

Drivers of Deforestation and REDD+ —Can REDD+ Compete?



If we believe in REDD+—and the levels of global investment so far indicate we do—then we need to do more to make it a competitive and viable option.

What do opportunity costs mean in the context of REDD+ and what are the implications for local communities? Farmers intuitively know the importance of opportunity costs. To tackle deforestation in a socially equitable way, we must consider what the drivers of deforestation are and what incentives and livelihood opportunities accompany them.

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About REDD-Net

REDD-Net is the hub for knowledge sharing and resources on Reducing Emissions from Deforestation and Degradation (REDD+). Aimed at Southern civil society organizations and practitioners in REDD+, the network offers the latest information and resources to help build pro-poor REDD+ projects and policies. Led by the Overseas Development Institute (ODI), REDD-Net's partners include RECOFTC – The Center for People and Forests, Tropical Agricultural Research and Higher Education Center (CATIE), and Uganda Coalition for Sustainable Development (UCSD).

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From the Editor

Dear Readers,



Despite its associated risks, many of us do believe that REDD+ offers a real and important opportunity for the region's forests and the rural communities that live in and around them. However, certain realities are becoming clear: if REDD+ is expected to operate on current market values of forest carbon offsets (US\$ 5.5/ ton according to the recently released State of Forest Carbon Markets 2011), at current prices it simply cannot compete with land use options such as oil palm, timber, rubber, coffee, and rice production. For all the funds supporting the development of REDD+ by the international community (fast-start funding commitment of US\$4.5 billion made by the REDD+ Partnership nations, US\$100 billion a year by 2020 for the Green Climate Fund, etc.), unless the cost-benefit analysis works in favor of forests at the local level, there is good reason for concern.

If we believe in REDD+, we need to do more to make it a competitive and viable option. If the voluntary market will not pay enough to keep forests intact, we must consider other options. Compliance markets offer the possibility of a mandated value for carbon offsets, however, given the low probability of a binding agreement on emissions reductions, this is unlikely. A further option is for REDD+ to be fund-based. This would entail public investment on a massive scale, with commitments to date making up only a fraction of what would be needed. Finally, the burden of transaction costs in developing and validating REDD+ projects presents a formidable hurdle, at least in the start-up phase.

An important point in assessing opportunity costs associated with REDD+ is that forests cannot and should not be viewed exclusively in terms of their carbon sequestration value. The role of forests is multifunctional, and one of the criticisms of REDD+ by local communities and indigenous peoples is that REDD+ fails to take into account their traditional uses, holistic management and cultural/spiritual values for the forests. Opportunity costs presume actions based on economics-based logic, namely the pursuit of individual self interest. However, examples from successful community-based natural resource management demonstrate that profitability is not the only, or even most significant, factor motivating forest management.

We face a monumental challenge to make REDD+ work. A growing body of evidence (including the anecdotal cases from the region described in this bulletin) suggests that moving towards a carbon-based market will not be enough to counter rates of deforestation in the region. More work needs to be done to better understand and build upon the real incentives for local communities to conserve forests.

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All costs are not equal

Three general categories of costs are associated with REDD+:

Opportunity costs are those most widely referred to. These are forgone benefits that would have otherwise resulted from deforestation, including the economic benefits associated with alternative land uses. Less easily quantified are socio-cultural costs (the loss of traditional livelihoods and local knowledge, and spiritual or emotional impacts of changed livelihoods) and indirect costs (the impacts on downstream communities when supply chains and economic activities change). Opportunity costs are important as they normally make up the largest portion of REDD+ costs.

Also important to consider are **implementation costs** associated with the cost of efforts needed to reduce deforestation and forest degradation. This can include: land use planning, tenure reform, forest protection and associated administration.

Finally, **transaction costs** of establishing and operating a REDD+ program must be considered. Such transaction costs tend to relate to REDD+ related negotiations, certification, and monitoring, reporting, and verification (MRV) processes.

The most important thing for indigenous people to be able to decide whether the opportunity costs justify engaging with REDD+ is not to assume the information is too detailed and complicated. Allow them maximum information available so that they can assess the costs and benefits in ways that are appropriate for them.

Joan Carlyle,
Asia Indigenous Peoples Pact (AIPP)

It is said that people destroy forests because they are poor, and that deforestation causes poverty—but generalizations are a poor foundation for policy. We find that deforestation is caused by both rich and poor people—and it can either destroy or create assets for poor people.

Kenneth Chomitz,
lead author of World Bank report,
At Loggerheads (2007)

Changing diets, a bite out of forests?

The expected growth of the human population to over 9 billion people by the middle of this century is guaranteed to increase pressure on the world's food supply. Over the past 50 years, the world has seen consumption of grain, beef, and mutton nearly triple. Adding to the pressure generated by population growth, changes in diet will place heavy pressure on global food production systems – and forestland – to meet demand. Meat production is heavily resource-intensive and requires up to 10 times the quantity of resources (land, energy, and water) that is needed to produce equivalent amounts of non-meat food.

In addition to its effects on the environment, meat consumption also has serious social and economic consequences. While several hundred million people do not have sufficient food, 40% of the world's grain supply is fed to livestock.¹ As meat consumption increases, the increased demand for grain by feedlots may further limit the supply available to the world's poorest people. For example, increasing China's per capita consumption of beef to the level of the United States would require an additional 340 million tons of grain per year—roughly equal to the annual average U.S. grain harvest.

While the link between deforestation and meat consumption is one step removed, the Stern Review argues that an important part of the climate change research agenda must be to connect proximate causes of environmental degradation, such as meat production, with underlying causes, such as social, political, and economic factors. Where meat consumption is increasing and opportunity costs make extensive raising of livestock and grain production to feed livestock profitable, forests will be under increased pressure to give way to competing land use demands, and REDD+ must be able to compete.



Table 1: Grain and forage inputs per kilo of animal product²

Product	Grain (kg)	Forage (kg)
Lamb	21	30
Beef cattle	13	30
Eggs	11	-
Swine	5.9	-
Turkeys	3.8	-
Broilers	2.3	-
Dairy (milk)	0.7	1

¹ Foster, P. (1992). *The World Food Problem: Tackling the Cause of Undernutrition in the Third World*. Boulder, Colorado: Lynne Rienner.

² Data from US Department of Agriculture.

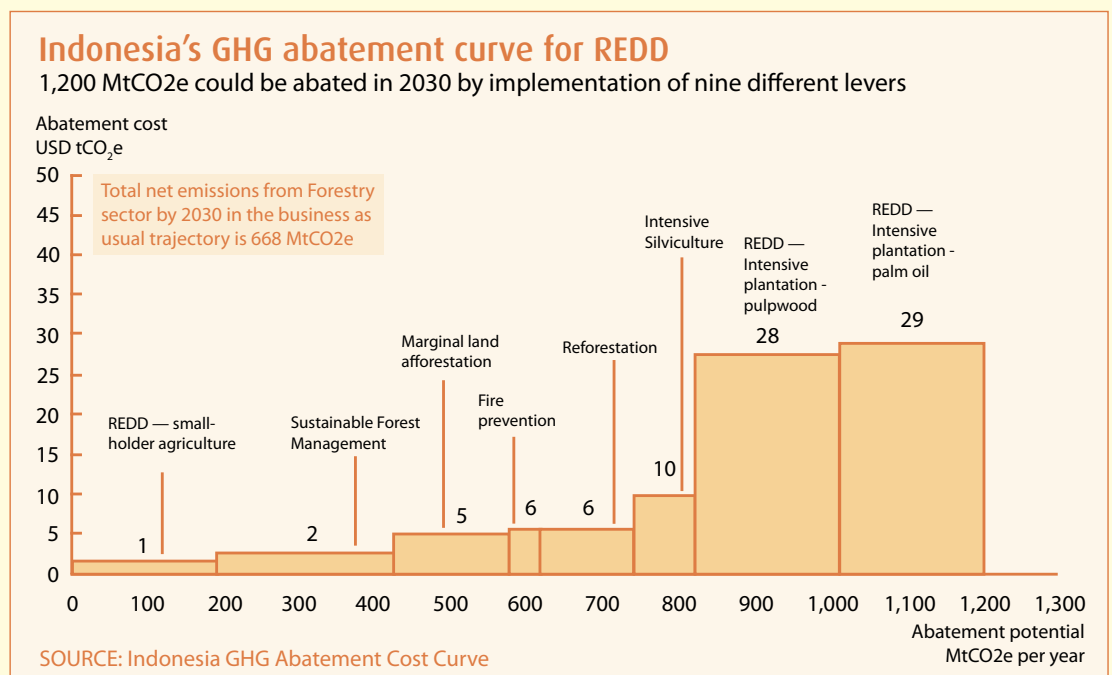
The hidden costs of the MAC model

Marginal Abatement Cost (MAC) curves are graphic depictions of the marginal cost of emission abatement for various mitigation options in a certain year in the future. MAC curves have become mainstream in climate change discourse over the past few years largely due to the seminal Stern Review (2006) and more recently with McKinsey & Company's adaptation of the model.

To date, McKinsey has developed over 14 country emission cost curves and a global cost curve model, all of which have been highly influential in steering national government approaches to mitigation policies. McKinsey acknowledges the MAC's limitations, referring to it as "a starting point for global discussions about how to reduce GHG emissions, showing the relative importance of different sectors, regions and abatement measures."³ However, groups such as Greenpeace, the Rainforest Foundation and most recently the University College London Energy Institute continue to raise some fundamental concerns about its application (UCLEI, 2011). Some key concerns include:

- **over-simplification** (not taking into account the full range of interacting factors with uncertain effects);
- **the omission of transaction, administration, implementation or monitoring costs** (transaction costs alone can comprise 9-40% of total investment costs);
- that **mitigation options in the forestry sector are not comparable to those in the energy sector** (particular complexities such as changes in carbon content according to forest maturity); and
- the **omission of distributional equity**, even where it has been calculated.

The cost curve graph for Indonesia, below, is adapted from a McKinsey model. The effectiveness and impact of given abatement strategies are depicted by the width of the graph bars, as compared to costs incurred (the vertical axis).



"The MAC curve is not, and should not be used as a one-stop shop for ranking abatement policies...The MAC curve of McKinsey & Company, and of anyone else, can only be one component of the decision-making aids on which policy is based (UCLEI, 2011)."

From the DNPI, Indonesia, 2011⁴

³ Naucler and Enkvist 2009

⁴ <http://www.dnpi.go.id/report/DNPI-Media-Kit/reports/>

Lessons from the Region

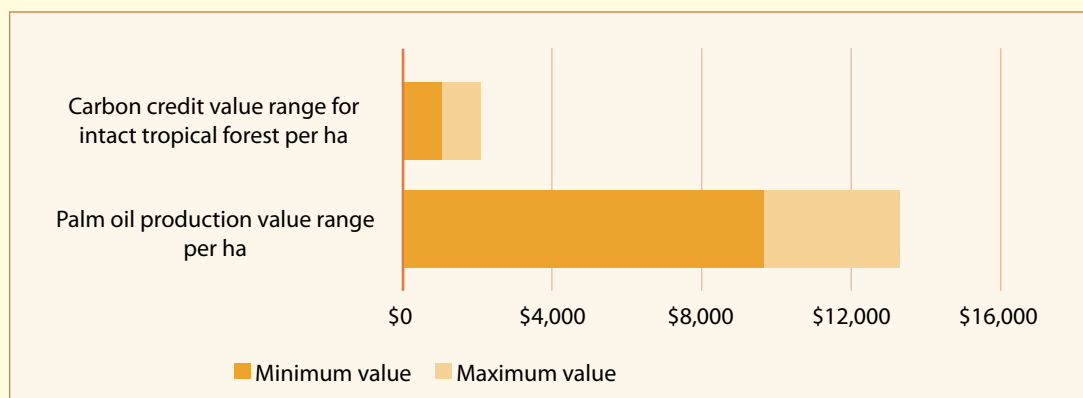


Palm oil and REDD+

Between 2005 and 2010, Indonesia and Malaysia, together responsible for 80% of global palm oil production, lost approximately 685,000 ha/ year and 87,000 ha/year of forest cover respectively (due to a range of factors, not exclusively palm oil conversion).⁵ Global concern over palm oil production and resulting deforestation in tropical countries is high. The World Bank estimates that market demand will require an additional 6.3 million hectares of palm oil plantations by 2020.⁶

The threats stemming from the high demand for palm oil production are due in part to (a) poor management, policies and enforcement at national levels, combined with (b) poor efficiency and low productivity by small scale producers (comprising approximately 60% of palm oil producers). The industry in general has low efficiency with yields of between 3.0 to 4.4 tons of oil per hectare, while productivity could be as high as 8.6 tons per hectare.⁷ Claiming the need to consider the livelihoods of some six million people employed in the sector, in April 2011, the World Bank Group lifted an 18 month moratorium on new investments in the global palm oil sector. The implications for REDD+ are that while the strong demand for palm oil and the employment it offers bring with it a range of risks, it will continue to be a major driver of deforestation unless proactive policies are developed supporting intensification of production on land that is not already forested.

The graph below shows palm oil values versus those of the carbon market in tropical rainforests in Southeast Asia. The opportunities presented by palm oil require both higher carbon credit values and policy interventions to level the playing field in favor of forests.



Adapted from data from Butler, R., Koh, L. P and Ghazoul, J. (2009).

⁵ FAO (2010). Global Forest Resources Assessment 2010. Rome, Italy: Food and Agriculture Organisation

⁶ [http://www.ifc.org/ifcext/agriconsultation.nsf/AttachmentsByTitle/Discussion+Paper/\\$FILE/Discussion+Paper_FINAL.pdf](http://www.ifc.org/ifcext/agriconsultation.nsf/AttachmentsByTitle/Discussion+Paper/$FILE/Discussion+Paper_FINAL.pdf)

⁷ <http://ictsd.org/i/news/bioresreview/110718/>

⁸ Butler, R., Koh, L.P., & Ghazoul, J. (2009). REDD in the red: palm oil could undermine carbon payment schemes. Conservation Letters 1-7 doi: 10.1111/j.1755-263X.2009.00047.x

It is absolutely critical for communities to understand that REDD+ entails both opportunities gained as well as opportunities lost. And this is why benefit sharing and informed negotiations are key ingredients to any REDD+ activity—they're the meat and bones for local communities.

**Lawrence Ang,
Ateneo School
of Governance,
Philippines**

Lessons from the Region



Cambodia: Meeting a taste for trafficked timber

A chicken which has laid its egg on a bed of rice will eventually start eating the rice.

Cambodian saying to describe the temptation of exploiting high value resources such as forests

The Seima Protection Forest in Mondolkiri is one of Cambodia's few remaining reserves of original forest. It is also one of Cambodia's two REDD+ pilot sites, along with Oddar Meanchay. Populated by indigenous peoples, this inaccessible area bordering Vietnam had, until recently, remained undeveloped with its forest resources still largely intact. This has changed in a very short period of time: the fertile soil and abundant land have attracted numerous lowland farmers. In many cases, indigenous peoples have been persuaded to sell communal lands with token payments such as motorbikes and televisions. As tenure remains unclear and indigenous peoples see an increasing incursion of logging concessions, the incentives for protecting their traditional forests are declining.

Simultaneously, strong demand for high value timber is coming from nearby Vietnam. While the timber is illegal in Cambodia, once across the border and with levies paid in Vietnam, it becomes legal and can be sold on to China for high-end furniture production.⁹ The high demand for timber within the region means that in order for deforestation in and around the Seima Protection Forest to be curbed, in addition to ensuring that the emission reduction payments are high enough, REDD+ will need to be part of a broader package of sustainable forest management benefits and measures – including enforcement of cross border trade.

⁹ <http://www.aic.gov.au/documents/B/D/4/%7BBBD4B2E50-33B4-47F1-815E-901C0ACC7A43%7Drpp89.pdf>



Lao PDR: Does keeping the forest in Salavan pay?

Salavan Province in Lao PDR is one of the few sites in the region where detailed REDD+ opportunity cost assessments have been done at the project level. An opportunity cost study led by the Sustainable Forestry and Rural Development (SUFORD) project¹⁰ looked at the profitability of different land uses in Salavan Province, specifically in Lao Ngam Production Forest Area (PFA).

Causes of deforestation in Lao Ngam (approximately 1.05% annually) include: the expansion of rubber plantation concessions, shifting cultivation with shortening fallow periods, fuelwood collection, and agricultural expansion. New road development and a surge in foreign investment leading to greater market engagement have also contributed to deforestation. The study estimated the economic potential for these activities in Salavan province and compared them with several scenarios for how REDD regimes and associated profitability might develop in the future (including Compliance European Union Allowances, Compliance Certified Emission Reductions and Voluntary Market VERs).

The SUFORD study indicates that to provide sufficient incentive for farmers to stop clearing forest for other land uses, the price of carbon credits would need to be competitive with the following:

- seasonal rice: USD \$33 t CO₂e
- coffee: USD \$35 t CO₂e
- rubber: USD \$39 t CO₂e.

The report shows that the development of rubber concessions will generate income per hectare ranging from USD \$828 to USD \$5,531 over a 30 year period. However, on the basis of the REDD scenarios, the value of carbon credits in the compliance market ranges from USD \$12 to USD \$326 per hectare over the same period. Under the voluntary carbon market scenario, market prices would provide income of USD \$12 to USD \$76 per hectare.

The study concludes that due to the high profitability of alternative land uses such as rubber and coffee, and the relatively low profits of REDD projects (once transactional, monitoring and other costs are factored in), REDD incentives will be seriously challenged to compete with alternative land uses in Salavan province.

The opportunity costs of protecting Da Loc's mangroves



Uncle Minh was nominated by his community in Da Loc (Thanh Hoa district, Vietnam) to be the 'protector' of the community-managed mangrove forests. Following the devastation of Typhoon Damrey in coastal Thanh Hoa in 2005, CARE initiated a mangrove forest project to buffer against future disasters. There had been previous donor- and state-led mangrove afforestation initiatives in the wake of the typhoon, but all had failed with high losses of the mangrove seedlings. The initiatives did not promote community ownership and contribution to ongoing maintenance activities such as barnacle removal and garbage clearance. The CARE project made the community the central stakeholders in the project, with resulting survival rates of the mangroves in the 80% range (CARE Evaluation report, 2009).

However, as the mangroves matured, a number of valuable marine species such as mollusks, shrimp and small fish began to populate the mangrove undergrowth. Mollusk collection was restricted, allowing the mollusks to reach large sizes and attract high market prices. In their efforts to obtain the mollusks, illegal collectors often cut at the mangrove roots, harming the entire plant.

Uncle Minh took his task seriously and began watching over the mangroves without a break. While all members of the community acknowledged the long-term value of the mangroves in buffering them from typhoons, the short-term value of the exceptionally large mollusks provided too much temptation to resist. Uncle Minh found himself in conflict with members of the community. Along with the conservation of forests also may come an increase in the opportunity costs of maintaining these forests. It remains to be seen in the case of Thanh Hoa if the mangroves can withstand the high individual opportunity costs for maintaining a public good.

¹⁰ Clarke, M. (2011). Technical Report on Opportunity Costs and REDD in Salavan Province. SUFORD.

Balancing the costs in favor of forests

Sustainable forest management (SFM) should not be a component of REDD+. This is backwards. Rather REDD+ should be a component of SFM. REDD+ should be an additional incentive to existing good forest management practices.

Bernhard Mohns,
Senior Program Officer,
RECOFTC

The rough sketch of emerging opportunity cost issues presented here suggests that REDD+ as a market mechanism driven by prices of carbon offsets in the voluntary market alone is difficult to justify. Local communities are at the heart of REDD+ discussions, both from a rights-based perspective and from one of effectiveness. Not involving local communities in an authentic way seriously compromises the implementation and eventual success of REDD+.

When grappling with how REDD+ can offer a real alternative to drivers of deforestation, there are some fundamental issues that need clarification and possibly some serious re-thinking. First and foremost is to bear in mind that there is yet to be a formal international agreement on climate change. While consensus on a number of REDD+ issues was reached at Cancun, REDD+ will most likely need to be embedded within a global agreement on climate change – which has yet to materialize.

Payments for REDD+ offsets are based on reduced rates of deforestation and determined by the value of REDD+ credits and the carbon stocks in the forest being protected. The premises underlying REDD+ depend on narrow and fundamentally incomplete valuations. By these same valuations, and given the current prices the markets are willing to pay for offsets, it will be difficult for REDD+ to compete.

What does this mean for ways forward? The following are some points to consider:

1. The **multifunctionality of forests** must be central. If, as it appears, carbon prices alone are insufficient to justify protection of forests, the entire basket of forest benefits must be brought into the equation. This means the inclusion of Sustainable Forest Management (SFM) in addition to other forest ecosystem services rather than an exclusive focus on carbon.
2. The **premises for REDD+ eligibility**, if not designed such that reference levels recognize previous positive actions, will potentially be too narrow and will possibly lead to perverse impacts. While the inclusion of conservation of carbon stocks was to ensure that countries such as Nepal and Bhutan, where positive actions taken in the past reduced deforestation, were not penalized, it remains critical that reference level modalities developed at the international level should ensure that these countries are eligible.
3. A **nested approach to REDD+** offers the most viable strategy for stimulating private financing of REDD+ activities. This approach would combine the advantages of both a national crediting system which would ensure national-level consistency regarding reference levels and potential leakage, with that of sub-national or project-level crediting which would allow for greater involvement of the private sector in implementation and financing of REDD+ activities.
4. One of the great hurdles both in monetary expense and in the human resources required is the **transaction costs** - upfront project development and continuing monitoring and verification. To date in most projects, this continues to be subsidized by NGOs and by the private sector as a CSR activity. Once accounted for, these costs make REDD+ even less competitive. Consideration must be given on cost sharing or other means of transferring this burden.
5. This very preliminary and anecdotal summary of some of the issues emerging in the context of REDD+ opportunity costs begs more questions than it answers. There is a pressing need as international negotiations refine the architecture for REDD+ to rationalize the mechanism – this will require greater research and careful consideration of how to make REDD+ more competitive with other, more profitable, land uses.

For more information please visit www.redd-net.org.

