

SESSION II: ENGAGING THE POOR TO MITIGATE EMISSIONS  
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# LINKING COMMUNITIES, FORESTS, AND CARBON

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Forest Trends

(A draft version of a chapter forthcoming in the book, *Development in the Balance: How Will the World's Poor Cope with Climate Change?*, to be published by the Brookings Institution Press)

**EXECUTIVE SUMMARY:**

The future of the world's climate and the future of millions of the world's poorest people are inextricably linked through forests. Deforestation is the second largest "sector" of emissions after energy and over 90 percent of those who live on less than a dollar a day depend fully or in part on forest products for their livelihoods. Yet the primary international framework for tackling climate change, the Kyoto Protocol, provides a minimal role for protecting forests and improving the livelihoods of those who depend on them. Rectifying this imbalance and successfully protecting forests will require new and creative alliances between governments, the private sector, and civil society. The challenge is to shape emerging global environmental markets to harness the power of small scale and local producer communities to address climate change and to bring much needed investment to improve their livelihoods.

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Over the last century, human activity has had a profound impact on the environment. Fossil fuel consumption, deforestation, and other unsustainable land use practices have resulted in a dramatic increase of carbon dioxide (CO<sub>2</sub>) and other greenhouse gas (GHG) emissions into the atmosphere. The great majority of scientists believe the increase of CO<sub>2</sub> emissions has created the human-induced climate warming conditions that

are currently affecting the globe. If this trend continues, climate disruption will inevitably accelerate with wide ranging (e.g. human health, national security) and catastrophic implications.

A large piece of the emissions of CO<sub>2</sub> into our atmosphere comes from deforestation and forest degradation in tropical countries which continues at an alarming rate despite decades of global advocacy and policy initiatives. Between 1990 and 2005 the rate of deforestation averaged over 13 million hectares a year with the highest emissions associated with industrial agriculture (e.g. soy beans, cotton) and cattle ranching in the Amazon, palm oil plantations in South East Asia, and household slash and burn agriculture in Africa.

Tropical deforestation happens very simply because it is more profitable to cut down trees and forests than to look after them. This is due to a complex combination of market, policy, and governance failures which vary country by country, and which make alternative land uses more attractive—or in other words, the opportunity costs of sustainable forest management (SFM) or conservation become too high. A key response to market failure is the emerging payments and markets for ecosystem services (PES) mechanisms. Currently, the most important PES opportunity is for ‘forest carbon’ payments, an attempt to link the role of forests in climate both as a source of emissions and as a sink to sequester emissions.

Deforestation accounts for 17 to 25 percent of global anthropogenic greenhouse gas emissions. It is the 2<sup>nd</sup> largest ‘sector’ of emissions—larger than transportation and 2<sup>nd</sup> only after energy (WRI 2007). Yet, land use and land use change projects like forestry (those most likely to benefit rural producers in developing countries) accounted for just 1 percent of the project based carbon transactions recorded in both 2005 and 2006. The primary international framework for tackling climate change, the Kyoto Protocol, excludes the preservation of standing forests (known as “avoided deforestation”) and the avoidance of forest degradation from the list of project types eligible to generate emissions reduction credits. The Kyoto Protocol also severely limits reforestation and afforestation activities as sources of carbon credits, undermining the capacity of international efforts to reduce the significant impact that deforestation and land degradation contribute to accelerated climate change.

The reasons for these restrictive policies from Kyoto and the major carbon trading instrument, the European Union Emission Trading Scheme (EUETS), are part political and part technical concerns about permanence, leakage, measurement, and how credits could fit into current trading schemes. While these concerns are real, continuing to exclude forest activities from the list of Kyoto-acceptable emission reductions projects severely limits our ability to mitigate climate change and engage rural peoples in the battle. Mainstream economic activity continues to create perverse incentives for damaging and destroying the planet’s remaining indigenous forests and forested ecosystems. Without national and international policies that create alternative revenue streams to encourage keeping these areas intact, the world is poised to lose some of its most biodiverse habitats (tropical rainforests) and largest carbon sinks to conversion into agriculture, development, and other land-based industries that reduce the carbon sequestration potential, water quality, and biodiversity of forest land.

Just since the Rio ‘Earth Summit’ in 1992 we have lost over 1.5 million square kilometers of forest with major costs to our biological diversity and to local peoples (an estimated 1 billion of whom live in and around forests and are dependent on their resources for fuel, food, and medicine). The fact that deal-flow in the carbon market is currently bypassing important conservation and community based sustainable development projects in Africa, Asia, and Latin America—partly because of high transaction costs—highlights the pressing need for innovative mechanisms to aggregate transactions, increased institutional capacity building, better information services, and more sophisticated market infrastructure surrounding payments for carbon and other ecosystem services for low-income and indigenous communities in developing countries. We have an historic opportunity to shape these new emerging markets. Yet, this window of opportunity is closing quickly. In the next 5 years the rules and instruments for these markets will be formed and the interests on conservation and low-income communities will be in or out.

To achieve this, governments, the private sector, and civil society will need to act boldly, in concert and with urgency to address the ‘tsunami’ of climate change. Our global leaders and climate negotiators are currently debating targets for 2050. We cannot wait for the political process to set the agenda or pace of response. We need to act today to put projects on the ground, gain experience and local capacity, and inform the political process. In this paper I lay out some of the challenges of effectively linking communities, conservation, and climate, and more importantly some tangible activities that can bring these inextricably linked elements together in a powerful way. I use a baking metaphor—bringing local communities, forest conservation, and carbon emissions reductions (the ingredients) together through a new mix (recipe) to produce a range of products that bring climate, forest, and community benefits.

### **FORESTS AND COMMUNITIES: THE INGREDIENTS**

The future of the world’s forests and the future of millions of the world’s poorest people are inextricably linked. More than a billion mostly poor people now live within the world’s 19 forest biodiversity “hotspots.” Population growth in the world’s tropical wilderness areas is 3.1 percent—over twice the world’s average rate of growth. Over 90 percent of those who live on less than a dollar a day depend fully or in part on forest products for their livelihoods. A Forest Trends report, “Who Owns the World’s Forests,” examined global tenure trends and found that at least 420 million hectares or 11 percent are legally owned or administered by communities. This constitutes some 22 percent of the forests in the developing countries and three times as much forest as is owned by private individuals or firms (Forest Trends, 2002). More recently we identified the amount of the world’s forest that is being actively conserved by indigenous peoples and other communities with or without legal protections. We assessed total investment in forest conservation, including estimates of local people’s investments in conservation. The analysis reveals that community-driven biodiversity conservation covers significant areas of the world’s forests and that those communities invest an important amount in their conservation, equal in fact to the investment in forests from traditional international assistance.

Communities offer new institutional models for conservation that should be strengthened. Some traditional communities in large intact forests require more secure tenure rights, legal rights to actively use their forests, and support for building local

institutions and skills for better conservation outcomes. Others require stronger partnerships with their government or private partners where their presence and control of boundaries are under threat from outsiders. Communities in newly settled forest areas tend to require clarified and stronger tenure rights, more outside assistance to develop management structures and viable enterprises. Communities that are actively restoring forested landscapes or agriculture-forest mosaics may already have secure tenure rights, yet policies or regulations often place formidable barriers and create disincentives for these communities to undertake conservation activities or economic activities that are compatible with and supportive of their conservation goals.

Technical assistance and support is helpful to strengthen such efforts and should be provided on local terms. Local community actors can play lead roles in research and monitoring, setting management goals, and implementing and developing economic activities that generate financial and subsistence returns from the resource base while conserving that resource's multiple values. The more that local community managers and the next generation of community leaders are able or supported to perform these roles, the more effective and sustained forest conservation will result.

In parallel, policy makers and governments should re-examine global forest conservation conventions and mechanisms to ensure that these foster and support community conservation. Exciting new markets for environmental services are emerging with the carbon market in the lead, but currently few of these are sensitive to equity issues or to the access of local communities to these markets and market players. The challenge and historic opportunity is to shape these global environmental markets like the carbon market to effectively link to small scale and local producer communities bringing their power to address climate change and bringing much needed investment in improving their livelihoods.

To date, very few people have looked at these linkages.

### The Scolel Community in Mexico: Carbon Payments and Community Benefits

In the Tzeltal dialect of southern Mexico, Scolel Té means “the tree that grows.” According to those involved, this translation suits the fast-growing Scolel Té carbon sequestration project in Chiapas, Mexico. Scolel Té uses the sale of carbon credits on the voluntary carbon market to fund agroforestry efforts that reduce greenhouse emissions while advancing much-needed sustainable development. Since its launch in 1994, the project has expanded from Chiapas to Oaxaca and is now a viable business involving more than 400 farmers from 30 different communities and a range of ecosystems. The project, which is jointly managed by the Edinburgh Centre for Carbon Management (ECCM) and a cooperative of foresters and agronomists known as AMBIO in Mexico, finds carbon buyers who want to buy carbon credits for reasons other than compliance and connects them with farmers who want to sell carbon credits generated by innovative land-use practices on their land.

In a market where many believe that cost-effective greenhouse gas emissions reductions and sustainable development in impoverished rural areas do not usually go hand-in-hand, Scolel Té’s successes is noteworthy. But the Mexican researchers who work with indigenous farmers on the project say the secret to their success is surprisingly basic. Instead of giving key responsibilities to outsiders, this project puts a strong emphasis on making community members participate. “The greatest strength of this project is social participation,” says Miguel Angel Castillo, head of the Laboratory of Geographical and Statistic Information of Ecosur in Chiapas.

Of course, the project is not exempt from the problems of the real world and Castillo is the first to admit that working with poor rural communities can be difficult. “Because approximately 70 percent of the forests in Mexico are under a common property regime call *ejido*, this project is mainly addressed to the inhabitants of ejidos. These people live in areas with high biological richness but are very poor,” Catillo says. “Working with poor people with strong social conflicts implies high administrative costs. Also, it means that management procedures are time-consuming and that it takes a lot of effort to explain the project to community members.”

On balance, though, Scolel Té seems to have come up with a system that is satisfying both the indigenous farmers generating carbon credits and the companies and individuals buying them.

Ecosystem Marketplace, “A Tale of Two Continents“, 2006

## FORESTS AND CLIMATE: THE INGREDIENTS

Forests play a central role in the global carbon cycle. To get a clear sense of the role of forests in climate change and emissions I have included some important data points captured in a recent report from Resources for the Future:

### *Forests and carbon:*

- In 2005, global forests covered 3,952 million hectares (Mha), or 30 percent of the total land area worldwide (FAO 2006). The UN Food and Agriculture Organization (FAO) estimates that global forests store 638 gigatons of carbon (GtC) in their ecosystems, compared with approximately 750 GtC stored in the atmosphere. Of this forest carbon, 283 Gt (44 percent) is stored in forest biomass, and the remainder is stored in soil (46 percent).

### *The state of the forests:*

- Many temperate forests are growing, and thus sequestering more carbon. However, tropical forests are shrinking at a relatively rapid rate and emitting carbon once

stored within the organic matter. Annually, deforestation removes 13 Mha of forest, or 0.2 percent of total forest area (FAO 2006). In the tropics, forests cover approximately 43 percent of the land area, and deforestation is occurring at an annual rate of approximately 0.6 percent, for a cumulative loss of 8.3 percent of tropical forests over the 1990 to 2005 time period (FAO 2006; Butler 2007).

*Sinks vs. Sources:*

- Forests and other terrestrial sinks annually absorb approximately 2.6 GtC; however, deforestation and land-use activities emit approximately 1.6 GtC, or 5.9 Gt carbon dioxide (CO<sub>2</sub>) (IPCC 2007), reducing forests' role as a net carbon sink. Net carbon absorption rates are approximately 1.0 GtC annually (IPCC 2007). For comparison, annual fossil fuel and cement emissions are approximately 6.4 GtC (IPCC 2007). The 1.6 GtC annually emitted by deforestation and land use activities account for approximately 20 percent of total global emissions.

With the contribution of deforestation and degradation emissions to climate change now quantified, the international community is scrambling to create incentives for “avoided deforestation.” After extensive analysis of the economics of climate change, the much publicized Stern Review concluded that “curbing deforestation is a highly cost-effective way of reducing greenhouse gas emissions and has the potential to offer significant reductions fairly quickly” (Stern 2007). At the UNFCCC Conference of the Parties (COP 13) in Bali in December 2007, international consensus was built around the point that reducing emissions from deforestation and degradation in developing countries needs to be included as a strategy for meeting the climate change and sustainable development objectives of the convention. This marked the birth of a proposed new instrument—Reduced Emissions from Deforestation and Degradation (REDD).

One additional important point is that emissions from forest loss and land use change are not evenly distributed around the globe, but are concentrated in a few tropical countries experiencing very high rates of deforestation. Brazil and Indonesia are two of the top 5 global CO<sub>2</sub> emitters following China and the U.S., solely because of their emissions from deforestation.

### **Brazil: A Forest and Carbon Superpower**

- Tropical deforestation emissions may increase in the coming decade as rising worldwide demand for animal ration, meat, and biofuel places new pressures on potential agricultural lands in the tropics (Soares-Filho et al. 2006, Nepstad et al. 2006c, Nepstad et al. in press). Estimates suggest that in a business-as-usual scenario, 55 percent of the forests of the Brazilian Amazon will be cleared, logged, or damaged by drought by the year 2030, releasing  $20 \pm 5$  billion tons of carbon to the atmosphere. These predictions do not include the effects of regional or global climate change.
- Brazil is a prime candidate for a REDD program because of its ground-breaking successes in reducing and monitoring deforestation and forest degradation in the Amazon region, where most of its emissions occur (~70 percent). Brazil contains more carbon in tropical forest trees than any other country— $47 \pm 9$  billion tons in 3.3 million square kilometers of forest in the Amazon alone. But there is considerable debate and discussion over how REDD programs will work, and how much they will cost to the implementing nations. The ultimate price of REDD carbon credits and, hence, the flow of money into REDD, will be determined by the size of the world carbon market which is, in turn, defined by the emissions reduction targets that developed countries commit to.
- Considering only the maximum opportunity cost (OP) of forgone profits from soy vs. cattle ranching, the OC of preserving the remaining forests of the Brazilian Amazon (3.3 million km<sup>2</sup> and 47 billion tons of carbon) is \$5.5 per ton of carbon, and a total of \$257 billion. This cost declines to \$2.8 per ton of carbon and \$123 billion overall if forest conservation to soy and cattle ranching is permitted on the 6 percent of remaining forested lands that have the highest opportunity costs (370,000 km<sup>2</sup> of forest containing 3 billion tons of carbon).
- Substantial co-benefits of this program include: the doubling of income of 200,000 rural forest-based families; a reduction in fire-based costs to society (namely respiratory illness, deaths, and agricultural and forestry damages) of \$10 to \$80 million per year; and protection of the rainfall system that may supply much of the Brazilian grain belt and hydro-electric energy production of the industrial southwest. Substantial non-monetized benefits include biodiversity conservation, such as avoidance of the near-elimination of five ecoregions.

Nepstad et. al, 2007, Woods Hole Institute

## **THE POTENTIAL OF CURRENT INSTRUMENTS TO LINK FORESTS, CLIMATE, AND COMMUNITIES**

### *1) Kyoto, and the E.U. Emission Trading Scheme*

Although the UNFCCC specifically notes the important role that forest sinks play in the sequestration of carbon, policy mechanisms to incentivize terrestrial carbon sequestering have been limited. Forestry projects can generate carbon credits within the Kyoto Protocol's Clean Development Mechanism (CDM) and joint implementation (JI) mechanisms and are restricted to afforestation/reforestation (AR) projects that sequester carbon. AR credits are capped for use by Annex I parties at 1 percent of base-year emissions of 5 percent of emissions during the entire five-year commitment period from 2008 to 2012 (Schlamadinger, Ciccacese et al. 2005). At this time, avoided deforestation activities are excluded as a means to meet emissions targets.

Within the context of the Kyoto Protocol, credits generated from forestry projects are considered to be inherently different from credits generated from energy projects because of a perceived lack of permanence and the potential reversibility of forestry projects (Neef and Henders 2007). *Thus, in summary, these regulated markets have little to no potential to address poverty issues or engage local communities in the climate change battle. Their policies need to be changed!*

## 2) REDD

At the formal UNFCCC (the official climate change negotiations) it was decided that a new mechanism for compensating tropical countries for their nation-wide reductions of greenhouse gas emissions from deforestation and forest degradation (REDD) would be created.

Since the COP 13, several major initiatives around REDD have begun to move forward. In late 2007, the World Bank launched the Forest Carbon Partnership Facility with the dual goals of building REDD capacity and sponsoring a series of pilot projects to test the viability of compensated reduction schemes in developing countries. Norway announced a \$100 million fund to finance avoided deforestation in Tanzania. Australia announced its International Forest Carbon Initiative to research and sponsor REDD pilot projects in Oceania, particularly Indonesia and Papua New Guinea. Many international nongovernmental organizations and other international organizations have also developed REDD initiatives.

Despite this proliferation of interest in REDD, available information on project development tools and institutional and community-level capacity are severely lacking. Few national, state, and local government entities, not to mention indigenous groups and local communities, have the resources or access to the information they need to shape policy on market design.

*In the most ambitious scenario, we are 3 to 5 years away from major financial resources flowing from REDD.*

## 3) Voluntary Carbon Market

The voluntary carbon markets have been and can continue to play a significant role in poverty alleviation and forest protection, by providing finance for communities seeking to protect their forests through financed carbon sequestration and through clean energy projects. These markets, while considerably smaller (\$400 million) than the regulated carbon market are actually growing at a faster pace. The voluntary market also offers opportunity to innovate and help provide project experience into policy formation.

With fewer transaction costs and more market tolerance for innovation, the voluntary markets have the potential to significantly benefit communities in developing countries. In fact, they already have. In 2007, credit-generating projects in developing countries made up approximately 50 percent of the total market value. There is a clear increase in buyer demand for voluntary carbon credits with community benefits, so called “social co-benefits,” and these credits often command a price premium in the voluntary

markets. In the regulated markets, the story behind a credit is much less important than obtaining a credit for the cheapest price possible in order to meet a compliance requirement. Transaction costs tend to be lower in the voluntary markets. Project sizes tend to be smaller in the voluntary than the regulated markets, suggesting that the voluntary markets may be able to provide the capital to enable smaller credit-generating operations (such as those in developing countries) that may be unable to bear the relatively high transaction costs per credit needed to enter the market.

*The voluntary market permits all types of forest carbon projects. The scale of investment depends on international demand. More investors in the voluntary market means more community forest carbon projects.*

### **CARBON COMMUNITY FORESTRY: THE RECIPE**

Carbon is the ultimate global market that does not discern a ton of emissions coming from a coal fired power plant in China to a ton of emissions coming from an SUV in California to a ton of emissions coming from burning forests in Indonesia. To the atmosphere it frankly makes no difference from where the emissions come or reductions happen. Yet from the perspective of the broader societal goals of poverty alleviation and conserving the globe's precious biodiversity, reducing emissions by preventing forest loss and conversion should be preferred. Carbon with these additional attributes benefit local communities and preserves endangered species. 'Charismatic carbon,' if you will, should be more valuable than 'commodity' carbon.

This mix of carbon markets with forests and communities can require complex frameworks to function well; community-based programs need substantial, technical, business and finance support to participate in these markets! But if these ideas are mixed thoughtfully, there's a possibility of jumpstarting positive changes for the environment and for communities. There is great potential, to fulfill the vision, that carbon markets can be designed based on sustainable development practices that are socially inclusive and promote the conservation of ecosystem services, especially the quality of water, biodiversity, and climate.

These programs can also create a shift in mindset of how work in developing countries is traditionally funded. Instead of having only a few options—either supporting government-run programs or pure philanthropy—potential donors could also have an opportunity to make their contribution an investment in the voluntary carbon market preserving and protecting both the environment and the local community.

And in turn, ecosystem service providers may have the chance to make their own investments in themselves and their children. One of these providers, schoolteacher Beatrice Ahimbisibwe, has started to plant trees on her 3 acres of land in Uganda, selling carbon credits and using the funds to invest in her home and her family. "Not only do I use my work as an example when I teach my school children, and not only do I get to talk to and meet people from all over the world, but now my neighbors come and ask me questions about my carbon and my trees."

### **The Role of Financial Institutions and Climate: Scale, Scale, Scale**

The need for major capital investment in a broad range of economic sectors to truly address emission problems, coupled with the creation of a powerful and pervasive new commodity market (one that some speculate could become one of the world's largest), suggest that financial institutions have three essential roles to play: (1) they will need to provide *capital* at significant scale to support investment; (2) they will need to provide *market liquidity* to enable investors and businesses to freely enter and exit investments and to manage exposure to the price of carbon; and (3) they will need to provide *risk-transfer solutions*, including price hedging and insurance to help participants manage risks involved in large-scale capital investment and manage new carbon market compliance exposure.

Private capital cannot solve the problem alone. Substantial public action is required to create the conditions for financial markets to provide these services. Without public support, many required investments, particularly those at the earliest stages of commercial development, will be unable to attract private capital. Unless public policy measures are stable and sustained, they will not convince the private sector to make the long-term investments needed. Without market innovation, investment opportunities that are attractive but challenging to execute, such as forest carbon projects, will remain unexploited.

### **A CONCRETE SOLUTION: THE FINAL PRODUCT**

*The Katoomba Incubator: Getting to market, increasing local benefits: connecting communities, forest conservation and markets*

The Katoomba Ecosystem Services Incubator was created to address the supply side of the current disconnect in ecosystem service markets. By providing targeted technical, financial, and business management support to promising projects with potential for long-term financial viability, the Incubator contributes to catalyzing the nascent ecosystem service markets and bringing benefits to small-scale producers. Latin America is the initial regional focus of Incubator investments given its leading role in ecosystem market and project innovation, and expansion to East and Southern Africa has begun.

The Incubator strategically invests in the project development phase enabling projects to more effectively engage private investors or buyers on solid footing to increase opportunities for equitable outcomes. Though there are notable brokers and investment funds developing carbon projects (an estimated \$11 billion in private and public carbon funds worldwide), few are focused on maximizing conservation and community benefits. And very limited investment is available for moving projects efficiently through the design and development process to go from promising potential to marketable commodity.

The Incubator focuses on investing in the design and development phases of community and biodiversity-centered projects. While other NGOs have incorporated carbon and ecosystem services into their agenda, the Incubator identifies a portfolio of projects that enables it to provide effective, efficient support to a broad range of partners and aggregation models. Thirdly, the Incubator benefits from the Katoomba network's capacity to draw on leading practitioners in the field and the most up-to-date market information via the Ecosystem Marketplace's ([www.ecosystemmarketplace.com](http://www.ecosystemmarketplace.com)) global market linkages.

*Incubator Goals*

- Increase benefits to communities from ecosystem services markets by increasing supply of solid projects.
- Leverage new investment flows, demonstrating that community ecosystem services projects can provide attractive investment returns.
- Catalyze innovation and methodological development, including a focus on REDD, water markets, and bundled services.
- Strengthen regional institutional capacity to access markets and develop viable projects.
- Build an aggregation model to efficiently support a range of small-scale producers.

**Restoration of Amazon Rainforest in the Surui Indigenous Territory**

The Surui indigenous people, numbering approximately 1,000, live within a 248,000 hectare territory in the Amazon rainforest of the state of Rondonia in western Brazil. A small percentage of the Suri territory has been deforested, and their forests are under strong threat of encroachment for timber extraction. This project proposes to catalyze carbon financing to promote the conservation of biodiversity and indigenous rights, through a combination of:

- Restoration of 1500 ha of degraded pasture through reforestation with native species;
- Conservation (avoided deforestation) of over 240,000 ha of remaining native forest.

The Incubator will support the capacity building of this community to manage reforestation projects and administer carbon finance, and should serve as a key demonstration project to be leveraged through partner organizations for other indigenous territories in the country.

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