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Using Carbon Markets to Fund Forestry Projects: Challenges and Solutions

Amid mounting concerns over global climate change, forests are receiving increasing attention. Standing forests sequester huge amounts of carbon—more than 600 billion tons. Yet when converted to other land uses, forests become a significant source of greenhouse gas: 10 to 20 percent of annual emissions have come from deforestation in recent years. Protecting forests from deforestation and degradation, and planting trees to re-establish forests, are thus critical components of climate change mitigation. Forests also play a role in climate change adaptation by protecting coasts from storms, stabilizing soils, and tempering weather extremes.

Among the many threats to forests are a powerful demand for agricultural land and a demand for fuelwood (especially in Sub-Saharan Africa where 80 percent of energy is derived from fuelwood, much of it unsustainably harvested). To mitigate many of these threats, DAI's natural resources and agriculture projects have worked with communities for nearly 40 years to provide sustainable livelihoods, reduce deforestation, and reforest degraded lands. More recently, DAI has been working to access carbon markets to provide sustainable financing for forestry projects.

There are many challenges to accessing carbon finance—the creation and sale of carbon credits—in forestry projects. Some are specific to forestry projects, others common to all projects seeking financing through the carbon markets. Fortunately, the barriers are coming down, both internationally and in the United States, where both the U.S. Senate and House proposed climate change legislation includes significant funding for international forest conservation.

CARBON MARKETS AND FORESTRY CREDITS

Recognizing that industrialized countries are responsible for most of the greenhouse gases in the atmosphere and more than 40 percent of current emissions, the Kyoto Protocol placed a heavier burden on developed nations to reduce emissions. Kyoto established the Clean Development Mechanism (CDM) to allow industrialized nations to support emissions reduction projects in developing countries in exchange for carbon credits they can use to meet their own emissions reduction targets.

CDM procedures and most voluntary standards require projects to prove that their emissions reductions are verifiable (auditing systems are in place), additional (reductions exceed those that would take place in the project's absence), permanent (sequestered emissions are not released in future years), and accountable (for any emissions increases displaced outside the project boundaries). The need to show additionality is particularly challenging for forest preservation projects,

Deforestation in Madagascar.

also known as Reduced Emissions from Deforestation and Degradation (REDD). Under REDD projects, the amount of carbon credits issued is based on the hypothetical amount of deforestation avoided, which is generally inferred from historical deforestation rates. In the Kyoto negotiations, critics argued that developing countries with high rates of deforestation should not be compensated more than countries that have managed their resources more sustainably. In addition, there was a fear—now seen as unfounded—that excess credits from low-cost reforestation and REDD projects could flood the market, depressing carbon prices and providing industrialized nations an "easy way out" through purchasing cheap carbon credits rather than reducing their domestic emissions. Due to these concerns, REDD projects were excluded from the CDM.

Projects seeking credits for replanting forests also face hurdles, notably around the issue of permanence. If a forestry sequestration project is later harvested or lost to fire, disease, or logging, then the credits—which are generated on an annual basis—must be replaced, at a potentially higher cost. In addition to the permanence criterion, concerns about market flooding, additionality, and monitoring saw the CDM limit forestry credits to 1 percent of reductions, while the European Union (EU) disallowed reforestation credits entirely for its market, which is by far the largest in the world. As a result, market demand for reforestation credits was anemic; only recently have reforestation projects showed signs of life under the CDM, as it appears they will be more broadly accepted after 2012.

Despite the CDM's restrictions on reforestation credits and exclusion of REDD credits, buyers of credits for voluntary purposes (as opposed to compliance with a regulatory scheme) favor forest carbon credits. These credits are correctly seen as a mechanism to reduce global warming while preserving biodiversity and providing other community and ecosystem benefits. Several formal, voluntary carbon market standard-setting organizations certify and register credits. Certification under voluntary standards is generally less administratively burdensome and costly than under the CDM, but faces similar challenges. All projects in the carbon markets must strike a balance between the desire to support sustainable development and the need to ensure environmental integrity. Granting credits too easily for projects with dubious emissions reductions can reduce buyer interest or flood the market and reduce overall carbon credit prices; the United Nations Framework Convention on Climate Change and the EU have attracted criticism for focusing on environmental integrity at the expense of sustainable development.

Policy makers are working to overcome the challenges to forestry carbon credits (see Table 1). The REDD concept was formally listed as a potential means to achieve emissions targets in Bali in 2007, and progress was made toward an agreement on a formal mechanism for REDD in Copenhagen in December (COP15). The United Kingdom's Stern Review estimated that the REDD market could grow to $15 billion per year if included in regulated carbon markets.

COSTS AND FINANCING OF FORESTRY PROJECTS

Reforestation and avoided deforestation projects can be costly, as they involve much more than just protecting or re-establishing forests. The implementation costs include forest management, surveillance, and monitoring; project management; and the development of livelihood options for local communities as an incentive for preventing ongoing illegal deforestation. DAI's

TABLE 1: FORESTRY CARBON CREDIT PROJECTS: CHALLENGES AND SOLUTIONS

Challenges	Potential Solutions
Financing projects with slow credit generation and long payback periods	Reduce policy and investment risks, facilitate pre-sale of future credits, allow private sector risk-based returns, educate financial institutions and provide government/multilateral guarantees
Uncertainties in monitoring and verification	Require third-party validation, use new satellite and aerial monitoring technologies, ensure access and host government transparency
Administrative cost burdens	Streamline host government approval processes, bundle projects for economies of scale, support simplified methodologies in international carbon trading regimes, use alternatives to project-based additionality such as standards/sectoral approach
Potential impermanence of forestry carbon credits	Create buffers against loss, such as insurance, pairing with a forward credit or pooling credits
Proving additionality for REDD	Tie REDD credits to national or global average deforestation rates, create separate markets for REDD credits which may not be fungible with other credits
Lack of clear land tenure	Clarify and establish property rights, ensure governments recognize traditional land claims and fairly compensate local communities, engage communities and stakeholders
Potential for displacement rather than reduction of deforestation	Establish robust national and subnational accounting and monitoring systems, discounting credits to account for assumed baseline leakage/displacement
Managing and taxing carbon revenue	Establish trust funds, ensure government transparency of distribution of resource revenues, minimize taxes on carbon credits for indirect uses
Illegal logging	Establish community patrols, village protection payments, alternative livelihoods funds

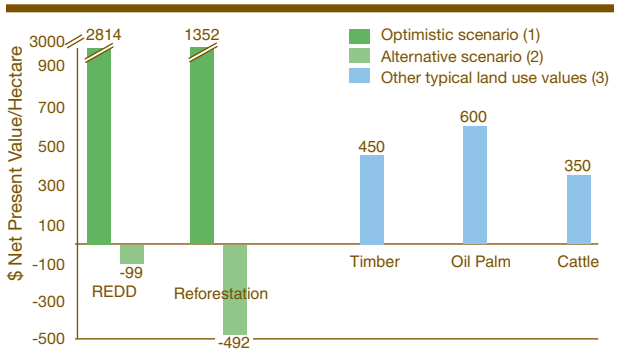
experience suggests that the implementation costs for forest protection projects can be $2 per hectare, with livelihood activities for local communities making up 50 percent of the funding. Initial costs for reforestation projects are much higher, from $50 to $1,000 per hectare for nurseries and planting and maintaining trees. Opportunity costs associated with foregoing the economic benefits that would have been generated by alternative land uses, such as for timber and agriculture, are the largest costs, as shown in Figure 1. Although the overall economic benefit from standing forests generally vastly exceeds the cost of preservation, this value is often dispersed as public goods among large areas/populations.

The transaction costs of bringing a project through carbon accreditation can be $50,000 to $200,000, including project design, registration, monitoring, and verification of emissions reductions. Forestry projects must generally set aside 5 to 40 percent of the credits in a reserve pool in case the forest is destroyed—an insurance policy that reduces revenues. Further administrative costs are involved in drawing up contracts with buyers, sellers, and host country governments.

Finally, there are financing costs. Communities, governments, or developers must pay to establish and register the project before credits are delivered. For reforestation projects, peak credit delivery will not occur until five years or more after establishment, as the carbon sequestered is minimal when trees are young. The credit value received by the project or land owner is normally significantly less than the market price of the credits if the credits are pre-sold (also called ex-ante) to pay for implementation costs. This discount is due to the risks involved in the carbon markets: the credits may not be delivered, policies may change, or any one of the myriad factors that affect carbon credit value—weather, economic growth, fossil fuel prices, and so on—may erode the value of future credits. In addition, voluntary market credits typically command a much lower value than those in regulated markets: the average price per metric ton of carbon dioxide equivalent (CO_2e) paid to developers of voluntary market credits in 2008 was just over $5.00.

In some scenarios, carbon payments can be sufficient to pay for the forestry project's implementation and offset the income lost from alternative land uses, but factors beyond the carbon price affect the decision to reforest or preserve the forest, such as the length of the period over which the credits are generated, the ability to pre-sell future credits, and the discount/risk factor applied to income from future credits. Taking into account the costs and revenues, Figure 1 compares potential carbon prices and the value provided per hectare.

FIGURE 1: NET PRESENT VALUE OF CARBON PAYMENTS VS. OTHER LAND USES



Notes: The price of a carbon credit, the crediting period, and the discount rate applied to future revenues from carbon payments vs. agricultural activities creates a wide variance in the value/hectare that can be obtained from the carbon markets.
(1) Optimistic scenario: 15% discount rate, 15% tax, $20 ton/$CO_2e$. For REDD: 250 tons C per ha stored, 5% deforestation rate; For Reforestation: 20 tons CO_2e/year avg. sequestered.
(2) Alternative scenario: 35% discount rate, 15% tax, $5/ton CO_2e. For REDD: 100 tons C per ha stored, 2.5% deforestation rate; For Reforestation: 8 tons CO_2e/year avg. sequestered.
(3) Representative profit per hectare over time from alternative land uses, also wide variance.

MANAGING CARBON CREDIT REVENUE

Many developing country governments, hoping that the carbon markets will be a windfall for funding general fiscal needs, are proposing taxes of up to 50 percent on carbon credits. Central governments generally use concession and licensing to allocate land use rights, and require revenue shares or fees for timber, agriculture, mining, or other land uses. However, in the case of carbon revenues, taxes must be considered carefully and tailored to the type of project. Imposing heavy tax burdens and fees will only drive away capital for greenhouse gas emission reduction projects, which may have technology transfer and local economic benefits.

Concerns about indigenous peoples' rights, particularly the payment and profit sharing mechanisms of REDD funding, are justified. Given the history of local disputes over oil and mineral royalties in many countries, local populations may have good reason to suspect that their national governments will seek to profit from the carbon rather than share the benefits. Unfortunately, this legacy of distrust means that potentially beneficial projects—projects that could directly pay local communities to improve health and education, support microfinance, and provide sustainable business opportunities—are sometimes derailed by activists and local communities unschooled in carbon markets.

Countries must establish clear governance structures, fiscal policies, and institutional arrangements for clarifying the legal rights to forest resources, and provide information and access to arbitration for local communities. In Madagascar, the government is proposing to tax carbon revenues and disperse at least 50 percent of carbon benefits to communities involved in avoiding deforestation. Ensuring that this funding is received by the local communities will be key; if benefits are not forthcoming, some community members may revert to destructive practices such as slash and burn agriculture. Building the capacity of local communities to manage and equitably distribute funds from carbon credits, and ensuring participation and transparency at the community level, will also be critical. For example, community members deciding whether to distribute carbon dividends equally to each household or fund a communal school or health clinic must be engaged and informed in their decision making, and accountable for it.

In many developing countries, ambiguous land tenure is another hurdle to forest-based carbon credit programs. Under the CDM, clear land tenure is a prerequisite for approval of carbon credits from reforestation efforts. Yet this clarity is often elusive. In Madagascar, promoters of a natural forest restoration project expended significant resources to map smallholder farms and fallow lands, and to facilitate tenure agreements between these traditional landowners and the government. In Indonesia, local communities living in or next to natural forest targeted by REDD projects do not have legal rights to the forest. A co-management agreement with the government is probably needed to allow REDD benefits to reach local communities. Under a DAI project in Malawi, such co-management agreements for government-owned protected areas have set the stage for two local communities to receive REDD funds that will be managed by a trust rather than by the central government.

CONCLUSION

Developing countries should be compensated for preserving and replanting their forests. Carbon markets could be the key to providing much-needed capital for these efforts, but many hurdles remain before donors can expect the private sector to play a significant role in financing forestry efforts. This is primarily due to the high risks in monetizing forest carbon credits currently—most notably the risk that the credits will not be delivered due to loss of the trees, or that cap and trade or REDD policies will change and the price of carbon credits will decline. And as with any foreign direct investment, developing countries must have good governance to attract capital. At the global level, climate change policies must provide long-term certainty that credits will be accepted and valued. When the risks are lowered, private sector "carbon speculators" will be early movers, and will make risk-adjusted profits from trading the carbon credits, but these market-makers are essential to achieving conservation goals—that is, the protection and replanting of forests.

For their part, development practitioners must address how the economic benefits from carbon credits are managed. They also have a role in preparing host countries to generate carbon revenues successfully, which includes developing baselines, establishing accurate carbon accounting systems, and supporting the project through the early stages of the approval process. Ideally, forestry, development, and carbon markets specialists will be engaged in the early stages to ensure carbon credits are successfully created, local value capture is maximized, and revenues are managed transparently. This will require a presence on the ground to support local stakeholders as projects take flight, as well as engagement at the national and international level to get the policies right. ■

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