

GLOBAL CLIMATE GOVERNANCE TO ENHANCE
BIODIVERSITY AND WELL-BEING: INTEGRATING
NON-STATE NETWORKS AND PUBLIC INTERNATIONAL
LAW IN TROPICAL FORESTS

BY

ANDREW LONG*

Environmental governance frequently represents a leading edge of global regulation. This is perhaps nowhere more evident than in the climate regime, which has continued to create new modes of regulation despite negotiation impasse. Yet, these new initiatives, like existing legal approaches to environmental challenges, too often embrace a fragmented view of issue areas and fail to reflect fundamental connections between the objects of regulation. Climate regime regulatory innovation also appears to be increasingly limited by the shortcomings of a purely state-driven international approach to global environmental governance, which has long been obvious in other areas (most prominently, the tropical forest context). Private networks play an increasingly important role in global environmental governance, as illustrated most directly by forest certification that was developed to fill a gap left by forest-related negotiation failures of the 1990s. These prior forest negotiation failures also laid the groundwork for tropical forests to become an object of climate regime regulation, giving rise to one of the most promising programs for developing issue-linkage in global environmental governance. The reduced emissions from deforestation and degradation (REDD) program holds out the promise of not only reducing greenhouse gas emissions in the forest sector, but also promoting public goods associated with biodiversity and human well-being. Despite its promise, REDD remains incompletely formed and fragile. Moreover, it faces the prospect of suffering from an issue-fragmentation that values forests only for their carbon and

* Assistant Professor, Florida Coastal School of Law. Many thanks to Jerry Anderson, Eric Biber, William Boyd, David Driesen, David Freestone, Keith Hirokawa, Shi Ling Hsu, Blake Hudson, Dick Ottinger, Daniel Schramm, David Takacs, Mike Vandenberg, and Christina Voigt for providing helpful comments on earlier drafts of this Article. I am also grateful for valuable feedback received on the ideas expressed in this Article during presentations at Emory University School of Law, Yale School of Forestry and Environmental Studies, and the University of Aarhus (Denmark). James Morgan and Melody Gilliland provided outstanding research assistance, and Lauren Blocker provided exceptional research assistance on earlier projects that led to development of this article.

restricting itself through purely state-based administration. In response to this concern and the need for greater recognition of issue-linkages in designing global environmental regulation generally, this Article proposes a hybrid public-private governance approach to REDD that can encourage maximum emissions reductions while also effectively promoting a broad array of benefits for biodiversity and human well-being. In so doing, the Article also offers a concomitant and generalizable model for combining private market finance and public funding to increase the coherence and effectiveness of global environmental regulation.

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I. INTRODUCTION

Global environmental governance in the 21st century faces core questions regarding the role of supranational institutions and non-governmental actors in the regulation of activities within the domestic authority of sovereign nations. These issues are nowhere more acutely represented than in tropical forests. Prior international efforts to protect tropical forests have generally failed, but effective international measures that preserve these ecosystems are essential for a successful response to the primary environmental challenges of the 21st century—climate change, biodiversity loss, and related threats to the well-being of the world's poor.

A new program for tropical forest protection is emerging in the climate change regime.¹ It seeks primarily to preserve forests as carbon stores, but also offers hope of broad cobenefits for the full range of forest values.² Tropical forests have gained a prominent place in climate change negotiations because deforestation accounts for nearly twenty percent of global greenhouse gas (GHG) emissions.³ Considering that a climate-forest initiative has the potential to secure emissions reductions in developing countries, it may also serve as an enabling element for a broader post-2012 global climate change agreement.⁴

In this Article, I examine current efforts to create a climate-forest program and find them lacking in fundamental ways. At the same time, I suggest that a modified climate-forest program could provide a much-needed model for integrated governance in international environmental law. Ultimately, I propose a hybrid public-private governance approach to reducing carbon emissions from deforestation while promoting a broad array of ecological and socioeconomic cobenefits that enhance climate

¹ For a discussion of how the climate regime has come to regulate tropical forests, see William Boyd, *Ways of Seeing in Environmental Law: How Deforestation Became an Object of Climate Governance*, 37 *ECOLOGY L.Q.* 843, 872–98 (2010).

² The term “cobenefits” is commonly used to describe any social or environmental benefits, other than greenhouse gasses emissions reductions, that result from forest carbon projects. While these benefits are often at least as important as emissions reductions, the term is nonetheless appropriate because emissions reduction is the primary motivation for a climate-forest program. See *infra* Part III.

³ Kenneth L. Denman et al., *Couplings Between Changes in the Climate System and Biogeochemistry*, in *CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS* 499, 514–15 (Susan Solomon et al. eds., 2007).

⁴ See e.g. Boyd, *supra* note 1, at 876–77.

change adaptation. This proposal is informed by the history of international efforts to preserve tropical forests, the enormous social and ecological value of these ecosystems, economic considerations, and the recent history of the climate regime negotiations that have brought the forests within their ambit.

Following the influential Stern Review's economic analysis of potential emissions reductions in the forestry sector,⁵ reducing deforestation became widely regarded among developed countries as cost-effective "low hanging fruit" in the search for near-term climate change mitigation measures.⁶ Efforts to create a forestry-based mitigation mechanism (known as Reducing Emissions from Deforestation and Degradation, or REDD) have since outpaced most other aspects of climate change negotiations and a burgeoning roster of internationally funded REDD demonstration projects for the voluntary market now exists.⁷

The basic outline of a climate regime program to reduce tropical deforestation is becoming clear. REDD would compensate developing countries for reducing their carbon emissions by reducing their rates of deforestation.⁸ In many formulations, much of the funding needed for this compensation would come from public or private investors who obtain carbon credits reflecting the avoided emissions or sequestered carbon.⁹ These carbon credits could then be used by public or private actors within developed countries to comply with international, national, or subnational emissions regulation.¹⁰ The role of such marketable carbon offset credits has proven divisive, however, drawing sharp opposition from several developing countries and civil society observers.

Parties came close to agreement on REDD at the fifteenth Conference of the Parties (COP-15) to the United Nations Framework Convention on Climate Change (UNFCCC) in Copenhagen, Denmark when the Ad Hoc Working Group on Long-Term Cooperative Action (AWG-LCA) produced a draft decision that could possibly have been finalized if greater progress had been made on an overarching post-Kyoto agreement.¹¹ The "Cancun Agreements" reached at the sixteenth Conference of Parties (COP-16)

⁵ NICHOLAS STERN, *THE ECONOMICS OF CLIMATE CHANGE: THE STERN REVIEW* 604–21 (2007) (discussing the emissions benefits of actions to reduce deforestation).

⁶ See JOHAN ELIASCH, *CLIMATE CHANGE: FINANCING GLOBAL FORESTS* 7, 70 (2008).

⁷ See generally Sheila Wertz-Kanounnikoff & Metta Kongphan-apirak, *Emerging REDD+: A Preliminary Survey of Demonstration and Readiness Activities* (Ctr. for Int'l Forestry Research, Working Paper No. 46, 2009) (providing an overview of existing REDD activities). REDD is often referred to as "REDD+" to signify inclusion of reforestation and conservation considerations. Use of the term "REDD" in this Article is intended to include these considerations.

⁸ Arild Angelsen & Sheila Wertz-Kanounnikoff, *What Are the Key Design Issues for REDD and the Criteria for Assessing Options?*, in *MOVING AHEAD WITH REDD: ISSUES, OPTIONS AND IMPLICATIONS* 11 (Arild Angelsen ed., 2008).

⁹ *Id.* at 12.

¹⁰ *Id.* at 14–15.

¹¹ U.N. Framework Convention on Climate Change, Copenhagen, Den., Dec. 7–15, 2009, *Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action Under the Convention*, U.N. Doc. FCCC/AWGLCA/2009/L.7/Add.6.

include several paragraphs encouraging REDD activities and articulating some aspects of a framework for REDD implementation.¹² However, the most difficult questions, including the role of markets in supporting REDD, remain unresolved and, on the whole, governance of tropical forests remains notoriously poor.¹³

An effective forestry mechanism within the climate regime could provide extensive and globally significant environmental and social benefits. Tropical forests directly support more than 350 million forest-dependent people worldwide, provide critical regional and global ecosystem services, and are among the most biodiverse ecosystems on Earth.¹⁴ Many tropical forest systems and associated human communities face severe threats from both climate change and other drivers of deforestation that international law has so far been unable to adequately address.

Not only are REDD cobenefits important to broad global environmental goals, but cobenefits will also be a critical determinate of REDD's success in meeting specific climate regime goals. Managing forests for cobenefits will support both the creation and permanence of REDD mitigation benefits while offering a means to promote climate adaptation of forest ecosystems and the human communities dependent on them.¹⁵ In the absence of socio-economic cobenefits, the pressures driving deforestation may remain high and, without ecological cobenefits, the forests themselves may become increasingly vulnerable to damage from climate change.

The risk that REDD will fail is very real, but the climate regime stands as a sort of last best hope for improving tropical forest management.¹⁶ Direct multilateral forestry negotiations over the past two decades are replete with striking failures, exhibiting a "grotesque character"¹⁷ that has produced institutions serving as "decoys, deliberately intended to pre-empt governance."¹⁸ While innovative non-state certification regimes have emerged to fill at least part of the governance gap left by failed forestry

¹² See U.N. Framework Convention on Climate Change, Cancun, Mex. Nov. 29–Dec. 10, 2010, *Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention*, Draft decision [–/CP.16] (2010), at 11–12.

¹³ See, e.g., Michael L. Brown, *Limiting Corrupt Incentives in a Global REDD Regime*, 37 *ECOLOGY L.Q.* 237, 239–42 (2010) (discussing the state of tropical forest governance).

¹⁴ Eric Chivian & Aaron Bernstein, *How Is Biodiversity Threatened by Human Activity*, in *SUSTAINING LIFE: HOW HUMAN HEALTH DEPENDS ON BIODIVERSITY* 29, 70–71 (Eric Chivian & Aaron Bernstein eds., 2008); WORLD BANK, *SUSTAINING FORESTS: A DEVELOPMENT STRATEGY* 3, 12 (2004).

¹⁵ See Part III.A, *infra*.

¹⁶ See Boyd, *supra* note 1, at 845 (describing "a growing realization that climate policy may represent the last chance to save tropical forests on any significant scale"); see also Peter Glück et al., *Governance and Policies for Adaptation*, in INT'L UNION OF FOREST RESEARCH ORGS., *ADAPTATION OF FORESTS AND PEOPLE TO CLIMATE CHANGE – A GLOBAL ASSESSMENT REPORT* 187–88 (Risto Seppälä et al. eds., 2009).

¹⁷ Radoslav S. Dimitrov, *Hostage to Norms: States, Institutions and Global Forest Politics*, 5 *GLOBAL ENVTL. POLITICS* 1, 10 (2005).

¹⁸ S. Jauregui, *International Forest Policy and Options for Climate Change Forest Policy in Developing Countries*, in *FORESTRY & CLIMATE CHANGE* 184, 187 (P.H. Freer-Smith et al. eds., 2007) (internal quotations omitted).

regulation, these private governance programs have had little impact on tropical deforestation largely because of their inability to leverage sufficient resources.¹⁹

With significant momentum behind REDD—such as recent pledges of over \$4 billion by developed countries to encourage REDD development²⁰—many countries and observers express optimism that REDD will drive widespread improvements in tropical forest management that yield gains in biodiversity preservation, sustainable development for forest peoples, and other cobenefits.²¹ Yet, indigenous peoples organizations and others express deep concern that REDD may produce negative ecological and social externalities in developing countries.²² Similar international investment in forest carbon projects in Ecuador and Uganda, for example, have been sharply criticized for displacing native ecosystems with tree plantations and exploiting vulnerable populations living near the forests.²³ These projects arose in the context of a voluntary market, where much investment is presumably driven by beneficent intent or desire for favorable public relations.

If REDD gains international approval as a carbon offset mechanism, it may spur much larger regulatory markets in which the major actors will be concerned primarily with profiting from cost-effective carbon credits that can be used for regulatory compliance in developed countries. For example, an entrepreneur who had recently secured a \$9 million investment from Merrill Lynch for a forest carbon project in Sumatra told CNN: “The more

¹⁹ See Part II.B.3, *infra*. For a discussion of the origins of certification, see generally Benjamin Cashore et al., *Introduction to CONFRONTING SUSTAINABILITY: FOREST CERTIFICATION IN DEVELOPING AND TRANSITIONING COUNTRIES* 7, 8–10 (Benjamin Cashore et al. eds., 2006). Certification is discussed in more detail in Part II.B.3 of this Article, *infra*. On the change in deforestation rates over the period in which certification has been operating, see e.g. U.N. FOOD & AGRIC. ORG., *GLOBAL FOREST RESOURCES ASSESSMENT 2010: KEY FINDINGS* 3 (2010).

²⁰ See, e.g., Elaine Ganley, *World Forest Panel Boosts Budget to Fix Key Climate Issue*, SEATTLE TIMES, Mar. 11, 2010, http://seattletimes.nwsources.com/html/nationworld/2011322902_climate12.html (last visited Feb. 13, 2011) (discussing the addition of a \$1 billion pledge by 60 nations to a six country pledge of \$3.5 billion for REDD development).

²¹ See, e.g., Virgilio M. Viana, *Seeing REDD in the Amazon: A Win for People, Trees and Climate*, INT’L INST. FOR ENV’T AND DEV., March 2009, available at <http://www.iied.org/pubs/display.php?o=17052IIED> (portraying REDD as a mechanism to stop deforestation and eradicate poverty).

²² See *infra* Part III.C.

²³ See PATRICIA GRANDA, ACCIÓN ECOLÓGICA, *CARBON SINK PLANTATIONS IN THE ECUADORIAN ANDES: IMPACTS OF THE DUTCH FACE-PROFAFOR MONOCULTURE TREE PLANTATIONS’ PROJECT ON INDIGENOUS AND PEASANT COMMUNITIES* (2005), available at <http://www.wrm.org.uy/countries/Ecuador/face.pdf>; CHRIS LANG & TIMOTHY BYAKOLA, WORLD RAINFOREST MOVEMENT, “A FUNNY PLACE TO STORE CARBON”: UWA-FACE FOUNDATION’S TREE PLANTING PROJECT IN MOUNT ELGON NATIONAL PARK, UGANDA (2006), available at http://www.wrm.org.uy/countries/Uganda/Place_Store_Carbon.pdf. In Ecuador, a project to produce forest-carbon credits involves over 22,000 hectares of plantation forest, composed primarily of nonnative pine trees that may permanently transform the characteristics of the local paramo soils. Larry Lohmann, *Carbon Trading: A Critical Conversation on Climate Change, Privatisation, and Power*, 48 DEV. DIALOGUE, Sept. 2006, at 226–27. This transformation may threaten the local hydrology, including water relied upon by local inhabitants. *Id.* at 227.

hectares we manage, the more land we ‘farm’ carbon on, the more money we make Our goal is to be the Amazon.com of the Amazon.”²⁴ This profit-driven vision of REDD runs a greater risk of causing damage in the name of GHG reductions than current forest carbon projects.

Even if investment considerations and international REDD rules effectively discourage some negative externalities—for example, investors may shy away from projects likely to increase social instability that could undermine permanence—the current conception of REDD as primarily a mitigation mechanism is likely to miss significant opportunities to make meaningful progress toward increasing sustainable management of forests. Moreover, a narrowly defined “do no harm” approach may actually prevent progress by locking in mitigation-driven policies that prevent broader improvements to other key global ecosystem services, such as biodiversity preservation.

While REDD holds promise for filling the regulatory gap in tropical forests, current proposals lack effective mechanisms to prevent the potential abuses of a regulatory carbon market and ensure that the REDD program provides net benefits across the full range of environmental and social issues it will impact. The decision adopted at COP-16, for example, acknowledges the need for safeguards, but it does little to ensure their implementation. Designing a REDD program that supports sustainable development, therefore, remains a major challenge for global environmental governance.

The apparently straightforward approach of requiring a certain level of cobenefits would be counterproductive if adopted at the global level. Imposing strict requirements that all REDD projects ensure specific levels of social or ecological cobenefits is likely to make the qualification process too intrusive, complex, or costly for potentially important developing country participants.²⁵ Therefore, mandating optimal social or ecological standards as a “REDD readiness” element could produce a system that ultimately fails to

²⁴ Marc Gunther, *Merrill Lynch’s Carbon Bet: Why a Wall Street Firm Wants to Save a Forest in Sumatra*, CNNMONEY.COM, April 18, 2008, http://money.cnn.com/2008/04/17/technology/carbon_farming.fortune/index.htm?postversion=2008041810 (last visited Feb. 13, 2011) (noting that Merrill Lynch’s investment in forest-carbon credits “isn’t philanthropy of public relations; it’s strictly business”).

²⁵ See Radoslav S. Dimitrov et al., *International Nonregimes: A Research Agenda*, 9 INT’L STUDIES REV. 230, 242–45 (2007), available at <http://politicalscience.uwo.ca/faculty/dimitrov/nonregimes.pdf>. For example, Brazil, which has the highest rate of primary deforestation in the world, has regularly resisted international efforts perceived to impinge on its sovereignty over forests and thus, might opt not to participate if cobenefit requirements are too stringent. *Id.* at 244–45; RHETT A. BUTLER, FORESTINDUSTRIES.EU, DEFORESTATION AND REDD FACTS & FIGURES (December 2009), available at <http://forestindustries.eu/content/deforestation-and-redd-facts-figures>. Other nations with high deforestation rates, such as Malawi, face extreme resource constraints that might make stringent cobenefit requirements for REDD unattainable without significant international aid. See BAGIE SHERCHAND, USAID, REDD CREDITS BOOST COMMUNITY PARTNERSHIPS FOR BIODIVERSITY CONSERVATION IN MALAWI 2009, available at <http://www.rmportal.net/library/content/tools/compass-ii/redd-credits-boost-community-partnerships-for-biodiversity-conservation-in-malawi/view?searchterm=malawi%20and%20REDD>; U.N. Framework Convention on Climate Change, *supra* note 12.

significantly impact tropical deforestation because key developing countries opt not to participate.²⁶

This Article explores the possibility of drawing upon non-state governance networks and public international finance to incentivize REDD cobenefits at a global scale, and in a way that could blaze a trail for future integrated global regulation of environmental issues. After surveying the social and ecological value of tropical forests, as well as the governance challenges they present, in Part II, the Article analyzes the likely effects of existing REDD proposals on tropical forests in Part III. Part IV recommends the development of a hybrid public-private governance approach to REDD in order to incentivize ecological and socioeconomic cobenefits that enhance climate change adaptation. Specifically, the Article argues that most, if not all, public financing directed at reducing emissions from deforestation should be targeted exclusively to projects that achieve certification, under approved non-state certification protocols, for obtaining a high level of adaptation-related cobenefits. Ultimately, the goal of the proposal offered in Part IV is to make high-cobenefit approaches to REDD attractive to both host countries and market participants by eliminating cost-based advantages of mitigation-only projects, without unduly intruding upon the sovereign authority of tropical forest nations.²⁷

The proposal contributes to existing literature on global governance by suggesting an approach to more holistic environmental regulation that integrates two of the most important developments in the field—the increasing relevance of supranational administrative bodies to national policies, and the emergence of non-state governance—to overcome the persistent stumbling blocks of international forest policy. In so doing, the article suggests a concomitant framework for combining public and private market finance to secure global public goods. Although articulated in the forest sector, the approach developed here could become a model for similar programs in other sectors (such as agriculture and coastal ecosystems).

II. GOVERNANCE OF TROPICAL FORESTS

Tropical forests, climate change, and the well-being of peoples living near the forests are fundamentally linked. Regulation of the linkage between

²⁶ See, e.g., M.G. Sangster & M. Dudley, *Governance and Climate Change*, in *FORESTRY AND CLIMATE CHANGE* 214, 217 (Peter H. Freer-Smith et al. eds., 2007). One visible proposal to avoid negative impacts from REDD is wholesale replacement of the market-based nature of the mechanism with a fund-based system relying on public money, but this would deprive REDD projects of the approximately \$7 billion annually that could be produced by global carbon markets. ELIASCH, *supra* note 6, at 182–83.

²⁷ Public funds would offset the additional cost of building in cobenefits and complying with certification requirements, thereby leveling the playing field so that certified projects and non-certified projects produce carbon credits of relatively equal cost to investors (who pay only for the mitigation benefit). Thus, the proposed approach could steer private compliance market investment toward measures with high cobenefits by eliminating cost-based advantages of projects or measures that produce negative externalities.

forests and climate change must be understood as an evolution of the international climate change regime to include forest carbon as a subject of regulation, but also from the perspective of efforts to improve forest management in tropical regions (often referred to as sustainable forest management, or SFM). Thus, after briefly setting the theoretical context of the Article, a detailed discussion of the forests elucidates the particular characteristics of tropical forests as a governance space, before the Article turns to tropical forest governance and the climate change regime in subsequent Parts.

A. Situating Tropical Forest Governance as a Global Administrative and Environmental Law Challenge

Tropical forest governance reflects many of the core challenges of global environmental law and global administrative law more generally. The internationalization of environmental law issues has spawned an increasingly complex set of supranational institutions and a web of interconnections between domestic and international environmental law.²⁸ These developments contribute to the growth of global environmental law²⁹ and, relatedly, global administrative law.³⁰ Global environmental bodies potentially subject to administrative law disciplines include not only state-based supranational institutions and informal intergovernmental arrangements, but also public-private regulatory bodies and some private entities exercising transnational regulatory functions.³¹

The emerging system of tropical forests regulation implicates several broad concerns of global administrative approaches to implementation of environmental law principles and may, in fact, prove to be a primary testing ground for their efficacy. The emergence of a global REDD mechanism will require the elaboration of legal rules to ensure accountability of actors (including the supranational climate regime body that oversees the program), legitimacy of its authority, and effectiveness of policy implementation by international, national, and subnational actors. Moreover, tropical forests have been a primary situs for the development of non-state governance institutions (forest certification entities, such as the Forest

²⁸ See generally Tseming Yang & Robert V. Percival, *The Emergence of Global Environmental Law*, 36 *ECOLOGY L.Q.* 615 (2009).

²⁹ *Id.* at 616. Professors Yang and Percival describe global environmental law as “a field of law that is international, national, and transnational in character all at once.” *Id.* at 616.

³⁰ Benedict Kingsbury et al., *The Emergence of Global Administrative Law*, 68 *LAW & CONTEMP. PROBS.* 15, 16 (2005). As described in a seminal article by Professor Kingsbury, Krisch, and Professor Stewart, administrative disciplines are emerging to address an accountability deficit arising from the increased interaction of global and domestic authority. *Id.* at 31–35; see also Daniel C. Esty, *Good Governance at the Supranational Scale: Globalizing Administrative Law*, 115 *YALE L.J.* 1490 (2006).

³¹ Kingsbury et al., *supra* note 30, at 17.

Stewardship Council) to fill the gap left by regime failure in international forestry negotiations.³²

Non-state certification bodies face a range of issues similar to those posed by supranational REDD implementation, but they have so far achieved governance ability only through a market-driven approach in which they certify the social and environmental quality of forest products operations and enable ecolabeling as a means of (potentially) providing market advantages to certified entities.³³ Non-state certification in connection with REDD has recently begun to emerge, primarily as a novel application of market-driven governance arrangements.³⁴ However, the precise role of these entities in a redefined tropical forest governance space that includes REDD remains an open question that has not yet received significant scholarly attention. A new type of global administration may evolve if non-state certification is formally embedded into the broader supranational REDD program. Achieving broader policy results through the integration of non-state certification into a publicly-created REDD mechanism would represent a significant shift from the current role of private actors within the climate regime, a shift with no apparent parallels elsewhere in international environmental law.³⁵

This Article explores the benefits and challenges of this new administrative model in the tropical forest context, which can be viewed as a framework for a generalizable public-private administrative approach to global environmental issues. In so doing, the Article examines the role of both public and private institutions in future global governance of the forests. This inquiry implicates, at times indirectly, the key insights of global administrative law and private governance literature by addressing questions of accountability and legitimacy in international institutions. Although the Article proceeds primarily through a policy analysis that seeks to define the optimal institutional arrangements for improving tropical forest governance, this analysis is informed by, and responsive to, the need for global administrative accountability, efficiency and legitimacy in creating an approach that will address the full range of global environmental issues at play in tropical forests (rather than narrowly addressing climate change mitigation). To frame the analysis, the next Parts assess global environmental issues and governance in tropical forests—the specific regulatory space in which this Article’s core contribution is developed—and provide context for understanding how the novel approach developed here can overcome persistent shortcomings of global environmental governance.

³² Cashore et al., *supra* note 19, at 8.

³³ See *infra* Part II.B.3.

³⁴ See *infra* Part III.E.

³⁵ Non-state actors have a much-celebrated formal role in the Aarhus Convention (a regional, rather than global, agreement). See, e.g., Svitlana Kravchenko, *The Aarhus Convention and Innovations in Compliance with Multilateral Environmental Agreements*, 18 COLO. J. INT’L ENVTL. L. & POL’Y 1, 6–9 (2007). But even this is far more limited than the role of non-state certification bodies proposed in this Article. See *infra* Part IV.

Following full development of the proposed approach in the tropical forest context, the Article returns to the broader themes of global environmental and administrative law in the Conclusion.

B. Tropical Forests and Governance

1. Issue-Linkages and the Importance of Tropical Forests

Tropical forest ecosystems underlie a vast array of natural services critical for the well-being of the rural poor and others in developing countries. Roughly 350 million people depend on forests for a high degree of subsistence, including 60 million indigenous people nearly wholly dependent on forests, and more than one billion people rely on agro-forestry systems for their livelihoods.³⁶ In many cases, “[t]hese people [already] lack the basic necessities to maintain a decent standard of living.”³⁷ They are highly vulnerable to the impacts of climate change and poorly situated to adapt, particularly if the loss of forest ecosystem services continues at current rates or increases due to climate change impacts.³⁸

Along with core subsistence requirements of forest-dependent peoples, forests provide important ecosystem services underlying broader human well-being. Many of these services are closely linked with forest biodiversity. As the Secretariat of the Convention on Biological Diversity notes:

[F]orest biodiversity underpins a wide range[] of goods and services for human well-being. Ecologically intact forests store and purify drinking water, they can mitigate natural disasters such as droughts and floods, they help store carbon and regulate the climate, they provide food and produce rainfall, and they provide a vast array of goods for medicinal, cultural and spiritual purposes. The health of forests and the provision of these and further forest ecosystem services depend on the diversity between species, the genetic diversity within species, and the diversity of forest types.³⁹

These non-timber products and services represent the bulk of forests’ value in many areas.⁴⁰ Forest ecosystem services are critical for regional

³⁶ SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY, SUSTAINABLE FOREST MANAGEMENT, BIODIVERSITY AND LIVELIHOODS: A GOOD PRACTICE GUIDE 3 (2009), *available at* <http://www.cbd.int/development/doc/cbd-good-practice-guide-forestry-booklet-web-en.pdf>.

³⁷ *Id.*

³⁸ Denis Sonwa et al., *Adaption for Forests and Communities in the Congo Basin*, EUR. TROPICAL FOREST RESEARCH NETWORK NEWS, Nov. 2009, at 93, 99–100, *available at* <http://idl-bnc.idrc.ca/dspace/bitstream/10625/41689/1/129387.pdf>.

³⁹ SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY, *supra* note 36, at 5.

⁴⁰ *See, e.g.*, MILLENNIUM ECOSYSTEM ASSESSMENT, ECOSYSTEMS AND HUMAN WELL-BEING: SYNTHESIS 56 (2005), *available at* <http://www.maweb.org/documents/document.356.aspx.pdf> (finding that, in most countries studied, timber and fuelwood production provided less than one third of the total economic value of the forest ecosystem services).

well-being throughout tropical forest regions.⁴¹ For example, evapotranspiration from forests in the Congo Basin contributes approximately seventeen percent of the rainfall in West Africa.⁴² These forests face severe threats from human deforestation activities and climate change, while West Africa already suffers from insufficient water to meet human needs.⁴³

The present situation for forests, as well as the biodiversity and human populations they support, is dire in many tropical nations. Deforestation occurs at a rate of approximately thirteen million hectares per year, with much of the loss occurring in the tropics. Roughly thirty percent of the earth's land area is forested, but only one-third of that is primary forest.⁴⁴ Together with a well-managed secondary forest, these primary forests provide critical ecosystem services that are often not replicated in plantation forests, poorly managed secondary forests, or degraded forest ecosystems.⁴⁵ Approximately six million hectares of primary forest are being lost each year, while plantation forests are growing.⁴⁶ Each of the major tropical forest regions—Africa, Asia, and Latin America—includes countries with among the ten highest rates of primary forest loss in 2000–2005.⁴⁷ In addition, approximately six percent of primary forests were degraded over a fifteen year period, while many secondary forests are increasingly degraded in ways that may ultimately destroy the forest ecosystem.⁴⁸

⁴¹ See, e.g., *id.* at 60 (noting that ecosystem services provide spiritual and cultural value as well as physical ambient services such as waste processing, air quality, and water access).

⁴² Elfatih A. B. Eltahir et al., *A See-Saw Oscillation Between the Amazon and Congo Basins*, in 31 GEOPHYSICAL RESEARCH LETTERS L23201 (2004); see also Johnson Nkem et al., *Forests for Climate Change Adaptation in the Congo Basin: Responding to an Urgent Need with Sustainable Practices*, CTR. INT'L FORESTRY RESEARCH, ENV'T BRIEFS, Nov. 2008, at 1, 3 (noting that these forests are also "highly strategic as a defense against advancing desertification in northern Africa and shielding water in the Congo River, which is shared by several countries, from the intense heat and accelerated evaporation resulting from climate change").

⁴³ T. M. Shanahan et al., *Atlantic Forcing of Persistent Drought in West Africa*, 324 SCIENCE 377, 377, 379 (2009).

⁴⁴ U.N. FOOD & AGRIC. ORG., *supra* note 19, at 3–4; see also U.N. Food & Agric. Org., *Global Forest Resources Assessment Update 2005, Terms and Definitions*, http://www.fao.org/docrep/007/ae156e/AE156E03.htm#P236_10121 (last visited Nov. 30, 2010) (defining "primary forests" as "[f]orests/[o]ther wooded land of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed"); Rhett A. Butler, *Destruction of Old-Growth Forests Looms Over Climate Talks*, MONGABAY.COM, Dec. 8, 2009, <http://news.mongabay.com/2009/1208-deforestation.html> (last visited Feb. 13, 2011) (noting that Brazil, which has the most primary forest cover of any nation, and Indonesia suffered the most extensive loss of primary forests in the period 2000–2005; also noting that the highest rates of primary forest conversion, however, were in Nigeria and Vietnam, both of which lost more than half of their primary forests in a five-year period).

⁴⁵ J. Barlow et al., *Quantifying the Biodiversity Value of Tropical Primary, Secondary, and Plantation Forests*, 104 PROC. NAT'L ACAD. SCI. 18555, 18558 (2007).

⁴⁶ U.N. FOOD & AGRIC. ORG., *supra* note 19, at 5 (also noting that approximately seven percent of the world's forests are now planted forests).

⁴⁷ Butler, *supra* note 44.

⁴⁸ K. Levin et al., *The Climate Regime as Global Forest Governance: Can Reduced Emissions from Deforestation and Forest Degradation (REDD) Initiatives Pass a 'Dual*

The drivers of deforestation run deep. For example, “[t]he forest situation in Africa presents enormous challenges, reflecting the larger constraints of low income, weak policies and inadequately developed institutions.”⁴⁹ Deforestation is also predicted to continue rising in South America due largely to agricultural expansion (subsistence and industrial), while Asia presents a mixed picture including areas where some countries are likely to increase conversion of forest land to other uses.⁵⁰ Globally, the drivers of deforestation are diverse and complex, including factors such as global consumer demand for timber and agricultural goods, rural poverty, poor governance, and violent conflict.⁵¹ Climate change will increase several existing deforestation pressures, and may also create new drivers through, for example, its impacts on agricultural productivity.⁵²

In addition to increasing immediate anthropogenic pressures on forests, such as land clearing, climate change also alters the basic ecological systems in forests.⁵³ Although the specific impacts of climate change on forest ecosystems are “complex and poorly understood,”⁵⁴ some specific predictions have begun to emerge. For example, a global average temperature rise of two degrees Celsius may produce significant loss of

Effectiveness’ Test?, 10 INT’L FORESTRY REV. 538, 540–41 (2008). Forest “degradation leads to a loss of carbon and biodiversity, decreases forest resilience to fire and drought, and can lead to deforestation.” SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY, CONNECTING BIODIVERSITY AND CLIMATE CHANGE MITIGATION AND ADAPTATION: REPORT OF THE SECOND AD HOC TECHNICAL EXPERT GROUP ON BIODIVERSITY AND CLIMATE CHANGE 56 (2009), *available at* <http://www.cbd.int/doc/publications/cbd-ts-41-en.pdf>.

⁴⁹ U.N. FOOD & AGRIC. ORG, STATE OF THE WORLD’S FORESTS viii (2009).

⁵⁰ *Id.* at viii–ix. South Asian forests demonstrate a particularly pressing need for improvement in international forest regulation. Many forests in this area contain high levels of biodiversity, including many endemic species, but are severely degraded and highly fragmented. Thus, the region is extremely important for preservation of forest biodiversity. Oscar Venter et al., *Harnessing Carbon Payments to Protect Biodiversity*, 326 SCIENCE 1368 (2009). At the same time, however, the opportunity costs of avoiding deforestation in South Asia are often far higher than in other tropical regions because of the profitability of palm oil plantations and other agricultural drivers of deforestation. *Id.* Further, Indonesia and other South Asian countries exhibit high levels of illegal logging and corruption, demonstrating some of the most intractable governance problems of any region in the world. *See* PERVAZE A. SHEIKH, ILLEGAL LOGGING: BACKGROUND AND ISSUES 3, 5 (2008); *see also* Brown, *supra* note 13, at 254.

⁵¹ Levin et al., *supra* note 48, at 541 (“The direct and indirect causes of forest deterioration are highly complex, including such diverse drivers as global consumer demand, poor logging practices, agricultural and pastoral expansion, rural poverty and displacement, war and civil unrest, and conflicting and/or ineffective government institutions and policies.”); *see also* G. Badiozamani, *Addressing Deforestation and Forest Degradation Through International Policy*, in FORESTRY AND CLIMATE CHANGE, *supra* note 26, at 197, 198.

⁵² Glück et al., *supra* note 16, at 207; *see also* U.N. ENV’T PROGRAMME, UNITED NATIONS CLIMATE CHANGE SCIENCE COMPENDIUM 41 (2009), *available at* http://www.unep.org/pdf/ccScienceCompendium2009/cc_ScienceCompendium2009_full_en.pdf.

⁵³ U.N. ENV’T PROGRAMME, *supra* note 52, at 41.

⁵⁴ Jeremy S. Broadhead et al., *Climate Change: Will It Change How We Manage Forests?*, 50 EUROPEAN TROPICAL FOREST RESEARCH NETWORK NEWS: FORESTS AND CLIMATE CHANGE: ADAPTATION AND MITIGATION 59 (2009).

forest cover in Amazonia because of decreased precipitation.⁵⁵ Closely linked with the landscape level impacts are species-specific impacts of changing climate.⁵⁶

Mounting evidence demonstrates existing climate change impacts on species, causing significant disruptions for terrestrial biodiversity⁵⁷ and signaling future trends. Unlike with prior climatic changes, human changes to the landscape (primarily through habitat destruction and fragmentation) will severely limit the ability of species to migrate in response to climatic changes.⁵⁸ Thus, climate change and habitat loss (particularly tropical deforestation) combine to severely threaten biodiversity. For example, one widely cited study estimates that mid-range climate change scenarios will commit roughly one-quarter of all species to extinction by 2050.⁵⁹ In some areas, climate change will cause range shifts that produce reorganization of entire ecological communities and may trigger loss of up to ninety percent of current species assemblages,⁶⁰ causing ecosystems to fragment or disappear completely.⁶¹ Further effects on species—such as uncoupling of parasite-host relationships or expansion of disease vectors—may have significant direct impacts on human health, while a broad array of climate change impacts on terrestrial ecosystems will affect human well-being.⁶² The loss of biodiversity due to climate change will exacerbate “the impacts of

⁵⁵ Chris Jones et al., *Committed Terrestrial Ecosystem Changes Due to Climate Change*, 2 NATURE GEOSCIENCE 484, 484 (2009); see also U.N. ENV'T PROGRAMME, *supra* note 52, at 37.

⁵⁶ Terry L. Root & Lesley Hughes, *Present and Future Phenological Changes in Wild Plants and Animals*, in CLIMATE CHANGE AND BIODIVERSITY 61 *passim* (Thomas E. Lovejoy & Lee Hannah eds., 2005).

⁵⁷ See, e.g., *id.* (explaining that phenological changes, or changes within the timeline of certain ecological functions, including animal migration and plant pollination and blooming, are among the best understood impacts of climate change on biological systems); see also Kevin P. Eckerle, *Climate Change Affects Terrestrial Biodiversity*, in VITAL SIGNS 2007–2008 94, 94 (World Watch Inst. 2007), available at <http://www.worldwatch.org/files/pdf/Vital%20Signs%202007-2008.pdf> (noting that climate change has lengthened the growing seasons of certain plants since 1966 that are located at 42 to 45 degrees northern latitudes and accelerated the migration of a majority of butterfly species studied in the United Kingdom, California, and Spain by up to 15 days). Other species whose cycles have been affected include four American frog species, migrant birds in the North Sea, American tree swallows, and European bird species. *Id.*; see also Chivian & Bernstein, *supra* note 14, at 70 (noting that even slight changes in species migration can disturb both ecosystems being migrated to and from, and can put species in danger of dying out because when they migrate too soon their food supply may not yet be available).

⁵⁸ Chris D. Thomas, *Recent Evolutionary Effects of Climate Change*, in CLIMATE CHANGE AND BIODIVERSITY, *supra* note 56, at 75, 82; see also Robert Hepworth, *Foreword* to MIGRATORY SPECIES AND CLIMATE CHANGE: IMPACTS OF A CHANGING ENVIRONMENT ON WILD ANIMALS 4, 5 (2006).

⁵⁹ Chris D. Thomas et al., *Extinction Risk from Climate Change*, 427 NATURE 87, 145, 147 (2004); see also U.N. ENV'T PROGRAMME, *supra* note 52, at 41 (noting that range shifts of species to higher elevations and high latitudes may lead to some shifting species becoming invasive in high elevations that were long thought to have suffered relatively little from biological invasion, thus exposing these ecosystems to an additional stress).

⁶⁰ U.N. ENV'T PROGRAMME, *supra* note 52, at 37.

⁶¹ Jerry Melillo & Osvaldo Sala, *Ecosystem Services*, in SUSTAINING LIFE: HOW HUMAN HEALTH DEPENDS ON BIODIVERSITY, *supra* note 14, at 107.

⁶² See, e.g., U.N. ENV'T PROGRAMME, *supra* note 52, at 38, 41.

climate change on the forest, as high genetic and species diversity within an ecosystem is a means of increasing the adaptive capacity of such ecosystems to climate change.”⁶³

Moreover, deforestation causes approximately seventy percent of global greenhouse gas emissions.⁶⁴ In some countries, deforestation accounts for ninety percent of annual GHG emissions.⁶⁵ Deforestation also affects global climate because intact primary tropical forests act as a carbon sink, drawing significant amounts of GHG emissions out of the atmosphere.⁶⁶ Tropical forests are particularly important for controlling emissions because they remove more carbon annually than higher latitude forests.⁶⁷

The relationship between deforestation, biodiversity loss, and climate change is synergistic.⁶⁸ Each may increase the effects of the other, potentially producing positive feedback loops. For example, increased climate changes can fuel increasing deforestation, which will increase the emissions of GHGs stored in the forests and thus further exacerbate climate change.⁶⁹

The synergistic effects of climate change and deforestation pose a profound threat to the well-being—perhaps survival—of tens of millions of people. Moreover, “climate change is likely to cause additional inequities, as its impacts are unevenly distributed over space and time and disproportionately affect the poor.”⁷⁰ Impacts on forest regulating services (such as erosion and flood control), for example, will hit developing countries hardest, and associated impacts on the poor may be severe.⁷¹ Climate-driven forest impacts will interact with existing causes of deforestation in some regions, such that poor governance and lack of SFM are likely to exacerbate socioeconomic damage.⁷²

⁶³ CHRISTOPH WILDBURGER, UNITED NATIONS FORUM ON FORESTS, BACKGROUND DOCUMENT FOR UNFF8: FORESTS AND BIODIVERSITY CONSERVATION, INCLUDING PROTECTED AREAS AND UNIQUE TYPES OF FORESTS ECOSYSTEMS 12 (2009), available at http://www.un.org/esa/forests/pdf/session_documents/unff8/UNFF8_Wildburger.pdf.

⁶⁴ Denman et al., *supra* note 3, at 514–16.

⁶⁵ See, e.g., Johnson Nkem et al., *Forests for Climate Change Adaptation in the Congo Basin: Responding to an Urgent Need with Sustainable Practices*, in CTR. INT’L FORESTRY RESEARCH ENVIRONMENT BRIEFS 1, 2 (2008), available at http://www.cifor.cgiar.org/publications/pdf_files/EnviBrief/02-EnviBrief.pdf.

⁶⁶ Simon L. Lewis et al., *Increasing Carbon Storage in Intact African Tropical Forests*, 457 NATURE 1003, 1003 (2009). The future levels of sequestration by tropical forests is, however, highly uncertain. *Id.* at 1006.

⁶⁷ Britton B. Stephens et al., *Weak Northern and Strong Tropical Land Carbon Uptake from Vertical Profiles of Atmospheric CO₂*, 316 SCIENCE 1732, 1732–34 (2007).

⁶⁸ Bert G. Drake et al., *Synergistic Effects*, in CLIMATE CHANGE AND BIODIVERSITY, *supra* note 56, at 296.

⁶⁹ *Id.* at 310–11.

⁷⁰ Andreas Fischlin et al., *Ecosystems, Their Properties, Goods and Services*, in CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY 211, 248 (Martin Parry et al. eds., 2007).

⁷¹ Balgis Osman-Elasha et al., *Future Socio-Economic Impacts and Vulnerabilities*, in ADAPTATION OF FORESTS AND PEOPLE TO CLIMATE CHANGE – A GLOBAL ASSESSMENT REPORT, *supra* note 16, at 101, 111–12.

⁷² See *id.* at 118.

While forest ecosystems and the biodiversity they support provide a wide array of benefits underlying human well-being, human activity is the primary cause of deforestation.⁷³ In tropical regions, much of this deforestation is attributable to problems in social systems, such as governance inadequacies and poverty.⁷⁴ Even where the forest clearing for subsistence agriculture is illegal, enforcement may be weak or officials may be corrupt.⁷⁵ Recently, however, “the underlying causes of deforestation have shifted quite dramatically—from mostly subsistence-driven deforestation through the 1980s, to far more industrial-driven deforestation more recently.”⁷⁶ While this has not significantly affected the rate of deforestation, the shift in drivers could make certain types of efforts to combat deforestation more effective because, compared with impoverished forest dwellers, large corporate interests can more readily respond to environmental pressures and government regulation.⁷⁷ Specifically, these interests appear likely to respond to international regulation established in the climate regime. This point is critical because current and previous international efforts at direct regulation of deforestation activities have essentially failed.

2. *The Absence of Effective International Forest Law*

After decades of negotiations aimed at improving forest management, the current international forest regime contains virtually no effective mechanisms to prevent deforestation.⁷⁸ Indeed, the effort to create a legally binding forest regime serves as a case study of failure and limitation in international cooperation on environmental efforts.⁷⁹ The reasons for this failure not only underscore the importance of the climate regime as an

⁷³ Denman et al., *supra* note 3, at 511–12.

⁷⁴ For example, forests can be a magnet for the poor and for those fleeing social disturbance (such as war) because they may provide open-access agricultural opportunities. ROSS W. GORTE & PERVAZE A. SHEIKH, CONGRESSIONAL RESEARCH SERVICE, DEFORESTATION AND CLIMATE CHANGE 27–28 (2010), available at <http://www.fas.org/sgp/crs/misc/R41144.pdf>.

⁷⁵ *Id.* at 16 (citing ALEXANDER PFAFF ET AL., NICHOLAS INST. ENVTL. POL’Y SOLUTIONS, POLICY IMPACTS ON DEFORESTATION: LESSONS LEARNED FROM PAST EXPERIENCES TO INFORM NEW INITIATIVES 39–40 (2009)).

⁷⁶ William F. Laurance, *Changing Realities for Tropical Forest Managers*, 18 TROPICAL FOREST UPDATE, no. 4 at 6, 6 (citing Helmut J. Geist & Eric F. Lambin, *Proximate Causes and Underlying Driving Forces of Tropical Deforestation*, 52 BIOSCIENCE 143, 146 (2002); Thomas K. Rudel, *Changing Agents for Deforestation: From State-Initiated to Enterprise Driven Processes, 1970–2000*, 24 LAND USE POL’Y 35 (2007)).

⁷⁷ See Rhett A. Butler & William F. Laurance, *New Strategies for Conserving Tropical Forests*, 23 TRENDS ECOLOGY & EVOLUTION 469, 469 (2008).

⁷⁸ E.g., Rosemary Rayfuse, *Biological Resources*, in THE OXFORD HANDBOOK OF INTERNATIONAL ENVIRONMENTAL LAW 363, 383 (Daniel Bodansky, Jutta Brunnée & Ellen Hay eds., 2007) (“[O]btaining international agreement on binding standards for the protection of forests . . . has so far proven to be an insurmountable task, despite decades of attention to the issue and the general recognition of the need to curb deforestation and other threats to the world’s forests.”).

⁷⁹ See DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 1178–79 (3d ed., 2007).

avenue for affecting deforestation, but also illustrate the challenges that any international mechanism for preventing deforestation is likely to encounter. Therefore, although the literature on this failure is well-developed,⁸⁰ a brief discussion here is necessary to illuminate key hurdles that any effort to address tropical deforestation will face.

Forests gained prominence as an international environmental issue in the 1980s and negotiations toward a binding forest treaty began in the lead-up to the 1992 United Nations Conference on the Environment and Development (UNCED).⁸¹ Despite strong support from many developed nations, such as the United States and most European countries, negotiations were abandoned in the preparatory stage. A series of similar negotiating efforts in the mid-1990s also failed as countries effectively refused to budge on their initial negotiating positions and the financial concerns of developing countries dominated discussions.⁸² In 2000, after yet another round of negotiations at which at least some parties sought a binding global forest agreement, “consensus could not be reached and the final decision amounted to rejecting the concept of a forest convention.”⁸³ These negotiations replaced pre-existing frameworks for forest policy development with the United Nations Forum on Forests (UNFF), which offer little hope of providing robust international policy initiatives to combat deforestation.⁸⁴ Most recently, UNFF efforts have resulted in the “[n]on-legally binding instrument on all types of forests,”⁸⁵ an instrument with, at best, questionable efficacy.

The existing forest regime includes over forty international organizations and over twenty international forest-related agreements.⁸⁶ Nonetheless, as the preceding Part demonstrates, deforestation remains a major global environmental problem with the most severe concerns existing in tropical developing nations.⁸⁷

Although a variety of analytical tools and approaches exist for understanding the failure of multilateral efforts at forest preservation, I do not attempt to fully explain the failure here. Instead, it is useful to simply highlight two basic factors undoubtedly underlie the lack of progress. First, developing countries have demonstrated a very strong resolve in resisting

⁸⁰ See generally Dimitrov, *supra* note 17; D. Humphreys, *The Politics of “Avoided Deforestation”: Historical Context and Contemporary Issues*, 10 INT’L FORESTRY REV. 433, 433–42 (2008).

⁸¹ See, e.g., Badiozamani, *supra* note 51, at 201.

⁸² Dimitrov, *supra* note 17, at 13; Humphreys, *supra* note 80, at 436–37; Jauregui, *supra* note 18, at 185.

⁸³ Jauregui, *supra* note 18, at 186.

⁸⁴ E.g., Dimitrov, *supra* note 17, at 1.

⁸⁵ G.S. Res. 62/98, U.N. Doc. A/RES/62/98 (Jan. 31, 2008), available at <http://www.fao.org/forestry/14717-03d86aa8c1a7426cf69bf9e2f5023bb12.pdf>. For an overview of some of these organizations and their efforts, see Levin et al., *supra* note 48, at 541–43.

⁸⁶ Badiozamani, *supra* note 51, at 200.

⁸⁷ E.g. Levin et al., *supra* note 48, at 538–41 (noting that, among other problems, “national and organizational short-term self-interest [are] stalling on-the-ground impacts”).

efforts perceived to impinge upon their sovereignty and impose the cost of slowing deforestation on the developing world alone.⁸⁸ This position finds support in major international environmental declarations, such as the Stockholm Declaration and the Rio Declaration,⁸⁹ and has been incorporated in major multilateral statements on forests.⁹⁰ Second, developed countries have repeatedly refused to meet demands for financing to pay costs of avoiding deforestation in developing nations.⁹¹ Both of these reflect the difficulty of addressing deforestation in a manner that comports with the principle of common but differentiated responsibility for globally significant environmental problems.⁹²

Underlying these broad themes in forest negotiations are complex circumstances related to forest use. For example, “[s]ocioeconomic interests in forest exploitation reduce the incentives for policy coordination” among countries.⁹³ In addition, the motivations of some countries pushing international forest regulation are questionable. For example, many environmental nongovernmental organizations (NGOs) changed their positions and began to oppose a binding international forest agreement in

⁸⁸ Dimitrov, *supra* note 17, at 13; Jauregui, *supra* note 18, at 185; Levin et al., *supra* note 48, at 541–42 (“Tropical developing countries . . . could expect to bear the brunt of the effort, and possibly the costs, of implementing any global forest agreement. Perhaps even more important was the South’s historically rooted suspicion that multilateral environmental agreements were simply another ploy for asserting Northern control over Southern resources.”).

⁸⁹ Declaration of the United Nations Conference on the Human Environment, princ. 21, U.N. Doc. A/CONF.48/14 (1972); United Nations Conference on Environment and Development, Rio de Janeiro, Braz., June 3–14, 1992, *Rio Declaration on Environment and Development*, princ. 7, U.N. Doc. A/CONF.151/26 (Vol. I), Annex I (Aug. 12, 1992); *id.*, princ. 2 (“States have . . . the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies.”).

⁹⁰ *E.g.*, United Nations Conference on Environment and Development, Rio de Janeiro, Braz., June 3–14, 1992, U.N. Doc. A/CONF.151/26/ (Vol. III) (Aug. 14, 1992), *available at* <http://www.un.org.documents/ga/conf151/aconf15126-4.htm>.

⁹¹ Dimitrov, *supra* note 17, at 9.

⁹² Two major components of common but differentiated responsibility are the leading historical role that developed countries have played in creating global environmental problems as a corollary to their development, and the financial and technological resource imbalance that exists between developed and developing countries. *See* David Takacs, *Forest Carbon Offsets and International Law: A Deep Equity Legal Analysis*, 22 GEO. INT’L ENVTL. L. REV. 521, 538–40 (2010). Thus, while developed countries demand verifiable actions to limit GHG emissions by developing countries as a prerequisite to agreement, many developing countries view this demand as unfair given their current economic and technological disadvantage and small historical role in creating the climate change problem. *See generally id.* at 538–39 (arguing that developed countries bear the primary responsibility of environmental mitigation while also recognizing the duty of developing countries to take action); Jauregui, *supra* note 18, at 187 (“The socioeconomic costs of protective policies are high because forest utilization is a complex cross-sectoral issue that affects a number of socioeconomic realms. . . . Concerns over relative gains and losses are also acute since the geographical distribution of forests is uneven and a global treaty would impose unequal obligations . . .”).

⁹³ Jauregui, *supra* note 18, at 187.

the 1990s, in part because they feared that the influence of logging industries in developed countries would produce a counterproductive agreement.⁹⁴

The added pressure that climate change places on forests makes the matter more urgent, but it does not increase the likelihood of an international forest convention, hopes for which are now essentially dead.⁹⁵ Instead, the impacts of climate change will be “compounded by the weakness of the international forest regime.”⁹⁶ Thus, climate change should be expected to increase the environmental and socioeconomic harms related to tropical deforestation and degradation unless a new approach can effectively incentivize protection of tropical forests in a way that preserves the full range of their ecological value.

3. Private Forest Governance: A Limited Approach

Following the failure of forest negotiations at Rio and the disillusionment of international NGOs regarding future prospects for a meaningful forest convention, many proponents of improved tropical forest management redirected their efforts toward a new approach: forest certification, a form of non-state market-driven (NSMD) global governance.⁹⁷ As a NSMD approach, forest certification relies upon market preference to influence forest management practices. Specifically, it seeks to shape behavior in the forest sector through creating market advantages for certified products based on consumer preferences. Such advantages may include price premiums or access to purchasers who demand certified products (including some public entities with procurement requirements designed to prefer certified goods).

In the forest sector, the most important organization for the emergence of certification is the Forest Stewardship Council (FSC), formed in 1993 with support of World Wide Fund for Nature (WWF) and other SFM proponents as a multi-stakeholder non-state body to certify well-managed forests.⁹⁸ FSC is based on a concept of NSMD governance promoting the spread of SFM through the private sector.⁹⁹ Although the impetus behind FSC was closely tied to failures of state-based efforts to stem *tropical* deforestation, certification’s major successes have occurred north of the tropics.¹⁰⁰

The structure of the FSC’s governing body, the General Assembly, responds directly to some of the major concerns that undermined state-based efforts to promote SFM leading up to UNCED and thereafter. It is divided into three chambers—economic, social, and environmental—to

⁹⁴ *Id.* at 185–86.

⁹⁵ See Glück et al., *supra* note 16, at 199–200, 202.

⁹⁶ *Id.* at 207.

⁹⁷ E.g., Benjamin Cashore et al., *Can Non-State Governance ‘Ratchet Up’ Global Environmental Standards? Lessons from the Forest Sector*, 16 REV. EUR. COMMUNITY & INT’L ENVTL. L. 158, 158 (2007).

⁹⁸ E.g., Cashore et al., *supra* note 19, at 11–12.

⁹⁹ BENJAMIN CASHORE ET AL., GOVERNING THROUGH MARKETS 12 (2004).

¹⁰⁰ *Id.* at 11.

balance these categories of interest and to deflect concern that it would operate as a mechanism for developed country dominance of tropical forest policy.¹⁰¹

FSC and other certification organizations share certain basic characteristics in their approach to promoting sustainable development. All certification systems require the development of standards which, in the forestry context, specify particular indicators of SFM as defined by the organization.¹⁰² FSC, for example, adopted ten internationally applicable principles, several internationally developed criteria for each principle, and numerous nationally or regionally developed indicators for each criteria.¹⁰³ Certification then requires a mechanism for applying the standards to particular entities or practices seeking certification, known as auditing.¹⁰⁴ This requires rules regarding acceptable auditing practices, frequency of audits and duration of certification, and qualifications of auditors, among other things.¹⁰⁵ In most NSMD certification organizations, including FSC, auditing is performed by independent third parties and, therefore, the organization must have a means of accrediting third party auditors.¹⁰⁶ Finally, to enable the desired market incentives, the organization must develop rules regarding the right to display a label demonstrating certification on products derived from sources meeting the standards and other requirements.¹⁰⁷

FSC was the first significant NSMD global governance organization.¹⁰⁸ The NSMD approach to influencing environmental standards has been picked up by numerous other organizations within the forest sector and spread to a variety of other sectors.¹⁰⁹ In addition, FSC's NSMD approach to global environmental governance can be understood as something of a forerunner to a variety of non-state-based governance arrangements that can be collectively understood as private governance.¹¹⁰ As limitations of the traditional state-centered international law approach to environmental governance emerge, these private governance approaches are receiving increased attention as a means of advancing global environmental improvements.¹¹¹

¹⁰¹ *Id.* at 12.

¹⁰² Errol E. Meidinger, *The New Environmental Law: Forest Certification*, 10 BUFF. ENVTL. L.J. 211, 213 (2003).

¹⁰³ Andrew Long, *Auditing for Sustainable Forest Management: The Role of Science*, 31 COLUM. J. ENVTL. L. 1, 7 (2006).

¹⁰⁴ *Id.* at 2.

¹⁰⁵ *See id.* at 17–18 (discussing the role of science in auditing procedures).

¹⁰⁶ *See id.* at 18.

¹⁰⁷ *See, e.g.,* Meidinger, *supra* note 102, at 246.

¹⁰⁸ *See* CASHORE ET AL., *supra* note 99, at 11–12.

¹⁰⁹ *Id.* at 12–13; *see* Virgilio M. Viana et al., *Certification of Nontimber Forest Products*, in CERTIFICATION OF FOREST PRODUCTS (Virgilio M. Viana et al. eds., 1996).

¹¹⁰ For a useful overview and analysis of the various forms of private governance, see Tracey M. Roberts, *Innovations in Governance: A Functional Typology of Private Governance Institutions*, University of Louisville School of Law Legal Studies Research Paper Series, available at <http://ssrn.com/abstract=1690831>.

¹¹¹ For example, Michael Vandenbergh has analyzed private governance approaches to improving international environmental standards, overcoming the deadlock in post-2012 climate

The effect of NSMD governance on forest management has been generally positive, in that where it is widely adopted, forest certification can have a variety of beneficial impacts.¹¹² For example, certification can increase public participation in decision making and attention to environmental impacts. However, NSMD governance of forests has struggled to gain a significant position in most tropical forest countries.¹¹³ Thus, the efficacy of NSMD mechanisms for addressing the problem of tropical deforestation is questionable.

A major study of forest certification by Cashore et al. sees “considerable potential [for certification] to improve forest management in developing countries,”¹¹⁴ but recognizes that major obstacles must be overcome for the potential to be realized.¹¹⁵ In many of the countries studied, costs of certification outweighed benefits.¹¹⁶ This results from a lack of market demand for certified products, among other factors.¹¹⁷ Although strategies exist to attempt to overcome certification’s inability to significantly penetrate tropical forest regions, NSMD proponents must recognize that after nearly two decades of development NSMD strategies have not notably reduced the global problem of tropical deforestation.¹¹⁸

If certification is to play a role in addressing tropical deforestation, proponents must increase the reach of effective certification regimes. One promising avenue for reaching developing countries lies in connecting certification to state-based multilateral regulatory programs. Thus, certification may form a “symbiotic relationship” with existing state-based regulatory mechanisms to bolster the latter mechanisms and avoid negative externalities.¹¹⁹ The most fertile ground for certification to develop a

change negotiations, and advancing climate protection in the absence of a global post-2012 agreement. See, e.g., Michael P. Vandenbergh, *The New Wal-Mart Effect: The Role of Private Contracting in Global Governance*, 54 UCLA L. REV. 913, 914–15 (2007); Michael P. Vandenbergh, *Climate Change: The China Problem*, 81 S. CAL. L. REV. 905, 907–908, 912 (2008); Michael P. Vandenbergh & Mark A. Cohen, *Climate Change Governance: Boundaries and Leakage*, 18 N.Y.U. ENVTL. L.J. 221, 222, 226 (2010).

¹¹² Benjamin Cashore et al., *Conclusion to CONFRONTING SUSTAINABILITY: FOREST CERTIFICATION IN DEVELOPING AND TRANSITIONING COUNTRIES*, *supra* note 19, at 578–87.

¹¹³ See Cashore et al., *supra* note 19, at 8–9; see also Benjamin Cashore et al., *Forest Certification in Developing and Transitioning Countries: Part of a Sustainable Future?*, 48 ENVIRONMENT no. 9, 2006 at 6, 8, available at <http://eprints.utas.edu.au/2208/1/Environment-Nov-06-Gale.pdf>.

¹¹⁴ Cashore et al., *supra* note 112, at 588.

¹¹⁵ *Id.*

¹¹⁶ *Id.* at 589.

¹¹⁷ *Id.* at 588–89.

¹¹⁸ See e.g. Peter Dauvergne & Jane Lister, *The Prospects and Limits of Eco-Consumerism: Shopping Our Way to Less Deforestation?*, 23 ORG. & ENV’T 132, 138–40 (2010).

¹¹⁹ Kelly Levin et al., *Can Non-State Certification Systems Bolster State-Centered Efforts to Promote Sustainable Development Through the Clean Development Mechanism?*, 44 WAKE FOREST L. REV. 777, 779–80 (2009) (developing a theory of symbiotic relationships between NSMD governance and state-based regulatory approaches through a case study of the Gold Standard certification system for CDM projects under the Kyoto Protocol).

symbiotic relationship with state-based efforts is not within the international forest regime, but lies in the emerging REDD program of the climate regime.

C. The Climate Regime and Tropical Forests

The United Nations Framework Convention on Climate Change (UNFCCC) climate regime represents perhaps the most highly developed set of agreements and institutions in all of international environmental law.¹²⁰ Participation in the regime is broad—with nearly all recognized nations actively participating in the UNFCCC¹²¹—and potentially very deep. To achieve the UNFCCC's objective of "stabiliz[ing] . . . greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system"¹²² will require significant changes in virtually all sectors of economic activity. To achieve this goal equitably, which is often understood to require facilitating economic growth in developing countries to improve the well-being of the world's poor, represents a challenge that is likely to define more than a generation of environmental law.

It is perhaps not surprising, then, that tropical forests have come to be viewed as an appropriate subject of climate regime regulation, and that the emerging REDD program is now seen by many as the best vehicle for effecting change in tropical forests.¹²³ To succeed, however, this program must be equipped with features that will directly address the underlying drivers of tropical deforestation and the stumbling blocks of prior efforts to address them.¹²⁴

1. Climate-Forest Regulation for Mitigation: The Emergence of REDD

The potential to impact forestry through climate regime mechanisms has been recognized since nearly the inception of the regime, but a potentially effective program to combat deforestation has only recently begun to emerge. Significant diplomatic attention to regulating the forest sector under the UNFCCC first surfaced late in the negotiations leading to

¹²⁰ PHILIPPE SANDS, *PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW* 359–60 (2d ed. 2003).

¹²¹ U.N. Framework Convention on Climate Change, Parties to the Convention and Observer States, http://unfccc.int/parties_and_observers/parties/items/2352.php (last visited Feb. 13, 2011) (note Andorra and Holy See are participating as observer States rather than as a parties).

¹²² U.N. Framework Convention on Climate Change, art. 2, *opened for signature* May 9, 1992, 1771 U.N.T.S. 107.

¹²³ See e.g. Boyd, *supra* note 1, at 845.

¹²⁴ D. NEPSTAD ET AL., *REDD+ IN THE POST-COPENHAGEN WORLD: RECOMMENDATIONS FOR INTERIM PUBLIC FINANCE 2* (2010), *available at* [http://www.gcftaskforce.org/documents/REDD%20+%20in%20the%20Post-Copenhagen%20World%20\(English\).pdf](http://www.gcftaskforce.org/documents/REDD%20+%20in%20the%20Post-Copenhagen%20World%20(English).pdf) ("Market trends and the rapid expansion of agricultural and livestock production in many tropical forest regions will undo progress made on REDD+ program development unless these drivers of deforestation are effectively (and immediately) engaged in low-emissions rural development.").

the 1997 Kyoto Protocol.¹²⁵ During these negotiations, the potential to reduce forest emissions was tabled in favor of an approach concentrating on forests as potential carbon sinks, ultimately defined through complex Clean Development Mechanism (CDM) rules established in the Marrakesh Accords adopted during the first meeting of Kyoto Protocol parties.¹²⁶ Essentially, developed countries are permitted to invest in afforestation and reforestation activities (but not antideforestation measures) in developing countries as a means of generating CDM credits to offset up to one percent of their 1990 emissions for compliance with the Kyoto Protocol.¹²⁷ The parties excluded reduced deforestation projects from the CDM because of technical uncertainties, difficulty of monitoring, and sovereignty concerns of developing nations.¹²⁸ Because of these limitations, the climate regime impact on forestry has been minimal.¹²⁹ Further, the Marrakesh Accords adopted an expansive definition of “forest” that easily includes plantation forestry without regard to environmental impacts, which may permit carbon credits to be issued for forestry projects with environmentally deleterious net effects.¹³⁰

Through the work of the Intergovernmental Panel on Climate Change (IPCC) and others, recognition of deforestation as a major source of GHG emissions—roughly equivalent to transportation sector emissions—continued to grow after the adoption of the Marrakesh Accords. The first

¹²⁵ Eveline Trines, *History and Context of LULUCF in the Climate Regime*, in CLIMATE CHANGE AND FORESTS: EMERGING POLICY AND MARKET OPPORTUNITIES 33, 33 (Charlotte Streck et al. eds., 2008).

¹²⁶ U.N. Framework Convention on Climate Change, Montreal, Can., Nov. 28–Dec. 10, 2005, Dec. 5/CMP.1, *Rep. of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol*, U.N. Doc. FCCC/KP/CMP/2005/8/Add.1, at 61–63 (Mar. 30, 2006), available at <http://cdm.unfccc.int/Reference/COPMOP/08a01.pdf>.

¹²⁷ U.N. Framework Convention on Climate Change, Marrakesh, Morocco, Oct. 29–Nov. 10, 2001, Dec. 11/CP.7, *Rep. of the Conference of the Parties*, U.N. Doc. FCCC/CP/2001/13/Add.1, at 54–55 (Nov. 10, 2001), available at <http://unfccc.int/resource/docs/cop7/13a01.pdf>.

¹²⁸ ERIN C. MYERS MADEIRA, POLICIES TO REDUCE EMISSIONS FROM DEFORESTATION AND DEGRADATION (REDD) IN DEVELOPING COUNTRIES 26 (Adrienne Foerster & Sally Atwater eds., 2008); see also Doris Fuchs, *Global Governance: An International Relations Perspective on Tropical Forests*, in TROPICAL DEFORESTATION 129, 133 (Sharon L. Spray & Matthew D. Moran eds., 2006); FARHANA YAMIN & JOANNA DEPLEDGE, THE INTERNATIONAL CLIMATE CHANGE REGIME: A GUIDE TO RULES, INSTITUTIONS, AND PROCEDURES 177–78, 180 (2004). For a discussion of forests and the CDM, see Andrew Long, *Taking Adaptation Value Seriously: Designing REDD to Protect Biodiversity*, 3 CARBON & CLIMATE L. REV. 314, 317–18 (2009).

¹²⁹ U.N. Framework Convention on Climate Change, CDM Project Search, <http://cdm.unfccc.int/Projects/projsearch.html> (last visited Feb. 13, 2011) (stating that only fifteen forestry projects have been registered under the CDM, fourteen of which were approved in 2009 or later).

¹³⁰ U.N. Framework Convention on Climate Change, *supra* note 127, at 58 (defining “forest” as “a minimum area of land of 0.05–1.0 hectares with tree crown cover (or equivalent stocking level) of more than 10–30 per cent with trees with the potential to reach a minimum height of 2–5 metres at maturity *in situ*”); see also YAMIN & DEPLEDGE, *supra* note 128, at 124–25; Michael Totten et al., *Biodiversity, Climate, and the Kyoto Protocol: Risks and Opportunities*, 1 FRONTIERS IN ECOLOGY AND THE ENV'T 262, 264 (2003); Ernst-Detlef Schulze et al., *Making Deforestation Pay Under the Kyoto Protocol?*, 299 SCIENCE 1669, 1669 (2003).

formal proposal for a mechanism to reward avoided deforestation on the basis of reduced emissions was introduced by the Coalition of Rainforest Nations in 2005 at COP-11.¹³¹ Elements of this proposal, which spawned the now widely used term “REDD,” provided the basic building blocks for negotiations toward creating an anti-deforestation program within the climate regime.¹³²

The core idea of REDD is to enable developing countries to receive financial support for reducing GHG emissions from deforestation.¹³³ Reductions would most likely be measured as the difference between a pre-defined baseline rate of deforestation emissions and a verified reduction in deforestation emissions achieved through measures or projects that comply with REDD requirements.¹³⁴ Major mitigation-related issues in the negotiations toward REDD include rules for setting baseline rates of deforestation and ensuring additionality of emissions reductions, preventing leakage of avoided deforestation to other areas, and securing the permanence of emissions reductions.¹³⁵

The REDD concept gained momentum in 2007 at the COP-13 meeting in Bali, Indonesia where the Subsidiary Body for Scientific and Technological Advice (SBSTA) issued a report that encouraged development of a REDD program.¹³⁶ The COP formally endorsed the development of a reduced emissions from deforestation program in the “Bali roadmap,” which established the framework for negotiations toward a post-Kyoto agreement.¹³⁷

After Bali, REDD became the subject of intense negotiations, billions of dollars of investment by governments and non-state organizations, formal proposals by nearly every country that could be affected by the mechanism, and extensive literature.¹³⁸ At COP-15 in Copenhagen, the REDD negotiations

¹³¹ U.N. Framework Convention on Climate Change, Montreal, Can., Nov. 28-Dec 9, 2005, *Reducing Emissions from Deforestation in Developing Countries: Approaches to Stimulate Action, Item 6 of Provisional Agenda*, U.N. Doc. FCCC/CP/2005/L.2 (Dec. 6, 2005), available at <http://unfccc.int/resource/docs/2005/cop11/eng/misc01.pdf>.

¹³² *Id.*; see also Boyd, *supra* note 1, at 872–77.

¹³³ See U.N. Framework Convention on Climate Change, *supra* note 131.

¹³⁴ MADEIRA, *supra* note 128, at 11.

¹³⁵ See generally *id.* (exploring and explaining REDD policy design issues and host country issues).

¹³⁶ See U.N. Framework Convention on Climate Change, Subsidiary Body for Scientific and Technological Advice, Bonn, Ger., May 7–18, 2007, ¶¶ 36–39, U.N. Doc. FCCC/SBSTA/2007/4 (June 22, 2007), available at <http://unfccc.int/resource/docs/2007/sbsta/eng/04.pdf>.

¹³⁷ U.N. Framework Convention on Climate Change, Bali, Indon., Dec. 3–15, 2007, Dec. 1/CP.13, *Rep. of the Conference of the Parties*, ¶¶ 1–11, U.N. Doc. FCCC/CP/2007/6/Add.1 (Mar. 14, 2008) [hereinafter Bali Action Plan]. The form of REDD emerging from COP-13 is often referred to as “REDD+” because of its recognition of conservation activities and reforestation as potential components of REDD.

¹³⁸ See Glück et al., *supra* note 16, at 204–07; CHARLIE PARKER ET AL., THE LITTLE REDD+ BOOK: A GUIDE TO GOVERNMENTAL AND NON-GOVERNMENTAL PROPOSALS FOR REDUCING EMISSIONS FROM DEFORESTATION AND DEGRADATION 90–94 (2008), available at http://www.amazonconservation.org/pdf/redd_the_little_redd_book_dec_08.pdf [hereinafter THE LITTLE REDD+ BOOK]; CHARLIE PARKER ET AL., THE LITTLE CLIMATE FINANCE BOOK: A GUIDE TO FINANCING OPTIONS FOR FORESTS AND CLIMATE CHANGE 50–51 (2009), available at

within the Ad-hoc Working Group on Long-Term Cooperative Action (AWG-LCA) were arguably the most successful negotiations of the entire conference. An AWG-LCA draft decision on REDD policy, crafted during COP-15, demonstrates near-agreement on many of the key aspects of REDD.¹³⁹ The COP agreed to move forward on REDD at COP-16 in Cancun and the decision that emerged from the AWG-LCA's work in Cancun, a part of the Cancun Agreements, represents the COP's first formal recognition of REDD.¹⁴⁰ To some extent, the decision also reflects consensus on the broad outline of REDD. Nonetheless, major issues remain unresolved, including the role of markets in financing avoided deforestation and the extent of social and ecological safeguards in the program.

An important component of REDD's high profile is its characterization as a low-cost mitigation opportunity. The influential Stern Review helped to develop this characterization by relying on the potential for low-cost near-term emissions reductions to support its economic case for international action to address climate change.¹⁴¹ In many models of REDD, its cost-effectiveness is enhanced by a market-based system in which REDD activities generate tradable carbon offset credits. However, some countries and commentators have consistently opposed using carbon offset credits to finance REDD, instead pushing for a fund-based approach in which donor nations would provide financing through an international fund.¹⁴²

Notably, developed countries have demonstrated a far greater willingness to fund REDD-related forest improvements than has been evident in any prior forest-related negotiations. For example, the Copenhagen Accord contains explicit agreement on "the need to provide positive incentives to [reduce emissions from deforestation] through the immediate establishment of a mechanism including REDD-plus, to enable the mobilization of financial resources from developed countries."¹⁴³

http://www.theredddesk.org/sites/default/files/resources/pdf/2009/lcfb_en.pdf [hereinafter THE LITTLE CLIMATE FINANCE BOOK]. See generally Wertz-Kanounnikoff & Kongphan-apirak, *supra* note 7 (surveying and analyzing REDD+ activities in Asia, Africa, and Latin America).

¹³⁹ U.N. Framework Convention on Climate Change, Copenhagen, Den., *supra* note 11.

¹⁴⁰ U.N. Framework Convention on Climate Change, Cancun, Mex., *supra* note 12.

¹⁴¹ STERN, *supra* note 5, at xxv–xxvi.

¹⁴² THE LITTLE REDD+ BOOK, *supra* note 138, at 28, 51, 69. Brazil, a proponent of a fund based system, would have an advantage in such a system. The Amazon accounted for twenty-six percent of all deforestation and also has very high forest carbon density. Johannes Ebeling & Mai Yasué, *Generating Carbon Finance Through Avoided Deforestation and Its Potential to Create Climatic, Conservation and Human Development Benefits*, 363 PHIL. TRANSACTIONS ROYAL SOC'Y B 1917, 1917 (2008). This combination of a high deforestation rate and a high forest carbon density means that Brazil can expect a substantial percentage of available incentives in a fund-based system. *Id.*

¹⁴³ U.N. Framework Convention on Climate Change, Copenhagen, Den., Dec. 7–15, 2009, Dec. 2/CP.15, Copenhagen Accord, ¶ 6, U.N. Doc. FCCC/CP/2009/11/Add.1 [hereinafter Copenhagen Accord]. After COP-15, meetings of more than sixty nations in the "Paris-Oslo process" resulted in pledges of nearly \$4 billion in early funding for REDD. See, e.g., Ganley, *supra* note 20. But see \$6B Forest Conservation Plan Lacking in Transparency, Indigenous Participation, Say Activists, MONGABAY.COM (Apr. 13, 2010), http://news.mongabay.com/2010/0413-paris-oslo_process.html (last visited Feb. 13, 2011) ("The process to establish REDD+

Increasingly, REDD is viewed as a major opportunity to enable developing countries to make a meaningful contribution to mitigation, which is probably integral to any significant global action on climate change.¹⁴⁴ Recognition of REDD in the Cancun Agreements supports the widespread perception that some form of REDD is virtually certain to play a role in the post-Kyoto approach to climate change, even if the parties do not reach agreement on a comprehensive Kyoto-style agreement.¹⁴⁵

The emergence of REDD over the next few years will create opportunities to simultaneously address other major environmental and development priorities. REDD could potentially lead to improvements in forest management that promote biodiversity preservation and socioeconomic development. However, this potential may be limited by a view of the forest sector as “low hanging fruit” for cheap near-term emissions reductions.¹⁴⁶

2. *Climate Change Adaptation in Tropical Forests: The Future of REDD*

Another major issue on the table at climate change negotiations is adaptation. The IPCC defines adaptation as “[i]nitiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects.”¹⁴⁷ Creating international mechanisms to support adaptation in developing countries is particularly critical, as some

... is lacking in transparency and failing to include civil society organizations and indigenous peoples, say activists across forty NGOs.”).

¹⁴⁴ *E.g.*, Boyd, *supra* note 1, at 877 (“[I]t has become increasingly clear since deforestation was placed on the international climate agenda in 2005 that it could be an important, perhaps crucial, component of any overall political deal on a post-2012 agreement, by . . . providing an avenue for developing countries to move toward meaningful emissions reductions commitments”).

¹⁴⁵ In the absence of a comprehensive agreement, REDD may be formalized in a smaller, sector-specific agreement.

¹⁴⁶ *See, e.g.*, William F. Laurance, *Can Carbon Trading Save Vanishing Forests?*, 58 BIOSCIENCE 286 (2008); LEO PESKETT ET AL., MAKING REDD WORK FOR THE POOR 32 (2008) (observing that “[c]ost-effectiveness of REDD projects or programmes might also have implications for overall investments in REDD and their distribution. This has been a concern in the CDM where there has been a high volume of investment in ‘low hanging fruit’ projects (i.e. low cost per unit of emissions reduction)” and “[g]iven possible high transaction costs of REDD, investors (whether they are private sector investors investing directly in projects, or host country governments implementing national REDD systems) may also seek to exploit economies of scale. In the CDM this issue has given rise to concerns about the development of large-scale forestry projects with potential negative impacts on the environment and the poor”); JOHANNES EBELING & JAN FEHSE, CHALLENGES FOR A BUSINESS CASE FOR HIGH-BIODIVERSITY REDD PROJECTS AND SCHEMES 14, 22 (2009), *available at* <http://www.cbd.int/forest/doc/other/ecosecurities-report-2009-02-en.pdf> (noting the “the business case for ‘project-blind’ compliance strategies”).

¹⁴⁷ INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: SYNTHESIS REPORT annex II (R. K. Pachauri & A. Reisinger eds., 2007), *available at* http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm.

regions facing the most severe impacts from a changing climate are also among the least able to cope.¹⁴⁸

The UNFCCC and the Kyoto Protocol both include provisions that reflect the need for adaptation.¹⁴⁹ UNFCCC Article 4.1 requires all parties to develop national strategies and measures “to facilitate adequate adaptation” to climate change.¹⁵⁰ Likewise, Article 10(b) of the Kyoto Protocol requires parties to develop national adaptation programs and measures for adaptation, and creates an international reporting mechanism.¹⁵¹ The UNFCCC also requires that developed country parties “assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects.”¹⁵²

Several adaptation funding mechanisms exist, but they are widely acknowledged to be inadequate. Pursuant to Article 12.8 of the Kyoto Protocol, a portion of proceeds from CDM projects is directed to “assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation.”¹⁵³ As established in the Marrakesh Accords, two percent of proceeds on certified emissions reductions credits generated through the CDM are used to finance an adaptation fund managed by an Adaptation Fund Board.¹⁵⁴ The Marrakesh Accords also established a broader “financial mechanism,” managed by the Global Environmental Facility, which provides some funding for adaptation, as do several other funds established under the regime.¹⁵⁵ In addition, the UNFCCC and Kyoto Protocol encourage bilateral and regional arrangements to facilitate adaptation.¹⁵⁶

The Cancun Agreements made progress on adaptation by establishing the “Cancun Adaptation Framework” that includes, among other things, creation of an “Adaptation Committee.”¹⁵⁷ While this framework may prove

¹⁴⁸ In many cases, the victims of climate change will not only be unable to pay for measures to adapt, but are also the least historically responsible for the elevated carbon concentrations causing the damage. Eric A. Posner & Cass R. Sunstein, *Climate Change Justice*, 96 GEO. L.J. 1565, 1580 (2008). These two factors embody the tension reflected by the CBDR principle with respect to climate change, and underlie the claims of some developing countries that developed countries should assume the primary burden of mitigation while also paying for a host of adaptation activities. See *id.* for a useful argument that, even if corrective justice and distributive justice arguments justify payments by developed countries, they do not support a lack of developing country commitments.

¹⁴⁹ See U.N. Framework Convention on Climate Change, *supra* note 122, at art. 4.1(b); see also Kyoto Protocol to the United Nations Framework Convention on Climate Change art. 10(b), Dec. 10, 1997, 2303 U.N.T.S. 148 [hereinafter Kyoto Protocol].

¹⁵⁰ The Article 4.1 requirement is subject to reporting under Article 12. U.N. Framework Convention on Climate Change, *supra* note 122, at arts. 4.1, 12.

¹⁵¹ Kyoto Protocol, *supra* note 149, at art. 10(b).

¹⁵² Bali Action Plan, *supra* note 137, ¶ 1(e)(iii).

¹⁵³ Kyoto Protocol, *supra*, note 149, at art. 12.8.

¹⁵⁴ U.N. Framework Convention on Climate Change, *supra* note 127, Dec. 10/CP.7, ¶ 1–2.

¹⁵⁵ *Id.* Dec. 2/CP.7, ¶ 5; *id.* Dec. 7/CP.7, ¶ 1–2.

¹⁵⁶ See U.N. Framework Convention on Climate Change, *supra* note 122, art. 11, ¶ 5; see Kyoto Protocol, *supra* note 149, art. 11, ¶ 3.

¹⁵⁷ U.N. Framework Convention on Climate Change, *supra* note 12, at § 2.

to be a building block that enables more effective action on adaptation, the decision itself does little to advance adaptation. The Cancun Agreements do not specifically commit developed country parties to provide funding for urgent adaptation needs in developing countries, nor do they establish other specific means of funding adaptation.¹⁵⁸ Thus, the effect of the Cancun Agreements on adaptation remains to be seen.

Over the history of the UNFCCC regime, progress on adaptation has been slow and insufficient to meet rising challenges, despite the formal recognition of the need for adaptation assistance and the financing mechanisms discussed above.¹⁵⁹ This insufficiency may be partially explained by the local, rather than global, nature of many adaptation benefits.¹⁶⁰ Adaptation funding provided by developed nations will generally not be perceived to provide them with direct or immediate benefits in return.

Given the historical difficulties of mobilizing assistance for adaptation, it may be useful for the parties to change their approach to the issue by seeking opportunities to incentivize adaptation according to sectoral needs. Funding a generalized concept of adaptation may be seen by developed countries to run counter to their economic self-interest, whereas opportunities exist to connect developing country adaptation with other concerns of more immediate relevance to developed country interests in specific sectors. As REDD emerges, and particularly if it embraces a market-based approach, forests can become a key testing ground for this approach. Thus, opportunities for linking REDD's mitigation potential with adaptation support warrant far greater attention than they have thus far received in international climate negotiations.

Forests serve as a key ecosystem type for realizing adaptation goals. In this context, "adaptation" can be understood as changing or improving forest management, including social and governance aspects of forest management, in response to existing or expected climate change impacts to limit harm to socioeconomic or ecological systems.¹⁶¹ Although forests and other ecosystems face severe threats from climate change, changes or improvements in forest management can "increase the resilience of ecosystems."¹⁶² Of particular relevance to tropical forests, the IPCC has noted that "[a] primary adaptation strategy to climate change and even current climate variability is to reduce and manage the other stresses on species and ecosystems, such as habitat fragmentation and destruction."¹⁶³

¹⁵⁸ The Cancun Agreements do create a Green Climate Fund, but neither dedication nor allocation of its resources are decided.

¹⁵⁹ Council on Foreign Relations, *The Global Climate Change Regime*, COUNCIL ON FOREIGN RELATIONS, April 20, 2010, available at http://www.cfr.org/publication/21831/global_climate_change_regime.html.

¹⁶⁰ See generally YAMIN & DEPLEDGE, *supra* note 128, at 213–46 (explaining that while developed countries will likely have to finance many adaptation activities in developing countries, such activities usually generate localized benefits).

¹⁶¹ See, e.g., Glück et al., *supra* note 16, at 187.

¹⁶² Fischlin et al., *supra* note 70, at 246.

¹⁶³ *Id.*

Thus, forest management is at least as relevant to adaptation as it will be to realizing mitigation gains through avoided deforestation.

Foresters working in the international arena describe the practices required for maintaining mitigation benefits in forests and advancing adaptation goals in forested areas as, for the most part, “functionally equivalent” to those encapsulated in the concept of sustainable forest management (SFM).¹⁶⁴ SFM has been the stated goal of international forestry improvement efforts for several decades.¹⁶⁵

Understood broadly, SFM “encompasses the administrative, legal, technical, economic, social and environmental aspects of the conservation and use of forests.”¹⁶⁶ Thus, SFM seeks to advance a holistic approach to forest management, preservation of biodiversity, equitable benefit sharing, and collaborative governance.¹⁶⁷

Current and historical barriers to SFM are directly relevant to climate regime goals, particularly adaptation but also mitigation. SFM has been broadly embraced as an aspirational goal in nonbinding international agreements and the myriad international institutions that have arisen to support improved forest management.¹⁶⁸ However, its implementation varies

¹⁶⁴ Broadhead et al., *supra* note 54, at 60–61; *see also* INT’L UNION OF FOREST RESEARCH ORGS., *supra* note 16, at 9, 13 (“The goal of adaptation to climate change should be added to the existing economic, ecological and social goals of sustainable forest management. In this way, adaptation can be promoted without compromising the overarching commitment to sustainability that drives national forest programmes.”). Moreover, as the IPCC Working Group II has observed: “Impacts of climate change on ecosystems also show strong interrelationships with ecosystem processes and human activities at various scales over time. Addressing these impacts requires a co-ordinated, integrated, cross-sectoral policy framework with a long-term focus; a strategy that so far has not been easy to implement.” U.N. Env’t Programme, *supra* note 52, at 248.

¹⁶⁵ INT’L UNION OF FOREST RESEARCH ORGS., *Executive Summary* to ADAPTATION OF FORESTS AND PEOPLE TO CLIMATE CHANGE – A GLOBAL ASSESSMENT REPORT, *supra* note 16, at 9. Although the SFM concept has been widely used, and sometimes misused to support apparently unsustainable logging practices, this Article intends the term to carry its most direct meaning. SFM as discussed here refers to forest management that satisfies ecological, social and economic needs in a way that allows forests to continue meeting such needs in perpetuity. This vision of SFM necessitates a primary focus on ecological sustainability as a precursor to meeting other needs, while also recognizing that climate change and human needs necessitate active and adaptive management of forests in most cases.

¹⁶⁶ U.N. Food & Agric. Org., *Promoting Sustainable Management of Forests and Woodlands*, <http://www.fao.org/forestry/sfm/en/> (last visited Feb. 13. 2011) (promoting sustainable management of forests and woodlands). In another publication, FAO explains: “It is difficult to explicitly define what sustainable forest management is. However, several recent international meetings have suggested that the following seven thematic elements are key components. (1) Extent of forest resources; (2) Biological diversity; (3) Forest health and vitality; (4) Productive functions of forest resources; (5) Protective functions of forest resources; (6) Socio-economic functions; (7) Legal, policy and institutional framework.” U.N. Food & Agric. Org., *What is Sustainable Forest Management?*, <http://www.fao.org/forestry/sfm/24447/en/> (last visited Feb. 13. 2011).

¹⁶⁷ Glück et al., *supra* note 16, at 190.

¹⁶⁸ *See, e.g., id.* at 200–02; *see also* Fischlin et al., *supra* note 70, at 248, 299. *See generally* SANDS, *supra* note 120, at 545–51 (discussing the development of SFM policies).

considerably. While most developed country forests have attained a relatively high degree of SFM, “in the tropics, the proportion of forests that are sustainably managed remains very low.”¹⁶⁹ Thus, to achieve adaptation and mitigation goals in tropical forests, the climate change regime will need to increase the implementation of SFM.

While policies aimed at offsetting the cost of SFM may have a significant impact on its implementation in tropical regions, funding alone will not produce SFM. Political resistance to SFM remains strong in many forested countries because of the potential impacts on other land uses and benefits currently enjoyed by existing forest stakeholders, among other reasons.¹⁷⁰ Because SFM is well suited to advancing both mitigation and adaptation goals,¹⁷¹ it can provide a metric within REDD for understanding whether particular measures are meeting the full range of climate regime goals.

III. REDD FROM A BROADER GOVERNANCE PERSPECTIVE: CRUCIAL COBENEFITS

Considering the full range of socioeconomic and environmental public goods provided by fully functioning tropical forest systems, and the difficulties of governance in this context, a REDD mechanism premised on mitigation alone will be insufficient. Greater success may emerge, however, if REDD can be reconceived as a broader effort to build social and ecological resilience in these systems, while simultaneously crediting the reduced GHG emissions that result. These broader social, economic, and ecological benefits, commonly referred to as cobenefits,¹⁷² are central to the successful regulation of forests because they provide the means of addressing the core drivers of deforestation. Understood in this way, REDD could be recast as a program to promote both mitigation and adaptation in tropical forest systems. This perspective produces suggestions for re-designing REDD in a way that may also provide a model for governance programs in other ecosystems that provide multiple global public goods.

Understanding REDD from a broader governance perspective also sheds light on the role of markets. Incorporation of REDD credits into carbon markets can serve as an important tool for raising the funds needed to support antideforestation efforts, but absent a mechanism to counteract market pressure for low cost forest carbon credits, market pressures may serve to magnify the risks of REDD and disincentivize development of cobenefit-rich projects and policies. Therefore, the market aspect of REDD

¹⁶⁹ U.N. FOOD & AGRIC. ORG., *supra* note 49, at 73 (noting that “in low-income situations, sustainable forest management faces far more constraints [than in developed countries], reflecting limited ability and willingness to pay for the additional costs involved in adhering to the social and environmental criteria”).

¹⁷⁰ See Glück et al., *supra* note 16, at 190.

¹⁷¹ See *id.*

¹⁷² See *supra* note 1.

should be shaped to promote projects and policies with a wide range of benefits for forest ecosystems and people.¹⁷³

Most current conceptions of REDD, including many REDD demonstration project frameworks,¹⁷⁴ view mitigation as REDD's primary or exclusive purpose. An exclusive focus on mitigation may encourage some participants to reduce cost through practices that ultimately produce negative impacts on human well-being and the ecology of forests.¹⁷⁵ In other words, although mitigation is the core impetus for REDD, a program focused exclusively on promoting near-term mitigation gains may give insufficient attention to other considerations contributing to the overall status of these complex systems. A realistic approach to realizing climate regime goals in tropical forests—regardless of whether the impetus is mitigation, adaptation, or both—must be able to address the factors that underlie persistently high rates of deforestation more effectively than previous

¹⁷³ See, e.g., Wertz-Kanounnikoff & Kongphan-apirak, *supra* note 7, at 11 (concluding that “the ultimate degree and nature of cobenefits depends on the design of the REDD+ scheme and how benefits and costs are distributed across the actors involved. In addition, to further secure and enhance REDD+ cobenefits, supplementary finance (e.g. international biodiversity finance, official development assistance) can help direct REDD+ investments towards areas and countries that are priorities for conservation and development”).

¹⁷⁴ For example, a recent Forest Carbon Partnership Facility (FCPF) publication states:

Some may offer, in addition to climate change mitigation benefits, a range of ‘co-benefits’, in particular for local people and the local environment. How the FCPF may help create, monitor and value co-benefits is a matter for the FCPF Participants to determine. It is recognized that the FCPF is, first and foremost, a climate change mitigation instrument. However, REDD programs must be designed to avoid any harm to local people and the environment and, where feasible, to improve livelihoods and improve the local environment. For example, REDD activities can enhance biological diversity by protecting and restoring natural habitat, and preserve or improve livelihoods for local communities by securing customary property.

BENOIT BOSQUET & ANDRE RODRIGUES AQUINO, FOREST CARBON PARTNERSHIP FACILITY: DEMONSTRATING ACTIVITIES THAT REDUCE EMISSIONS FROM DEFORESTATION AND FOREST DEGRADATION 10 (Anita Gordon & Stephanie Tam eds., 2009), *available at* http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PDF/English_54462_WorldBank_FCPF_Brochure.pdf.

¹⁷⁵ PESKETT ET AL., *supra* note 146, at 39 (“Decisions over the rules of operation of international REDD mechanisms could have significant implications, especially in terms of equity. These include factors such as different capacities to deal with complex systems; the way that baselines are established; how or whether degradation is included; and how definitions such as ‘forest’ are set. Differences may be obvious between countries, but these are also likely to play out at national and subnational scales.”). Plantations of fast-growing nonnative species, for example, would allow low-cost mitigation but may create negative environmental or social externalities. See Levin et al., *supra* note 48, at 546 (“If non-carbon benefits are ignored, [REDD] could adversely impact biodiversity and ecosystem function.”); see also SIMONE LOVERA, COMM’N ON ENVTL., ECON. AND SOC. POLICIES, THE HOTTEST REDD ISSUES: RIGHTS, EQUITY, DEVELOPMENT, DEFORESTATION AND GOVERNANCE BY INDIGENOUS PEOPLES AND LOCAL COMMUNITIES (2008), *available at* http://www.rightsandresources.org/documents/files/doc_904.pdf (discussing the potentially harmful effects of REDD on indigenous peoples and local communities in developing countries).

international environmental law programs.¹⁷⁶ This can only happen if REDD's core design supports approaches to overcome the multiplicity of considerations that underlie deforestation.¹⁷⁷

A. Importance of Cobenefits

REDD's success is fundamentally linked with its ability to generate cobenefits. In the short-term, the ability of REDD to affect tropical deforestation (and resulting GHG emissions) depends on its adoption by a substantial number of developing countries. Broad adoption of REDD will occur only if the potential participants perceive their participation as likely to provide them with net benefits—a perception that is likely to increase with an emphasis on promoting cobenefits. More fundamentally, over the long-term the success of REDD in many areas will depend upon incorporation of cobenefits that overcome deforestation drivers, such as poverty and inadequate governance. Thus, REDD's impact on both mitigation and adaptation turns, in large part, on programmatic incentives to generate cobenefits.

Development of social cobenefits is critical to maintaining the necessary social and governance conditions to ensure permanence of REDD mitigation benefits.¹⁷⁸ Where deforestation is driven by slash-and-burn subsistence agriculture, for example, viable alternatives must be created to preserve forests without imposing further hardships on the poor.¹⁷⁹ REDD may also require development of cobenefits to succeed in tropical forest nations with relatively advanced governance institutions, for example as a means of combating illegal logging.¹⁸⁰ In the absence of such cobenefits, long-term retention of carbon in forest ecosystems is doubtful at best.

¹⁷⁶ Broadhead et al., *supra* note 54, at 64–65 (“In many areas of the world, talk of steering forest management towards adaptation and/or mitigation without adequate recognition of the major challenges still standing in the way of SFM creates highly unrealistic expectations of the forestry sector.”). As noted by the Secretariat of the Convention on Biological Diversity, “[a]ddressing the underlying drivers of deforestation and degradation will require a wide variety of ecological, social and economic approaches.” SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY, *supra* note 48, at 11.

¹⁷⁷ In contrast, the current trajectory of negotiations appears poised to address non-mitigation elements as something of an afterthought.

¹⁷⁸ ALTS. TO SLASH & BURN P'SHIP AT THE WORLD AGROFORESTRY CTR. & INT'L INST. FOR SUSTAINABLE DEV., REDD: BRIDGING THE GAP BETWEEN NEGOTIATION AND ACTION: KEY MESSAGES FOR COPENHAGEN, *available at* http://www.iisd.org/pdf/2010/redd_key_messages_copenhagen.pdf (“Ensuring that co-benefits go to local communities is the best way to address non-permanence (the risk of releasing carbon stocks or re-emitting carbon sequestered through REDD projects at a later stage).”).

¹⁷⁹ *E.g.*, NEPSTAD ET AL., *supra* note 124, at 3 (“REDD+ program development will not succeed in the long term without lasting improvements in livelihoods of forest-maintaining indigenous and traditional people and other local communities.”).

¹⁸⁰ *E.g.*, Florence Daviet, *Legally REDD: Building Readiness for REDD by Supporting Developing Countries in the Fight Against Illegal Logging* (World Res. Inst. working paper, 2009), *available at* http://pdf.wri.org/legally_redd.pdf. Another potential barrier to REDD is lack of clarity in ownership of forest lands, as well as inadequately defined use rights. FILIPPO CHIESA

A recent evaluation of UN-REDD efforts in Tanzania presents a case study of how socioeconomic conditions drive deforestation and illustrates how REDD cobenefits might overcome these drivers.¹⁸¹ In the period 2000–2005, net forest loss in Tanzania ranked among the ten highest in the world at 412,000 hectares.¹⁸² Deforestation in Tanzania is driven largely by demand for fuelwood to meet energy needs, and by expansion of subsistence agriculture.¹⁸³ The history of Tanzania is replete with failed efforts to reduce deforestation, primarily because conservation efforts sought to restrict access of local peoples to lands from which they drew sustenance.¹⁸⁴ Governance of Tanzanian forests is poor, suffering from cronyism and corruption,¹⁸⁵ yet several initiatives have demonstrated that community-management of forests in Tanzania can produce a reduction in deforestation.¹⁸⁶ An influx of targeted funding to increase efficiency of energy use (for example, through improved cook stoves) and provide the expertise and technology needed to increase agricultural yield, combined with governance initiatives, would significantly reduce the drivers of deforestation and improve well-being of local populations.¹⁸⁷ Without targeted support of these cobenefits, however, funding for emissions reduction is unlikely to meet the needs that drive Tanzanian deforestation, and may exacerbate socioeconomic inequities.

In addition, attention to ecological considerations associated with adaptation and cobenefits is necessary to ensure permanence of emissions reductions. Poorly managed forests are likely to see increased die-back driven by climate change, as well as being more likely to revert to deforestation from other causes.¹⁸⁸ This type of forest loss can be understood as part of a positive feedback loop that increases the severity of climate change (through forest die-off) and contributes to additional forest loss through additional climate-driven die-off.¹⁸⁹ Forest management plans with a

ET AL., UN-REDD IN TANZANIA: PROJECT ON REDUCING EMISSIONS FROM DEFORESTATION AND FOREST DEGRADATION IN DEVELOPING COUNTRIES 7 (2009), *available at* <http://www.unep-wcmc.org/pdfs/SAIS-TanzaniaLowrES.pdf> (“REDD can both be affected by and be an agent of change of *land tenure systems*. Unclear land tenure systems (especially large amounts of open access land) are detrimental to the REDD framework. At the same time, REDD can provide the presently-missing monetary incentives for local communities to bring open-access forests under a regime of commonality and sustainable forest management.”).

¹⁸¹ CHIESA ET AL., *supra* note 180.

¹⁸² U.N. FOOD & AGRIC. ORG., GLOBAL FOREST RESOURCES ASSESSMENT 2005 at 21 (2005).

¹⁸³ CHIESA ET AL., *supra* note 180, at 5, 49.

¹⁸⁴ *Id.* at 21.

¹⁸⁵ *Id.* at 28–29.

¹⁸⁶ *Id.* at 35.

¹⁸⁷ *Id.* at 45, 49.

¹⁸⁸ Claudia M. Stickler et al., The Potential Ecological Costs and Cobenefits of REDD: A Critical Review and Case Study from the Amazon Region, 15 GLOBAL CHANGE BIOLOGY 2803, 2807–08 (2009).

¹⁸⁹ U.N. ENV'T PROGRAMME, *supra* note 52, at 40 (noting that exceptional carbon concentration growth in 2005 may have been partially caused by Amazon rainforest die-off due to drought); *see supra* text accompanying notes 78–79; *see also* Stickler, *supra* note 188, at 2807.

likelihood of providing mitigation benefits in areas facing severe climate change impacts must, therefore, incorporate adaptation-related techniques (which can be characterized as cobenefits).

A project proposal in Mozambique illustrates the potential use of REDD for ecologically-oriented adaptation that also produces gains for human well-being.¹⁹⁰ Mozambique has a history of damaging flood and drought events, which are expected to worsen with climate change, as well as food shortages due to crop failure.¹⁹¹ The Sofala Community Carbon Project is working to strengthen riverbanks and reduce vulnerability to flooding through afforestation, integrate farming techniques designed to enhance food security in the region, and simultaneously reduce GHG emissions from deforestation.¹⁹² Likewise, a verified forestry emissions reduction project in Panama has provided water quality improvements and slowed erosion, partially as a strategy to promote ecosystem resilience to climate change.¹⁹³

These and other demonstration projects show the potential of REDD to advance sustainable development and, by extension, aid adaptation.¹⁹⁴ However, it is questionable whether the current conception of REDD being negotiated through the UNFCCC will promote a proliferation of such cobenefit-rich efforts.

B. The Need for Greater Emphasis on Cobenefits

The potential for REDD to meet multiple goals has been recognized since before REDD gained formal endorsement in the Bali Road Map¹⁹⁵ and

¹⁹⁰ ENVIROTRADE CARBON LTD., SOFALA COMMUNITY CARBON PROJECT: PROJECT DESIGN DOCUMENT ACCORDING TO CCB STANDARDS (2009), *available at* <http://www.climate-standards.org/projects/files/sofala/2009-08-31-PDD-CCBA-Sofala-final2.pdf>.

¹⁹¹ *Id.* at 92–93.

¹⁹² *Id.* at 40–60.

¹⁹³ SMARTWOOD PROGRAM OF THE RAINFOREST ALLIANCE, VERIFICATION AUDIT REPORT FOR: FUTURO FORESTAL S.A. IN EL PARAÍSO, SAN FÉLIX, CHIRIQUÍ, PANAMÁ 45 (2007) [hereinafter VERIFICATION AUDIT REPORT FOR PANAMA], *available at* http://www.climate-standards.org/projects/files/panama/Panama_CCB_verif_audit_07.pdf. For a similar example from Indonesia, see SMARTWOOD PROGRAM OF THE RAINFOREST ALLIANCE, VERIFICATION AUDIT REPORT FOR: PROVINCIAL GOVERNMENT OF NANGGROE ACEH DARUSSALAM – FAUNA & FLORA INTERNATIONAL – CARBON CONSERVATION IN ULU MASEN ECOSYSTEM, (ACEH PROVINCE, INDONESIA) 53–54 (2008) [hereinafter VERIFICATION AUDIT REPORT FOR INDONESIA], *available at* http://www.climate-standards.org/projects/files/Carbon_Conservation_FFI_Provincial_Govt_of_Nanggroe_Aceh_Darussalam_CCB_Validation_Audit_Final_Feb_08.pdf.

¹⁹⁴ Examples of current efforts to promote forest adaptation are presented in Geoff Roberts et al., *Current Adaptation Measures and Policies*, in ADAPTATION OF FORESTS AND PEOPLE TO CLIMATE CHANGE – A GLOBAL ASSESSMENT REPORT, *supra* note 16, at 123–33.

¹⁹⁵ See, e.g., VALERIE KAPOs ET AL., U.N. ENV'T PROGRAMME, REDUCING EMISSIONS FROM DEFORESTATION: A KEY OPPORTUNITY FOR ATTAINING MULTIPLE BENEFITS 5 (2007), *available at* http://www.unep-wcmc.org/resources/publications/unep_wcmc%20RED%20Feb07.pdf (“Despite their basic focus on carbon, REDD efforts under the UNFCCC have strong potential to contribute towards the goals of many other multilateral environmental agreements and mechanisms and to help national governments to meet their obligations under these

continues to receive attention,¹⁹⁶ but country proposals for REDD generally have not progressed beyond the point of merely asserting that social and biodiversity benefits are important considerations.¹⁹⁷ This was evident at both COP-15 in Copenhagen and COP-16 in Cancun.

The negotiations on REDD within the AWG-LCA during COP-15 in Copenhagen resulted in a bracketed draft decision that “affirms” the importance of cobenefits in REDD.¹⁹⁸ Subsequent negotiations in the lead-up to COP-16, however, suggested that even these weak safeguards were in jeopardy.¹⁹⁹

Ultimately, the decision adopted at COP-16 in Cancun acknowledges the key social and environmental issues surrounding REDD (beyond mitigation), but does little to ensure that they are addressed. The decision “affirms” that REDD “should be carried out in accordance with” safeguards stated in annexes to the decision.²⁰⁰ It also “requests” that developing country parties “develop a system for providing information on” the implementation of safeguards and “address” issues such as “the drivers of deforestation,” “forest governance issues,” and enumerated safeguards in the design and implementation of national approaches to REDD.²⁰¹ Finally, the decision calls upon the SBSTA to develop a work plan regarding safeguards.

The safeguards created at COP-16 are provided in the two paragraphs of annex 1 to the decision. Paragraph 1 of the annex lists a grab-bag of eleven

instruments, as well as to help assure the continued provision of vital ecosystem services by forests and to enhance livelihoods.”).

¹⁹⁶ See, e.g., Yvo de Boer, Executive Secretary of the U.N. Framework Convention on Climate Change, Address at the UNCCD Land Day in Bonn, Germany (June 6, 2009) (transcript available at http://unfccc.int/files/press/news_room/statements/application/pdf/090606_speech_bonn.pdf) (“Regarding adaptation, there is growing convergence in the negotiations on the need for a strong adaptation framework or programme, which also needs to address synergies between adaptation and mitigation measures, including in the area of REDD.”).

¹⁹⁷ See THE LITTLE REDD+ BOOK, *supra* note 138, at 30, 41, 45.

¹⁹⁸ U.N. Framework Convention on Climate Change, *supra* note 11, at 2–3. The draft decision “affirms” several principles to “guide the implementation” of REDD, stating that REDD should “[f]acilitate sustainable development, reduce poverty and respond to climate change in developing country Parties” and “[b]e consistent with the adaptation needs of the country.” The draft “further affirms” that certain safeguards that should be “[promoted] [and] [supported],” including

[t]ransparent and effective national forest governance structures, taking into account national legislation and sovereignty . . . [f]ull and effective participation of relevant stakeholders, . . . [and a]ctions that are consistent with the conservation of natural forests and biological diversity, ensuring that [REDD activities] 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.

Id.

¹⁹⁹ See Int’l Inst. for Sustainable Dev., *Summary of the Bonn Climate Change Talks: 31 May – 11 June 2010*, Earth Negotiations Bulletin (June 14, 2010), available at <http://www.iisd.ca/download/pdf/enb12472e.pdf>.

²⁰⁰ U.N. Framework Convention on Climate Change, Cancun, Mex., *supra* note 12, at 69.

²⁰¹ *Id.* at ¶¶ 71–72.

aspirations that REDD activities “should” meet, including: “the objective of environmental integrity and . . . the multiple functions of forests and other ecosystems;” “sustainable development and reducing poverty;” and “the adaptation needs of the country.”²⁰² Paragraph 2 of the annex provides seven “safeguards” that “should be promoted and supported,” including “transparent and effective national forest governance structures;” “respect for the knowledge and rights of indigenous peoples and members of local communities;” stakeholder participation; and consistency with “conservation of natural forests and biological diversity, ensuring that [REDD activities] are not used for the conversion of natural forests.”²⁰³

The decision thus recognizes many of the core cobenefit issues raised by REDD as discussed in this Article. However, exceedingly complex issues—such as improving forest governance—are addressed in only a single phrase, and are merely encouraged to be promoted by REDD activities. Nothing in the draft incentivizes, much less requires, a form of REDD that maximizes cobenefits. Coming on the heels of decades of unsuccessful attempts to promote sustainable forest management through dozens of soft law instruments, this approach provides no assurance of a REDD mechanism that actually promotes adaptation and sustainable development on the ground. Instead, significant negative externalities may result from a REDD program that incentivizes the lowest cost reductions in forestry emissions.²⁰⁴

C. The Risks of REDD: Negative Externalities of Forest Carbon

The mitigation-only form of REDD that appears likely to result from climate change negotiations may actually worsen ecological and socioeconomic conditions, thus undermining adaptation. These concerns warrant greater attention by policymakers and REDD proponents.

1. Ecological Damage

REDD projects have the potential to negatively interact with existing forces of ecological degradation if the mechanism as a whole is not adequately attentive to impacts other than mitigation. This concern exists both within countries and, more ominously, at a global level.

First, potential exists for REDD markets to reward countries that destroy ecologically important forest systems, but create sufficient REDD projects in less ecologically-important areas to produce an overall decrease in their national deforestation rate. The concern is not merely hypothetical,

²⁰² *Id.* at Annex 1.

²⁰³ *Id.*

²⁰⁴ Some may argue that exclusive reliance on public international funding, rather than inclusion of private markets, would alleviate this concern. However, the limited availability of public funds under such an approach would create a strong incentive for recipients to meet mitigation targets through the lowest-cost means available.

as several forest carbon projects in South America involve plantations of non-native eucalyptus (*Eucalyptus*) trees and displace (or fail to reduce displacement of) existing habitats of significant ecological value.²⁰⁵ A CDM project in Brazil is currently creating over 11,000 hectares of primarily eucalyptus plantation forest.²⁰⁶ While the project purports to use some native vegetation to create ecological benefit and to provide socioeconomic benefits through “job creation,”²⁰⁷ these cobenefits are questionable. This project can be contrasted with a Climate, Community & Biodiversity Alliance (CCBA) certified project in Brazil, which uses less than 20 hectares of agro-forestry to improve livelihoods while reforesting nearly 160 hectares with native species to develop ecological benefits.²⁰⁸

On a global or regional level, a related ecological risk of purely mitigation-focused REDD involves an “ecological leakage” of deforestation pressures.²⁰⁹ Newly created REDD protections in some areas may displace pressures to more ecologically significant areas with lower carbon value. This risk illustrates the need for the global REDD mechanism to be sensitive to ecological concerns, such as biodiversity,²¹⁰ but also demonstrates the importance of addressing socioeconomic problems that underlie deforestation.

2. Socioeconomic Damage

Two basic socioeconomic problems that currently drive deforestation may be exacerbated by the international REDD mechanism: poor

²⁰⁵ Stickler et al., *supra* note 188, at 2806 (“For example, the species rich cerrado woodlands and savannas of Brazil are already being replaced by plantations of Eucalyptus species, native to Australia, and at least one project to earn carbon credits from this process is already underway.” (citation omitted)); *see also* GRANDA, *supra* note 23.

²⁰⁶ U.N. Framework Convention on Climate Change, Clean Development Mechanism Project Design Document Form for Afforestation and Reforestation Project Activities (CDM-AR-PDD) - Version 04, at 2 (2009), *available at* <http://cdm.unfccc.int/UserManagement/FileStorage/RN4YPQ1628K03HCISXFDEZJLVWATBO>.

²⁰⁷ *Id.* at 3.

²⁰⁸ RAINFOREST ALLIANCE, VALIDATION ASSESSMENT REPORT FOR: FOREST CARBON PROJECT IN QUIRINO PROVINCE IN SIERRA MADRE BIODIVERSITY CORRIDOR, LUZON, PHILIPPINES 39 (2010), *available at* https://s3.amazonaws.com/CCBA/Projects/Forest_Carbon_Project_in_Quirino_Province_Sierra_Madre_Biodiversity_Corridor_Luzon_Philippines/Conservation_International_Quirino_CCB_valid_10.pdf.

²⁰⁹ *E.g.*, Stickler et al., *supra* note 188, at 2816 (“REDD could provoke indirect negative effects by increasing the likelihood that low-biomass native ecosystems will absorb the agricultural and pasture expansion displaced from high-biomass forests.”); *see also* UN-REDD PROGRAMME, MULTIPLE BENEFITS – ISSUES AND OPTIONS FOR REDD 6 (2009), *available at* http://www.unredd.net/index.php?option=com_docman&task=doc_download&gid=1030&Itemid=53 (noting that an active international REDD program may create “a risk of displaced pressures, whereby protection of high-carbon forests leads to additional pressure to convert or degrade lower carbon ecosystems that may be important for biodiversity or flood regulation, . . . [or other ecosystem services in] low-carbon forests”).

²¹⁰ Venter et al., *supra* note 50 (reporting modeling results that indicate a REDD system designed to prioritize biodiversity preservation will yield far greater environmental benefit than a purely mitigation focused mechanism).

governance and poverty. Both issues will necessarily interface with REDD and have direct bearing on the mitigation, adaptation, ecological, and human development impacts of REDD.

Governance concerns pose fundamental challenges to designing an effective forest protection mechanism and will not be solved solely through infusion of REDD funds.²¹¹ These concerns permeate discussion of REDD because “those countries that face high deforestation rates are, by definition, struggling with good governance over forests, whether this concerns outright corruption, lack of national policy coherence or a failure to implement international commitments.”²¹² While injection of market-based funds may address the third of these concerns, the first two pose very complex challenges for any global forest mechanism.

Within countries, a sudden infusion of funds could potentially exacerbate existing social inequities if, for example, corrupt or indifferent elements of society appropriate REDD payments and exclude the poor from REDD protected areas they traditionally used for sustenance.²¹³ Specifically, as work by a task force of the International Union for the Conservation of Nature (IUCN) Commission on Environmental, Economic and Social Policies (CEESP) suggests, “[r]esources appropriation by elites is one of the main drivers of deforestation and one of the main causes of persistent poverty. By assigning a substantial monetary value to forests, the REDD mechanism will encourage this resource appropriation.”²¹⁴

International distributional concerns also affect REDD. Because payment for REDD credits will likely come after the projects are established, initial implementation funding presents a potentially insurmountable roadblock for countries that could most benefit from adaptation-related improvements.²¹⁵ In the absence of design elements to overcome this concern, REDD funds could end up flowing to those tropical forest countries that have the strongest financial and governance capabilities at the outset. In such a scenario, REDD may still have significant mitigation benefits, but major opportunities to promote human well-being and adaptation will be missed. Indeed, existing international inequities may be exacerbated as

²¹¹ Brian Murray, *Economics and the Climate Change Mitigation Portfolio*, 29 J. LAND RES. & ENVTL. L. 39, 51 (2009) (observing that while a REDD “mechanism could create a tremendous opportunity to bring a huge amount of money into the protection of forests that never existed before through traditional bilateral movement of funds,” it may also negatively impact “the sovereignty and the rights of local populations with access to the forest” by “lock[ing] up forests for the use and economic development of local communities”); *see also* LOVERA, *supra* note 175, at 11.

²¹² LOVERA, *supra* note 175, at 10–11.

²¹³ *See, e.g.*, LOVERA, *supra* note 175, at 6, 10.

²¹⁴ LOVERA, *supra* note 175, at 6 (subsequently stating: “This could include rapid entitlement of forest land by elites, implementation of policies aimed at displacing smallholders [and] peasants out of forest areas, repression of traditional modes of farming considered unsustainable, such as slash-and-burn cultivation etc., social marginalization, and displaced deforestation (by peasants moving from REDD project areas to other forest land).”).

²¹⁵ *See* THOMAS LEGGE ET AL., REDD AND FOREST GOVERNANCE 6 (2008), *available at* <http://www.illegal-logging.info/uploads/EAC2008REDDforestgovernance.pdf>.

financial and governance shortfalls leave some tropical forest nations unable to participate in benefits generated for other, relatively more well-off tropical forest countries.²¹⁶

In addition, REDD may have impacts on the availability of agricultural land, which would negatively affect those already facing difficulty securing sufficient food.²¹⁷ Reduction in agricultural land could influence global or regional food prices and may also limit the ability of the rural poor—and particularly landless populations—to carry out subsistence agriculture or collect fuelwood. This negative impact of prohibiting forest clearing has been a persistent difficulty for SFM efforts and will not evaporate upon creation of an international forest carbon market. Instead, REDD can only address this concern by building sustainable livelihoods into projects that adequately replace current unsustainable resource use.

D. REDD Markets: Promise and Perils

1. Market Benefits

A debate has emerged regarding whether REDD should be re-cast as a fund-based mechanism (not unlike existing demonstration projects for the voluntary market) that can avoid risks created by market-orientation. G-77 + China, for example, have advocated a fund-based approach relying entirely on developed country contributions.²¹⁸ Further, some have suggested that concerns over the rights of indigenous peoples warrant exclusive reliance on a fund-based approach.²¹⁹ However, fully implementing REDD to eliminate deforestation will require tens of billions of dollars annually—a sum that developed countries are unlikely to donate solely for the purpose of ending deforestation.²²⁰ Even if such funding could be obtained, it would undoubtedly be a drain on the resources available for other climate related priorities (such as promoting adaptation in least developed countries).²²¹ On the other hand, it appears highly probable that private financing through market-based REDD will raise needed revenues if countries adopt a sufficiently stringent cap on

²¹⁶ See Ebeling & Yasué, *supra* note 142, at 1921; see also Wertz-Kanounnikoff & Kongphan-
apirak, *supra* note 7, at 11–13.

²¹⁷ Stickler et al., *supra* note 188, at 2806 (“At the scale of regional and global economies, REDD could reduce the availability of land for agricultural expansion, [thus] pushing food prices higher.”).

²¹⁸ THE LITTLE CLIMATE FINANCE BOOK, *supra* note 138, at 137. Brazil has long been a leading proponent of the fund-based approach, but its position has softened over the past year. *Id.* at 141. Bolivia, Saudi Arabia, and several other countries remain opposed to markets and have been accused by the African Union of deliberately trying to undermine progress on REDD. See Int’l Inst. for Sustainable Dev., *Summary of the Bonn Climate Talks: 2–6 August 2010*, 12 EARTH NEGOTIATIONS BULLETIN, no. 478 (Aug. 9, 2010), available at <http://www.iisd.ca/download/pdf/enb12478e.pdf>.

²¹⁹ LOVERA, *supra* note 175, at 2.

²²⁰ G-77 + China, for example, seeks \$220–\$440 billion in funding from developed countries in its proposal. THE LITTLE CLIMATE FINANCE BOOK, *supra* note 138, at 46.

²²¹ ELIASCH, *supra* note 6, at 95.

overall global emissions. This question of whether to include market finance in REDD is not settled by the Cancun Agreements.²²²

A review of existing literature suggests that a market-based REDD mechanism will produce greater mitigation benefits than a fund-based mechanism because leveraging private funds will produce greater financial inflows and, thus, incentives to avoid deforestation.²²³ Depending on the stringency of emission caps in developed countries, the offset market could generate \$15–\$45 billion dollars for avoided deforestation in developing countries each year,²²⁴ although a more likely figure may be \$11 billion annually.²²⁵ Accordingly, major economic reviews of the issue, such as the Eliasch Review (*Climate Change: Financing Global Forests*) commissioned by the UK government, favor a market-based system supplemented by public funds.²²⁶ Models used in the Eliasch Review predict that a market-based credit system alone would produce sufficient funds to reduce deforestation emissions 22% by 2020 and eliminate 75% of potential forest sector emissions by 2030.²²⁷

A market-based REDD mechanism producing fully fungible credits would enable parties to make deeper emissions commitments on the basis of cost-effectiveness that the forest offset credits will provide. Likewise, market-based REDD may create other cost-reductions across the climate regime. As the Eliasch Review urges, inclusion of all relevant emissions reductions sectors within the trading regime maximizes the efficiencies and cost-saving gains of the cap-and-trade system.²²⁸ This suggests that so long as carbon trading remains a significant element of global climate governance, REDD's inclusion in the market will provide additional cost savings for forest credits and other sectors.

Even in the absence of a comprehensive global climate change agreement, a market-based REDD mechanism could be created through a COP decision or other agreement of the relevant countries. This system

²²² See U.N. Framework Convention on Climate Change, *supra* note 12.

²²³ E.g., David Freestone, *Foreword* to CLIMATE CHANGE AND FORESTS: EMERGING POLICY AND MARKET OPPORTUNITIES, *supra* note 125, at ix, xi.

²²⁴ THE LITTLE CLIMATE FINANCE BOOK, *supra* note 138, at 50. Raising \$15–\$45 billion would only be possible if emissions were capped at 25% below 1990 levels. Recently proposed legislation in the US would limit emissions to 10%–16% of 1990 levels. *Id.*

²²⁵ VIRILIO M. VIANA, INT'L INST. FOR ENV'T & DEV., FINANCING REDD: MESHING MARKETS WITH GOVERNMENT FUNDS 4 (2009).

²²⁶ ELIASCH, *supra* note 6, at xiv ("The forest sector should be fully included in any post-2012 deal at Copenhagen, with market access provided by emissions trading schemes.").

²²⁷ *Id.*, at 182–83. Some scholars have argued that the costs of establishing and policing a globalized trading regime may undercut the value of trading as a cost-effective regulatory method. See David M. Driesen, *Linkage and Multilevel Governance*, 19 DUKE J. COMP. & INT'L L. 389, 410–11 (2009). But the argument carries little force in this instance. A fund-based effort to reward avoided deforestation would also be very expensive. Halving deforestation by 2030 is expected to cost up to \$33 billion per year. ELIASCH, *supra* note 6, at 80; see also Georg Kindermann et al., *Global Cost Estimates of Reducing Carbon Emissions Through Avoided Deforestation*, 105 PROC. NAT'L ACAD. SCI. 10302, 10305–06 (2008) (reaching similar conclusions).

²²⁸ ELIASCH, *supra* note 6, at 95.

appears generally compatible with legislation that has been proposed in the United States²²⁹ and with the European Union's Emissions Trading System,²³⁰ for example. The cost-saving benefits of a market-based REDD would remain under this scenario, provided that sufficiently stringent restrictions on GHG emissions exist under national law.

2. Market Forces Intensifying REDD Risks

The costs and benefits of reducing tropical deforestation will be uneven, such that REDD activities will necessarily be more expensive in some areas—particularly where socioeconomic improvements are most needed—than equivalent forest emissions reductions in other areas.²³¹ This poses a significant equity concern, both internationally and within host countries, because it may drive investment decisions in a market-based form of REDD.²³² Specifically, market preference for the most cost-effective carbon credits may disincentivize REDD measures and projects with social and ecological cobenefits that are costly to develop.

In considering the effect of REDD on adaptation across a global scale, we can evaluate the mechanism along four vectors, two of which reflect potential adaptation value and two of which reflect the probable market forces that will drive the mechanism if projects create fungible carbon credits. Along the first axis, we will examine the impact on socioeconomic adaptation and the impact on ecological adaptation considerations. On the second axis, we must define the forces most likely to drive private market funding decision (i.e., which measures and projects will be able to generate credits most attractive to private investors). First, the extent and concentration of carbon in a given forest area, as well as the risk of deforestation—which this Article refers to as “carbon value”—will be significant because projects able to generate greater quantities of carbon offsets will likely attract large investors because they offer an economy of scale that will produce the most efficient outcome for large credit purchasers by minimizing transactions costs.²³³ Second, governance concerns that affect the probability of credit permanence (i.e., the perceived stability of the projects) will affect not only private purchasing decisions and insurance requirements, but also the ability of host countries and proponents to secure recognition of generated carbon credits or even the

²²⁹ Andrew Long, *Tropical Forest Mitigation Projects and Sustainable Development: Designing U.S. Law for a Supportive Role*, 36 WM. MITCHELL L. REV. 968, 984–86 (2009).

²³⁰ See Boyd, *supra* note 1, at 874 (2010).

²³¹ UN-REDD PROGRAMME, *supra* note 209, at 7 (“[T]here will be areas in which the implementation of REDD activities would achieve [sustainable development and biodiversity benefits], but where the cost of reducing emissions is higher than the cost of reducing equivalent emissions in another area.”).

²³² See PESKETT ET AL., *supra* note 146, at 32.

²³³ See Ebeling & Yasué, *supra* note 142, at 1921 (“[C]arbon markets value carbon not biodiversity and are designed to focus on the lowest cost options for generating emission reductions.”).

ability to establish REDD measures or projects in the first place. We can refer to this group of concerns as “credit marketability” because they all reflect issues surrounding the ability to create and sell credits from a given forest area. Considering the interplay of these four factors will result in a matrix that looks like this:

| | Carbon Value | Marketability of Credits |
|--------------------------------|--------------|--------------------------|
| Socioeconomic Adaptation Value | | |
| Ecological Adaptation Value | | |

The blank white squares in this table must be filled in with an analysis of how the market-related factors will interact with the adaptation-related factors. This analysis will yield a prediction of the impact that market forces will have on the adaptation considerations across an international scope, particularly whether REDD funding will benefit the forested areas most in need of support for adaptation.

A study by Johannes Ebeling and Mai Yasué, published in 2008, provides data analysis that is highly relevant to the question of how these forces will interact.²³⁴ They conclude that “[m]any of the countries that could in principle achieve the highest relative incomes through RED, for example, Liberia, the Democratic Republic of Congo (DRC), and Myanmar, may not have sufficiently effective governance capacities to implement effect[ive] land-use policies.”²³⁵ As these and other authors note, there is evidence to support the intuitive conclusion that forested countries with poor governance will be more likely to have higher deforestation rates than countries with more effective governance.²³⁶ Ebeling and Yasué observe, “RED could provide the necessary incentives and funds to tackle corruption and improve governance structures which in itself may have far-reaching indirect benefits for poverty alleviation and environmental protection.”²³⁷ Accordingly, the tropical forest countries with the poorest governance indicators are likely to be the countries with both high deforestation rates and the greatest potential to benefit from governance-related adaptation support, but only if resources reach them in a manner that promotes correction of existing governance problems.

However, a private market concerned only with cost-effective carbon credits will have no incentive to appropriately target resources toward the greatest needs. Such a market may instead disfavor countries with poor governance indicators because they are risky investments. Accordingly, the extent of actual beneficial impact of REDD on countries with the poorest

²³⁴ See *id.* (studying the impact of a pure market approach on biodiversity and human development).

²³⁵ *Id.* at 1920.

²³⁶ *Id.*

²³⁷ *Id.*

governance remains highly speculative. Rather than aiding in governance improvements, aversion to investment in countries with poor governance may produce an inverse correlation between the socioeconomic adaptation potential as it relates to governance and marketability of REDD credits.

Also relevant to socioeconomic adaptation, Ebeling and Yasué analyzed the relationship of REDD income potential and “human development potential.”²³⁸ The results of their analysis “suggest that a pure market approach might produce few synergies between emission reductions through REDD and development benefits on a national level.”²³⁹ The actual impact of REDD on human development will depend on a number of factors, most of which are related to the extent of socioeconomic cobenefits. In decisions such as the types of deforestation drivers targeted by REDD developers, pressure for cost effectiveness is likely to discourage an approach that realizes high human development gains. For example, it is likely that REDD can be implemented at a lower cost by targeting large corporate actors rather than improving land use practices and economic status of the rural poor. Likewise, strengthening law enforcement may be less costly than creating programs to value and preserve ecosystem services.²⁴⁰ An absence of rules providing for distribution of benefits within countries may further undermine prospects for socioeconomic benefits. On the whole, this analysis suggests an inverse correlation between the socioeconomic adaptation potential of REDD in a given area and the carbon value of forests, especially where the need for human development may complicate REDD implementation. Considering the impact of both carbon value assessment and marketability, we may predict that a purely mitigation-focused market-based REDD mechanism is unlikely to have significant positive socioeconomic adaptation benefits in the countries with the greatest need. In fact, if a thriving REDD market leads to increased pressures on forests in non-participating countries, REDD may negatively affect the likelihood of preserving key forest ecosystem services in the countries with the greatest socioeconomic and governance needs.

Ebeling and Yasué also assess the relationship between REDD income potential and biodiversity significance.²⁴¹ The results here are similarly disconcerting. At a national level, at least, the study suggests that countries considered the highest biodiversity priorities (often because of the imminence of extinction threats) are less likely to benefit significantly from REDD.²⁴² Similarly, another study using models to determine the likely beneficiaries of REDD funding concluded that in the model “if REDD

²³⁸ *Id.* at 1921. The concept of human development potential generally reflects the livelihood and other socioeconomic benefits discussed in this Article.

²³⁹ *Id.*

²⁴⁰ *Id.* at 1922.

²⁴¹ *Id.* at 1921, 1922 fig.4.

²⁴² *Id.* at 1921; *see also* Wertz-Kanounnikoff & Kongphan-apisak, *supra* note 7, at 10 fig.8 (showing that REDD demonstration project investment is low in areas of high biodiversity in Latin America, Africa and Asia).

focuses solely on cost-effectively reducing carbon emissions, its benefits for biodiversity are low.”²⁴³ These results reflect that high carbon value forests often do not correlate with high biodiversity priorities because the “biodiversity hotspot” forests tend to be less extensive and more fragmented, along with possible variation in forest types.²⁴⁴ Further, marketability of credits from biodiversity priority forests is also likely to be lower for the same reasons and because the forces behind the fragile state of biodiversity hotspot forests will frequently be the same governance concerns that undermine marketability of credits.

Although there is apparently no scientific work directly testing the likely impacts of REDD on adaptation considerations, the available literature does raise some troublesome implications of REDD for adaptation.²⁴⁵ A purely carbon-focused market-oriented REDD is unlikely to significantly benefit countries with poor governance or high biodiversity indexes, and such benefits are unlikely to reach the rural poor.²⁴⁶ Recalling the discussion earlier in this Article that demonstrates the significance of governance and poverty to socioeconomic adaptation, as well as the relevance of biodiversity to ecological adaptation, we can conclude that the currently proposed form of REDD is unlikely to significantly benefit adaptation on a global scale. Thus, we can tentatively infer the following relationships into our tabular representation of the interaction between market considerations and REDD’s potential adaptation value:

| | Carbon Value | Marketability of Credits |
|--------------------------------|---------------------|--------------------------|
| Socioeconomic Adaptation Value | Inverse Correlation | Inverse Correlation |
| Ecological Adaptation Value | Inverse Correlation | Inverse Correlation |

If these inferences are correct, REDD does not hold globally significant promise for cobenefits in its current form. Instead, it is likely to sacrifice the ecological and socioeconomic underpinnings of adaptation in forested areas (not to mention well-being and globally important biodiversity) for the sake of cost-effective, and ultimately short-term, mitigation.

²⁴³ Venter et al., *supra* note 50, at 1368.

²⁴⁴ See *id.* (noting most cost-effective forests for reducing emissions may not protect biodiversity because biodiversity “hot spots” are often areas with “relatively little remaining forest”); see also Ebeling & Yasué, *supra* note 142, at 1921 (“global hot spots for biodiversity conservation have high land-use conservation rates and are consequently likely to have high opportunity costs for conservation.” (citation omitted)).

²⁴⁵ See, e.g., Ebeling & Yasué, *supra* note 142, at 1923 (discussing challenges in successfully implementing REDD, including governance issues and the need for non-carbon-based support).

²⁴⁶ *Id.* at 1920–21, 1923.

*E. Emerging Efforts to Improve REDD: NSMD Approaches and
Voluntary Investment in Cobenefits*

Given the risks of a market-based REDD mechanism and the inadequacy of a fund-based mechanism, several approaches and proposals for improving REDD have emerged. Although a variety of modifications to REDD have been suggested by NGOs, none has apparently gained significant traction.²⁴⁷

One approach that seems implicit in many arguments for a stronger cobenefit requirement in REDD is to mandate a certain level of cobenefits. A mandatory approach to increasing cobenefits is unwise, however, because it may discourage developing countries from participating. Mandating cobenefits would raise many of the same sovereignty concerns that have undermined prior efforts at international forestry regulation, or make compliance prohibitively expensive.

By far the most important development toward improving REDD's social and ecological effect is the emergence of NSMD certification of cobenefits. Certification of REDD projects has begun to emerge through the development of several protocols, all of which utilize a NSMD approach. Although these systems are primarily designed for the existing voluntary REDD market,²⁴⁸ protocols for the regulatory market and of broader REDD measures (rather than discrete projects) are already under development. NSMD certification of cobenefits can clearly play a role in advancing REDD activities that provide extensive value beyond mitigation.²⁴⁹ The effect of NSMD systems may be especially important and pronounced in a voluntary market, where investors are primarily driven by a desire to promote environmental and social goals, but their role in regulatory market is less clear.²⁵⁰

²⁴⁷ For examples of other proposals, see ERICH LIVENGOD & ALISTAIR DIXON, GREENPEACE, REDD AND THE EFFORT TO LIMIT GLOBAL WARMING TO 2°C: IMPLICATIONS FOR INCLUDING REDD CREDITS IN THE INTERNATIONAL CARBON MARKET 3, 16, 22 (2009), *available at* <http://www.greenpeace.org/usa/Global/usa/report/2010/1/redd-and-the-effort-to-limit-g.pdf>; VIANA, *supra* note 225.

²⁴⁸ Some certification protocols concentrate on assuring that carbon emission reductions are real and sustainable, while others assess cobenefit issues. EDUARD MERGER, FORESTRY CARBON STANDARDS 2008: A COMPARISON OF THE LEADING STANDARDS IN THE VOLUNTARY CARBON MARKET: CLIMATE, COMMUNITY AND BIODIVERSITY STANDARD (CCBS), CARBONFIX STANDARD (CFS), PLAN VIVO SYSTEMS AND STANDARDS, VOLUNTARY CARBON STANDARD AFOLU (VCS) AND THE STATE OF CLIMATE FORESTATION PROJECTS 5 (2008). Mitigation-focused systems play an important role in the voluntary REDD market by providing a measure of assurance for investors. *See, e.g., id.* at 16–17 (noting Voluntary Carbon Standard is designed to provide credibility and stimulate investments).

²⁴⁹ *See, e.g.,* Stickler et al., *supra* note 188, at 2818.

²⁵⁰ The Gold Standard for CDM projects is the sole example of formal interaction between certification and state-based carbon trading standards. It relies upon a NSMD approach and can be applied to either credits used for compliance or a voluntary market in which the earned carbon credits must be retired. THE GOLD STANDARD FOUNDATION, GOLD STANDARD REQUIREMENTS VERSION 2.1, at 20, 55 (2009), *available at* http://www.cdmgoldstandard.org/fileadmin/editors/files/6_GS_technical_docs/GSv2.1/GSv2.1_Requirements.pdf. Although developed later, the voluntary approach seems to be outstripping the compliance approach in terms of both verified projects and applications. Further research into the reasons for this disparity is needed.

The work of the Climate, Community & Biodiversity Alliance (CCBA) is particularly important in advancing a NSMD approach to REDD cobenefits. CCB project standards are the most widely adopted and concentrate more extensively on cobenefits than other voluntary REDD market standards.²⁵¹ CCBA has also facilitated the development of “REDD+ Social & Environmental Standards” (national standards) for use by national governments, which can be readily applied in a regulatory market.²⁵²

The CCB project standards include separate protocols for assessment of carbon benefits, community (i.e., social) benefits, and biodiversity benefits, as well as offsite impacts and monitoring.²⁵³ The standards also include a “Gold Level Section” for exceptional community or biodiversity benefits, or for adaptation benefits.²⁵⁴

The REDD+ Social and Environmental Standards provide significantly greater detail on assessment and mirror the approach adopted by FSC and other forestry certification entities by including principles, criteria and indicators.²⁵⁵ Similar to the FSC approach, the national standards include internationally applicable principles and criteria as well as a process for developing country-specific indicators from an international framework for indicators within each criterion.²⁵⁶

Although none of the principles in the national standards are explicitly addressed to climate change adaptation, several of the standards implicitly require that a certified REDD program advance adaptation goals. Principle 5, for example, requires that “The REDD+ program maintains and enhances biodiversity and ecosystem services.”²⁵⁷ Principles 3 and 4, separately and in combination, address social cobenefits relevant to adaptation, requiring that “[t]he REDD+ program improves long-term livelihood security and wellbeing of Indigenous Peoples and local communities with special attention to the most vulnerable people” (Principle 3) and “[t]he REDD+ program contributes to broader sustainable development, respect and protection of human rights and good governance objectives” (Principle 4).²⁵⁸ These types of cobenefits—biodiversity, ecosystem services, livelihoods, and governance—are the key cobenefits for adaptation, as suggested above.²⁵⁹

(apparently, none has been conducted), but one may reach an initial conclusion that experience under the Gold Standard suggests that NSMD approaches are less effective in influencing compliance markets than in attracting voluntary investors.

²⁵¹ MERGER, *supra* note 248, at 14–15.

²⁵² CLIMATE, CMTY. & BIODIVERSITY ALLIANCE & CARE INT’L, REDD+ SOCIAL & ENVIRONMENTAL STANDARDS 3 (2010), *available at* http://climate-standards.org/redd+/docs/june2010/REDD_Social_Environmental_Standards_06_01_10_final.pdf.

²⁵³ CLIMATE, CMTY. & BIODIVERSITY ALLIANCE, PROJECT DESIGN STANDARDS 36–45 (2008), *available at* http://www.climate-standards.org/standards/pdf/ccb_standards_second_edition_december_2008.pdf.

²⁵⁴ *Id.* at 32.

²⁵⁵ CLIMATE, CMTY. & BIODIVERSITY ALLIANCE & CARE INT’L, *supra* note 252, at 3.

²⁵⁶ *Id.*

²⁵⁷ CLIMATE, CMTY. & BIODIVERSITY ALLIANCE, *supra* note 253, at 10.

²⁵⁸ *Id.* at 8–10.

²⁵⁹ *See supra* Part III.A.

Thus, the national standards appear well-suited to evaluating the adaptation impacts of REDD.

Development of the CCB standards and the REDD+ Social and Environmental Standards provides critically important tools for assessing the broader socioeconomic and ecological impacts of REDD. CCBA has validated over twenty projects under its standards and numerous other projects are undergoing validation.²⁶⁰ This process provides important field experience in assessing REDD cobenefits and can be used to inform program design.

Despite the benefits of NSMD certification such as that undertaken by CCBA, it appears unlikely to play a significant role in shaping a regulatory REDD market. Instead, NSMD systems may have only marginal impacts on a compliance market driven by cost efficiency concerns. In that setting, NSMD influence is unlikely to “scale up” sufficiently to exert an adequate impact on the REDD market as a whole and produce a high percentage of cobenefit-rich measures.²⁶¹

Several commentators have suggested that supplemental voluntary financing could be bundled with payments for REDD carbon credits to fund cobenefit development, perhaps in combination with NSMD certification.²⁶² However, current levels of funding for SFM compared with potential revenues of REDD credits suggest that such voluntary contributions are unlikely to affect a regulatory REDD market at the scale necessary to significantly affect net environmental benefits (or harms) of the program. Total annual international expenditure on biodiversity preservation outside of the United States is estimated at less than \$750 million (including all ecosystem types)²⁶³ and foreign direct investment in tropical SFM is estimated at significantly less than \$1 billion annually.²⁶⁴ Even a ten percent reduction in deforestation has been estimated to generate up to \$13 billion annually through carbon markets.²⁶⁵ Accordingly, it appears highly unlikely

²⁶⁰ Climate, Cmty. & Biodiversity Alliance, CCB Projects, <http://www.climate-standards.org/projects/> (last visited Feb. 13, 2011).

²⁶¹ *E.g.*, Katia Karousakis, *Promoting Biodiversity Co-Benefits in REDD* 20 (OECD Environment Working Papers, No. 11, 2009), available at http://www.oecd-ilibrary.org/environment/promoting-biodiversity-co-benefits-in-redd_220188577008 (“[V]oluntary schemes are unlikely to provide the scale necessary to create a global demand for biodiversity and change land prices fundamentally.”). This point is also illustrated by experience with Gold Standard certification of CDM credits. See note 250, *supra*.

²⁶² *E.g.*, Karousakis, *supra* note 261, at 18–20; see also Jonah Busch et al., *Comparing Climate and Cost Impacts of Reference Levels for Reducing Emissions from Deforestation*, 4 ENVTL. RESEARCH LETTERS 1 (2009), available at http://iopscience.iop.org/1748-9326/4/4/044006/pdf/1748-9326_4_4_044006.pdf (analyzing multiple REDD reference level designs for effectiveness at reducing emissions); see also Wertz-Kanounnikoff & Kongphan-apisak, *supra* note 7, at 11 (recommending supplementary finance as a way to increase cobenefits in REDD).

²⁶³ Benjamin S. Halpern et al., *Gaps and Mismatches between Global Conservation Priorities and Spending*, 20 CONSERVATION BIOLOGY 56, 59 (2006) (“Total global conservation expenditures for FY02 that could be assigned to countries were \$1,470,344,794, with more than half of that (51%) spent in the United States.”).

²⁶⁴ IVAN TOMASELLI, U.N. FORUM ON FORESTS, BRIEF STUDY ON FUNDING AND FINANCE FOR FORESTRY AND FOREST-BASED SECTOR 23 (2006).

²⁶⁵ Ebeling & Yasué, *supra* note 142, at 1918 (providing a range of \$2.2 to \$13.5 billion).

that funding available to support biodiversity preservation in forests or SFM generally will significantly influence the shape of the REDD market and the types of measures created therein.

Moreover, while an active carbon market will provide a degree of certainty to program developers that mitigation benefits will generate revenue, the prospect of voluntary investment in cobenefits will be less certain because the pool of such investments will be much smaller. Thus, host countries or other REDD developers seeking financing to build in cobenefits will either have to pre-arrange funding with donors or will take the risk that such funding cannot be found after REDD implementation. This uncertainty, together with the transaction costs of arranging funding on an individual basis, will make substantial investment in cobenefits less attractive to developers.²⁶⁶ Certification eases this burden in a relatively small voluntary market. However, if REDD is able to achieve a fifty percent reduction in tropical deforestation, and a sizable percentage of the covered forests generate payments for cobenefits outside of the regulatory carbon market, the availability of funds is likely to dry up. In other words, NSMD certification and voluntary investment in cobenefits may be a significant player while REDD remains in a voluntary market, but this influence is likely to be dwarfed by compliance investment if REDD gains acceptance as a source of regulatory offset credits.²⁶⁷

The next step in the development of the REDD program, therefore, should be creation of a mechanism by which the gains of NSMD certification can be infused into the state-based REDD framework. The following Part provides a proposal for making this step.

IV. INTEGRATING PRIVATE CERTIFICATION AND PUBLIC LAW: A REDD FRAMEWORK FOR COBENEFITS

Despite the weaknesses of a purely market-driven approach to improving REDD design, non-state certification can provide the necessary ingredient to make REDD a transformational forest governance mechanism. While a state-based REDD administrative body may be well-suited to setting parameters for global public goods (i.e., GHG emissions reduction) to define a global market for REDD credits, such a global body is probably poorly situated to advance adaptation considerations in REDD that are, by their nature, necessarily localized.²⁶⁸ Designing and implementing effective

²⁶⁶ See Wertz-Kanounnikoff & Kongphan-apisak, *supra* note 7, at 8 (“The absence of strong institutions can make PES-type deals prohibitively expensive because of the transaction costs associated with negotiating and enforcing (monitoring) the deals.”).

²⁶⁷ Presumably, some percentage of compliance investors will pay more to purchase cobenefit certified REDD credits. However, given the cost-saving motives of compliance investors, there is little reason to think such purchases will have any greater impact on SFM and cobenefits than certification systems for the forest product market.

²⁶⁸ Examples of international environmental governance efforts unable to significantly change on-the-ground environmental outcomes include the forestry regime, and, to a lesser degree, the Convention on Biological Diversity regime. See *generally* ASSESSING THE

adaptation-related cobenefits will require a much more contextualized analysis than measuring carbon. Non-state certification contains several elements that suggest it may be more successful in facilitating the necessary on-the-ground changes in tropical forests to advance adaptation-related cobenefits than a REDD administrative body. CCBA and other organizations arise from civil society and contain processes that integrate local stakeholders in decision making.²⁶⁹ Further, forest certification has proven an ability to broaden the considerations taken into account by decision-makers. FSC, for example, has effectively influenced forest policy networks to become more pluralistic, including an increased attention to environmental and social concerns and growth in cross-sectoral dialogue.²⁷⁰ In this way, some non-state forest certification entities are well-positioned to facilitate the incorporation of cobenefits into a growing REDD program. Accordingly, the REDD program may advance adaptation-related cobenefits by including such entities in the international governance structure.

Below, this article proposes an approach to REDD that efficiently divides the administrative work of creating a REDD mechanism to achieve mitigation and adaptation goals, and effectively separate the roles of public and private finance in supporting projects and policies. Specifically, a public administrative REDD body should develop REDD mitigation rules and general parameters for certification of measures achieving a high level of adaptation-related cobenefits. Non-state certification entities should be approved to carry out on-the-ground certification of adaptation-oriented projects or policies. Projects or policies achieving such certification should receive public funding to offset the cost of developing adaptation-related cobenefits and the cost of obtaining certification. All projects and policies meeting public requirements for mitigation should be eligible to sell carbon credits to public or private entities on a compliance market.

Integrating non-state certification schemes into a state-based REDD mechanism and connecting them with international public finance will have several advantages. The approach will create opportunities to enhance the legitimacy and accountability of both types of institutions. Non-state entities can gain legitimacy through implementation of an international REDD program, while the accountability and legitimacy of state-based entities can

INTERNATIONAL FOREST REGIME: IUCN ENVIRONMENTAL LAW AND POLICY PAPER NO. 37 (Richard G. Tarasofsky ed., 1999) *available at* <http://weavingaweb.org/pdffdocuments/EPLP37EN.pdf>.

²⁶⁹ For an argument that inclusion of civil society is preferable to a state-centric approach to governance of environmental issues, see Adil Najam, *The Case Against GEO, WEO, or Whatever-else-EO*, in GLOBAL ENVIRONMENTAL INSTITUTIONS: PERSPECTIVES ON REFORM 32, 32–43 (Duncan Brack & Joy Hyvarinen eds., 2002).

²⁷⁰ Cashore et al., *Conclusion to CONFRONTING SUSTAINABILITY: FOREST CERTIFICATION IN DEVELOPING AND TRANSITIONING COUNTRIES*, *supra* note 112, at 578 (concluding that a primary effect of FSC's presence on forest policy networks is "an increase in the inclusiveness of the forest policy network and a rebalancing of power relations away from business-industry clientelist networks to more pluralistic arrangements involving environmental, community, and indigenous peoples' interests").

be enhanced through the additional public participation and access provided by certification.

Further, by relying on non-state certification, a supranational state-based REDD administrative body can concentrate primarily on the complex issues of assuring mitigation benefits, as it is currently projected to do. Non-state certification entities will continue to carry out the task they are designed to perform—verification of on-the-ground forestry activities—but will do so with an explicit emphasis on adaptation relevance. Public funding will continue to support REDD development, but will do so in a way that emphasizes adaptation and empowers approved non-state certification entities to dramatically influence the REDD market. This approach will eliminate the expected market bias in favor of measures that do not incorporate expensive cobenefits by allowing high cobenefit measures to produce carbon credits that are cost-competitive for investors.²⁷¹ Finally, the approach addresses climate justice concerns in the forest sector by encouraging developing countries to share the burden of mitigation while offering them tangible support for developing policies with rich local and regional adaptation-related benefits. This can support development of either a comprehensive agreement on climate change or, at least, an independent forestry mechanism that engages developing countries in mitigation while providing offsets for use within national legislation in developed countries.

Thus constructed, REDD will become a mechanism that produces real benefits for adaptation, while also retaining the option for tropical forest countries to forgo certification. This form of REDD can maximize the return on public investment by encouraging comprehensive adoption of REDD²⁷² while also funding an adaptation mechanism that can minimize the cost of climate change impacts in tropical forest countries.²⁷³

²⁷¹ If created as proposed, the REDD mechanism will provide a level playing field for complex projects obtaining certification to compete with relatively streamlined noncertified mitigation-only projects in terms of cost-effectiveness in the carbon credit market. Therefore, the approach can effectively steer market investment in REDD toward projects that realize adaptation-oriented cobenefits. If cost is equal, many investors will presumably prefer to buy from projects that offer a host of benefits as a means of generating a positive public image for the investor.

²⁷² The approach embraces maximum flexibility in order to avoid intrusion on the sovereignty of forested nations, while targeting the most beneficial projects for support. This will have both mitigation and adaptation benefits by encouraging broad participation (a stated goal of the COP in recognizing REDD), which not only enhances mitigation but also reduces the likelihood of international leakage, while incentivizing adaptation-related activities.

²⁷³ The approach has the potential to significantly reduce the amount of future adaptation funding needed in forested areas because the adaptation-oriented REDD projects will provide sustainable benefits and reduce the extent of future climate change impacts. Further, by combining mitigation and adaptation goals in the same projects, the approach will promote a more efficient approach to meeting the regime's dual goals. In this respect, the tiered form of REDD proposed here could lay the groundwork for a new model of international environmental programs.

A. Building Certification into REDD

The climate regime or REDD program must initially recognize the importance of cobenefits in REDD, as well as REDD's potential value for adaptation. With that broadened emphasis, the question of how certification entities can interact with a public REDD body becomes more focused. Essentially, this involves an issue of how much authority the public body should cede to certification entities. For reasons of legitimacy and political necessity, the primary policy-making authority must rest with the public REDD body and certification entities should be employed to flesh out the application of global policy to specific geographic areas based on their local circumstances. In this arrangement, integration of non-state certification into a state-based REDD program requires division of authority concerning two fundamental elements: definition of the cobenefits that will qualify for certification; and the power to create and change the specific standards applied. An outline of the necessary division of authority is sketched below.

First, the state-based regime must provide definition of the cobenefits that warrant certification triggering public finance. The key feature for certification should be delivery of adaptation benefits,²⁷⁴ but the question remains how precisely the public body should articulate the meaning of this. To allow for localized application, the public body should define types of cobenefits that qualify while allowing for a broad range of activities that support adaptation-related cobenefits. The following Part of this Article provides guidance on this question by elucidating types of cobenefits that should qualify. However, given scientific uncertainty of future climate change impacts and the best management practices to facilitate adaptation, the concept of adaptation-related cobenefits should be understood broadly in this context. Nonetheless, safeguards should be created to prevent corruption and other improper pressures on certification. This concern, as well as concerns regarding potential over-breadth of cobenefits qualifying for certification, can be addressed through public authority over approval of particular protocols as triggers for public financing.

The climate regime's approval of non-state certification protocols will be somewhat analogous to certification regimes' approval of third-party auditors in that it will be approving certification systems to verify the achievement of certain on-the-ground benchmarks. However, a full integration of certification into REDD requires a more probing approval process because to effectively delegate verification responsibility and realize the benefits of non-state governance, the REDD program must permit

²⁷⁴ An argument could be made that certification should target SFM rather than adaptation, particularly because these terms are nearly interchangeable in the face of a changing climate. However, the concept of adaptation is firmly entrenched in the climate regime as a primary goal of cooperative action and therefore aligns more completely with the purposes of climate regime mechanisms. Further, focus on adaptation will assure that certified cobenefits directly relate to the purposes for which public funds are contributed—namely, advancing the goals of the climate regime.

certification systems to design and implement their own protocols for defining and measuring adaptation-related cobenefits. Accordingly, this approval process should be undertaken only upon submission of a fully-developed certification protocol by the non-state institutions. The public body could then identify areas of concern as necessary, allow the certification entity to address these concerns through its own processes, and thereafter reconsider the protocol as amended. The approval should be for a defined period (for example, a five-year period) and significant amendments to the protocol should require approval of the public body on an expedited basis.

These two essential elements are closely connected and will define the scope of work that must be completed by a public climate regime body with administrative authority over REDD financing. The more detail elaborated in the REDD program's definition of adaptation-related cobenefits, the less authority the non-state institution will have to use its own procedures in creating such a definition. Advantages of both state-based and non-state-based governance can be realized by retaining ultimate authority in the public body while encouraging civil society participation through non-state development of certification protocols. This can be accomplished if the state-based body constructs a general definition of adaptation-related cobenefits, approves certifying entities for compliance with the definition, limits the extent of unilateral changes in the certification entities' protocol, and provides a mechanism for approval of proposed changes within the protocol. This will minimize the need for micro-management of projects by the state-based body and enable non-state development of standards, while providing a means to ensure that non-state activities comply with publically agreed-upon international policy parameters for provision of public funds.

B. Recognizing Cobenefits

Essential to the direction of public funding toward adaptation-oriented projects is a mechanism for identifying qualifying cobenefits. A significant portion of this recognition can be carried out by non-state certification entities, but some formal recognition of types of qualifying activities should be expressed in the agreement creating a state-based REDD program. Two broad categories of adaptation cobenefits warrant recognition: ecological adaptation activities and socioeconomic adaptation activities. While parameters for cobenefits qualifying under each of these categories may be set through negotiation of the REDD agreement, certification entities should develop (and submit for approval) their own more detailed protocols for identifying and certifying cobenefits within them.

1. Ecological Adaptation Activities

Ecological adaptation, as discussed above, can be understood as including maintenance or enhancement of ecosystem services and biodiversity. Technical capacity exists to measure many types of ecological

cobenefits in REDD²⁷⁵ and substantial climatological literature identifies anticipated impacts in the various tropical forest regions.²⁷⁶ Evaluation of cobenefits under the proposed REDD system should include, where possible, assessment of the specific climate change impacts anticipated in the particular geographic region under consideration.²⁷⁷ This can enable tailoring ecological cobenefits to increase resilience and, thereby, increase the adaptation value of the REDD measures.

Measures designed to enhance or maintain ecosystem services anticipated to experience significant additional stress or disruption due to climate change should be eligible for adaptation-orientated REDD certification and support. Protection of ecosystem services in areas likely to face significant climate change impacts will directly support adaptation of natural systems and, in many cases, the human populations that benefit from them. In addition, protection of forest ecosystem services will require maintenance of the forests in a manner that provides additional insurance against emissions due to climate change-caused deterioration of forest ecosystems.

A CDM project designed primarily to improve the quantity and quality of freshwater in the Chinchiná River watershed of Columbia illustrates how reforestation and afforestation can contribute to maintaining hydraulic regulation and other ecosystem services through climactic changes.²⁷⁸ Although historical deforestation has severely degraded the watershed, it now faces an increasing threat from glacial melting in the Andes Mountains.²⁷⁹ Along with mitigation and watershed benefits, the project “seeks to slow erosion of the rich volcanic soils, mitigate the sedimentation of rivers, lakes and seas, promote the increase of biodiversity, improve the connectivity of strategic ecosystems.”²⁸⁰ This and other projects demonstrate the ability to incorporate critical ecosystem services cobenefits into projects that realize mitigation gains.

In light of the critical role biodiversity plays in underlying ecosystem services essential to human well-being, projects and measures aimed at ecological benefit through biodiversity protection can realize a dual adaptation benefit by enhancing the resilience of natural systems that, in turn, underlie the resilience of human communities. Therefore, along with

²⁷⁵ Stickler et al., *supra* note 188, at 2817.

²⁷⁶ *E.g.*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: IMPACTS, ADAPTATION AND VULNERABILITY (2007), *available at* http://www.ipcc.ch/publications_and_data/publications_and_data_reports.htm#1 (Under “Assessment Reports,” click on “Working Group II Report” for individual sections of report).

²⁷⁷ CLIMATE, CMTY. & BIODIVERSITY ALLIANCE, CLIMATE, COMMUNITY AND BIODIVERSITY PROJECT DESIGN STANDARDS 11, 32 (2008), *available at* http://www.climate-standards.org/standards/pdf/ccba_standards_second_edition_december_2008.pdf (describing the CCBA Gold Level Climate Change Adaptation Level criterion, which requires project proponents to identify likely regional climate change impacts so that adaptation projects can be tailored to the effects specific to a region).

²⁷⁸ U.N. Framework Convention on Climate Change, *supra* note 206, at 2–3.

²⁷⁹ *Id.* at 3.

²⁸⁰ *Id.*

REDD measures aimed at preservation of specific ecosystem services, certification should be available to those projects or measures that provide specific and identifiable biodiversity benefits.

One recent study provides evidence that specifically designing REDD projects for biodiversity or ecosystem services benefits can increase the ecological cobenefits associated with the project. Examining several REDD projects in Brazil, Stickler et al. found that projects imposing significant restrictions aimed at protecting ecological features realized substantially greater ecological cobenefits than projects with lesser restrictions.²⁸¹

On a global level, a modeling study by Ventner et al. suggests that targeting REDD projects to biodiversity hotspots would yield significantly greater biodiversity benefits than a system built on cost-effectiveness alone.²⁸² This results primarily from the disconnect between carbon value and biodiversity value, as discussed above.²⁸³ Accordingly, the proposed certification scheme within REDD should be designed to encourage development of projects in areas of particular importance for biodiversity. This can be achieved by explicitly recognizing the adaptation value of biodiversity benefits in a particular region.

While Ventner et al. suggest that some decrease in mitigation benefits may be necessary to achieve maximum biodiversity gains, the approach proposed here can maximize both mitigation and biodiversity gains.²⁸⁴ For example, the proposed approach would direct significant public funding toward projects and measures in biodiversity hotspots with relatively low REDD income potential (such as Southeast Asia), while still encouraging extensive development of marketable carbon credits through high mitigation value projects in low biodiversity priority areas (such as many areas in Brazil).

A CCB-certified restoration project in the Philippines seeks to create ecosystem services benefits and has received certification under the exceptional biodiversity benefits standards.²⁸⁵ The project initially grew from local stakeholder initiatives, but its expansion to nearly 3000 hectares was facilitated by a grant from the Toyota Motor Corporation.²⁸⁶ Along with

²⁸¹ Stickler et al., *supra* note 188, at 2816.

²⁸² Venter et al., *supra* note 50, at 1368.

²⁸³ *See id.*

²⁸⁴ By permitting both types of projects, the form of REDD proposed in this Article could realize the biodiversity benefits cited by Venter et al. without requiring the sacrifice in mitigation benefits that those authors suggested may be necessary. *Id.*

²⁸⁵ RAINFOREST ALLIANCE, VALIDATION ASSESSMENT REPORT FOR: PHILIPPINE PEÑABLANCA SUSTAINABLE REFORESTATION PROJECT (PPSRP) IN PEÑABLANCA, PROVINCE OF CAGAYAN, PHILIPPINES 3, 65–66 (2009), available at http://www.climate-standards.org/projects/files/cagayan/Conservation_International_Philippines_Penablanca_CCB_valid_09.pdf. Certification for exceptional biodiversity benefits was based on the presence of endangered, vulnerable, and endemic species. *Id.*

²⁸⁶ *Id.* at 3, 25–26.

reforestation activities, the project includes development of alternatives to historical fuelwood collection that drove deforestation.²⁸⁷

Certification on the basis of ecological benefits may be justified for a fairly broad range of activities where the risks to forest ecosystems from climate change are severe. In Africa, for example, nature reserves account for a large amount of the high biodiversity areas. Fragmentation of habitats and isolation of species makes these areas particularly vulnerable to changes in climate as vegetation cannot adapt fast enough to abrupt changes and wildlife lacks sufficient corridors to migrate.²⁸⁸ Possible qualifying activities include creation of significant wildlife corridors through reforestation designed to redress habitat fragmentation, creation of protected areas to preserve ecosystem services or threatened species, or establishment of ecologically sustainable agricultural practices where they replace or prevent unsustainable practices.²⁸⁹

2. Socioeconomic Adaptation Activities

Socioeconomic aspects of forestry are critical to maintenance of ecological values and will affect the felt impacts of climate change on forest systems. These impacts include, primarily, governance of forests and livelihoods of peoples living in and around forests. Accordingly, cobenefits designed to improve these socioeconomic components of forest systems warrant recognition for public financial support in the proposed approach to REDD where they enhance the resilience of human forest communities to climate change impacts. Several non-state organizations have developed methods of assessing the social impact of forest carbon projects.²⁹⁰

Governance of forests plays a primary role in the ability of forest systems to adapt to climate change. Indeed, it has been suggested that “adaptation to climate change essentially involves altering and adjusting governance structures.”²⁹¹ Where existing dysfunctional forest governance undermines adaptation, as in the DRC and several other African nations, governance related cobenefits are of fundamental importance and plainly warrant recognition and support through public finance. Even where the governance situation is less dire, improvements can lay the groundwork for sustaining forest ecosystems through climate change. In Indonesia or Brazil, for example, creating REDD projects that effectively reduce illegal

²⁸⁷ *Id.* at 18.

²⁸⁸ L.F. Awosika et al., *Africa*, in INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, THE REGIONAL IMPACTS OF CLIMATE CHANGE: AN ASSESSMENT OF VULNERABILITY 72 (Cambridge Univ. Press 1998).

²⁸⁹ See ENVIROTRADE CARBON LTD., *supra* note 190 (highlighting a project incorporating numerous cobenefits of these types); see also *supra* text accompanying note 192.

²⁹⁰ E.g., CLIMATE, CMTY. & BIODIVERSITY ALLIANCE ET AL., MANUAL FOR SOCIAL IMPACT ASSESSMENT OF LAND-BASED CARBON PROJECTS: PART I – CORE GUIDANCE FOR PROJECT PROPONENTS 1 (2010), available at http://www.forest-trends.org/documents/files/doc_2436.pdf.

²⁹¹ Osman-Elasha et al., *supra* note 71, at 116.

logging may be critical for supporting the resilience of forest systems to climate change.²⁹²

Improving governance structures requires empowering the people who actually use the forest resources (bottom-up governance), or imposing adequately enforced mandates to ensure that management decisions ultimately produce SFM (top-down governance), or both. Bottom-up improvements may include defining and securing the property and legal rights of stakeholders, or expanding poor and marginalized peoples' access to legal assistance at a community level.²⁹³ A project in Ethiopia, for example, seeks to develop community management of reforested public lands, utilizing a variety of community-building strategies and engaging a community development specialist and a sociologist, among others, to develop the project in way that sustainably meets community needs and preferences.²⁹⁴ Top-down structures should include policies of transparency and accountability in government programs as well as commitment to include stakeholders in the decision-making process and improvements in law enforcement.²⁹⁵ A project in the Ulu Masen Ecosystem, Aceh, Indonesia, for example, relies upon "support for enhanced enforcement . . . recruiting forest wardens, conducting forest monitoring and patrols, and improving synergies through law enforcement and other relevant agencies," among other strategies, to reduce deforestation caused by illegal logging.²⁹⁶

Factors such as the project's ability to improve community participation, access to information, and decision-making authority may serve as indicators of improvements in governance that warrant certification. At the same time, the design of certification criteria on these topics must be flexible enough to enable sensitivity to legitimate local traditions and governance frameworks.²⁹⁷

²⁹² *E.g.*, CCB – VALIDATION REPORT: FUNDAÇÃO AMAZONAS SUSTENTÁVEL – FAS: THE JUMA SUSTAINABLE DEVELOPMENT RESERVE-PROJECT: REDUCING GREENHOUSE GAS EMISSIONS FROM DEFORESTATION IN THE STATE OF AMAZONAS, BRAZIL at A-21, A-39 (2008), *available at* http://www.climate-standards.org/projects/files/juma/Validation_Report_Juma_CCBA_30Sep_2008.pdf (verifying a project designed to reduce illegal logging in Brazil); *see also e.g.*, VERIFICATION AUDIT REPORT FOR INDONESIA, *supra* note 193 (verifying a project designed to reduce illegal logging in Indonesia).

²⁹³ *See* Rosemary Lyster, *REDD+, Transparency, Participation and Resource Rights: The Role of Law*, Syndey Law School Research Paper No. 10/56 §§ 1, 2, 5 (June 2010), *available at* <http://ssrn.com/abstract=1628387>.

²⁹⁴ CLIMATE, CMTY. & BIODIVERSITY ALLIANCE, CLIMATE, COMMUNITY AND BIODIVERSITY STANDARDS PROJECT DESIGN DOCUMENT FORM FOR AFFORESTATION AND REFORESTATION PROJECT ACTIVITIES: HUMBO ETHIOPIA ASSISTED NATURAL REGENERATION PROJECT 83 (2009), *available at* http://www.climatestandards.org/projects/files/ethiopia/Ethiopia_Humbo_CCBA_PDD_June_6.pdf.

²⁹⁵ CLIMATE, CMTY. & BIODIVERSITY ALLIANCE & CARE INT'L, *supra* note 252, at 9.

²⁹⁶ THE PROVINCIAL GOVERNMENT OF NANGGROE ACEH DARUSSALAM ET AL., REDUCING CARBON EMISSIONS FROM DEFORESTATION IN THE ULU MASEN ECOSYSTEM, ACEH, INDONESIA: A TRIPLE-BENEFIT PROJECT DESIGN NOTE FOR CCBA AUDIT 38 (2007), *available at* http://www.climate-standards.org/projects/files/Final_Ulu_Masen_CCBA_project_design_note_Dec29.pdf.

²⁹⁷ *See, e.g.*, CLIMATE, CMTY. & BIODIVERSITY ALLIANCE & CARE INT'L, *supra* note 252.

Improving governance may also be closely linked with establishing sustainable livelihoods. Even if REDD generates large financial flows into developing countries, prior resource-based economic inflows suggest that the wealth can serve to exacerbate inequities and negatively affect the status of the poor.²⁹⁸ Ensuring that benefits of REDD are equitably distributed may require devolution of authority and income away from central governments.²⁹⁹ Likewise, experience with community management of protected areas and indigenous reserves suggests the promise of such approaches to reducing deforestation and meeting livelihood goals.³⁰⁰ Thus, tying community management with livelihoods that support maintenance of intact forests can promote forest management that not only stores carbon, but also facilitates adaptation of the human and ecological communities.

Projects and measures creating sustainable livelihoods that support maintenance of intact forests hold significant potential to reduce the human toll of climate change and to directly address drivers of deforestation that undermine adaptation. Creating livelihoods compatible with intact forests can reduce the need for forest clearing to support subsistence agriculture, for example.³⁰¹ In Kenya, a community established a sewing industry as an alternative to traditional slash-and-burn agriculture and seeks carbon credit funds from the avoided deforestation to increase the long-term sustainability of the project.³⁰² Further, the project was verified for adaptation benefits under the CCB Gold Level standards because the project proponent demonstrated a likelihood of substantial climate change impacts and designed the project to reduce the harm caused by such impacts with cobenefits.³⁰³ In these instances, the livelihood cobenefits are directly relevant to adaptation of forest systems and, therefore, warrant recognition and financial support under the proposed approach to REDD.

Providing sustainable livelihoods can also counter the demand for income from industrial-scale agriculture and logging for the international market. Selective logging, supplemented by REDD credit income, could offer a means of resisting the demand for palm oil plantations in nations such as

²⁹⁸ See PESKETT ET AL., *supra* note 146, at 29–30.

²⁹⁹ See *id.* at 35–36.

³⁰⁰ Alison Campbell et al., *Protecting the Future: Carbon, Forests, Protected Areas and Local Livelihoods*, 9 BIODIVERSITY 117, 118–19 (2008).

³⁰¹ See, e.g., *infra* Part IV.E (discussing the Mantadia project).

³⁰² WILDLIFE WORKS CARBON LLC, THE KASIGAU CORRIDOR REDD PROJECT: PHASE I – RUKINGA SANCTUARY 33, 41, 47, 55 (2008), *available at* http://www.climate-standards.org/projects/files/taita_taveta_kenya/rukinga_ccb_pdd.pdf.

³⁰³ SCI. CERTIFICATION SYS., FINAL CCBA PROJECT VALIDATION REPORT: KASIGAU CORRIDOR REDD PROJECT: TAITA TAVETA, KENYA 59, 62, A-1 (2009), *available at* http://www.climate-standards.org/projects/files/taita_taveta_kenya/CCB_WildlifeWorks_RPT_ValidationReport_Final_122009.pdf (listing the following adaptation-related cobenefits: “create livelihoods alternative to agriculture, improve efficiency of agriculture production and protection of the project area from poachers”).

the DRC.³⁰⁴ Along with providing income to counter deforestation drivers, establishment of sustainable livelihoods can directly enhance the ability of local populations to adapt to other climate change impacts. Thus, integration of sustainable agriculture with REDD projects in appropriate areas can help to offset potential impacts of REDD on food prices while also reducing regional demand for environmentally destructive industrial agriculture.³⁰⁵

A 750,000 hectare project in Ulu Masen Ecosystem, Aceh, Indonesia demonstrates integration of numerous socioeconomic and ecological cobenefits. The region was recently embroiled in violent conflict and its forests “now face significant threats from resurgent illegal logging, renewed potential for unsustainable industrial logging practices, and conversion to plantations and farm land following the ending of the civil conflict and the post-tsunami reconstruction process.”³⁰⁶ The project requires adequate finance to “justify land reclassification and permanently eliminate the legal possibility of land conversion and logging” and expects to eliminate 85% of logging in the region.³⁰⁷ At the same time, it will create sustainable livelihoods through low impact community logging.³⁰⁸ Thus, the project is designed to eliminate legal forest clearing and combat illegal logging.³⁰⁹ Further, the project area will be managed to promote ecological adaptation by reducing the increased risk of fire, which is understood to be the primary climate change related impact that can be addressed by the project, and by providing habitat to facilitate migration and adaptation of species.³¹⁰

For socioeconomic cobenefits to take hold, projects must ensure that benefits reach the poor. While poverty reduction will frequently be closely linked with governance or livelihood improvements, in many regions, REDD benefits cannot be expected to reach the poor unless mechanisms to ensure poverty alleviation are built into the project’s design.³¹¹ Thus, projects may include mechanisms for equitable distribution of benefits.³¹² Development of

³⁰⁴ See PESKETT ET AL., *supra* note 146, at 28. This approach may be more difficult to implement where opportunity costs are high, such as in Southeast Asia. See, e.g., Venter et al., *supra* note 50, at 1368.

³⁰⁵ See PESKETT ET AL., *supra* note 146, at 39 (suggesting that REDD strategies including intensified agriculture could achieve both forest preservation and increases in local agricultural production, reducing the demand for regional, industrial agriculture). For a relevant project example, see CLIMATE, CMTY. & BIODIVERSITY ALLIANCE, *supra* note 294.

³⁰⁶ THE PROVINCIAL GOVERNMENT OF NANGGROE ACEH DARUSSALAM ET AL., *supra* note 296, at 21. As previously noted, Indonesia faces some of the highest rates of deforestation in the world. See *supra* note 50.

³⁰⁷ THE PROVINCIAL GOVERNMENT OF NANGGROE ACEH DARUSSALAM ET AL., *supra* note 296, at 36.

³⁰⁸ *Id.* at 2, 65.

³⁰⁹ *Id.* at 37–38.

³¹⁰ VERIFICATION AUDIT REPORT FOR INDONESIA, *supra* note 193, at 41.

³¹¹ See PESKETT ET AL., *supra* note 146, at 51.

³¹² Examples include VERIFICATION AUDIT REPORT FOR INDONESIA, *supra* note 193 and CLIMATE CMTY. & BIODIVERSITY STANDARDS, PROJECT DESIGN DOCUMENT: APRIL SALUMEI, EAST SEPIK, PAPUA NEW GUINEA (2010), available at http://www.climate-standards.org/projects/files/new_guinea/April_Salumei_PDD_Final_June_2010.pdf.

equitable benefit sharing measures and poverty eradication benefits will frequently involve a mix of governance and livelihood improvements in the project region, which directly address a major driver of deforestation. Accordingly, in areas where poverty impedes adaptation or is expected to exacerbate climate change impacts, projects that reduce poverty should be eligible for recognition and public financial support for either governance or livelihood cobenefits (or both) under the proposed approach to REDD.

C. Financing

The third core element of the proposed approach to REDD involves public financing. Public financing would be used primarily, if not exclusively,³¹³ to enable and reward the development of adaptation-related cobenefits. Enabling the development of these cobenefits will frequently lay the necessary groundwork for development of REDD projects and national measures that create marketable carbon credits. In that sense, the proposed role of public financing is similar to existing efforts to raise funds for REDD “readiness.” The role of public financing proposed here is different, however, in that recipients of public monies will be required to obtain certification that the funded activities achieve a significant level of adaptation-related cobenefits. Current discussions of readiness concentrate on enabling REDD development for mitigation purposes,³¹⁴ whereas the proposed approach to financing will ensure that such measures will advance adaptation while generating mitigation benefits. In this way, the proposed approach is more robust, encompassing both current conceptions of readiness and the adaptation-related cobenefits discussed throughout this Article.

Under this proposal, private market financing is anticipated to generate the vast majority of funds required to pay for mitigation benefits from REDD, but is not anticipated to directly support development of cobenefits. It thus assumes the development of a viable carbon market for REDD carbon credits and effectively counteracts the regulatory market pressure for cost-effectiveness (i.e., cheap credits) that would otherwise disincentivize the development of high cobenefit projects.

Two fundamental financing issues must be addressed to effectively implement the proposal: the source of funding and rules for their distribution. These issues are explored below.

³¹³ Public funds may also be important to more broadly support development of REDD projects in countries where governance and other conditions make market access impossible. *See, e.g.,* THE COMM’N ON CLIMATE AND TROPICAL FORESTS, PROTECTING THE CLIMATE FORESTS – WHY REDUCING TROPICAL DEFORESTATION IS IN AMERICA’S VITAL NATIONAL INTEREST 8, 12 (2007) (discussing the use of U.S. funds to support such projects).

³¹⁴ TOM GRIFFITHS, FOREST PEOPLES PROGRAMME, SEEING ‘REDD’? FORESTS, CLIMATE CHANGE MITIGATION AND THE RIGHTS OF INDIGENOUS PEOPLE AND LOCAL COMMUNITIES 38 (2008), *available at* https://www.elaw.org/system/files/doc_923.pdf.

1. Source of Funds

Total funding needed to support cobenefits in REDD under this proposal will depend upon the extent of certified activities and the cost of their development. Necessary improvements to support implementation of SFM in tropical forest countries are estimated to require an additional investment of approximately \$11 billion per year.³¹⁵ Carbon markets alone could generate this sum for REDD development with a mandated forty percent reduction in GHG emissions from 1990 levels and a ten percent quota requirement for REDD credits in use of offsets to meet GHG targets.³¹⁶ Even with lesser market funding, or uneven distribution of market funding, the use of government funds as a complement to markets provides a viable means of assuring that the total level of funding is adequate to meet tropical SFM implementation needs.

Two broad pathways exist for raising the public funds needed to support cobenefits. First, substantial funding should be provided through Official Development Assistance (ODA) and other public support by donor nations. As of 2004, global ODA investment in SFM was approximately \$1 billion per year.³¹⁷ Although not all of this investment would or should be redirected toward support of SFM development in REDD, a significant increase in government assistance to support SFM through REDD may be anticipated as several major developed nations had already pledged approximately \$4 billion toward REDD readiness before formal recognition of REDD at COP-16.³¹⁸ Thus, a significant portion of the needed government funding could be raised through donor nations.

Second, a market-linked mechanism should be used to provide additional public funds for REDD cobenefit support. This mechanism would be similar to the existing two percent tax on credit transfers to support the adaptation fund. Several options exist within this approach based on the types of trading taxed and the scope of the fund management. Specifically, financing for adaptation-related REDD cobenefits could be drawn from a broader adaptation fund or housed in a separate forest adaptation fund. Although integration of REDD cobenefits into a general adaptation fund might initially be easier to administer, it is preferable to create a specific forest adaptation fund. This would allow more accurate accounting and also provide a means for donor countries to target aid specifically toward REDD support.

Under the forest adaptation fund approach, a specific credit-transfer tax would be necessary to provide market-linked resources. The tax could be made applicable to all carbon credit transfers, which would allow drawing upon an estimated \$11 billion market³¹⁹ and require designating a

³¹⁵ TOMASELLI, *supra* note 264, at 13–14.

³¹⁶ VIANA, *supra* note 225.

³¹⁷ TOMASELLI, *supra* note 264, at 6.

³¹⁸ THE LITTLE CLIMATE FINANCE BOOK, *supra* note 138, at 17; ELIASCH, *supra* note 6, at 223.

³¹⁹ See, e.g., VIANA, *supra* note 225.

specific percentage added onto the existing tax that supports the general adaptation fund (assuming retention of that approach post 2012). Alternatively, a forest adaptation fund could be supported through a tax specifically on REDD credits. This could have an equalizing effect on REDD implementation because investment in the areas with the most extensive REDD development (including noncertified projects) would provide a large portion of the funding needed to support certified REDD development in all areas. A third approach would target only noncertified REDD projects for taxing to support the forest adaptation fund. While this approach would further incentivize development and certification of cobenefits (by further equalizing the cost of streamlined noncertified projects with the cost of certified projects), it is unclear whether sufficient resources could be raised.

Upon balancing the considerations, the best approach to financing a forest adaptation fund is probably a combination of a small tax on all carbon credit transfers (including CDM and others) with an additional small tax on noncertified REDD credits. This approach would ensure significant funding through the general tax, while providing an additional market advantage to certified REDD credits over noncertified REDD credits (which would be subject to the additional tax). Determining the rate of these taxes requires further economic analysis, but it appears plausible that something less than one percent in both cases could be effective without dampening the carbon market.³²⁰

In sum, financing for adaptation-related cobenefits should ideally be drawn from a distinct fund created for this purpose. The fund should be composed of governmental aid donations and market-linked tax revenues. This approach will allow the fund to grow with increasing volume of credit trading, while providing a safety net of publicly-donated monies to guard against shortfalls.

2. Distribution of Funds

The ability to foster adaptation-related cobenefits through the proposed approach to REDD also depends on effectively scaling and delivering public financing to certified projects. Two major issues require consideration: the amount of financing provided and accountability.

a. Amount of Financing

The amount of financing provided to support specific REDD measures should reflect 1) the incremental cost of including the adaptation cobenefits, 2) the adaptation value of the cobenefits, and 3) the cost of certification. The cost of cobenefits should serve as a starting point for deciding the appropriate amount of financing, but may be adjusted by the adaptation

³²⁰ Assuming carbon market transfers can generate \$11 billion dollars annually, a 1 percent tax on transfers could generate over \$100 million dollars annually for funding adaptation cobenefits. See VIANA, *supra* note 225.

value of the funded cobenefits.³²¹ The costs of certification should then be added. Accordingly, the following formula should be used in determining the appropriate amount of funding:

$$(\text{cost of cobenefits} \times \text{adaptation value}) + \text{certification cost}$$

A climate regime administrative body would apply this formula to determine the amount of public funds to be allocated. It would not affect market value of carbon credits or otherwise create any marketable instrument.

Because a primary goal of the proposed approach is to make adaptation-oriented REDD cost-competitive, the starting point for determining financing levels should be the cost of adding the cobenefits. If public financing completely offsets these costs, as well as certification costs, it will allow certified projects to sell carbon credits at prices that are fully competitive with noncertified projects.³²² In some cases, it may be necessary to adjust the amount of financing based on an analysis of the adaptation value of the cobenefits. This value might be measured by predicting the savings attributable to proactive adaptation activities compared with the costs of reactive action when climate change impacts become severe, or through a measurement of the value of climate-threatened ecosystem services retained by the cobenefits. While this adjustment may in some cases lead to an increase in financing provided, it would also serve as a mechanism to prevent fraud or artificial inflation of cobenefits costs. Thus, a high-cost activity with minimal adaptation value might receive significantly less financing than the amount needed to offset the costs of developing the cobenefits.

Finally, the costs of the certification process itself should be compensated to avoid inflating the price of carbon credits and to encourage participation in the certification approach. These costs may range as high as \$40,000 per project or be substantially lower.³²³ Accordingly, compensating these costs will likely not be a substantial drain on international public

³²¹ An adjustment based on the receiving country's level of development might arguably be appropriate in some cases. However, differences in development level will generally be reflected in the extent of social cobenefit investment required for the project to succeed. Thus, projects in least developed countries will presumably receive high levels of cobenefit financing because they require extensive socioeconomic cobenefit development.

³²² Establishing the cost of cobenefits may be complex as it involves consideration not only of direct implementation costs, but also of opportunity cost. In most situations, however, the market financing provided for carbon credits should be anticipated to cover opportunity costs. In remote areas where the drivers of deforestation are poverty and governance failures, the opportunity costs will presumably be low, but the implementation costs will be substantially higher. Only where opportunity costs are particularly high and implementation costs are low due to strong existing governance structures should opportunity costs provide a basis for increasing the amount of financing provided. *See, e.g.,* STEFANO PAGIOLA & BENOÎT BOSQUET, WORLD BANK, ESTIMATING THE COSTS OF REDD AT THE COUNTRY LEVEL 3-4, 7-8 (2009), available at <http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PDF/REDD-Costs-22.pdf>.

³²³ MERGER, *supra* note 248, at 45.

resources, but may prove critical to development of small REDD projects or measures in countries (or provinces) with small or fragmented forest areas of particularly high cobenefit value. This cost compensation may be particularly important for preservation of highly threatened and fragmented forests in Southeast Asia, for example.

b. Accountability and Timing

Accountability concerns are particularly acute in REDD. Tropical forest governance has long been plagued by corruption in many regions.³²⁴ The expectation of financial inflows from REDD may exacerbate the incentives for fraud and resource appropriation. Accordingly, rules for the distribution of public funds must contain safeguards to enhance accountability. These safeguards will also influence the schedule of distribution, which involves a balance of promoting accountability and maximizing benefits.

Accountability concerns can most effectively be addressed through governance improvements that serve as the basis for certification.³²⁵ Thus, most accountability concerns should be addressed by ensuring that socioeconomic cobenefits are well-designed and effectively implemented,³²⁶ which requires that approved non-state-certification entities are capable of accurately assessing socioeconomic cobenefits and assessing the risks of cobenefit failure. Projects or measures that are sufficiently stable to provide effective governance supporting forest adaptation will be in a strong position to resist corruption. Although influx of public funds may increase corruption risks, this too is a factor that should be considered in the certification audit. Nonetheless, public international rules should be established to impose national accountability for implementation and, in

³²⁴ Brown, *supra* note 13, at 253. Illegal logging is estimated to be a \$10 billion black market industry annually. Cambodia only collected revenue on ten percent of the nation's log production in 1997. During the period of 2003–2006, less than half of Indonesia's timber was harvested legally. *Id.*

³²⁵ See generally Glück et al., *supra* note 16, at 195–97, 208 (describing new governance techniques, and noting that promoting these adaptive governance practices through certification can be promising).

³²⁶ See Christopher Barr et al., *Financial Governance and Indonesia's Reforestation Fund During the Soeharto and Post-Soeharto Periods, 1989–2009: A Political Economic Analysis of Lessons for REDD+* 65 (Ctr. for Int'l Forestry Research, Occasional Paper No. 52, 2010), available at http://www.forestforclimate.org/attachments/669_Occasional%20Paper_CIFOR_52.pdf (noting that unless the governments design and implement equitable benefit sharing mechanisms from the outset, there is a risk of widening the economic disparity between powerful industrial interests and forest dependent communities, and repeating the mistakes of previous inequitable benefit distribution programs). The design of cobenefits is generally more important than timing from an accountability standpoint. For example, if the majority of benefits are directed to the largest drivers of deforestation such as large-scale forestry enterprises, generally closely tied to state elites and government agencies, the risk is high for both improper appropriation of benefits and increasing the disparity between rich and poor. *Id.*

some circumstances, repayment of funds received for projects or measures that ultimately fail due to corruption or similar governance failures.³²⁷

In determining the schedule of benefit distribution, the administrative body must be sensitive to both equity considerations and accountability concerns. There is a delicate balance between conditioning payment on prior demonstration of performance to enhance accountability and avoiding potential negative consequences of such conditioning for the poor within host nations.³²⁸

Initial implementation costs will create a significant barrier to the development of cobenefits in many cases. This is particularly true for socioeconomic cobenefits, such as governance improvements or creation of sustainable livelihoods.³²⁹ Accordingly, staggered funding, including pre-implementation investments, may be necessary to support implementation of cobenefit-rich REDD. Moreover, a carefully structured system of staggered payments may have important social benefits by providing a stable source of income over time.³³⁰ Interim benchmarks and payments could be designed to work in tandem with carbon market income, thus providing

³²⁷ Requiring that a percentage of carbon credits from each project be withheld from trading and deposited into a common buffer account can provide a degree of insurance against negative net emissions impacts resulting from failed or underperforming projects. Erin C. Myers, *Policies to Reduce Emissions from Deforestation and Degradation (REDD) in Tropical Forests: An Examination of the Issues Facing the Incorporation of REDD into Market-Based Climate Policies* 35–36 (Resources for the Future, Discussion Paper 07-50, 2007), available at <http://www.rff.org/RFF/Documents/RFF-DP-07-50.pdf>. However, similar approaches are unlikely to address adaptation concerns related to project failures because, in most instances, adaptation is highly location specific. Accordingly, measures to enhance early detection of project problems and facilitate compliance will likely be necessary. In extreme cases, procedures for repayment of public funds may be appropriate.

³²⁸ See PESKETT ET AL., *supra* note 146, at 31–32 (discussing a number of poverty consequences that could ensue should countries decide to condition payments on successful project completion).

³²⁹ See Patrick Doyle & Tom Erdmann, *Using Carbon Markets to Fund Forestry Projects: Challenges and Solutions*, 6 DAIDEAS no. 3, May 2010, at 2–3, available at http://www.dai.com/pdf/DAIdeas_Spring%20201_web.pdf (suggesting that livelihood activities may have accounted for fifty percent of implementation costs in many projects); Sheila Wertz-Kanounnikoff et al., *Integrating REDD into the Global Climate Protection Regime: Proposals and Implications* 7 (Ctr. for Int'l Forestry Research, Inst. for Pure & Applied Mathematics, & Overseas Dev. Inst., Background Paper, 2008), available at http://www.cifor.cgiar.org/publications/pdf_files/research/environment/carbofor/Tokyo_Background_paper_final.pdf (suggesting that socioeconomic cobenefits like governance reform and land tenure reform are unlikely to be financed within the existing capacity of REDD). For example, where a REDD project includes poverty eradication goals, expenses incurred in establishing community economic activities should be substantially offset through international support. Thus, expenses related to establishing non-timber forest products operations, or ecologically sound selective timber harvesting or small-scale agriculture, could be eligible for support from certification-related adaptation funds.

³³⁰ See PESKETT ET AL., *supra* note 146, at 41.

sustainable income and necessary support while REDD measures are in critical early stages.³³¹

D. Noncertified (Mitigation-Only) REDD

To provide flexibility and encourage participation, the proposed approach does not mandate cobenefits. Instead, the REDD program should enable countries to access the carbon market by satisfying essential requirements for demonstrating mitigation benefit.³³² The mitigation-only option should provide an opportunity for host countries to access carbon markets with minimal transaction costs and regulatory burdens.³³³ This relative simplicity is necessary to provide real choice and offer avenues for countries to avoid international intrusion into sovereign decisions regarding management of their natural resources, while still providing globally significant climate benefits.

To ensure that certification benefits are meaningful, however, non-certified mitigation-only projects or measures generally should not receive direct financial assistance from the climate regime fund. This does not foreclose the possibility of readiness funding for certain countries at the national level as necessary and appropriate regardless of contemplated projects. It may, however, require careful accounting in countries that adopt mitigation-only measures in some areas and certified measures elsewhere.

³³¹ ELIASCH, *supra* note 6, at 196 (noting that funds can be used early on to finance policy and institutional reform until the REDD schemes become more integrated into the carbon market).

³³² There are, of course, mitigation-related issues that must be addressed before REDD can become reality. Literature on some of these points—such as additionality, leakage, and permanence—is extensive and well-developed. Most of the options currently being debated would be adequate to establishing the tiered REDD approach outlined in this Article. For a thorough discussion of baselines, leakage, and permanence from a design perspective, see MADEIRA, *supra* note 128, at 41–49, 51–61. An alternative approach to the additionality question, which warrants careful consideration, has been advanced in several studies. See, e.g., Danilo Mollicone et al., *An Incentive Mechanism for Reducing Emissions from Conversion of Intact and Non-intact Forests*, 83 CLIMATIC CHANGE 477, 479–80 (2007) (noting that additionality credit should be given for avoiding deforestation in existing forests); Gustavo A. B. da Fonseca et al., *No Forest Left Behind*, 5 PLOS BIOLOGY 1645, 1645 (2007); see also Randall S. Abate & Todd A. Wright, *A Green Solution To Climate Change: The Hybrid Approach To Crediting Reductions In Tropical Deforestation*, 20 DUKE ENVTL. L. & POL'Y F. 87 (2010), 102–23. Another threshold issue that must be resolved before REDD can be expected to provide net incentives for adaptation is the definition of “forest” to be used within the mechanism. See Long, *supra* note 128, at 318, 321–22.

³³³ In many respects, the mitigation-only component of the proposed tiered REDD mechanism aligns with the current tract of REDD negotiations, as exemplified by the AWG-LCA draft decision on REDD policies. See U.N. Framework Convention on Climate Change, Ad Hoc Working Group on Long-term Coop. Action Under the Convention, *Policy Approaches and Positive Incentives on Issues Relating to Reducing Emissions from Deforestation and Forest Degradation in Developing Countries; and the Role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks in Developing Countries*, § 1(i), U.N. Doc. FCCC/AWG/LCA/2009/L.7/Add.6 (Dec. 15, 2009), available at http://maindb.unfccc.int/library/view_pdf.pl?url=http://unfccc.int/resource/docs/2009/awglca8/eng/107a06.pdf.

Perhaps most importantly, a mechanism is needed to prevent non-certified activities from creating negative externalities that undermine or counteract the adaptation benefits created by certified projects or measures. Accordingly, the potential negative impacts of such activities should be assessed through national-level accounting of cobenefits. Thus, countries that host both certified and non-certified projects or measures may have to undergo an assessment of net adaptation impacts from REDD within the country. This assessment will allow public funding for certified activities—which may be at the national level—to be reduced if non-certified activities create significant negative impacts on adaptation capacity. Alternatively, these negative impacts could be accounted for through a discounting or taxing of the carbon credits sold by the non-certified project.

E. Applying the Proposal

At a practical level, experience with voluntary REDD market provides support for the viability of the proposed approach. As suggested throughout this Article, demonstration projects are beginning to show the potential for REDD to integrate a variety of sustainable land uses in a manner that meets mitigation and other environmental goals while improving the economic prospects of the local population. A good example is the Ankeneny-Zahamena-Mantadia Biodiversity Conservation Corridor and Restoration Project (Mantadia), which is located in the Eastern portion of Madagascar between two national parks that represent the “core” of the Malagasy rainforest.³³⁴ Madagascar’s primary forests contain an extremely high level of biodiversity, but have been reduced to less than fifteen percent of the country’s land cover due to a variety of deforestation drivers such as subsistence agriculture.³³⁵ The Mantadia project includes over 400,000 hectares of avoided deforestation and reforestation of 3000 hectares with native species to reconnect biologically isolated forests (creating a biodiversity corridor).³³⁶ The project is specifically designed to combat the

³³⁴ NICOLE R. VIRILIO ET AL., THE NATURE CONSERVANCY, CONSERVATION INT’L & WILDLIFE CONSERVATION SOC’Y, REDUCING EMISSIONS FROM DEFORESTATION AND DEGRADATION (REDD): A CASEBOOK OF ON-THE-GROUND EXPERIENCE 45–46, 50 (2010), *available at* http://www.hedon.info/docs/REDD_Casebook-TNC-CI-WCS.pdf (noting that in addition to meeting deforestation goals for this sensitive connection wildlife area between national parks, the Mantadia project is employing locals to conduct site preparation, planting and maintenance, and helping to diversify the local agricultural economy); Carbon Finance Unit, The World Bank, *Madagascar: Ankeniheny-Zahamena – Mantadia Biodiversity Conservation Corridor and Restoration Project*, <http://wbcarbonfinance.org/Router.cfm?Page=BioCF&FID=9708&ItemID=9708&ft=Projects&ProjID=9638> (last visited Nov. 4, 2010).

³³⁵ VIRILIO ET AL., *supra* note 334, at 9.

³³⁶ *Id.* at 9; Jeannicq Randrianarisoa et al., *Case Study: Creative Financing and Multisector Partners in Madagascar*, in CLIMATE CHANGE AND FORESTS: EMERGING POLICY AND MARKET OPPORTUNITIES, *supra* note 125, at 206 (the project involves “restoration of 3,000 hectares of natural forest to reconnect biologically isolated forests and protected areas, the promotion of sustainable cultivation systems . . . across 2,000 hectares, and protection of 425,000 hectares of

primary drivers of deforestation in the area through provision of socioeconomic benefits.³³⁷ The project includes sustainable forest and community gardens, fuelwood plantations, and clarification of land tenure, all of which meet community needs in a manner that promotes environmental sustainability and significantly reduces overall carbon emissions.³³⁸ By all accounts, this project is a model of cobenefit integration into a REDD project. In a recent “casebook” of REDD projects compiled by a coalition of NGOs, for example, the Mantadia project serves as the featured case study for both the chapter on socioeconomic cobenefits and the chapter on environmental cobenefits.³³⁹

The communities surrounding the Mantadia project (comprising over 300,000 people) are engaged with the project through participation in decision-making, alternative income opportunities (primarily through creation of sustainable agricultural operations), and clarification of land tenure.³⁴⁰ The project also includes monitoring and other mechanisms to promote biodiversity cobenefits resulting from the reforested corridor.³⁴¹ Further, the project is designed to comply with the CCB standards.³⁴²

Funding sources for the Mantadia project are mixed. Carbon offsets are projected to generate one third of the project’s revenue, while additional funds are expected from groups investing in biodiversity restoration and from aid for community development.³⁴³ The non-carbon funding was particularly important to initiate the project, as most of the carbon credit funds will not be provided until the benefits are demonstrated.³⁴⁴ This creative financing has been hailed as a demonstration that “a landscape-scale project that designs multiple benefits can effectively tap a mix of carbon offset financing and philanthropic and development funding.”³⁴⁵ Unfortunately, scaling up Mantadia’s model of financing for cobenefits in a way that allows large-scale replication of such project design sufficient to affect the net impacts of a global regulatory market will be exceedingly difficult, if not impossible.³⁴⁶ The approach proposed in this Article offers a solution that can make such cobenefit-rich projects the norm, rather than the exception.

Under the proposed certification system, the Mantadia project could benefit from the staggered funding approach suggested above, receiving

native forest by reducing deforestation driven by unsustainable agricultural expansion and fuelwood harvesting”).

³³⁷ VIRILIO ET AL., *supra* note 334, at 10.

³³⁸ Randrianarisoa et al., *supra* note 336, at 208.

³³⁹ VIRILIO ET AL., *supra* note 334, at 43–51.

³⁴⁰ *Id.* at 45–46.

³⁴¹ *Id.* at 50–51.

³⁴² *Id.* at 46, 51.

³⁴³ Initial funding comes from the Government of Madagascar, U.S. Agency for International Development, Conservation International, World Bank and others. *Id.* at 21.

³⁴⁴ Randrianarisoa et al., *supra* note 336, at 208.

³⁴⁵ *Id.* at 207–08.

³⁴⁶ See text accompanying notes 272–277, *supra*.

significant public funding to offset the cost of cobenefits and reducing (or eliminating) the need to arrange a complex and creative funding network to get the project off the ground. Specifically, the project would receive substantial initial public funding to offset the cost of creating sustainable livelihoods, as well as partial funding for the biodiversity benefits resulting from the reforestation corridor. Further development of cultivation and other sustainable economic enterprises could receive climate fund support as they are developed. Demonstrated improvements in governance structures could trigger additional funding to support, *inter alia*, acquisition of expert knowledge or core skill sets necessary to improving governance functioning, economic sustainability and ecosystem services. Market sales of mitigation credits would provide a substantial source of funds that could be used, at least in part, for long-term investment aimed at community improvements and to provide resilience for economic elements of the project. On the whole, projects such as these would provide a solid investment toward supporting adaptation of ecosystems and communities, while simultaneously providing a permanent mitigation benefit that might not be viable without substantial support for the associated cobenefit activities that underlie its adaptation benefits.³⁴⁷ The Mantadia project thus demonstrates that carbon market finance can be combined with other funding sources to produce a range of benefits that address the underlying drivers of deforestation. The project's success suggests that REDD can spur holistic improvements in tropical forest management, provided that cobenefits receive sufficient attention in the design of REDD-funded activities. The proposal set forth above provides a viable option for ensuring that, as a whole, adaptation-related cobenefits become a significant feature of REDD design.

Some observers may charge that the proposal advanced in this Article adds complexity to already difficult REDD negotiations under the UNFCCC. They might also suggest that cobenefit incentives should be added at a later time, after the REDD program is firmly established. These and related concerns miss the mark, however. Certification will add some complexity to the creation of the REDD mechanism, but it may also facilitate agreement by providing increased choice for countries wishing to move forward with REDD and emphasizing the opportunities for lasting benefits in developing countries. Further, a "wait-and-see" approach to cobenefits poses significant dangers because if negative biodiversity and socioeconomic externalities are created—such as exclusion of indigenous peoples from their traditional

³⁴⁷ BioCarbon Fund, Powerpoint Madagascar: The Mantadia Biological Corridor REDD/AR Project at the BioCF Training (Feb. 8, 2008), *available at* http://wbcarbonfinance.org/docs/Day_4a_BioCF_-_CI_Madagascar_Andr%C3%A9_Aquino_BioCF_Training_Jan08.ppt. Projects in the Mantadia Corridor include increasing agricultural intensity to reduce slash and burn agriculture, increasing ecotourism, agroforestry, reforestation projects, and increasing protected areas. *Id.* at slide 9. Seventy-five percent of Madagascar's population of 18 million is rural and dependent on the land and natural resources. *Id.* at slide 2. Only fifteen percent (ten million Ha) of Madagascar's natural forest cover remains. *Id.* at slide 4.

forest lands, or intensified pressures on tropical forest biodiversity hotspots—the damage will often be irreversible, and the negotiation dynamics will have changed by creating vested interests in maintaining an unsustainable status quo. Instead, incentives for cobenefits should become a prominent aspect of REDD from the outset in order to promote a REDD program that, like the Mantadia project, seeks to create a range of cobenefits that will support adaptation and the permanence of mitigation gains.

V. CONCLUSION: BROADER LESSONS OF THE PROPOSAL

This Article has highlighted the close relationship of global and local issues affecting human well-being and the environment in the forestry context. It also provides an assessment of the benefits and risks of market funding for environmental public goods, and suggests how a combination of private market finance and public funding can be used to reshape the REDD program into one that beneficially affects nearly all of the social and environmental issues at play in tropical forests, at both global and local scales. In this way, the Article proposes a form of REDD that can be described as convergent. The approach to REDD proposed here will bring together the various strands of governance, livelihoods, biodiversity, and ecosystem services under the rubric of climate change (including mitigation and adaptation) by melding public and private sources of both governance and finance.

Similar approaches could be created in other sectors, such as agriculture, and impact the same range of issues. These approaches, as with the REDD proposal advanced here, could be adopted without a comprehensive agreement addressing any one environmental or social issue on a global basis. This would overcome the fragmentation and persistent divisions that have plagued prior efforts to address key environmental issues, such as biodiversity, by targeting regulation to the linkages among issues and delivering adequate (and appropriately employed) financial capacity to change public and private behavior. Thus, the convergent legal mechanism suggested here for REDD could be developed into a novel approach to multiple areas of global environmental governance.

The approach suggested here for tropical forests realizes several gains that hold value for transnational environmental governance more generally. It may therefore be understood as a model for designing more effective global environmental programs, which can be transposed to a variety of contexts.

First, the suggested integration of private and public financing provides a model for improving regulation in all sectors touched by climate change, and therefore also presents a potential means of overcoming the impasse in climate negotiations. In sectors such as agriculture and energy, as well as habitats such as coastal ecosystems and wetlands, opportunities exist to leverage carbon markets to fund mitigation gains, thereby injecting substantial funds to stimulate environmentally beneficial activities. These funds could be combined with a retargeting of public international finance

that is currently aimed at discrete issues (such as food security) toward convergent projects providing a range of benefits. This approach promises greater efficacy than currently fragmented efforts to address issues in relative isolation.

Second, the formal integration of public and private global governance institutions recommended for certification of cobenefits highlights a need and opportunity to reform existing supranational environmental institutions in a way that promotes both compliance with global environmental goals and sensitivity to local and national circumstances and priorities. The approach lends legitimacy and accountability to private governance efforts, while increasing the flexibility and reach of supranational regulation. State-based global regimes can reach deeper into root causes of environmental problems at the local or national level if they can partner with more fluid and regionally created implementation entities. Again, this Article has developed the approach in the context of tropical forests, but further research should be undertaken to explore its application to a whole range of regulatory and geographic spaces that affect environmental quality.

Finally, the approach recommended here implicitly advances a framework for enhancing accountability of supranational governance that penetrates regulatory space traditionally within the sovereign prerogative of domestic governance. By employing non-state bodies for implementation and certification, supranational regimes will create an additional—and perhaps more responsive—channel of communication between local constituencies and global decisionmakers. Concerns brought to and recognized by non-state bodies will inform and potentially shape the agreements between state and non-state actors on a broader range of issues, from overall goal definition to specific tactics for measuring and reporting compliance. Accordingly, while state-based regimes will lend legitimacy to non-state actors, the latter will simultaneously provide additional accountability for growing international institutions.