Greening REDD+

Tools and measures for ensuring REDD+ provides biodiversity benefits

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Carbon and biodiversity: REDD+ can support all forest values if well designed. *Photo: T.Bruder/ITTO*

Although the overall goal of REDD+ is to reduce greenhouse gas emissions from deforestation and degradation and to increase carbon sequestration in forests, the way in which REDD+ is designed and implemented will have a significant, and possibly unparalleled, impact on the conservation of biodiversity. If a REDD+ mechanism is approved and successfully applied, it is expected to lead to significant reductions in tropical forest loss and degradation, provide unprecedented revenues to developing countries to retain their forests and manage them more sustainably (on the order of US$15 to 30 billion annually), and, more generally, lead to improved land tenure and governance of tropical forests, all of which will largely be beneficial for biodiversity conservation (Harvey *et al.*, 2010).

However, there are also some potential risks for biodiversity from REDD+ (e.g., Putz and Redford, 2009). For example, if only a subset of countries choose to participate in REDD+, there may be leakage (displacement of deforestation) to other forested countries that have high biodiversity. And even within countries that participate in REDD+, there may be a shift from deforestation in forests with high carbon densities to forests with lower carbon densities, or a shift in agricultural expansion away from forested areas to other sensitive ecosystems (such as savannahs or wetlands) with negative consequences for the biodiversity of these systems. Moreover, forest carbon stock enhancement may be carried out in ways that have harmful effects on biodiversity. The overall impact of REDD+ on biodiversity will therefore depend closely on both how the global REDD+ mechanism is designed, as well as how individual countries implement REDD+ on the ground.

This article provides a short overview of the key design and implementation issues that will determine the impact of REDD+ on biodiversity conservation, and highlights the measures and tools that policy makers and forest managers can use to achieve biodiversity conservation through REDD+.

REDD+ design and biodiversity conservation

The design of the REDD+ mechanism by the UNFCCC[1] will shape both the opportunities and risks for biodiversity. In particular, decisions about the scope of eligible activities will determine which countries participate in REDD+, how much they reduce their emissions, and how much (and where) forest is conserved. The current draft negotiating text proposes that the following range of activities be eligible under a REDD+ scheme: reducing emissions from deforestation, reducing emissions from forest degradation, conservation of forest carbon stocks, sustainable management of forests; and enhancement of forest carbon stocks (UNFCCC, 2010). However, at present, there is not yet a common understanding of what these different activities entail, nor is it clear how they will be incentivized under the REDD+ mechanism. The incentive structure for each of these activities will depend, in turn, on issues such as the reference levels that are used, the scale at which REDD+ is implemented, and the origin and volume of the finance that is available (see Harvey *et al.*, 2010 for more details). The resolution of these design issues will have important consequences for biodiversity conservation, as they determine how much (and which) tropical forests are conserved or sustainably managed.

1 *United Nations Framework Convention on Climate Change (UNFCCC)*

In addition, the direction of the on-going negotiations suggests that the REDD+ mechanism will likely include 'safeguards' on a number of social and environmental issues, including biodiversity. The current draft of the negotiating text states that REDD+ activities should be "consistent with the conservation of natural forests and biological diversity, ensuring that actions… are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits" (UNFCCC, 2010). However, there is some debate as to whether or not the safeguards should be voluntary or legally binding, and whether there should be monitoring, reporting and verification on these safeguards. But even if the UNFCCC does not make these safeguards legally binding, there may still be scope for individual countries or REDD+ funding agencies to make these safeguards mandatory in particular instances. If such safeguards are endorsed and monitored, this would be an important step for biodiversity conservation.

In order to identify how different REDD+ designs may influence tropical forest cover and associated biodiversity benefits, a number of authors have developed models that identify which countries- and which forest areas- are most likely to be conserved under different REDD+ designs. For example, the OSIRIS (Open Source Impacts of REDD+ Incentives Spreadsheet model; Busch *et al.*, 2010) allows users to explore the impacts of four different designs for REDD+ on national deforestation rates in 86 tropical countries, as well as the impacts of different levels of REDD+ finance. Other authors have examined the spatial congruence of carbon and biodiversity (e.g., Kapos *et al.* 2008), or carbon income potential from REDD+ and biodiversity (Eberling and Yasue 2008), drawing attention to both the potential synergies and tradeoffs between REDD+ and biodiversity conservation. From a biodiversity conservation perspective, these analyses point to the importance of ensuring that a global REDD+ mechanism be designed to include as much tropical forest as possible, prevent the international displacement of deforestation, reduce deforestation and degradation rates as quickly as possible, and ensure that REDD+ finance is sufficient and sustainable, so that the reductions in deforestation and degradation rates can be sustained over time.

REDD+ implementation and biodiversity conservation

Although the global REDD+ mechanism provides the framework of how greenhouse gas emission reductions and removals will be credited and compensated and thereby establishes the potential for conservation benefits, it is the implementation of REDD+ on the ground which will ultimately determine its net impact on biodiversity. Individual countries will decide which forest mitigation activities to pursue (e.g., forest conservation, sustainable management of forests, carbon stock enhancement), as well as where, and how quickly, to apply these strategies (see Harvey *et al.* 2010 for more details). These decisions, in turn, will affect the quantity, quality and distribution of forest habitat available for wildlife.

In general, policy makers and forest managers can help ensure REDD+ implementation contributes to biodiversity conservation in a variety of ways. These include (but are not limited to) spatially targeting REDD+ to forests of greatest biodiversity value, prioritizing the reduction of deforestation and forest conservation over the reduction of forest degradation and forest carbon stock enhancement (as the former will have greater immediate conservation benefits), establishing new protected areas where appropriate, replacing conventional logging with reduced impact logging or forest conservation, requiring environmental and social impact assessments (EAIA's) for REDD+ programs and/or establishing environmental safeguards.

Ensuring REDD+'s contribution

There are a range of tools that can be used, often in combination, to assist countries and forest managers to increase the opportunities for biodiversity conservation through the implementation of REDD+, and to decrease the risks. These tools include spatial analyses, scenario development (including assessments of economic costs and benefits), guidelines and standards, and monitoring.

Spatial analyses can show the relationship between carbon stored in forests and areas of importance for biodiversity. They can therefore be useful in identifying areas where it is possible to take action that will contribute to both climate change mitigation and to maintaining biodiversity, as well as pinpointing potential trade-offs. Global maps of carbon stocks are already available (e.g., Scharlemann *et al.*, 2009), however the value of these maps would be enhanced if they would also identify where that carbon is most threatened (e.g., due to agriculture, logging, fires or other threats) and where there is potential for increasing carbon stocks through restoration, reforestation or sustainable management. The different measures of biodiversity include global datasets such as Important Bird Areas (http://www.audubon.org/bird/iba/), Key Biodiversity Areas (Eken *et al.*, 2004), and Alliance for Zero Extinction sites (www.zeroextinction.org), as well as regional and national datasets of biodiversity priority areas, which exist for some countries and some taxonomic groups. UNEP-WCMC has already undertaken work that utilizes these different datasets at global, regional, national and sub-national level (e.g., Kapos *et al.*, 2008, Miles *et al.*, 2009b), providing valuable examples of how to use spatial analysis to incorporate biodiversity considerations into REDD+ planning. In addition, individual countries are now starting to incorporate spatially-explicit information on biodiversity into the development of national-level strategies to reduce deforestation and degradation and the prioritization of sites for conservation efforts (e.g., the Socio Bosque program of Ecuador; http://www.ambiente.gob.ec/ paginas_espanol/sitio/sociobosque.html).

As countries face choices about which policy options to adopt, spatially explicit scenarios that estimate the outcomes of different policy choices and development paths can also be a useful tool in planning the implementation of REDD+. For example, the 'Valuing the Arc' project in Tanzania is mapping the spatial distribution of carbon storage, water regulation and endemic species (among other aspects), and exploring the consequences of alternative development trajectories on ecosystem services (www.valuingthearc.org). The challenge posed by the use of such models and scenarios is that they rest on necessarily untestable assumptions about what will happen and are often very data-hungry when the relevant data may not be available. In addition, these models also require information about the costs and benefits of different land uses and land management options (including the opportunity costs of maintaining forests), which is often difficult to obtain but critical for management decisions.

A different type of tool is provided by the REDD+ Social and Environmental Standards that are being developed by the Climate, Community and Biodiversity Alliance (CCBA) and Care International (CCBA and CARE, 2010). These standards consist of a set of principles, criteria and indicators, which provide generic guidance to countries as they develop and implement their national or state-level REDD+ strategies to ensure that a range of social and environmental issues are taken into account. They also suggest a process for monitoring, reporting and verification on social and environmental aspects of government-led REDD+ programs. These standards are currently being tested by several countries (Nepal, Ecuador, Tanzania) and the State of Acre (Brazil) to determine their ease of use, feasibility, cost, and overall performance, and it is likely that additional countries will join these efforts over the next year. If these standards prove to be effective and are broadly adopted across REDD+ countries, they could play a significant role in shaping the social and environmental impacts of REDD+.

Finally, monitoring the impacts of REDD+ implementation on biodiversity will be essential to determine if the outcomes have been positive and to allow for any necessary adjustments to ensure biodiversity benefits. Standard methodologies and approaches for monitoring certain aspects of biodiversity already exist (e.g., for species richness and rarity) and guidance is available from the Convention on Biological Diversity (www.cbd.org) and other organizations. There is also on-going work to develop a framework for evaluating and monitoring biodiversity for the CBD 2010 target and beyond (www.twentyten.net). Coordinating such initiatives and potentially adapting some of the existing methodologies for REDD+ could enable their use in the monitoring, reporting and verification (MRV) of REDD+. A key challenge, however, will be to ensure that adequate, and sustained, finance is available to establish a biodiversity baseline and cover the costs of monitoring biodiversity over the long-term in countries where REDD+ is implemented.

Conclusions

REDD+ has the potential to transform the future of tropical forest conservation and to deliver significant benefits to biodiversity conservation. However, the extent to which these benefits are delivered will depend on how the international REDD+ mechanism is designed and implemented. Fortunately, there are a growing number of analyses and tools that can be used by policy makers and forest managers to explore the impacts of different REDD+ designs on biodiversity conservation, as well as to help incorporate biodiversity considerations into the implementation of REDD+ activities on the ground. As countries prepare to implement REDD+, it will be critical that they make full use of these existing tools and models to increase the opportunities for biodiversity conservation, decrease any risks, and strategically target the implementation of REDD+ towards areas which provide both the highest climate mitigation and highest biodiversity benefits.

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