

REDD+ and Ecosystem Services: Relevance to the Forestry Profession

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Significant conversion of forestland to nonforest use is of fundamental concern to the forestry profession. The world's forests are estimated to have occupied 14 billion acres in 1700, about 44% of the world's land area (Ramankutty and Foley 1999) and by 1990 forests occupied 10.3 billion acres of land (Food and Agriculture Organization of the United Nations [FAO] 2010). From 1990 to 2010, about 16.6 million acres per year, an area larger than the State of West Virginia, were converted to nonforest use (FAO 2010). The extent of degradation in the tropics is less well documented but still considered to have a widespread and significant impact on the forest (Asner et al. 2009).

Currently global net deforestation rates are highest in tropical, economically developing countries, often due to expansion of large-scale agriculture and pasture (Angelsen 2010). Other direct drivers of deforestation and degradation in the tropics include urban expansion, mining, oil and gas exploration, fuelwood and charcoal production, and other logging, especially involving access roads, all activities conducted to support economic development. Indirect drivers include insecure land tenure, poverty, weak forest sector governance and institutions, and illegal selective logging.

Much of this forest loss is occurring in primary forests; therefore, the negative implications for the global carbon budget, biodiversity, and communities can be large. Tropical deforestation alone accounts for about 10% of global greenhouse gas emissions annually (Baccini et al. 2012). In an effort to reduce these activities, the United Nations Framework Convention on Climate Change (UNFCCC) adopted the strategy Reducing Emissions from Deforestation and Degradation (REDD+), which is intended to promote reduced emissions from deforestation and forest degradation, conservation and enhancement of forest carbon stocks, and sustainable management of forests (UNFCCC 2010, paragraph 70).

Evolution of the UNFCCC and Its REDD+ Policy Framework

Although solutions to deforestation are implemented by each country, global-scale attention may be needed to best focus efforts on this issue that operates at a global scale. Two decades ago, the Earth Summit—the United Nations Conference on Environment and Development—highlighted the connections between healthy forests and a healthy planet, propelling the launch of the Rio Conventions, the UNFCCC, and the United Nations Convention on Biological Diversity (CBD), among others. The aim of the UNFCCC is to stabilize greenhouse gas concentrations to prevent “dangerous” human interference with the climate system. Because of the large amount of CO₂ emissions from land-use change, particularly deforestation, as well as changes in CO₂ related to other changes in forests, UNFCCC negotiations have included a focus on forest carbon stocks and on forest-related emissions and sequestration.

The main approach behind the UNFCCC's approach to reducing emissions from forest conversion is the idea that creating a market value for the traditionally unmarketed benefits provided by forests and other ecosystems, such as using payment for environmental services schemes can enhance opportunities for land stewardship and forest conservation. At the request of the UNFCCC, the Intergovernmental Panel on Climate Change (IPCC) developed a methodology and approach for accounting through the Good Practice Guidance for Land Use, Land-Use Change and Forestry. At the December 2007 UNFCCC meeting in Bali, Indonesia, a global-scale policy mechanism involving payments to avoid developing country forest emissions was adopted as a negotiation agenda item. Since then, acceptance of this policy approach has progressed quickly, and all UNFCCC countries, including the United States, adopted the REDD+ policy framework during the November 2013 meeting in Warsaw, Poland. This new mechanism promotes forest conservation and sustainable management practices that historically have been difficult to attain in the tropics by focusing on results-based payments for greenhouse gas emissions reductions.

As an accepted mechanism to address global climate change, the idea of implementing REDD+ has moved into international bodies beyond the UNFCCC. For example, the CBD has adopted decisions that could contribute to REDD+ objectives (CBD 2011), and the World

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Bank has REDD+-specific financial mechanisms such as the Forest Carbon Partnership Facility. In addition, within the United States, efforts to reduce tropical deforestation and degradation are being considered as a potential offset for the California cap and trade system (Asner 2011, California Air Resources Board 2013, p. 273) and is a major part of voluntary carbon offset systems, such as the Verified Carbon Standard and those offered by individual organizations. The widespread interest in REDD+ from those outside the forestry and climate change communities mostly stems from the environmental and social safeguards embedded within REDD+, aimed to ensure that this policy provides benefits beyond carbon and promotes sustainable economic development at the local level.

Some of the attractive elements of REDD+ are the associated socioeconomic benefits such as positive impacts on community jobs, income, tenure, provision of ecosystem services, and participation in land use and development decisions (Lawlor et al. 2013). Some of the ecosystem services benefits, such as water regulation, timber production, erosion control, and supply of non-timber forest products, are derived from sustainable forest management (Harvey et al. 2010). However, an initial review of the socioeconomic benefits from REDD+ indicates that they are unevenly distributed, and some benefits are still modest (Lawlor et al. 2013). Therefore, although REDD+ may provide a spectrum of impacts, unless it is able to address key social issues such as poverty, it will probably not effectively address climate change mitigation and sustainable forest management and capture the full suite of social and economic benefits.

Most Current Status under the UNFCCC

The UNFCCC has made three major decisions on the REDD+ mechanism. In December 2010 (Cancun, Mexico), countries agreed to the fundamental characteristics of REDD+: the activities included in it (see above) and the social and environmental safeguards that would be fundamental to its design. In December 2011 (Durban, South Africa), negotiations on many technical elements, including how a REDD+ jurisdiction would establish its baseline emissions levels, were concluded. Finally, in November 2013 (Warsaw, Poland), a REDD+ design framework was completed, including

decisions on monitoring, measuring, reporting, and verifying emissions reductions. All of these pieces are expected to contribute to the foundation for REDD+.

Still, under the UNFCCC, funding to implement REDD+ is, by far, the least-developed aspect of the policy. The program does allow for multiple funding approaches, which could include the following: direct funding or assistance, usually from a donor government; market-linked funding, usually revenue from a carbon pollution allowance auction under a cap and trade system; or direct market funding through carbon offsets, which will require a significant burden of proof for additionality and permanence of the emissions reductions. Between 2007 and 2013, about \$2.27 billion was pledged by developed countries to pay for REDD+, almost exclusively as direct funding or assistance (Caravani et al. 2013). This includes funding from the United States, which financially supports REDD+ efforts through bilateral agreements and multilateral efforts, such as the World Bank (Caravani et al. 2013). To date, little REDD+ funding has been generated through market-linked or offset approaches (US Agency for International Development 2013). Because offsets reduce 1 unit of greenhouse gas emissions to compensate for the emissions of another unit emitted elsewhere, in this context these can be viewed as balancing out and generating no net climate change mitigation benefit in the long run. Therefore, there are those who oppose the use of markets for payments for offsets to fund REDD+ activities. On the supply side, producers may be less willing to assume the burden of proof for some of the market-related approaches, which also contributes to the relatively small use of REDD+ funding.

Flexibility and Challenges on the Ground

The REDD+ policy framework under the UNFCCC provides for flexibility to take into consideration unique country circumstances so that appropriate decisions can be made on the ground within countries that implementation of REDD+. This means that implementation will look different in each country. Some may choose to nest multiple projects under a country baseline, thus looking more like the “traditional” approach of selecting zones and implementing REDD+ in those zones. In other cases, national policies may be used to generate in-

centives and disincentives for landowners to decide to conduct activities to reduce net emissions and to provide financial rewards using approaches different from the project-based approach. The UNFCCC text indicates that any country implementing REDD+ should move toward using full national-level carbon accounting over time (UNFCCC 2010, paragraph 71b).

Even with adequate funding, REDD+ will not be without challenges in implementation. Two of the major hurdles that have presented themselves to date include the difficulties in creating a “green economy” and in ensuring that REDD+ is beneficial for local communities. For example, under current funding levels, analyses show that REDD+ carbon payments cannot effectively compete with profits from large-scale commodity production associated with deforestation, such as palm oil in Southeast Asia (Fisher et al. 2011). Furthermore, land tenure, forest governance, and community rights present challenges in many locations (Angelsen 2012), both for transferring benefits to local communities and for ensuring full implementation of REDD+ activities. Finally, although most countries agree that providing benefits that are not measurable in terms of carbon outcomes are critical for the long-term social acceptance of REDD+ (Elias et al. 2014), it is still unclear how the international community will support such efforts in a mechanism designed to pay for emissions reductions (UNFCCC 2013a).

How the Forestry Community Can Help Address Challenges

Full implementation and realization of REDD+, as designed, should reduce deforestation and forest degradation and increase climate change mitigation in qualifying countries.¹ However, forestry expertise and support will be needed to realize these goals. Needs identified to date include technical capacity development and technical assistance related to measuring, reporting, and verifying forest carbon stocks and stock change including forest area estimates (e.g., see UNFCCC 2013b) and supporting corporate commitments to remove deforestation from their supply chains (e.g., see the New York Declaration on Forests [United Nations 2014]).

Technical support will be needed to help find appropriate and efficient monitoring approaches for each situation, including those at the project, community, or

stand level. For many tropical ecosystems, there are gaps in understanding, developing, and applying sustainable silvicultural practices and in understanding the impacts of these practices on communities, wildlife, and products and services expected from forests. Forest industries can also create an atmosphere that supports REDD+ through efforts to reduce illegal logging. Life-cycle analyses of forest-related products and services can help improve practices to reduce emissions.

In addition to the financial assistance provided by the United States for REDD+ (Caravani et al. 2013), programs such as SilvaCarbon represent the nation's efforts to share technical knowledge to improve REDD+ efforts.² Although REDD+ activities apply strictly to developing countries, forest-related expertise in the United States can help inform US policies related to REDD+ activities internationally. US foresters can promote capacity building in forest-related research, inventory and monitoring approaches, and management techniques, as well as share existing and emerging research results.

Recent commitments by corporate actors to source commodities such as soy, beef, palm oil, timber, and pulp and paper in such a way that avoids tropical deforestation will require significant efforts to evaluate supply chains and improve production capacity on already-cleared land. US foresters have both the expertise in following long and complicated global supply chains, as well as in improved land management to increase productivity.

The Society of American Foresters (SAF) can provide leadership in supporting and implementing REDD+ and in overcoming some of the obstacles for scaling-up this program. For example, SAF members have learned many lessons from North American forestry on land tenure, forest governance, and community rights and how strengthening these can generate benefits for local communities. SAF could continue the conversation at the annual convention, through articles in *The Forestry Source*, and

supporting the membership working on such issues. This can help ensure that the expertise of foresters and natural resource professionals is incorporated into REDD+ activities and provide the membership with updates on this rapidly developing forestry initiative. Professional and technical expertise will be critical in effectively implementing REDD+ activities.

Endnotes

1. The UNFCCC describes the purpose of REDD+ as to "collectively aim to slow, halt and reverse forest cover and carbon loss" (UNFCCC 2010).
2. For more information, see egsc.usgs.gov/silvacarbon/node/30.html.

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