment in environmental priorities that will ensure their continued share of the ICMS-E funds. Municipalities currently have complete autonomy in earmarking where and how funds are spent. This could be a problem where there exists higher risk of corruption.

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INDONESIA'S KECAMATAN DEVELOPMENT PROJECT (KDP)

Indonesia's Kecamatan Development Project (KDP) was the largest community-driven development program financed by the World Bank globally, and was implemented in three phases between 1998 and 2008. In 2007, the Government of Indonesia piloted the Program Nasional Pemberdayaan Masyarakat, or PNPM Generasi, with World Bank Support. PNPM Generasi builds on and utilizes the institutional capacity and structure built during KDP, modifying the program to incorporate performance incentives.

KDP placed a primary focus on building strong institutions and governance and a secondary focus on tangible outcomes such as infrastructure construction. It was highly successful but may have limited scope for full replication given its expense and its unique suitability to the Indonesian context. Regardless, certain features of KDP may translate well to REDD+: its innovative approach to budgetary flow, which bypasses middlemen to eliminate possible points for corruption; its focus on community participation and capacity building; its transparency provisions (including a top-down and bottom-up approach); and its adaptive learning cycle. KDP suggests high initial investments in institutions are necessary and well worth the cost.

Statistics at a Glance

INDONESIA'S KECAMATAN DEVELOPMENT PROJECT (KDP)

DATE: 1998 to 2008.

LOCATION: Indonesia.

SCOPE: KDP ultimately reached 91 percent of provinces (30 of 33) and nearly 50 percent of all villages in Indonesia (World Bank 2010a). PNPM Generasi, the national program for community empowerment which developed from KDP, has been implemented in at least six provinces since 2007 (Olken et al. 2010).

PURPOSE: The key purpose of the program was to strengthen local institutions and local governance through the participatory processes and accountability measures used in crafting project proposals and implementing projects. This was supported by provisioning block grants to fund development projects, and was part of a larger overall effort to jump-start the decentralization process that began in Indonesia in the late 1990s. KDP's secondary focus (meant to emerge as a byproduct of stronger governance) was to help alleviate poverty.

FUNDING SOURCE: KDP was primarily financed through World Bank support. This support totaled over US \$1 billion up to 2007. Donors contributed an additional US \$205 million in grants and the Government of Indonesia contributed progressively more through the three phases of KDP; US \$50 million to KDP1, US \$101 million to KDP2, and US \$266 million to KDP3 (World Bank 2007). The World Bank contributed an additional US \$62 million in loans between 2007 and 2008 to support block grants for 286 sub-districts (known as kecamatan) under PNPM Generasi (World Bank 2011).

STRUCTURE: KDP was primarily (but not strictly) a budgetary approach to benefit sharing. Funds flowed from the central government but bypassed several levels of government that would otherwise handle funds to directly arrive at the kecamatan level. After reaching the kecamatan, funds were directly transferred to accounts in participating villages.

Revenue Management and Administration

GOVERNANCE STRUCTURE and OVERVIEW

Though mostly financed externally, the World Bank vested control of KDP within the Government of Indonesia in the Ministry of Home Affairs (PMD). PMD is a relatively less powerful agency, and KDP formed a big part of its overall pool of responsibilities. This allowed PMD to prioritize program management and allowed the World Bank to exert more control over the project than if it were managed elsewhere (Edstrom 2002).

KDP modified the disbursement of funds, but did not create any new institutions. Instead, it utilized existing government structures for fund flow. Block grants flowed from a central account directly to sub-district governments. At the sub-district level, they entered a local bank and were processed by a branch of the national treasury. Funds were registered on government books (Dunbar 2004; Edstrom 2002).

TARGETS, BENEFITS, and OPERATIONS

KDP operated with five core expenses:

- Block grants to poor communities (roughly 80 percent): Primarily funded village-level governance and development activities (described in more detail below).
- Implementation support (together with Technical assistance, about 16.5 percent): Funded trained social and technical facilitators that help villagers oversee the planning process, monitor projects implementation, and provide advice to villagers.
- Technical assistance (together with implementation support, about 16.5 percent): Covered the cost of the program's overall administration (including the team within PMD).
- Monitoring and evaluation (approximately 2.5 percent of fund use): Covered the cost of internal and externally sourced evaluations, such as regular project reporting by facilitators (World Bank 2007).
- Operational expenses: Covered government travel and project management (about 1 percent of fund use).



Beekeeping is a micro enterprise in Kamarora, Sulawesi, Indonesia. © Jez O'Hare

KDP's primary expense (80 percent) were the community block grants delivered to participating kecamatans, which ranged in value from US \$55,000 to US \$110,000 (grant amounts are set to varied levels ultimately based on a sub-district's population density) (World Bank 2007). To obtain a block grant from their respective kecamatan government, villagers within participating kecamatans undertook a participatory process to design proposals to compete for funds. To do this, workshops were first held at the village level to disseminate information on the program. Villagers then elected two facilitators (one male and one female) to assist with planning. These facilitators held multiple meetings (including some for women only) where villagers discussed development priorities. Through these meetings, villagers prepare proposals for an "open-menu" of any productive investments, e.g. road and bridge construction, sanitation, the repair or extension of service facilities, and the like.

The potential funded activities are constrained only by a short list of projects that will not be funded by the program. All villagers are invited to an inter-village forum to determine which proposals to submit, and villages can submit up to two proposals to be ranked by the inter-village

forum to receive funding (one of which must come from a women's group). All in all, this process takes four to six months, and helps better ensure that benefits meet local needs. Simultaneously, it builds community confidence and capacity for autonomous governance (Guggenheim et al. 2004; Voss 2008). Specific planning grants are available to provide additional facilitation for villagers to develop proposals. Achievement grants are also available to fund an evaluation of how well proposals produce results on performance indicators (World Bank 2007).

Once a village's proposal is selected, grants are disbursed directly to a village account through a transfer bank. Disbursements occurred in three tranches (40 percent, 40 percent, and 20 percent). To receive the final two tranches, villagers had to approve how funds have been spent thus far in an accountability meeting. A typically funded village received roughly US \$9,000 and used this for infrastructure construction, and a typical project implementation cycle takes 12 to 14 months (Olken 2007; Voss 2008). However, funds can also be used as loans to support more diverse economic activities.

In any case, funds are large relative to normal village budgets, and often more than double average local government expenditure. Any funds which are not used in completing the project can be used for additional development, subject to approval by a village meeting (Olken 2005). Overall, 75 percent of KDP funds were used for socioeconomic infrastructure, such as schools, road construction, and health clinics, and 25 percent for economic activities, such as microloans. In KDP2, 74 percent of disbursed funds went to infrastructure projects, 2.4 percent to health-related activities including clinics, 8.2 percent went to education, and 15.9 percent went to microfinance activities (Voss 2008) (World Bank 2007).

At the time KDP began in 1998, Indonesia was considered one of the most corrupt countries globally and as much as 50 percent of cash grants for development were lost in the process of transferring them to communities (Dunbar 2004). While corruption was still a key challenge through the program (Guggenheim et al. 2004; Olken 2007), channeling funds directly from the central to sub-district government helped to ameliorate the risk

of corruption during financial transfers. This efficiency has allowed the project to disburse funds 25 percent faster than anticipated and to increase in scope by 50 percent more than was expected annually (Edstrom 2002).

External provisions also effectively helped reduce corruption relative to previous development interventions (Olken et al. 2010). Both internal and external audits were conducted, and as a condition of World Bank assistance, the Ministry of Home Affairs (the implementing agency for KDP) was required to sign a contract with the Association of Independent Journalists and the Institute for Social and Economic Research, Education and Information at the beginning of the project to ensure that journalists would report on the program. By the end of the first phase, over 850 stories had been written (Wong 2004). Over 60 independent NGOs were also enlisted to cross-check and validate projects' progress against internal project reports and within the first five years of the program, NGOs had uncovered over 140 anomalies (Guggenheim et al. 2004).

PNPM Generasi, the community empowerment pilot subsequent to KDP which draws heavily on its institutional basis, has also incorporated an incentive component: the size of a village's block grant for the subsequent year is partly based on the village's previous performance in relevant targeted health and education indicators (e.g., Olken et al. 2010; Sujana Royat 2009). Olken et al. (2010) posit that it may be the first health and education program globally to combine community block grants with performance bonuses. Through PNPM Generasi, villagers also contributed funds independently at a total value of roughly 5 percent of disbursed funds (World Bank 2010a). The program disbursed approximately US \$14 million in its first years, reaching 1,610 villages. Another element of the PNPM program is "Green PNPM," an environmental pilot program which disburses block grants for investments in natural resource management, environmental conservation, and renewable energy sub-projects. This program is being piloted on the islands of Sulawesi and Sumatra, and as of 2009, communities within 33 targeted sub-districts had completed 285 projects, with over 400 others in the process of being planned and implemented (World Bank 2010a).

KDP's success in Indonesia can be characterized by several aspects:

- An extensive scale and ability to scale quickly (for a full explanation, see Guggenheim et al. 2004);
- An ability to operate even at times of national crisis in Indonesia because no one district's participation was contingent on the participation of another district (Guggenheim et al. 2004); and
- Rates of corruption were substantially lower than in standard projects (Olken 2007).

Outside Indonesia, KDP (now PNPM Generasi) may have limited replicability, despite its innovation and success. Not only was KDP expensive to facilitate and manage (World Bank support totaled over US \$1 billion) but it was uniquely suited to the Indonesian context. Indonesia has high adult literacy (87 percent), relatively low salary expectations, and at the time the project began, a low currency value.

Other exogenous factors have also contributed to the success of KDP, including an efficient communications network in Indonesia and a growing civil society and demand for democratization following the collapse of Soeharto's authoritarian New Order in 1998. In Indonesia, observers believe it was possible to get the government to "sign-off" on bypassing certain levels of government because the government was aware that credibility of government was low and because demand for accountability was increasing (see, e.g., Edstrom 2002). Other governments may not be willing to relinquish as much ownership.

There is therefore mixed opinion as to whether or not KDP would be replicable. Edstrom (2002) has concluded that the KDP model would be unaffordable elsewhere even with heavy external financing. However, Wong (2004) suggests that KDP may be replicable in other countries if these factors are in place. This seems in line with initial evidence that features of KDP have been successfully introduced in other community-driven development programs in East Timor, Afghanistan, and the Philippines (Guggenheim et al. 2004). While critics originally questioned whether the mechanism should be replicated, arguing that introducing a well-financed parallel structure may weaken government capacity (e.g., Edstrom 2002), the early success of PNPM

Generasi further suggests this was not the case in Indonesia (Olken et al. 2010).

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BOTSWANA'S MULTI-YEAR APPROACH TO BUDGETING DIAMOND EXTRACTION REVENUES

Botswana's central government holds a 50 percent equity stake in the Debswana company's diamond mining activities in the country. Government revenues from the mines are distributed according to priorities set in a multi-year approach to budgeting developed within the central government, the National Development Plan. Citizens benefit from expanded government services, particularly in education and health.

Botswana provides some analogies for REDD+ in that it models a diffuse approach to benefit sharing, which operates using existing government structures. Importantly, however, the benefits supported by diamond revenues are not intended to achieve behavioral change. In the context of REDD+, an approach like Botswana's could function to build legitimacy and enhance equity, but would have to be part of a broader suite of mechanisms, some of which focused more specifically on targeting specific behavior changes by key actors. Though elements of Botswana's approach can be replicated, much of Botswana's success is contingent on sustained political will and a tradition of public scrutiny. This highlights the risk a budgetary approach to benefit sharing may pose in countries where the risk of corruption is high.



Statistics at a Glance

BOTSWANA'S MULTI-YEAR APPROACH TO BUDGETING DIAMOND EXTRACTION REVENUES

DATE: 1967 to present.

LOCATION: Botswana.

SCOPE: Nation-wide

PURPOSE: To support economic development, particularly related to education and health.

FUNDING SOURCE: Botswana holds a 50 percent ownership stake in Debswana Diamond Company, which manages production at Botswana's four largest diamond mines. The total value of this equity stake is undisclosed, even to Botswana's Parliament, but Botswana has accumulated foreign reserves totaling over US \$8 billion, and grown at a rate of roughly 9 percent since the 1960s, principally fueled by diamond revenues.

STRUCTURE: The government allocates a portion of revenues into offshore investments to build foreign reserves (through the Revenue Stabilisation and Public Debt Service Funds). The remainder is placed in a Central Bank account and dispatched to different governmental branches via normal budgetary procedures.



The Bushmen tribe in Botswana are hunter-gatherers, and the oldest inhabitants of southern Africa. Image used under Creative Commons from Dietmar Temps

Revenue Management and Administration

GOVERNANCE STRUCTURE and OVERVIEW

Shortly after diamonds were discovered, Botswana's government nationalized all subsoil mineral rights (1967 Mines and Mineral Act). The government also requires that it has equity participation and board representation in all mining ventures (Bryan and Hofmann 2007). When De Beers Diamond Company discovered diamonds in Botswana, the government negotiated for a 50 percent ownership stake, and co-founded the Debswana Diamond Company.

Debswana still manages production at Botswana's four largest diamond mines and in 2006, the government extended mine licenses until 2029 (De Beers 2006). Representatives of the Ministries of Finance, Trade, Minerals Energy, and Water Resources, as well as the Central Bank and the president serve on Debswana's board.

TARGETS, BENEFITS, and OPERATIONS

When diamonds are sold, Debswana invests in development projects as determined by the government of Botswana and pays a set share of dividends and taxes from the diamond sales to the government. Diamond revenues formed over 50 percent of all government revenues in the 1990s; they have since declined to about 40 percent of all revenues (World Bank 2010b).

The government allocates a portion of revenues into offshore investments to build up foreign reserves (through the Revenue Stabilisation and Public Debt Service Funds). The remainder is placed in a Central Bank account and dispatched to different governmental branches, according to the National Development Plan (NDP). The bulk of development spending goes into education, health services, and infrastructure construction. Some development spending has addressed national disasters, including drought (Holm and Cohen 1988; US Department of State 2011).

The government does not engage with Debswana's day-to-day operations (Bryan and Hofmann 2007); rather, its involvement begins once revenues have been generated. The Ministry of Finance and Development Planning (MFDP) is

the central development apparatus, responsible for developing policies and overseeing their implementation as well as monitoring and enforcing the administration and management of all public finance (Crisuolo n.d.). After being finalized, development plans are carried out by line ministries (e.g., Education, Works, and Communications). In this manner, the mechanism becomes very much like a typical budgetary approach where funds become part of the line ministries' overall budgets and are put towards the ministries' program budgets.

The Economic Committee (Cabinet of Ministries, all Permanent Secretaries, the Governor of the Central Bank, Commander of the Defense Force, and the Commissioner of Police) sets ceilings on expenditures and ensures that any development policies can be feasibly implemented within the constraints of these ceilings, in part by making accounting officers from each line ministry defend that ministry's budget submissions before this committee (Crisuolo n.d.).

There are relatively strong tools to ensure accountability: a 1976 "warrant, sub warrant, and virement" system which holds any officer personally accountable if funds are misused (Crisuolo n.d.); a unit within the MFD that monitors aggregate revenues and expenditures to note discrepancies; and regular reviews and meetings to ensure that each line ministry is accountable to the relevant finance unit for revenue disbursement during project implementation. MFD further undertakes an annual review and progress is discussed in monthly meetings, and Botswana's judiciary is considered to practice in true independence (Transparency International 2005)

Despite these careful safeguards, Botswana's government has been criticized for the lack of independence between revenue governance and monitoring (see, e.g., Transparency International 2005, Bryan and Hofmann 2007). The National Assembly is not able to remove officials from the offices of Auditor General, Ombudsman, Director on Corruption and Economic Crime, which report directly to the president. Parliament is also excluded from government negotiations with the private sector, and key agreements related to revenue distribution are confidential, including the agreement between De Beers and Botswana's government (Bryan and Hofmann 2007).

Botswana is considered to be one of the great development success stories in the 20th century based on its management of diamond revenues. In 1966, it was one of the poorest countries in Africa with almost no literacy. Since then, it has averaged a 9 percent growth rate, accumulated foreign exchange reserves totaling over US \$8 billion, and achieved a national literacy rate of 81 percent. Its citizens have free and nearly universal access to education (World Bank 2009; US Department of State 2011). The country is struggling with an AIDS epidemic, but health access is much improved and the government is using diamond revenues to distribute free anti-retroviral medication (Bryan and Hofman 2007).

Despite all this, its effectiveness has been contentious from an equity standpoint. Picard (1987) argues that "the primary beneficiaries of government policy in the areas of economic and rural development have been the organizational elites, bureaucratic, professional, and political, who dominate the system." Possibly reflecting this, Botswana has one of the highest wealth disparities between rich and poor, with more than 30 percent of the population still living below the poverty line (Bryan and Hofman 2007; World Bank 2010b).

Further, though it is widely agreed that good policies have led to Botswana's economic success, it is also widely agreed that Botswana's system is highly dependent on sustained political will (e.g., Acemoglu et al. 2001; Bryan and Hofmann 2007; Ernenwein n.d.).

Several researchers argue that this political will was cultivated by unique circumstances. In particular:

- Development policies in Botswana have uniquely been in the economic interest of political elites, who at the time of Botswana's independence, were almost exclusively cattle ranchers;
- Botswana's political elites have held broad and stable support since 1966, so corruption is probably not used widely as a tool to garner political support;
- Botswana's predominant tribal institutions have a long history of upholding property rights, ruling by consent and collaboration, and of forcing leaders to submit to public scrutiny and accountability measures (Ernenwein n.d.; Acemoglu et al. 2001); and
- Colonialism was limited in Botswana and colonial institutions never replaced village institutions.



Zebras in Botswana. Image used under Creative Commons from Dietmar Temps

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BRAZIL'S AMAZON FUND

Brazil's Amazon Fund is perhaps the most advanced national climate funding entity that has been established and developed. It uniquely restricts the role of its governance committee and utilizes low-cost local management. It also explicitly targets drivers of deforestation across levels by setting funding priorities that focus not only on command-and-control interventions but also on creating alternative economic opportunities.

However, while the Amazon Fund is a valuable first effort toward establishing a benefit-sharing mechanism for REDD+, it is still a work in progress. It was not envisaged as a mechanism that compensates local actors for their direct efforts in reducing deforestation, but as an instrument for payment-for-performance at the national level, in which the country is compensated for reductions achieved nationally. The amount received based on national performance is then allocated for projects aimed at reducing deforestation; these projects may have a very broad scope, such as state and municipal policies and plans for monitoring deforestation, research, and enforcing legislation, to name a few.

Monitoring, reporting, and verifying (MRV) of emissions reductions for the projects funded by the Amazon Fund is not required. In order to be financed by the Amazon Fund, projects must align with national policies and priorities; contribution to REDD+ is only one of many possible avenues of alignment. In determining national performance, the annual deforestation rates (DR) to be used in emissions reduction calculations shall be annually compared with the average deforestation rate for the past 10 years. These 10-year periods are to be updated every five years. For example, for the period 2011 to 2015, annual deforestation rates were compared with the average deforestation rates from 2001 to 2010.

A key problem thus far relates to access. Projects must be approved by the Brazilian National Development Bank (BNDES) to transfer benefits to another level and many organizations and actors currently lack the capacity to successfully participate in this process, restricting the scope of beneficiaries. A second problem relates to the Fund's overall alignment with national efforts and priorities. The Fund was established quickly, and Brazil is still in the process of articulating an overall climate change strategy. The Fund has not yet been synchronized with such a strategy to maximize its impact.



Revenue Management and Administration

GOVERNANCE STRUCTURE and OVERVIEW

The Amazon Fund was quickly brought into creation, initially established with just enough structure to allow it to operate and subsequently tweaked to address gaps and challenges (Zadek et al. 2010). The Fund's legal basis is Government Decree No. 6257, signed on August 1, 2008. Donors deposit funds into an account held by BNDES. These funds are subsequently invested and the Amazon Fund's assets are the total sum of donations and the net return from cash investments (Amazon Fund 2011).

The multi-stakeholder governance or "guidance" committee (COFA) helps to set project selection guidelines as well as oversee the goals, commitments, and policies of the Fund over the longer run, in part by overseeing project results (Amazon Fund 2011). COFA is comprised

of federal government officials, state government officials, and civil society, with each of these three blocks holding one vote in committee decisions and each member of each block holding one vote within their respective block (Amazon Fund 2011). Further breakdown of COFA's three blocks is as follows:

- Federal government representatives include officials from the Ministry of the Environment; BNDES; the Ministry of Development, Industry and Trade; the Ministry of Foreign Affairs; the Ministry of Agriculture, Cattle-Raising and Supply; the Ministry of Agriculture Development; the Ministry of Science and Technology; the President's Office; and the President's Secretariat for Strategic Affairs.
- The nine states of the Brazilian Amazon are also represented on COFA, but only have voting rights if they have prepared a deforestation prevention and control plan.

Statistics at a Glance

BRAZIL'S AMAZON FUND

DATE: 2008 to present

LOCATION: Brazil.

SCOPE: As of March 2012, the Amazon Fund has 26 projects that are either approved or operational and an additional 70 prospective projects in the pipeline (Amazon Fund 2012). The thematic area with the highest number of projects is "environmental control, monitoring and inspection." The second is biodiversity conservation. Proponents are local governments (26 percent); state governments (24 percent); NGOs and social movements (24 percent); the federal government (11 percent); actors in the private sector (6 percent), and public enterprises (3 percent).

PURPOSE: To prevent, monitor, and fight deforestation as well as to promote the conservation and sustainable use of forests within the Amazon (Decree No. 6257 2008).

FUNDING SOURCE: The Government of Norway has pledged the initial US \$200 million, and has announced that it is willing to contribute up to US \$1 billion to the fund until 2015 if Brazil succeeds in reducing deforestation. The Government of Germany also donated roughly US \$30 million in a contract signed in 2010. The ultimate ambition is to raise US \$21 billion over 13 years (Grudgings 2008).

STRUCTURE: A targeted fund separate from Brazil's national budget. The fund is managed as an account within the Brazil National Development Bank (BNDES).



Tree-planting as part of reforestation efforts in Brazil. © Adriano Gambarini

- The following organizations represent civil society: the Brazilian Forum of NGOs and Social Movements for the Environment and Development; the Coordination of Indigenous Organization in the Brazilian Amazon; the Brazilian Confederation of Agricultural Workers; the Brazilian Association for the Advancement of Science; the Brazilian Confederation of Industry; and the Brazilian Forum of Forestry Activities.

A technical committee (CTFA) comprised of scientific experts appointed by the Ministry of the Environment has also been enlisted to verify the Ministry of the Environment's calculation of carbon emissions from deforestation. They also appraise methodologies used in the calculation. Each member serves a three-year pro bono term which can be renewed once.

Although the Amazon Fund is ultimately overseen by COFA, its governance function is relatively limited compared to other funds. This was done intentionally to confer significant autonomy to the fund's management, BNDES (Zadek et al. 2010). BNDES undertakes fundraising, handles contracts, and monitors and supports projects (Amazon Fund 2012). Because this management is in-country, it comes at a relatively low cost. However,

vesting management of the Fund with BNDES has subjected the Fund to some criticism—BNDES also commonly funds investments in agriculture, livestock, and infrastructure development that drive deforestation. Zadek et al. (2010) argue that involving BNDES in the Amazon Fund's management could actually incentivize a change in their funding patterns.

TARGETS, BENEFICIARIES, and OPERATIONS

Funds held within the Amazon Fund are intended for use in financing projects in the following areas (Amazon Fund 2011):

- Public forest management;
- Protected area management;
- Environmental control, monitoring, and inspection;
- Sustainable forest management;
- Economic activities related to sustainable forest use;
- Zoning, territorial arrangements, and regulations;
- Biodiversity conservation; and
- Reforestation and natural regeneration.

These targets are designed to not only reduce deforestation and forest degradation but to promote sustainable development, in line with the Fund's core objectives. To complement these objectives and contribute to the Fund's capacity to measure its success, funds can also be used to finance the development of systems for monitoring and controlling deforestation (Amazon Fund 2011, Zadek et al. 2010).

Projects are solicited from public administrators at various levels, NGOs, private companies, cooperative associations, research institutions, and environmental enforcement agencies, among others (see Amazon Fund 2011 for more information). Regardless of grantee or target, project proposals have to follow set criteria to ensure that they convey information on the grantee's past activities and capacity to undertake the project, the contribution of the project to reducing emissions, the involvement of indigenous peoples and traditional communities in the project, and the potential scope of the project.

After project proposals are submitted, they are assessed by the Priority Department of the BNDES' Planning Division. The Priority Department first considers the applicant's capacity to undertake the project and BNDES' Eligibility and Credit Committee subsequently assesses the proposed project's eligibility—that is, whether it is in line with the Amazon Fund's objectives and is something the Fund should pursue. If the project is selected for consideration, the applicant then submits a detailed project proposal with more technical information on the project that will then be assessed by BNDES. While this detailed process may help to target fund allocation among a multitude of competing possibilities in the future, the initial quality of proposals has been weak. This means the Amazon Fund's criteria have thus far mostly acted as a filter. Further, vesting BNDES with full decision-making power may also create some transparency issues, and project selection criteria could be clearer (per communication with Fernanda Carvalho, August 2011).

Of the 26 projects approved, projects have focused on building the institutional and technological capacity for monitoring deforestation; supporting the implementation

of reduced impact logging technology; restoring riparian habitat through plantings; and creating protected areas, among many other activities. Pay-for-performance schemes fall within the scope of the Amazon Fund's mandate, but this does not seem to be a primary focus of the Fund from an overview of the initial projects financed (Amazon Fund 2011). That said, the Amazon Fund contributes US \$11 million to Bolsa Floresta, one component of which is a pay-for-performance incentive to families, and the overarching structure of the Amazon Fund is also pay-for-performance—additional financing from the Government of Norway is contingent on the Fund's overall ability to reduce deforestation. Specifically, payments depend on the difference between emissions from deforestation and the reference level, which is the average deforestation rate for the most recent 10-year calculation period (re-calculated every five years). Ultimately, COFA is responsible for establishing the guidelines that monitor the fund's results, with the technical committee under the Ministry of the Environment (CTFA) responsible for certifying the carbon emissions from avoided deforestation.

Many projects can focus on more than one activity (e.g., sustainable forest management, forest recovery) or operational modality (e.g., protected areas, institutional development). One project the Amazon Fund supports with US \$35 million in the state of Acre simultaneously aims to improve capacity for command-and-control measures and provide additional value for sound forest management. Its first component focuses on strengthening state-level environmental and forest institutes and developing municipal-level plans for preventing and controlling deforestation and forest fires. Its second component focuses on improving value chains for agroforestry and forestry.

The 70 projects in the pipeline are spread relatively evenly between seven key areas of activity (listed above), with roughly half focused on developing institutions and a third focused on scientific and technical development. More detailed information on applicants and project focus is available in the Fund's latest Portfolio Report (AMA/DEFAM 2011). Given the Fund's relatively short existence, it is difficult to assess how successful these

efforts have been in reducing and preventing deforestation and forest degradation thus far. It is noteworthy that, despite all criticism, the Fund's disbursement rate is not significantly different from other multilateral initiatives, such as the Rain Forest Trust Pilot Program (PPG7).

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ODDAR MEANCHEY: COMMUNITY FOREST REDD+ PROJECT IN NORTHWEST CAMBODIA

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The Oddar Meanchey Community Forest REDD+ Project (OM CF REDD+) began in 2008 to specifically target high deforestation rates in northwestern Cambodia and to solidify the capacity of the growing network of community forests in the region. OM CF REDD+ is currently undergoing validation for the Verified Carbon Standard (VCS) and the Climate, Community and Biodiversity (CCB) Standard.

The project is not yet registered in the REDD+ Voluntary Carbon Marketplace. However, the project provides valuable insight into how a REDD+ project can design incentives to target the drivers of deforestation across levels. It is also a valuable example of how REDD+ projects can use a participatory discussion about the distribution of project benefits during the design phase to tailor those benefits to meet the various needs and priorities of relevant stakeholders.

Statistics at a Glance

ODDAR MEANCHEY: COMMUNITY FOREST REDD+ PROJECT IN NORTHWEST CAMBODIA

DATE: 2008 to present.

LOCATION: Oddar Meanchey, Cambodia.

SCOPE: Province-wide, with 13 community forests participating.

PURPOSE: To effectively reverse high deforestation rates, sell emissions reductions on the voluntary market, and support community development and conservation through these sales.

FUNDING SOURCE: Various grants from the Danish International Development Agency (DANIDA), the UK Department for International Development (DFID), the New Zealand Aid Programme (NZAID), and the Clinton Climate Initiative (CCI). Pact, an international development NGO based in the United States, has and continues to directly invest in the project to sustain the community forests and their field activities during carbon project development. Terra Global Capital (TGC),

a US forest carbon firm, provided up-front professional services to develop the project in exchange for future credits. Ultimately, it is anticipated that the project will be financed through the sale of voluntary emissions reduction credits that are jointly validated under the VCS and CCB standards.

STRUCTURE: Project documents are in the process of being validated and the ultimate plan for revenue sharing is still under discussion. The preliminary design is a decentralized payment for environmental services scheme, in which the revenue from the sale of all of the carbon credits from the 13 community forests in the project will capitalize a new project fund. The new fund will be distributed through a mix of existing and new budgetary structures. The exact proportions of tailored benefits that will be distributed to each stakeholder level are still being negotiated.



Buffalo shepherd on the rice field. © Denis Rozan/Shutterstock

The foundation of the project was the passage of the Community Forestry Sub-Decree (2003), a law allowing communities to secure 15-year renewable management rights for community forest areas. The 13 community forests have created management plans and applied to the Forest Administration for legal recognition.

Revenue Management and Administration

GOVERNANCE STRUCTURE and OVERVIEW

The OM CF REDD+ project is currently in its fourth year of development and has a number of active stakeholders. The project principally belongs to the Forestry Administration (FA) of the Royal Government of Cambodia with a minor, non-voting, equity stake held by Terra Global Capital (TGC). The project was initially developed by Community Forestry International (CFI), and is now being implemented on the ground by Pact and the FA with support from the Oddar Meanchey Community Forest Network, the Monks Community Forestry Association, the Children's Development Association (CDA), and local authorities in Oddar Meanchey.

The OM CF REDD+ project has been explicitly designed to address drivers of deforestation and forest degradation across multiple levels in the province, including:

- Forest clearing and illegal logging for commercial sale by government officials, individual loggers, and others;
- Forest conversion to cropland or settlements and forest product collection by individuals (e.g., migrants);
- Concessions for land development, supported by national policy and implemented by domestic and international corporations; and
- Forest fires, both natural and by forest users (e.g., hunters, gatherers, and farmers).

Community development and livelihood goals are considered an important means of addressing these drivers because poverty and the lack of viable economic activities help motivate forest clearing and product collection. This focus on affecting deforestation rates by changing the economic value of forest protection led to an inclusive vision of how benefits needed to be distributed to the communities, and how the communities needed to participate in determining what benefits they wanted and how they were distributed. TGC also carefully considered how alternative livelihood options could be implemented in developing the VCS-validated methodology for the project.

While stakeholders implementing the project have had explicit communications about benefit distribution and sharing during the formal project design and development, a delicate balance must be maintained. Overt communications about benefit distribution and sharing have led to increased expectations by the communities. As the project development cycle has already entered its fourth year, and as the delivery date for project credits is not yet known, it is vitally important to effectively manage these expectations. To build local community acceptance and positive momentum, the project implementers have actively consulted with the community forest user groups and engaged in collaborative planning about benefit distribution. Through this process, however, it has become clear that the time lag between the initial discussion of benefit sharing and the actual delivery of benefits needs to be shorter. The long-term nature of developing a REDD+ project creates a challenge in ensuring completely transparent benefit-distribution models without leading to frustration about the long time lag before delivery.

TARGETS, BENEFICIARIES, and OPERATIONS

Thus far, the project has aimed to build the institutional framework and capacity that will allow project implementers to address the drivers of deforestation over the long run. This includes building a partnership with local stakeholders in all 13 of the community forests (which cover roughly 68,000 ha, or about 31 percent of all forested area in the province). The partnership is being built through participatory meetings, by increasing community capacity for forest management, and by determining the budget demands for user groups' projected forest protection activities. The community forest user groups expect revenue to cover their labor and fixed costs and also expect their portion of the project profits to satisfy their specific community development demands. The revenue for each community forest will be proportional to the number of credits they generate (as a true payment for environmental services program, or PES), and will be available as a grant fund for the communities to apply to with a wide range of project ideas: education, health, agriculture, forestry, livestock, access to markets, infrastructure, micro-enterprise, and so on.

Agreements related to the distribution of revenues from emissions reductions sales are still largely tentative, but they are underpinned by Government Decision No. 699, one of the highest-level commitments to community forest REDD+ in the Asia region. This decision authorized the Forestry Administration as the designated official seller of forest carbon generated by the project. It also confirmed that benefits to local communities would be maximized. A subsequent agreement (between the FA & TGC) specified that a minimum of 50 percent of project profits (revenues minus costs) will accrue to local communities.

Initial communications defining the preliminary distribution as a minimum 50 percent net to the communities came from the desire to recognize both the FA as the owner of the land, and therefore the carbon, and the work done by the community forest user groups to protect the forest and incentivize their improved management. This arrangement was reached at a policy level and has proven to be general enough to be appropriate for creating enthusiasm in the communities without generating too much immediate expectation. The policy level definition of benefit distribution also gives the FA an incentive to consider how REDD+ can play a role in other provinces and with other forest-dependent communities, as it designates those as goals for the FA.

Pact has been providing training, coaching, and mentoring to local communities and the community forest management committees on organizational development and financial management in order to ensure the transparent and accountable management of distributed funds when the project becomes fully operational.

Though subject to change, as of July 2011, the tentative agreement for using and distributing project revenues includes:

1. Costs: Paying for project development and implementation.
 - a) Compensate the development of the VCS REDD+ methodology and project design documents borne by TGC. This will be paid with early credits generated from the project.

- b) Finance ongoing project implementation costs of the FA and Pact. This includes implementing livelihood activities that confront the drivers of deforestation such as fuel wood alternatives, agricultural intensification, assisted natural regeneration, and local land-use planning.
 - c) Cover project management expenses of the secretariat of the Technical Working Group on Forestry and Environment (TWG F&E). Whether this will be the TWG F&E is yet to be confirmed, but some management entity will account for these expenses.
 - d) Pay commission on completed sales to the carbon credit broker (TGC).
2. Risks: As determined by the VCS risk analysis process.
- a) To mitigate future risk associated with under-performance or unintended reversals of sequestration, a percentage of credits will accrue in a reserve pool for the project life. Upon validation, this percentage was determined to be 17.5 percent; this will be re-evaluated at the first verification.
3. Benefits: After paying costs and filling the buffer reserve, the project profits will be distributed to stakeholders.
- a) A minimum of 50 percent of profits (net income) are designated specifically for community development and livelihood improvement activities in the communities in the project areas.
 - b) Remaining benefits will be used by the FA to study other potential REDD+ sites or initiatives in Cambodia, and to improve forest quality (ensuring a sustained flow of multiple benefits to future forest user groups).

Some revenue will be reinvested in the implementation of livelihood activities that confront the drivers of deforestation; these are included as part of the implementation costs. The 50 percent of net revenues will fund a small grants program that the community forestry associations and associated communities can apply to for development projects that meet their priorities, such as roads, health

centers, education programs, agricultural programs, or water infrastructure. Specifics about the operational management of the fund are still being worked out, but Pact will help communities prepare grant proposals to the fund and the FA will administer the grant funds, with assistance from Pact.

Community Forestry International (CFI) initially conceived the project with the Government of Cambodia's FA in 2008. In 2009, CFI handed all project implementation activities over to Pact. Pact has directly invested in the project, covering gaps in donor financing for project implementation activities with the community forest groups. Pact continues to coordinate and build capacity of the community forests in the absence of funding, in the anticipation that carbon revenues will sustain the project in the long run. Pact does not have an equity stake in future credits. TGC has been involved from the beginning developing the methodology and the project design documents that will allow it to be validated under both the VCS and CCB standards. TGC has foregone up-front payment in exchange for a percentage of future revenues. TGC is the FA's broker for the credits from the project. The FA is the project owner and lead national partner, and Pact is the FA's implementing partner.

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A local farmer and ecotourism guide drinks from a mountain stream that flows from Colombia's coastal mountain range, Sierra Nevada de Santa Marta, to the Caribbean sea through Tayrona National Park, which contains one of the wildest equatorial rain forests in northern South America. © Bridget Besaw

DISTRIBUTION OF MINERAL REVENUES IN COLOMBIA

Colombia devolves the majority of resource rents to local governments, unique among oil-producing countries. Theoretically, this allows local governments to best align spending with local needs, and has allowed the program to scale quickly and disburse revenues efficiently. In practice, however the program has been ineffective because department and municipal governments in Colombia lack the capacity to undertake organized and strategic planning. Fund use has also been considerably corrupt at the level of department and local governments.

For REDD+, the Colombia model for distributing mineral revenues suggests that it will be important for REDD+ programs to invest in building capacity at the local levels of government. Colombia's management of mineral revenues also highlights the risk of devolving implementation without first establishing strong participatory processes and monitoring and evaluation, reiterating the importance of building and testing safeguards before a program scales up.



Revenue Management and Administration

GOVERNANCE STRUCTURE and OVERVIEW

After being collected nationally, 68 percent of royalties is transferred directly to local governments in oil-producing regions (47.5 percent to departments, 12.5 percent to municipalities, and 8 percent to ports). The remaining 32 percent is placed in the National Royalties Fund (Fondo Nacional de Regalías, or FNR) for disbursement to both producing and nonproducing regions. Revenue distribution is ultimately set by the national legislative body. Funds held in the FNR were initially administered by a public commission, but are now administered by the National Planning Department (DNP) and Ministry of Finance (Chaparro et al. 2004).

Local governments in producing regions receive transfers of their share of funds monthly and are required to use 90 percent of revenues on priority development projects. Until minimum criteria have been met in several basic areas (e.g., health, education, etc.), spending on other social infrastructure is capped at 30 percent for departments and 25 percent for municipalities.

The disbursement of royalties is overseen by the Bureau of Royalties within the DNP, established by law in 2005. The Bureau coordinates and supervises planning and prioritization for the FNR and is responsible for establishing systems to monitor how royalties are used by local governments.

The Ministry of Mines and Energy and the National Planning Department must endorse both the feasibility and priority of projects before they can be funded. Projects are selected by the FNR on the following criteria:

- Regional balance;
- Alignment with the National Development Plan;
- Adherence to the law on revenue distribution; and
- Overall social, environmental, and economic benefits.

TARGETS, BENEFICIARIES, and OPERATIONS

Spending is highly and carefully prescribed to achieve certain basic unmet needs. However, lower levels of government lack the capacity to undertake organized planning, and revenues often are not spent according to their prescribed purposes. Many of the projects financed by royalties are very slowly implemented and left uncompleted, e.g., BPXC's Operation in Casanare, Colombia (Benavides et al. 2002, cited in Chaparro et al. 2004).

Statistics at a Glance

DISTRIBUTION OF MINERAL REVENUES IN COLOMBIA

DATE: 1970s to present, with the current framework for decentralized allocation adopted in 1991.

LOCATION: Colombia.

SCOPE: Nation-wide.

To enhance social well-being. Benefits are shared widely, but the preferential beneficiaries are those communities directly affected by resource exploitation.

FUNDING SOURCE: The 1991 National Constitution reaffirms that the Government of Colombia owns all nonrenewable minerals in the soil and subsoil and establishes payments from mining companies to the state for extraction of these resources ranging from 3 to 12 percent, depending on the resource (IDRC 2004).

STRUCTURE: Sixty-eight percent of revenues are directly transferred to lower levels of government via budgetary procedures and the remaining 32 percent are placed in a separate fund, the National Royalties Fund.

There is also poor monitoring of how revenues are spent, and little evidence that monitored data are considered by decision-makers at the national level (Fischer 2007; ESMAP 2005). This poor accountability is another explanation for poor effectiveness, and results in a lot of anecdotal corruption (e.g., ESMAP 2005). A lesson for REDD+ is the need to focus on building the capacity of local governments to administer the program.

Another barrier to transparency is that local communities are rarely engaged. They often have very little information about how revenues are managed, very little trust in revenue disbursement, and very few channels through which to lodge complaints. Though the 1991 Constitution established a number of mechanisms for the public to participate in private and public projects, these are mostly judicial, and generally only allow local communities to engage once the law has been broken. Trust is so weak and dissatisfaction so high that many communities have demanded that mining companies be placed in charge of investing royalty revenues (IDRC 2004). A lesson for REDD+ is the need to engage communities to make sure the program incorporates local priorities and knowledge and that it builds local buy-in.

There seems to be somewhat better transparency on the national level. There is typically clarity about how revenues are disbursed to sub-national levels (ESMAP 2005), and transparency issues with the initial commission for the FNR resulted in it being abolished. However, Chaparro et al. (2004) argue that despite the change in administration, FNR resources are still managed with poor transparency. The key challenge seems to be that central officials have a high level of discretion over how funds are allocated.

The system's prioritization of producing areas has also produced considerable debate. Roughly 17 percent of Colombia's population have received over 80 percent of all royalties. Further, within producing municipalities, of the 250 that receive royalties, 60 percent accrues to six of these (Chaparro et al. 2004). This pattern of revenue allocation reinforces accountability challenges. Rich municipalities can use extra resources to circumvent spending prescriptions, and have a flow of money that is independent of performance to their tax base. This disparity highlights the need for strong monitoring. It also suggests benefits have not been appropriately tailored.

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CHINA'S CLEAN DEVELOPMENT MECHANISM GUANGXI REFORESTATION PROJECT

The Guangxi carbon project is the world's first Clean Development Mechanism forest project. In this project, community lands are entered into a share-holding system, wherein many small individual plots of land are pooled for reforestation by a local forest management company. This arrangement has helped to ensure that the landscape can be reforested.

Most importantly, the Guangxi reforestation project provides an example of benefits tailored not only to meet local costs but also to mitigate local risk and support a longer-term transformation of the local economy. At the time the project began, community members in Guangxi possessed partially forested and partially barren land but despite their interests to do so, were unable to reforest the land independently. Well-tailored benefits, incorporated into the share-holding system, helped circumvent various social and technical challenges. This further highlights the importance of well-tailored benefits for REDD+.



Revenue Management and Administration

OVERVIEW

The Guangxi Project is part of a World Bank umbrella project, the Guangxi Integrated Forestry Development and Conservation Project, which aims to reduce pressure on natural forests and protect forests in key watersheds. The specific Guangxi reforestation project is ultimately designed to satisfy CCB standards (Climate, Community and Biodiversity Project Design Standards), with generated project credits primarily purchased by the World Bank through the BioCarbon Fund.

Day-to-day operations are implemented by the Longlin Forestry Development Company Ltd., which coordinates with local planting entities and farmers. In essence, communities agree not to farm the land in return for benefits from reforestation undertaken by local forest companies.

Communities in Guangxi possessed partially forested and partially barren land but despite their interests in doing so, were unable to reforest the land independently. Many owned very small individual plots of land, and reforestation activities by individuals required access to capital

and carried high transaction costs and technical hurdles. Project developers worked with community members to pool their barren lands in a share-holding system, in which community members agreed not to farm the land and handed management responsibilities to local forest companies. An estimated US \$2 million is expected from the sale of certified carbon credits, US \$5.5 million from timber products, and US \$3.5 million from pine resins. In return for pooling their land and agreeing not to farm, communities obtain a 60 percent share in carbon profits, 40 percent share in timber profits, and a 40 percent share in pine resin profits (Gong 2010). Community members also benefit from employment in assisting with tree planting, weeding, harvesting, and forest management. These opportunities are particularly important because 80 percent of those living in the area are ethnic minorities, many of whom live in poverty with few options to generate external income (UNFCCC/CCNUCC 2008).

Though the project has not fully met its desired level of emissions reductions, it appears to provide a model for how weak collective action and technical constraints can be circumvented and for how benefits can be tailored to local needs. Indeed, there are early signs that it has helped to meaningfully transform the local economy (Gong 2009, 2010).

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Statistics at a Glance

CHINA'S CLEAN DEVELOPMENT MECHANISM GUANGXI REFORESTATION PROJECT

DATE: 2005 to present.

LOCATION: Cangwu and Huanjiang Counties, Guangxi Province, China.

SCOPE: The Guangxi Project is designed to reforest over 8,000 hectares (ha) of multiple-use land and to produce an annual average of about 100,000 tCO₂e (tons of carbon dioxide equivalent) over its first 20-year crediting period, which began in 2008 (UNFCCC/CCNUCC 2008).

PURPOSE: To enhance carbon sequestration, biodiversity conservation, and soil erosion control, and thereby improve local livelihoods.

FUNDING SOURCE: The project is financed through multiple sources, including a World Bank loan of US\$5.15 million, and loans from local commercial banks of US\$12.9 million. Further, the Guangxi Zhuang Autonomous Region (local government), the Guangxi Longlin Forestry Development Company Ltd., and participating farmers (private) have contributed their own equity to the project, adding an additional US\$19.1 million from these three sources. The project has generated revenue in the form of carbon credits that have been purchased by the BioCarbon Fund for US\$2.2 million.

Resources from the World Bank loan and counterpart funds from the local government are used to cover project establishment costs; short-term loans from local commercial banks are used for covering operating and maintenance costs; and equity from Longlin Company, farmers, and the local government is used for technical input, plantation management, and payment for labor in the plantations.

The revenues from carbon credits, which are being generated ahead of other sources of income, serve as a stable source of income up to 2017 that contribute to the repayment of commercial bank loans in the short term, helping to bridge the gap before revenues from timber harvesting are produced.

It is expected there will be additional revenues from carbon credits. 40 percent of the revenues will be used to repay the World Bank loan. From the remaining carbon income, 60 percent will go to participating farmers and 40 percent to the Longlin Forestry Development Company (World Bank and UNDP 2011).

STRUCTURE: Revenues are partitioned according to percentages agreed upon in a sub-national shareholding system.



Men traverse Brazil's Amazon rainforest in a canoe. © Haroldo Palo, Jr.

BOLSA FLORESTA: AMAZONAS STATE, BRAZIL

Bolsa Floresta (PBF) is a large-scale and multi-pronged payment for environmental services (PES) program that operates in the Amazonas State of Brazil, Brazil's largest state that is covered almost entirely by Amazon rainforest (roughly 98 percent). While Amazonas has historically experienced low deforestation rates, a consortium of research institutions has predicted that under a business-as-usual scenario, the state of Amazonas may lose up to 30 percent of forest cover by 2050 (Soares-Filho et al. 2006). This motivates PBF, the world's largest PES program, with 35,000 participants from 15 protected areas (roughly 10 million hectares) (FAS 2011). PBF responds to classic critiques of conservation in many ways, perhaps most so by ensuring that additional resource extraction restrictions are not imposed (i.e., by ensuring that conservation payments are additional to forest users' regular income). It also explicitly invests in social infrastructure, uniquely and explicitly accounting for the importance of social capital in conservation projects. Ultimately, the state of Amazonas owns the land. This means that payments are dependent on sustained political will (Pereira 2010). The institutional arrangement—a private foundation managing environmental services of public areas—has generated some criticism.



Revenue Management and Administration

GOVERNANCE STRUCTURE and OVERVIEW

PBF was created in 2007 by Law No. 3.135, which articulates Amazonas state's climate change policy. It is supported by Law No. 52 on the state system of conservation units (REDD Desk 2011). Law 3.135 is Brazil's first PES-specific legislation and defines the legal foundations for PBF and establishes FAS, or the Fundação Amazonas Sustentável (Hall 2008; Viana 2008). FAS is a joint initiative between the Amazonas state government and Bradesco Bank, which is now responsible for implementing, managing, and monitoring PBF with support from various other institutions operating in the protected areas of Amazonas (Cassola 2010; Viana 2008). At the time of forming FAS, both the Amazonas state government and Bradesco Bank donated roughly US \$11.8 million to form an endowment fund. Financial returns from that principle amount support PBF (Viana 2008).

PBF is one component of the Juma Sustainable Development Reserve, which is an early REDD+ project covering over 500,000 hectares of tropical forest. Further, PBF extends well beyond the Juma Sustainable Development Reserve and is associated with protected areas not participating in REDD+ projects. PBF aims to

benefit local communities living in reserve areas in Amazonas, and, unique relative to other conservation programs, allows families living in the protected areas to maintain the same user rights to forests (FAS 2011; Periera 2010). PBF has been criticized for being top-down and for only holding participatory meetings after the operational rules had been defined nationally and regionally. However, organizers also undertook socioeconomic questionnaires and held several meetings with communities to ascertain how communities self-identified problems related to health, transportation, education, and the like. They argue these inputs helped to define the program moving forward (FAS 2008; personal communication with Marina Campos, November, 2011).

TARGETS, BENEFICIARIES, and OPERATIONS

PBF delivers four distinct benefits, with a current focus on land that is already under protection but that is inhabited by various traditional and indigenous populations (Viana 2008).

1. Bolsa Floresta Renda (Forest Conservation Income Allowances):

This is an investment of roughly US \$2,320, payable to each community per year (each community includes 11 households on average) (Periera 2010). This money is intended to support the sustainable production of fish,

Statistics at a Glance

BOLSA FLORESTA: AMAZONAS STATE, BRAZIL

DATE: 2007 to present.

LOCATION: Amazonas, Brazil.

SCOPE: 10 million hectares as of late 2010 (FAS 2011), which encompass 15 state protected areas.

PURPOSE: To reward inhabitants for maintaining the environmental services provided by tropical forests, improve their quality of life, reduce deforestation, and enhance existing forests.

FUNDING SOURCE: Amazonas State Government, Secretariat for Environment and Sustainable Development, Bradesco Bank, Marriot Hotels, and CocaCola Brasil (Reimer et al. 2011).

STRUCTURE: A PES program established by the Amazonas state government to target local communities living in the region sustained by financial returns from an endowment fund (Cassola 2010).

oil, fruit, and other such products (essentially, any economically productive and legal activities that either enhance forests or do not involve deforestation.) (Viana 2008). Example investments include purchases of a boat or tractors for produce transportation or investment in storage infrastructure (FAS 2011).

2. Bolsa Floresta Social (Forest Conservation Social Allowances):

This is another investment of roughly US \$4,640, payable to each community per year and designed to meet inhabitants' basic needs in education, health, transportation, and communication (Periera 2010). An example investment (developed in partnership with local governments and organizations) might be to facilitate emergency care through investments in ambulances or radio communication (FAS 2011). Activities are developed by collaborating with relevant local government bodies or institutions (Viana 2008).

3. Bolsa Floresta Familiar (Forest Conservation Allowance for Families):

This is the targeted payment for environmental service, and delivers US \$29/month to the mothers of families within protected areas that are committed to conservation and sustainable development. To affirm this commitment, families must attend a two-day training program on environmental awareness and sign a voluntary agreement to contribute zero deforestation in primary forests; they also have to enroll their children in school. The primary function of these payments is to incentivize involvement; it is an income supplement not intended to serve as the primary source of family income (FAS 2011, REDD Desk 2011). Families are allowed to continue using secondary forests as part of traditional production systems (Viana 2008).

4. Bosla Floresta Associação (Forest Conservation Allowance for Associations):

This is an investment equivalent to 10 percent of all family payments in the area (the Forest Conservation Allowance for Families, explained above) that is directed to conservation unit residents' associations to support work to strengthen social leadership and participatory governance of the program (Viana 2008). Funds may be used to construct organization

headquarters or to invest in equipment related to project governance, including computers and printers, for example (FAS 2011; REDD Desk 2011).

The program is designed to monitor forest cover by satellite imagery and field verifications at the individual level (personal communication with Marina Campos, November 2011). If participants are found to have deforested, they are first issued a warning. After two warnings, they are no longer eligible to participate. These warnings are intended to act as a gradual sanction system, with warnings depending on the amount of deforested land. Further, this was considered to be part of a local conflict resolution mechanism, wherein families found to deforest land had to justify this action to the community association (Periera 2010). The Secretariat of the Environment and Sustainable Development for the State of Amazonas is the party responsible for monitoring results and issuing warnings (REDD Desk 2011), but the extent of enforcement thus far is unclear (Periera 2010).

This methodology was established by a scientific committee formed of national and international NGO members. Additionally, an external independent institution (TÜV-Süd) validates and certifies Climate, Community, and Biodiversity Standards (Viana 2008). PBF has been the subject of some controversy related to how well it actually improves well-being for participants in the program. It has been argued, for example, that collecting payments imposes an unfair burden on families, as it may require a two-day trip by boat to collect monthly stipends (World Rainforest Movement 2010). FAS has responded to this criticism by arguing that families can withdraw money whenever they so choose and can do so from whichever nearest city they may visit otherwise. FAS also points out that the money is intended to supplement rather than replace incomes (FAS 2010).

It is important to mention that the deforestation dynamics in the state of Amazonas is very specific. Amazonas has lost only two percent of its original forest cover, most of its population is concentrated in Manaus, and it has more indigenous peoples and local communities within its territory than other Amazon states. Cattle ranching and agriculture have recently become real threats. These factors contribute to the success of this approach.

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