

Session 1: PES for sustainable forest management

Payments for environmental services can promote the sustainable management of forests and landscapes

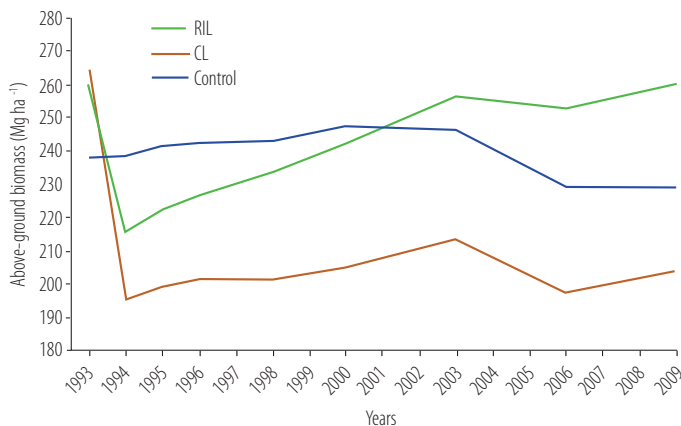
Is certification capturing PES in tropical forests?

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Figure 1 shows a comparison of carbon stock in a tropical forest after logging with conventional (highly destructive) methods and with reduced-impact methods as a component of SFM. Under conventional methods, there is a huge decrease in carbon held in the forest, and the carbon stock recovers only slowly. Under reduced-impact logging, there is substantially less of a decline in carbon because fewer trees are harvested and much less damage is done to the remaining forest, and at the same time the recovery of the carbon stock is much faster. After about 15 years, the carbon stock is more-or-less the same as it was prior to harvesting.

Figure 1: Carbon stock in managed forests



Note: RIL = reduced-impact logging; CL = conventional logging.

Source: West, T.A.P., Vidal, E. & Putz, F.E. 2014. Forest biomass recovery after conventional and reduced-impact logging in Amazonian Brazil. *Forest Ecology and Management* 314: 59–63.

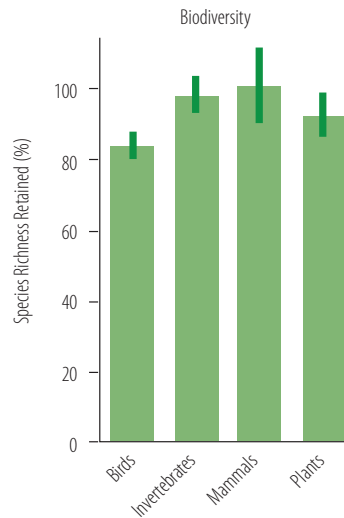
SFM also involves management practices to protect water catchments by employing buffer zones along streams and other waterways and the careful planning and construction of roads and bridges. SFM therefore contributes to regulating water supply and the provision of clean drinking water.

Figure 2 summarizes a meta-analysis of more than 100 studies looking at the impacts of SFM on biodiversity. The analysis found that selectively logged forests have only a minimal effect on biodiversity; birds are most affected, but, even so, about 85 percent of bird species are the same in a logged forest compared with undisturbed old-growth forest.

These results show that SFM contributes to three important environmental services: carbon storage, regulating water supply, and biodiversity conservation.

Markets for environmental services. What are the markets for these services? At a global level there is much discussion about carbon, but lumber exports remain by far the largest economic good from forests in terms of market

Figure 2: The effect of selective logging on biodiversity in tropical forests



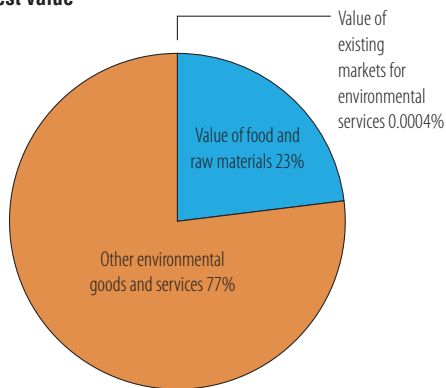
Source: Putz, F.E., Zuidema, P.A., Synnott, T., Pena Claros, M., Pinard, M.A., Sheil, D., Vanclay, J.K., Sist, P., Gourlet-Fleury, S., Griscom, B., Palmer, J. and Zagt, R. 2012. Sustaining conservation values in selectively logged tropical forests: the attained and the attainable. *Conservation Letters* 5 (2012): 296–303.

size; the international trade in wood products was worth about US\$237 billion in 2008, while the international trade in non-timber forest products was worth US\$11 billion. In 2010 the global market for forest carbon was worth an estimated US\$178 million, the global market for water catchment protection services was worth US\$9.25 billion, and the global biodiversity compensation market was worth US\$2.4–4 billion. Figure 3 shows that, at least by some valuations, environmental services potentially account for more than three-quarters of the total value of forests, but only a tiny fraction of that value is being remunerated in the marketplace.

Forests provide many environmental services. The Millennium Ecosystem Assessment distinguished four categories—supporting, regulating, cultural and provisioning. But not all these services can easily be quantified, measured and traded. Tangible forest goods such as lumber, biomass and water can be measured and traded, and there is a clear role for the private sector in these markets. But intangible services such as soil formation or cultural services are difficult to measure and trade, and other mechanisms are needed for these services.

One option is to “bundle” all (or a range of) services, which may reduce the complexity of the payment system and the cost of quantifying the services delivered. Bundling also has potential disadvantages, however; for example, different services may have different beneficiaries and bundling makes it more difficult to ensure that users pay for the environmental services they receive. Moreover, incorporating the cost of maintaining all environmental services into a single tangible good, such as lumber, may make it difficult for such goods to compete with, for

Figure 3: Ecosystem market value compared with economic forest value



Sources: analysis based on various Ecosystem Marketplace reports; TEED 2010. The economics of ecosystem services and biodiversity: ecological and economic foundations, edited by Pushpam Kumar. London and Washington, DC, Earthscan.

example, illegal lumber and substitute commodities (such as concrete and aluminium).

Certification. Forest management certification, which developed in the early 1990s, is a voluntary market instrument that attempts to capture, among others, the environmental services provided by forests in the price of wood by providing a “premium” if such wood is obtained from well-managed forests. In 2010, about 26 percent of the global lumber production was in forests where management was subject to third-party certification, but only 0.1 percent of certified lumber was tropical. Twenty years after forest certification began, only about 6 percent of tropical production forests are certified, although the growth in the area of tropical forest subject to certification has been almost exponential from a very small base. A study commissioned by the Dutch Sustainable Trade Initiative found that the costs involved in certifying forests—i.e. the reduction of revenue caused by a reduction in the annual allowable cut, additional management costs associated with certification, and the cost of certification auditing—reduces the gross profit and the price premium on certified wood—where there is one—often does not make up for this shortfall.

Voluntary markets for environmental services—such as certified wood markets—have the advantage of being a coalition of the willing in which producers and consumers come together for a mutually beneficial purpose. They have some significant disadvantages compared with compliance markets, however, such as their generally small size, the difficulty in scaling them up, and high transaction costs. Governments can assist the growth of voluntary markets by, for example, adopting public procurement policies to favour certified wood, and enforcing national laws and regulations to create a level playing field between conventional logging and SFM.



Reduced-impact logging involves, among other things, the use of rubber-tired machinery, the careful planning of skidding trails and lifting the end of the log to reduce the damage caused to soil and vegetation.

Photo: R. Boot

Making people aware

Banks, insurance companies, pension funds and many other investors are looking for opportunities to invest in sustainable practices and the restoration of degraded lands. Tropical forests provide many important environmental services, but few people beyond the forest sector know this. Thus, the first step to creating viable PES schemes is to raise awareness—to tell people about the provisioning, regulating and cultural services of tropical forests. Target groups for awareness-raising include companies, policymakers, banks and other investors, the media, religious leaders, non-governmental organizations, foundations, the general citizenry, and students (the chief executive officers of the future). Messages should be developed based on knowledge of the audiences they will be aimed at.

The messages that should be conveyed include:

- Tropical forests are sources of water.
- Standing tropical forests render more revenues in the long term than conversion renders in the short term.
- Tropical forests are life-support systems for us and for our children.

It is clear that forests also have a crucial role to play in “healing the world”; they are a least-cost option for mitigating climate change. We need to plant more trees, manage our forests better and produce more “green” products and environmental services. We can call it “REDD+”, PES or a green economy; it doesn’t matter. We don’t need to invent anything, but we may need to repackage it. The important thing is that the crucial global role of forests is recognized and paid for.

We need to spread the message that tropical forests are a giant carbon dioxide vacuum cleaner and manufacturer of green, renewable biomass, and that their sustainable management provides enormous global benefits.

Sources: based on presentations by Meindert Brouwer, author of The ecosystem promise, and Yetti Rusli, Senior Advisor, Ministry of Forestry, Indonesia.

A landscape approach to PES

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We may need to broaden the discussion from forests alone to landscapes with multiple functions. Forestry and agriculture are often seen as if they are a dichotomy. In this view, the more intensive agriculture is, the more forest can remain (the “land-sparing approach”). Another way to approach it is to think of landscapes as integrated mosaics (“land-sharing”), where functions of natural forests, tree (crop) plantations, agroforestry and open-field agriculture are managed jointly. Such landscapes come to life when people and institutions are seen as part of a complex socio-ecological system, interacting with the natural resource base and external markets and expectations. Landscapes are not just mosaics of multiple land covers and land uses; they are spaces within which lives and livelihoods run their course, and they include aspects of identity, pride and concern for the environment, with greater or lesser degrees of social coherence. Landscape approaches are attempts to reconcile local and external perspectives on what constitutes desirable landscape outcomes. Economic instruments such as PES complement regulatory and motivational dynamics.

PES schemes were initially seen as a simple exchange between (relatively) poor people living in environments where there is plenty of natural capital (e.g. biodiversity and carbon) and (relatively) rich people elsewhere living in environments that are poor in natural capital; it would then seem that a simple exchange—money for environmental services—could serve the needs of both sides. But this is not so simple in practice because all the various kinds of capital—social, human, natural, financial and institutional—are linked. Successful PES



Landscape approaches to PES require understanding of the who, what and where of land use and land-use change, the consequences of this change for environmental services and stakeholders, and the opportunities for stakeholders to gain leverage on the drivers of change.

Photo: DGFRN, Benin

schemes adjust to this complexity. People on the forest edge and in rural landscapes need respect, recognition, commitment and co-investment in their livelihoods as much as they need cash transfers. So there is a need for a more integrated approach between social and economic approaches to PES. We found that the concept of co-investment covers desirable system aspects of shared risk, benefit and commitment.

There is often a need to nest PES at different scales: landscape, region and international aspects such as REDD+. There is a common view that nesting must be like a set of Russian dolls and that PES schemes at all scales are essentially the same. But this is more restrictive than necessary. Landscape-scale co-investment PES mechanisms (removing bottlenecks to a local green economy) can be nested in subnational compensation PES schemes (equitable sustainable development support across regions), and nested again in global commodification PES schemes (carbon credits for money at the national border). PES may thus have a different form at each scale, with important translation steps on the nodes.

Landscape approaches require a basic understanding of the who, what and where of land use and land-use change in time and space, the consequences of this change for environmental services and the various stakeholders, and the opportunities for stakeholders to gain leverage on the drivers of change at the local level. Negotiation support tools for learning landscapes have recently been compiled and can help in fine-tuning local efforts.

Positive externalities

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Positive externalities are the co-benefits produced by rural economic activities that are not taken into account in economic transactions but which benefit society and the environment. PES schemes in developing countries focus on reducing negative externalities (PES as “use-restricting”), but building up assets through entrepreneurship and innovation is necessary to ensure financial sustainability. Thus, existing PES schemes tend to overlook the potential for creating new markets.

PES schemes can be aligned with the interests of local people if they are allowed to be in the driving seat; this would provide them with the opportunity to become entrepreneurs themselves and thus increase their motivation to participate and assume responsibility. But enabling local people to become entrepreneurs also requires support and coaching from the public sector. This facilitation role is about building up an entrepreneurial infrastructure, which so far has been neglected. Clear policies can help create markets for environmental

services, but matching grants and other incentives may still be needed to encourage entrepreneurs to tap into these nascent markets and eventually scale them up.

Where local partners are striving to adopt sustainable practices, the creation of a market for environmental services has two key requirements:

- a government that actively aims to minimize (through regulation) negative externalities and maximize (through innovation) positive externalities by
 - designing environmental services investment policies
 - strengthening national innovation systems
 - using procurement policies with sustainability strings attached
 - rewarding the creation of positive externalities.
- an innovation-driven private sector with a willingness to
 - share knowledge and expertise
 - participate in business deals with local actors
 - source certain goods from local providers
 - offer awards for good custodianship
 - offer awards for local initiative.

PES is based on the assumptions of neoclassical welfare economics, but there is a need to align PES theory with experience on the ground. Scaling up PES is possible only if local people have the opportunity to participate as entrepreneurs—not just as recipients of monetary compensation. It is important to minimize negative externalities, but there is also a need to facilitate positive externalities by promoting innovation in local communities.

Comments from the floor

- The multi-functionality of forests is paramount, and a big question is how much should be paid for multiple services. The state must understand that it is a facilitator, not a manager of PES schemes. It is a business for forest owners and managers; it is not simply about compensation.
- In Mexico, 80 percent of forests are in the hands of communities—they are the owners and managers. A key element for the success of PES schemes is the organizational level of the communities. Therefore, an important role for government is promoting the organization of communities through training and enabling the creation of community associations. As communities become organized they are also better placed to make use of their traditional knowledge in PES schemes.
- Let me tell you about a small community in northern Thailand, where rampant deforestation destroyed the environment. The local people were aware that this

was excessive. They organized a conservation group to assist with payments, and they protected the forest and carried out reforestation activities, and now the area is reforested and the community is benefiting from the goods and services supplied by the forest they protect. The carbon stock increased by 36 percent in four years and is still increasing. The key factor in making this PES scheme work for SFM is the participation of local people. Over 50 percent of biodiversity in Thailand is in our local region. We are working strongly on PES, but we are asking for more help from the international community.

- We have heard of a number of good examples of successful PES schemes in tropical forests. It's not so difficult to find such examples; the big challenge is how to scale these up. A responsive and active government can help by promoting pilot programs and scaling up those that work—this can increase the chances of success. Many of the experiences are in the south, so south–south and triangular collaboration can be important.
- Branding is an important way to add value to environmental services. We have seen it in Costa Rica, and we are seeing it emerge in Indonesia.
- I agree that there is a tremendous opportunity for PES schemes as part of climate-change mitigation. The new challenge for foresters is how to introduce our accumulated experience and data to climate-change negotiations. I hope that ITTO and FAO will get more involved to ensure that all their good work is made known to climate-change negotiators.
- In New Zealand we have had many trials of different approaches. Some of the key things we've learned: you need to understand what behaviour you are trying to change. Every stakeholder and owner is different, so you have to offer a variety of payment mechanisms and means. You also need to understand that sometimes payments are not the best way to get the outcomes you want, so work with stakeholders to determine which approaches will work best.
- There is very little evidence that PES works (or doesn't work). We only see “before” and “after”; it's hard to know what is cause and effect, and other factors may have contributed to the success of the measure, or PES may have hindered the change. There are some data: the World Bank carried out a study in Colombia, with a control group, which determined that, yes, the PES intervention there had had a big impact. My recommendation is to include assessment measures in the project design. Often we only think about assessment at the end, but we need to design it at the beginning. If we exclude it, we will remain with vague, inconclusive or mistaken results that will be unconvincing.



A Forum participant makes a point during the plenary session.
Photo: H.O. Ma/ITTO