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POLICY BRIEF

Improved Forest Management and REDD

KEY POINTS

- Logging is likely to expand in the tropics over the next five years, and represents a significant challenge to efforts to mitigate climate change by curbing deforestation and forest degradation.
- Improved Forest Management can help meet growing demand for timber while achieving significant and measurable carbon benefits, generating local community benefits, and sustaining native biodiversity.
- Improved Forest Management can therefore play a critical role in the successful implementation of REDD programs and should be a priority for REDD investments.

Introduction

One of the primary near-term, cost-effective opportunities for curbing climate change is the reduction of emissions from deforestation and forest degradation (REDD). In order for REDD programs to be successful, the way land is used and managed will need to change dramatically. Worldwide, over 20% of natural tropical moist forests (390 million hectares), is subject to logging.[1] This makes logging one of the dominant land uses, surpassing agriculture in some areas.[2] Logging therefore plays an important role in the economic development strategies of many forested countries.[3]

Demand for timber is expected to significantly increase from 2010-2015.[4] With timber plantations occupying only 3% of forested lands, demand for wood in the short-term will entail opening up natural forests[5] and/or intensifying harvest in already logged forests.[6] The likely expansion of industrial logging in the tropics presents a significant challenge to efforts to mitigate climate change by curbing deforestation and forest degradation. Currently, logging represents at least 20% of forest emissions in many tropical forest systems.[7]

Improved Forest Management (IFM) can help meet this growing demand while providing significant and measurable emissions reductions; however, incentives are needed to make that happen, and scientific innovation is needed for more affordable and scaleable carbon measurement. While IFM can generate cost savings over the long-term,[8] there has been limited adoption to date of IFM practices, largely due to significant up-front costs and a low value placed on the social and environmental benefits IFM provides.[9] REDD provides the opportunity to reverse the historical pattern of destructive logging by providing incentives for improved forestry practices that sustain production, reduce emissions, generate important local community benefits, and help conserve native biodiversity.

What is Improved Forest Management?

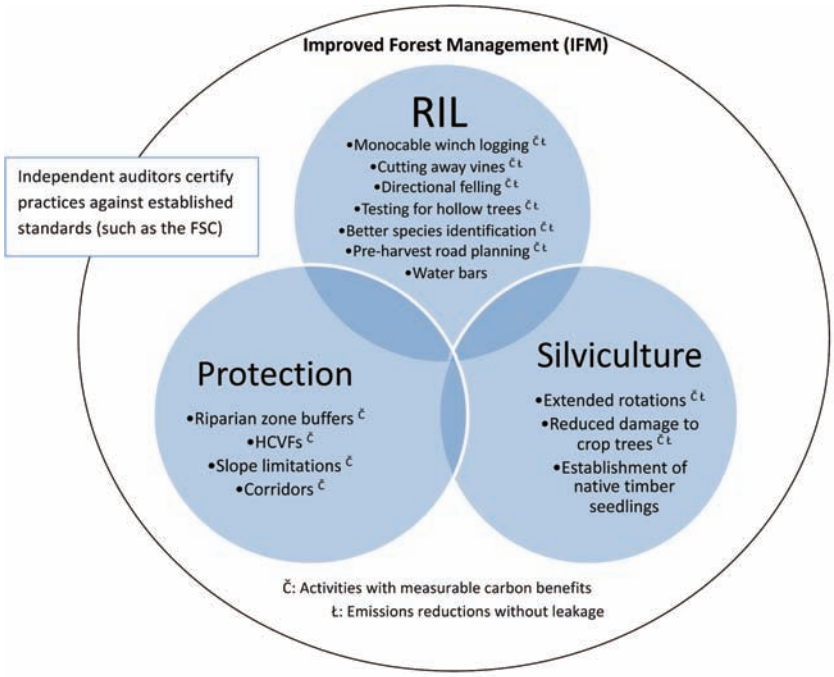

Figure 1

Practices included in Improved Forest Management. Many of these practices provide measurable carbon benefits. Many also lead to little or no leakage because emissions reductions are achieved while maintaining timber production.

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Dozer skid trail: when bulldozers are used to skid trees, a swath of forest is cleared up to every tree harvested.

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Monocable winch skidding: Monocable winch machines allow individual trees to be skidded out of the forest without clearing a swath of forest for bulldozer access.

Improved Forest Management (IFM) is a suite of practices that reduce the social and environmental impacts of forestry activities while maintaining forest product supply (see **Figure 1**). These practices include:

Reduced Impact Logging (RIL): RIL is an established set of timber harvesting practices designed to reduce the damage to the forest from timber extraction. Practices include:

- Using innovative, low-impact logging equipment—such as the monocable winch system—that slide logs along the forest floor with long cables, reducing the damage to forests by bulldozers;
- Improved design and construction of roads and skid trails to minimize width and length required to access trees designated for harvest ;
- Cutting trees so that they fall in a specific direction to minimize damage to other trees and maximize timber recovery (directional felling);
- Cutting away vines that get tangled in the tree tops so that a cut tree does not bring several other non-commercial trees down with it;
- Testing for hollow trees before they are cut down to avoid the wasteful destruction of trees that provide high ecosystem function but little or no timber value;
- Proper identification of marketable species before cutting so that non-marketable species are not cut down and abandoned; and
- Construction of water bars (small ditches) across roads and skid trails to divert runoff and reduce erosion.

Protection of conservation zones: IFM practices include the identification and special management of conservation zones, including:

- Riparian buffer zones - areas where land meets streams or rivers, which are sensitive to erosion and have high plant and animal species diversity;
- High Conservation Value Forests (HCVFs) - forests that contain concentrations of rare species, rare ecosystems, and/or areas of importance to local people;
- Steep slopes sensitive to erosion; and
- Corridors – forest areas that connect two or more larger blocks of forest.

Silviculture: IFM also includes practices to ensure regeneration of native timber tree species, which helps maintain native tree diversity and provide a long-term source of income and employment. Some of these practices reduce emissions (e.g. extended rotation times, reduced damage to crop trees) while others can

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One of the most widely used certification standards for IFM is the Forest Stewardship Council (FSC). The FSC aims to promote socially beneficial, economically viable,and environmentally appropriate forest management.

increase emissions (e.g. larger canopy openings to regenerate shade intolerant timber species); thus, careful planning is often necessary to achieve both emissions reductions and sustainable timber supply.

Independent third-party auditing systems exist to certify IFM practices. One of the most widely used certification standards for IFM is the Forest Stewardship Council (FSC). The FSC aims to promote socially beneficial, economically viable, and environmentally appropriate forest management. FSC standards include strong provisions for retaining and restoring native plant diversity, limiting conversion of natural forests, protecting high conservation values, and carrying out ecologically-oriented forest management practices. While certification systems such as FSC represent critical resources for credibly implementing and verifying socially responsible IFM, they were not designed to achieve specific emissions reductions levels. Work remains to link FSC with emissions reductions goals.

The Benefits of Improved Forest Management

Improved Forest Management can achieve significant and measurable carbon benefits, generate important local community benefits, and help sustain native biodiversity.

Improved forest management generates significant and measurable emission reductions

Most timber harvest in tropical forests is "selective logging" to extract the small number of commercial species amidst a large number of non-commercial species. Under conventional logging practices, 10-20 non-commercial trees are severely damaged for every commercial tree that is extracted. These "collateral damage" trees are left to rot, emitting carbon dioxide as they decompose. Reduced impact logging can significantly decrease this collateral damage through the practices described above. Reduced impact logging methods can directly decrease emissions by about 30-50% per unit of wood extracted.[10] Furthermore, the requirements for special management of HCVFs and other conservation zones provides for greater carbon storage in those areas.

Additionally, IFM is an appealing REDD strategy because it has little or no leakage to the extent that emissions reductions are achieved while maintaining timber production. This makes IFM an important component of a comprehensive low carbon development strategy.

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Low impact logging equipment can provide more employment than conventional logging systems and reduce risk or injury to workers.

Improved forest management generates significant local community benefits

IFM can provide important benefits to local communities, including increased employment opportunities, processes for tenure and dispute resolution, special management of High Conservation Value Forests, and improved worker safety requirements:

- **Employment**: Low impact logging equipment can provide more employment than conventional logging systems. For example, one timber concessionaire in Borneo seeking FSC certification employs eight times more local people in timber extraction operations using monocable winch systems as compared to conventional bulldozer systems.
- **Tenure and Dispute Resolution**: FSC standards require definition of tenure and use rights to the land such that local communities and indigenous peoples with legal or customary use rights can maintain control over forest operations and play a greater role in decisions about the fate of the forest. Managers of certified forests are also required to resolve disputes among forest stakeholders.
- **High Conservation Value Forests**: Because IFM has a much lower impact on the forest, ecosystem services that communities rely on, such as water quality and flood control, are better protected. Additionally, FSC standards require that High Conservation Value Forests have special management planning measures that maintain or enhance the identified values. For example, TNC worked with Dayak villages in Borneo to identify and map areas of high conservation value and helped broker an agreement with a logging company to avoid those areas (see Case Study). These areas included socially, culturally, and ecologically important areas

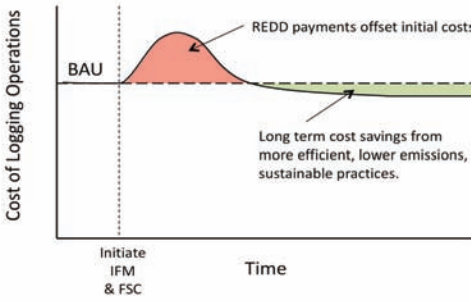

Figure 2

REDD payments help overcome up-front costs associated with certification but in many cases will not be needed over the long-term since IFM practices provide long-term cost-savings. We note that IFM may not generate cost savings in landscapes where large areas should be protected from logging due to sensitivity and/or high conservation value. In these places there will be ongoing opportunity costs, although they will be partially offset by sustainable, low impact timber revenue.

Figure 3

The forest industry includes a wide range of agents, from community-based forest management to multinational corporate forest management. REDD incentives can help agents across this spectrum move towards IFM and certification. REDD incentives will be more critical to smaller agents in overcoming the up-front capital costs (indicated in Fig. 2). It is also important to engage larger agents, such as government forest management agencies and multinational corporations, who are positioned to catalyze large scale shifts towards IFM, certification, emissions reductions, and other co-benefits.

such as village cemeteries and the nesting grounds of rare species.

- **Worker Safety**: Workers are exposed to extremely high risk of injury and death in conventional logging operations. Reduced impact logging operations significantly reduce those risks. FSC requires operators to meet or exceed applicable laws and regulations covering health and safety of workers and their families.

Improved forest management helps sustain native biological diversity

Forests that are carefully managed for timber will not replace protected areas as storehouses of biodiversity, but they can be an integral component of a conservation strategy that encompasses a larger portion of the landscape than is likely to be set aside for strict protection.[11] From a biodiversity maintenance perspective, sustainable natural forest management is preferable to virtually all alternative land-use practices other than complete protection.[12] For example:

- FSC-certified forests typically maintain a greater number of conservation zones than conventionally logged forests. These include: special management buffer zones along rivers and streams, protected High Conservation Value Forests, and areas slated for forest restoration. A study of the impacts of FSC certification in 21 countries found that 63% of certified operations had improved riparian and aquatic management and 62% had improved treatment of sensitive sites and HCVFs.[13] On average, certified logging operations designated 22% of total area as HCVFs (totaling 2.5 million hectares, the size of Vermont).[14]
- A WWF Peru fauna monitoring project in the Espinoza Forest Concession identified FSC certified harvest areas with large-animal densities similar to those of protected areas.[15]
- A study of forests in Malaysian Borneo concluded that forest certification had a positive effect on biodiversity. The certified forest sustained denser populations of endangered large animals including orangutans and elephants than elsewhere in the region. Tree species diversity under RIL was as rich as in old growth forests.[16]
- FSC-certified community-managed logging concessions in the Peten region of Guatemala have 20 times lower rates of deforestation than strictly protected areas.[17]
- A study comparing the impact of protected areas and ejidos (community-based forest management areas) in Mexico found that both are valuable conservation approaches, but ejidos are more effective: forest cover is actually increasing within ejidos while net forest cover is declining within protected areas.[18]

Why Invest REDD Funding in IFM?

Logging is inevitable, Improved Forest Management is not. Incentives are needed to shift the industry standard toward Improved Forest Management (IFM) practices (see **Figure 2**), and advance scientific measurement of carbon benefits. While IFM can generate cost savings over the long-term,[19] there has been limited adoption to date of IFM practices – less than five percent of tropical forest area designated for logging is under certified forest management.[20] Adopting and certifying IFM practices requires significant up-front costs and capacity, which limits adoption. These up-front costs can include technical training for staff; purchasing new equipment; hiring additional employees; and implementing planning, measurement and auditing processes. By helping cover the up-front costs of adoption, funding for IFM is an ideal fit for REDD programs that aim to provide bridge payments over a set time period for activities that will transform parts of developing countries' economies to sustainable, low carbon models. If properly designed and coupled with measures to reduce the flow of illegal and irresponsibly harvested timber into consumer markets, REDD could tip the balance towards responsible, certified logging throughout the tropics.

REDD payments are needed to help small, medium, and large scale logging operations move toward certification (see **Figure 3**). At one end of the spectrum, community-based forest management operations need the most support to build capacity, overcome up-front costs, and strengthen and document tenure rights. On the other end of the spectrum, large-scale operations can be expected to demonstrate the most efficient, scaleable, low emissions operations in response to initial investments, and help tip the balance toward certified logging as an industry standard.

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School children at the Long Laai village on the banks of the Sagah River in the Bornean forest of the Berau district, East Kalimantan, Borneo, Indonesia. Part of the agreement between the villages and the logging company provides scholarships and improved education for children.

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Segah River as seen from Long Laai, a Dayak village in the Sumalindo IV logging concession, East Kalimantan, Borneo, Indonesia.

Case Study: Bringing Loggers and Villagers together for Conservation in Indonesia

A timber concession on the island of Borneo nearly became a battleground in 1999 when conflicts between local Dayak villagers and Sumalindo Lestari Jaya, a logging company, escalated to the point the Dayak took logging equipment hostage and chased loggers out of a camp, singing ancestral headhunting chants. The conflict dated back to 1990 when Sumalindo first entered the area, but came to a head nine years later when the communities' demands for compensation for damages (e.g. cutting off access to water sources, ancestral burial sites, and forest products), went unheard. An unsuccessful attempted mediation led unilaterally by the company culminated in demonstrations, suspension of all timber extraction and ultimately abandonment of the concession in 2001, leaving it open to illegal logging, poaching and other destructive activities.

In 2002, following an extensive assessment of the situation and the area, TNC began a 2-year process of building communication between the conflicting parties and government, ultimately leading to resolution of the conflict and design of Indonesia's first Collaborative Forest Management Memorandum of Understanding (CFM MoU) in a production forest.

Today, with the support of the USAID/TNC-led Responsible Asia Forestry and Trade (RAFT) Program, the concession is working towards Forest Stewardship Council (FSC) certification and is successfully implementing the CFM MoU together with the five communities and government Parties. Under the RAFT Program, the process has been replicated in 2 other concessions, both moving towards FSC certification.

Collaborative Forest Management (CFM) is based on a legal agreement that establishes ground rules for managing a common forest area sustainably, so that community needs and values are respected and benefits to all parties are satisfactory. For the five communities along the Segah River, this means annual payments to community members; no cutting of fruit trees nor the Menggeris trees where bees make their honey; no logging in ancestral forests and burial sites; priority employment opportunities at the concession; and support from the company to improve community health and education.

But CFM does not end with the signing of an MoU; it is an ongoing process. The Segah Management Board is a local institution set up both to negotiate the MoU and to see that it is adhered to by all Parties. It is the responsibility of the management board to keep communication between Parties open and information flowing. This ensures that everyone knows the rules, making it harder for self-interested outsiders to spread misinformation about applicable regulations—an important cause of escalation in many conflicts, including this one. CFM sets up the right relationships and institutions for companies and communities to work together to identify social, cultural and ecological high conservation value areas, and integrate these into forest management and land use. TNC is encouraging the next big step: allocation of half of the concession under local community tenure for community-based management.

Collaborative forest management will be one important part of putting REDD into practice, and TNC's testing of CFM in the Segah watershed provides a model for REDD program development in Indonesia and globally.

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