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PROMOTING BIODIVERSITY CO-BENEFITS IN REDD

by **Katia Karousakis**

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Keywords: biodiversity conservation, climate change deforestation, cost-benefit analysis, environmental economics

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ABSTRACT

Reducing Emissions from Deforestation and Forest Degradation (REDD) in developing countries is a new financial mechanism that is being proposed for the post-2012 climate change regime under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC). Successful agreement on a future REDD mechanism would represent a substantial and unprecedented development in the creation of an international mechanism to help internalise the carbon-related ecosystem services from forests and could make a significant contribution to addressing the global climate change challenge.

Forests also play a key role in the provision of biodiversity, as well as other non-carbon ecosystem services. The Bali Action Plan recognises that action to support REDD “can promote co-benefits and complement the aims and objectives of other relevant international conventions and agreements”. A notable example is that of the Convention on Biological Diversity.

This report examines how biodiversity co-benefits in REDD can be enhanced, both at the design and implementation level. It discusses potential biodiversity implications of different REDD design options that have been put forward in the international climate change negotiations and proceeds by examining how the creation of additional biodiversity-specific incentives could be used to complement a REDD mechanism, so as to target biodiversity benefits directly.

Key design elements of a REDD mechanism that need to be agreed upon, and are likely to have implications for biodiversity, include: the scope of the mechanism; financing; the establishment of baselines/reference levels; and permanence issues, amongst others. For example, a market-based approach to REDD financing (rather than a fund-based approach) is likely to generate substantially larger volumes of financing (by directly engaging the private sector), which would enable more REDD activities, greater forest areas being conserved, and hence larger biodiversity co-benefits.

Overall, a well-designed REDD mechanism is likely to deliver substantial biodiversity co-benefits since avoided deforestation and degradation implies a decline in habitat destruction and thus in biodiversity loss. However, some of the international REDD design elements may pose potential risks to biodiversity, for example via afforestation and reforestation activities that resulted in mono-plantations, and appropriate safeguards may be needed.

At the implementation level, further efforts can help ensure that biodiversity co-benefits can be mainstreamed into REDD activities in an efficient and informed manner. For example:

- Some international financing would be well-invested in economically evaluating and geographically mapping biodiversity and ecosystem services benefits as this can provide an important input to national REDD planning and implementation. An improved database on national biodiversity will increase the likelihood of using this information to achieve and maximise REDD co-benefits.
- If a REDD mechanism is successful in avoiding deforestation and degradation, it could free up financial biodiversity resources from areas where high carbon and high biodiversity benefits

coincide. Thus for OECD countries, biodiversity-targeted international funding should be flexible and seek to avoid double payments. Rather, biodiversity-targeted funding should aim to complement REDD financing *e.g.* focussing in areas with high biodiversity and low carbon benefits.

- The on-going REDD demonstration activities (or pilots), which are encouraged under the UNFCCC 2007 Bali Action Plan as a means to prepare and obtain experience for future REDD programmes, provide a valuable opportunity for biodiversity policy-makers to promote and financially support biodiversity monitoring, reporting and verification in REDD demonstration activities to assess biodiversity performance over time. This will enable the analysis, comparison, and evaluation of different approaches and methods used to promote biodiversity co-benefits in REDD. Lessons learned during the implementation of these REDD demonstration activities can ultimately feed into the international and national level policy-making processes.
- Biodiversity policy-makers may wish to consider the creation of a technical expert group on Promoting REDD Biodiversity Co-benefits to establish best-practice guidelines and principles, including on indicators for biodiversity. Such a group could in effect develop a “how-to” tool-kit to assist developing countries implementing REDD activities at the national, regional and/or local level.

In addition to these design and implementation considerations for enhancing biodiversity *co-benefits* in REDD, additional policies and incentives can be created to target biodiversity *benefits* directly, as a complement to any future REDD mechanism. This would involve making multiple payments for the multiple benefits provided by forests. These payments for biodiversity conservation can be mobilised via voluntary or regulatory approaches, and can be designed as either market- or fund-based instruments. Several voluntary initiatives have recently emerged to bundle payments for both carbon and biodiversity in forestry projects, such as the Climate, Community and Biodiversity Alliance (CCBA), PlanVivo, Carbon Fix, amongst others. It is important to note however that while these initiatives can provide valuable insights and lessons learned on how to bundle these benefits, voluntary schemes are unlikely to provide the scale necessary to create a global demand for biodiversity and to impact land-use decisions fundamentally. Just as demand for carbon allowances, certified emission reductions from the Clean Development Mechanism - and potentially REDD credits in the future - is driven by legally-binding GHG emission reduction commitments and regulated via an international carbon market, large scale international demand for biodiversity would come from large scale regulatory biodiversity policies.

JEL Classification: Q23, Q57

Keywords: biodiversity conservation, climate change deforestation, cost-benefit analysis, environmental economics

RESUMÉ

La réduction des émissions liées à la déforestation et à la dégradation des forêts (REDD) dans les pays en développement est un nouveau mécanisme financier proposé pour le régime climatique post-2012 sous l'égide de la Convention-cadre des Nations Unies sur les changements climatiques (CCNUCC). L'obtention d'un accord sur un futur mécanisme de REDD constituerait un progrès majeur et inédit vers la création d'un dispositif international visant à internaliser les services écosystémiques forestiers liés au carbone, et pourrait sensiblement contribuer à relever le défi du changement climatique global.

Les forêts jouent également un rôle essentiel pour assurer la biodiversité, et pour fournir d'autres services écosystémiques non liés au carbone. Le Plan d'action de Bali reconnaît que l'action en faveur de la REDD « peut avoir des retombées positives et servir les buts et objectifs d'autres conventions et accords internationaux pertinents ». Un exemple notable est celui de la Convention sur la diversité biologique.

Le présent rapport examine les moyens de renforcer les avantages connexes pouvant être tirés de la REDD sur le plan de la biodiversité, tant au niveau de la conception qu'à celui de la mise en œuvre. Il analyse les répercussions potentielles sur la biodiversité des différents dispositifs de REDD envisageables qui ont été avancés dans les négociations internationales sur le changement climatique et poursuit en examinant comment compléter la REDD en créant des incitations supplémentaires spécifiquement axées sur la biodiversité, de manière à cibler directement les avantages liés à celle-ci.

Les principaux aspects de la conception d'un mécanisme de REDD sur lesquels il reste à trouver un accord, et qui sont susceptibles d'avoir des répercussions sur la biodiversité, sont notamment la portée du mécanisme, son financement, les niveaux de base ou de référence, la permanence, etc. Par exemple, une approche du financement de la REDD s'appuyant sur le marché (plutôt que sur un système de fonds) permettra vraisemblablement d'obtenir des ressources financières beaucoup plus importantes (en mobilisant directement le secteur privé), d'où un plus grand volume d'activités de REDD, une superficie accrue des zones forestières conservées, et par conséquent des avantages connexes plus importants sur le plan de la biodiversité.

Dans l'ensemble, un mécanisme de REDD bien conçu sera susceptible de procurer des avantages connexes substantiels sur le plan de la biodiversité, dans la mesure où le ralentissement de la déforestation et de la dégradation contribue nécessairement à freiner la destruction des habitats et par conséquent la perte de biodiversité. Toutefois, certains des aspects de la conception d'un mécanisme international de REDD peuvent présenter des risques potentiels pour la biodiversité, par exemple les activités de boisement et de reboisement qui aboutissent à des mono-plantations, aussi peut-il être nécessaire de prévoir des mesures de sauvegarde appropriées.

Au niveau de la mise en œuvre, une poursuite des efforts pourrait contribuer à ce que les avantages connexes liés à la biodiversité puissent être pleinement intégrés aux activités de REDD de manière efficace et réfléchie. Par exemple :

- Certains financements internationaux trouveraient un emploi fructueux dans l'évaluation économique et la cartographie géographique des avantages liés à la biodiversité et aux services écosystémiques, ce qui apporterait une contribution appréciable à la planification et à la mise en œuvre de la REDD au plan national. Si le socle d'informations sur la biodiversité à l'échelle

nationale est plus solide, on aura plus de chances d'obtenir et d'optimiser les avantages connexes en utilisant ces informations.

- Si un mécanisme de REDD parvient à éviter la déforestation et la dégradation des forêts, il pourra libérer des ressources financières pour la conservation de la biodiversité dans les zones où coïncident des avantages importants sur le plan du carbone et de la biodiversité. Ainsi, ce qui concerne les pays de l'OCDE, les financements internationaux en faveur de la biodiversité devraient être flexibles et s'efforcer d'éviter les cumuls de paiements. Au contraire, ces paiements devraient viser à compléter les financements au titre de la REDD, par exemple en étant axés sur les zones où les avantages en termes biodiversité sont importants et où ceux liés au carbone sont faibles.
- Les activités de démonstration (ou pilotes) de REDD qui sont actuellement menées, conformément aux recommandations de la CCNUCC dans le Plan d'action de Bali de 2007 en préparation des programmes futurs de REDD et afin d'acquérir de l'expérience dans ce domaine, offrent aux responsables de l'élaboration des politiques de biodiversité une bonne occasion de promouvoir et soutenir financièrement les opérations de suivi, de notification et de vérification de la biodiversité, dans le cadre d'activités de démonstration de REDD qui permettront d'évaluer les résultats en matière de biodiversité au cours du temps. On pourra ainsi analyser, comparer et évaluer différentes approches et méthodes utilisées pour promouvoir les avantages connexes de la REDD sur le plan de la biodiversité. Les enseignements tirés de la mise en œuvre de ces activités de démonstration de REDD pourront à terme être pris en compte dans les processus d'élaboration des politiques à l'échelle nationale et internationale.
- Les responsables de l'élaboration des politiques de biodiversité pourraient envisager la création d'un groupe d'experts techniques sur la promotion des avantages connexes de la REDD liés à la biodiversité, qui serait chargé d'établir des lignes directrices et de définir des principes de bonnes pratiques, notamment sur les indicateurs de biodiversité. Un groupe de ce type pourrait de fait mettre au point une « trousse à outils » afin d'aider les pays en développement à mettre en œuvre des activités de REDD au niveau national, régional et/ou local.

En dehors de ces aspects de conception et de mise en œuvre à prendre en considération pour renforcer les *avantages connexes* de la REDD sur le plan de la biodiversité, des politiques et incitations supplémentaires peuvent être créées afin de cibler directement les *avantages* liés à la biodiversité, et de compléter ainsi un éventuel dispositif futur de REDD. Il s'agirait de verser de multiples paiements pour les multiples avantages fournis par les forêts. Ces paiements au titre de la conservation de la biodiversité peuvent être mobilisés au moyen d'approches volontaires ou réglementées, et conçus comme des instruments fondés soit sur les mécanismes du marché, soit sur un système de fonds. Plusieurs initiatives volontaires récentes ont consisté à grouper les paiements liés au carbone et à la biodiversité dans le cadre de projets forestier, notamment l'Alliance climat, communauté et biodiversité (CCBA), le Plan Vivo, CarbonFix, etc. Il importe toutefois de noter que si ces initiatives peuvent apporter de précieux éclairages et enseignements sur la façon de grouper ces avantages, des dispositifs volontaires ne permettront sans doute pas d'atteindre l'échelle nécessaire pour créer une demande mondiale de biodiversité et modifier fondamentalement les décisions en matière d'utilisation des terres. Tout comme la demande de crédits de carbone, de réductions certifiées des émissions au titre du Mécanisme pour un développement propre - et potentiellement de crédits de REDD à l'avenir - est déterminée par des engagements juridiquement contraignants de réduction des émissions de GES, et régulée par un marché international du carbone, seules des politiques de réglementation de la biodiversité à grande échelle donneront lieu à une demande internationale de biodiversité de grande ampleur.

Classification JEL : Q23, Q57

Mots clés : conservation de la biodiversité, changement climatique, déforestation, analyse coûts-avantages, économie de l'environnement

FOREWORD

This report on "Promoting Biodiversity Co-Benefits in REDD" was developed following an OECD joint workshop of the Working Group on Economic Aspects of Biodiversity (WGEAB) and the Annex I Expert Group (AIXG) on the UNFCCC on "Incentives to Capture the Carbon and Biodiversity Benefits for Reducing Deforestation: Linkages, Synergies and Limitations" held on March 26, 2008 (www.oecd.org/env/biodiversity). Building on presentations and discussion from delegates and experts, a draft report was prepared for the OECD WGEAB meeting on July 2, 2009. The present report incorporates the feedback received from WGEAB delegates that have overseen this work.

This report has been authored by Katia Karousakis. In addition to WGEAB delegates, the author is grateful to Andreas Tveteraas, Markus Lehmann, Tim Christophersen, Jaime Webb, John Scott and Bas Clabbers (all in their personal capacity), as well as Helen Mountford and Jan Corfee-Morlot, for valuable input and feedback.

The document does not necessarily represent the views of either the OECD or its member countries. It is published under the authority of the Secretary General.

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1. Introduction

Reducing Emissions from Deforestation and Forest Degradation (REDD) in developing countries is a new financial mechanism that is being proposed for the post-2012 climate change regime under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC). Successful agreement on a future REDD mechanism would represent a substantial and unprecedented development in the creation of an international mechanism to help internalise the costs of losing the carbon-related ecosystem services from forests and could make a potentially significant contribution to addressing the global climate change challenge.

Forests play a key role in tackling climate change. Emissions from land use change, primarily deforestation, are estimated to contribute up to 17% of global greenhouse gas (GHG) emissions (IPCC, 2007) – the third largest source of anthropogenic GHG emissions after energy supply and industrial activity.¹ Forests also play a key role in the provision of biodiversity (as well as other non-carbon ecosystem services), harbouring at least 50% of the global terrestrial richness in species, mainly in the tropics (MEA, 2005). As REDD discussions under the UNFCCC have evolved, the biodiversity community has shown increasing interest in the potential for REDD to contribute to biodiversity conservation and sustainable use.

This report examines the possible synergies between the role of forests in mitigating climate change and the role of forests in biodiversity conservation and sustainable use. The aim is to identify opportunities for how biodiversity co-benefits of REDD can be maximised at the international, national and local level. The paper also examines how additional biodiversity incentives could be created, to complement a REDD mechanism, so as to further capture and market biodiversity benefits directly.

The report is organised as follows: Section 2 provides an overview of the evolution of REDD under the UNFCCC, and potential implications of different REDD design options on biodiversity. Section 3 examines how biodiversity co-benefits in REDD could be maximised and provides examples of tools to facilitate its implementation. Section 4 discusses synergies that could be harnessed to go beyond the biodiversity co-benefits in REDD, existing initiatives that are underway, and how these could be scaled-up and improved. Section 5 concludes.

2. REDD and Biodiversity

2.1 *Background: The Evolution of REDD under the UNFCCC*

The ultimate objective of the 1992 UNFCCC is to stabilise GHG concentrations at a level that would prevent dangerous anthropogenic interference with the climate system. Under the 1997 Kyoto Protocol, most Annex I (or industrialised) countries agreed to nationally binding quantified emission limitation and reduction objectives (QELROs)² for the first commitment period (2008 to 2012). To lower the aggregate costs of achieving the emission targets, the Kyoto Protocol allows Annex I Parties to utilise a number of flexible mechanisms, including under Article 12, allowing Annex I Parties to invest in emission reduction projects (*i.e.* offsets) in developing countries via the Clean Development Mechanism (CDM). With respect

¹ To reach a stabilisation of GHG emissions in the atmosphere at a concentration of e.g. 450ppm CO₂e, the Eliasch Review (2008) argues forests will be an essential element to attain this target. Current studies also suggest that REDD is likely to be low-cost mitigation option relative to other GHG emission reduction alternatives (e.g. IPCC, 2007; Kindermann *et al.* 2008).

² Including emissions from the Land Use, Land Use Change and Forestry (LULUCF) sector.

to the forestry sector, only afforestation and reforestation projects are currently eligible under the CDM. Avoided deforestation was not included due to concerns with *inter alia* adequacy of monitoring capabilities, and the ability to ensure additionality.³

At the UNFCCC 11th Conference of Parties (COP-11; December, 2005) Papua New Guinea proposed to integrate reducing emissions from deforestation (RED) in developing countries into the post-2012 climate change regime. A formal process was subsequently launched whereby Parties were invited to consider issues "...relating to reducing emissions from deforestation in developing countries, focusing on relevant scientific, technical and methodological issues, and the exchange of information and experiences, including policy approaches and positive incentives" for potential recommendation to the UNFCCC at COP-13 (December, 2007). The Bali Action Plan, adopted by Parties at COP-13, mandates Parties to negotiate a post-2012 instrument, including possible financial incentives for forest-based climate change mitigation actions in developing countries. COP-13 also adopted a decision on "Reducing emissions from deforestation in developing countries: approaches to stimulate action".⁴ This decision encourages Parties to explore a range of actions, identify options and undertake efforts, including demonstration activities, to address the drivers of deforestation and forest degradation. The scope of RED was thus extended to include forest degradation (REDD). The REDD demonstration activities (*i.e.* pilot activities) in developing countries are intended as a means to obtain practical experience and generate lessons learned to feed into any post-2012 REDD mechanism. More recently, the notion of REDD was expanded to include conservation, sustainable forest management, and enhancement of carbon stocks, as listed in the Bali Action Plan (Decision 1/CP.13), and is collectively referred to as 'REDD-plus'.⁵

Although REDD is necessarily focused on addressing carbon emissions, the Bali Action Plan recognizes that actions to support REDD "can promote co-benefits and may contribute to achieving the aims and objectives of other relevant international conventions and agreements" (Decision 2/CP.13). A notable example is that of the Convention on Biological Diversity.

2.2 REDD Design Options and Potential Implications for Biodiversity

The REDD negotiation process is still underway and will ultimately need to be integrated into any wider climate agreement reached in Copenhagen (UNFCCC COP-15; December 2009) and beyond.⁶ There are still a number of REDD methodological and technical issues that remain to be resolved (see Karousakis and Corfee-Morlot, 2007). Key design elements of a REDD mechanism that need to be agreed upon, which are likely to have implications for biodiversity, include: the scope of the mechanism; financing; the establishment of baselines/reference levels; permanence; gross vs. net deforestation; and how local communities are included in REDD. Each of these international design elements are examined in turn below.

³ *i.e.* that emission reductions achieved as a result of a project are additional to what would have occurred in the business-as-usual counter-factual.

⁴ Decision 2/CP.13

⁵ Ad Hoc Working Group on Long-term Cooperative Action under the Conventions (AWG LCA) Chair proposal of March 2009, FCCC/AWGLCA/2009/4. The draft REDD text prepared for the COP-15 negotiations in Copenhagen is contained in Non-paper No. 39. http://unfccc.int/meetings/ad_hoc_working_groups/lca/items/5012.php

⁶ Key issues for agreement on a post-2012 climate change regime include enhanced mitigation commitments and actions by developed countries, and nationally appropriate mitigation actions in developing countries, taking into account differences in national circumstances.

2.2.1 *Scope: REDD and REDD-plus*

Any future REDD mechanism that addresses emissions from deforestation and forest degradation in developing countries is expected to have significant positive impacts on biodiversity since a decline in deforestation and degradation implies a decline in habitat destruction and thus in biodiversity loss. At the global scale for example, Turner *et al.* (2007) examine how ecosystem services (including climate regulation) and biodiversity coincide. Overall their findings suggest greatest synergy in tropical forests. At the national and local scale, achieving REDD in areas of both high carbon stocks and high biodiversity can contribute to climate change mitigation and further enhance co-benefits related to biodiversity conservation and sustainable use.

A REDD-plus mechanism that also encompasses conservation, sustainable forest management, and the enhancement of carbon stocks could have additional positive impacts on biodiversity, in particular where this is achieved through the appropriate restoration of degraded forest ecosystems and forest landscapes. If afforestation and reforestation (A/R) activities are also included in a future REDD mechanism, biodiversity benefits could arise from incentives to regenerate forests in previously deforested areas and increased connectivity between forest habitats. Moreover, the use of mixed native forest species can yield multiple benefits for biodiversity. In contrast, afforestation and reforestation activities that resulted in mono-plantations and the potential use of invasive alien species in plantations could have adverse impacts on biodiversity (CBD, 2009). There is a need therefore for safeguards to avoid potential negative effects.

2.2.2 *Financing REDD: Market-based, fund-based and phased approaches*

There are currently three prevailing proposals to generate REDD financing: Market-based approaches, fund-based approaches and phased approaches.⁷ These have implications for the promotion of biodiversity co-benefits in a REDD framework and for the involvement of possible stakeholders in the decision-making processes.

Market-based approaches

If REDD were financed via the international carbon market, REDD credits would need to be fungible with existing Assigned Amount Units (AAUs) under the Kyoto market.⁸ The unit of exchange would therefore be in tonnes of carbon or equivalents thereof (tCO₂e). Demand for these REDD credits would be generated by the regulated international carbon market and the market would drive investment to the least-cost carbon mitigation options. Market-based approaches to REDD are likely to mobilise higher levels of sustainable and long-term financing, due to their ability to fully engage the private sector. Thus the more finance available for REDD, the greater the area of forests conserved and hence the larger the biodiversity co-benefits are likely to be.

⁷ In the pilot and demonstration activities, in particular for the REDD 'readiness' phase (*i.e.* structural and regulatory preparations and capacity building), predominantly fund-based grants are used, which might increasingly be accompanied by loans (e.g. when World Bank Forest Investment Programme becomes operational). Private sector investments might further complement the available funding during the REDD readiness phase, if an agreement on REDD is reached at UNFCCC COP-15.

⁸ REDD credits could also be fungible with permits/allowances under existing (domestic) emission trading schemes such as the European Union Allowances (EUAs) under the EU Emissions Trading Scheme.

Depending on how REDD baselines⁹ are determined (*i.e.* national vs. sub-national¹⁰ and project level – see Section 2.2.3), different stakeholders could prioritise REDD activities so as to promote biodiversity co-benefits.¹¹

Fund-based approaches

Fund-based approaches for REDD can be designed to disburse finances based on objectives and criteria established by donor (and host) countries. For example, whereas financing from the carbon market would necessarily deliver emission reductions, fund-based approaches to REDD could be used to finance emissions reductions and/or to support capacity-building needs in developing countries that would enable REDD markets to work.

How the funds are generated can have implications for how the funds should be disbursed. Current proposals for generating REDD funds include voluntary contributions from national budgets (*e.g.* as with ODA), auctioning allowances, levies on emission reduction units from joint implementation projects, and taxes on carbon-intensive commodities and/or international transport emissions.

- If funds for REDD were mobilised via central coffers, then governments could in theory disburse the money any way they wished¹², including by prioritising REDD activities in areas with high biodiversity co-benefits (and thus enhancing cost effectiveness in forest investments). Though this may imply greater flexibility for governments to pursue specific objectives, it is generally recognised that reliance on national contributions on a voluntary basis is unlikely to mobilise sufficient, predictable and long-term sources of financing that is needed for REDD climate change mitigation (and hence therefore nor for maximising biodiversity conservation co-benefits in REDD).¹³
- If alternatively, funds were generated via the auctioning of AAUs for example, and the objective of the REDD fund-based mechanism were to extend *beyond* biodiversity co-benefits (see Section 4 for discussion), then GHG polluters would be bearing the costs of biodiversity conservation in addition to the costs of GHG emission reductions. This is not in line with the polluter pays principle. Ideally, one would want those causing biodiversity loss/damage to be paying (and thus internalising) these costs.

Phased approaches

More recently, several Parties have proposed the use of a phased approach for REDD financing¹⁴, whereby different sources of financing would be mobilised depending on developing country national

⁹ A baseline is the reference level below which emission reductions are credited (or paid for).

¹⁰ Sub-national refers to States or provinces, or regions within countries.

¹¹ There are also ways in which additional biodiversity benefits could be bundled with REDD credits (see Section 4).

¹² This also depends on whether ODA REDD funding were disbursed bilaterally or multilaterally. If via the latter, Parties may well set up eligibility criteria which would need to be agreed upon at the international level (see Karousakis and Corfee-Morlot, 2007 for further discussion on REDD eligibility criteria).

¹³ See OECD 2008 DAC CRS for information on ODA statistics on biodiversity- and climate-related aid. Biodiversity-related bilateral aid by DAC members in 2005/2006 amounted to USD 2687 million (2006 prices), or 2.6% of total bilateral aid.

¹⁴ See *e.g.* UNFCCC submissions by Papua New Guinea and the Coalition of Rainforest Nations, Norway, and the Meridian Institute Report www.redd-oar.org.

circumstances and the purpose for which the financing would be used. More specifically, 3 phases are proposed: (i) Voluntary funding for capacity building; (ii) a binding finance instrument for policies and measures; and (iii) markets for emission reductions.¹⁵ The biodiversity-related implications for the different phases of fund vs. market approaches to financing are similar to those discussed above.

2.2.3 Baselines/reference levels: National vs. sub-national (including project-level) approaches

REDD baselines are essential as they provide a reference against which emissions performance can be assessed. REDD baselines /reference levels could be established either at the national accounting level and/or at the sub-national (including project-) accounting level.¹⁶ From an environmental perspective, the baseline accounting level has implications for carbon leakage, as well as for biodiversity leakage. Carbon leakage refers to the displacement in anthropogenic emissions by GHG sources which occur outside the accounting boundary, *i.e.* if deforestation and/or forest degradation (and thus emissions) increase elsewhere as a result.¹⁷ Both intranational and international leakage under REDD can therefore have adverse consequences for carbon as well as for biodiversity. Leakage can be detrimental in the case of biodiversity if deforestation/degradation is displaced from an area with low biodiversity value to another forest area with higher biodiversity value. In general, national level accounting of emissions is better able to account for intranational carbon leakage than sub-national and/or project level accounting (Angelsen *et al.* 2008) and is also better-suited to provide incentives for national-level strategies and implementation of policies and measures necessary to achieve and sustain emission reductions from the forestry sector (Karousakis and Corfee-Morlot, 2007).¹⁸ However, if REDD is successful, it should free up financial resources in biodiversity conservation (*i.e.* from high carbon/high biodiversity areas). These conservation resources could then be redirected to target forest areas with low carbon/high biodiversity values (see *e.g.* Miles and Kapos, 2008).

The choice of the baseline design also has implications on who may be able to integrate biodiversity considerations into REDD activities. If REDD baselines/reference levels are determined at the national level, then the host country could decide where REDD activities could be prioritised, and could thus establish guidelines or methodologies that aimed to promote biodiversity co-benefits within a REDD system.¹⁹ If instead REDD baselines/reference levels are established at the project level, then investors (or perhaps fund managers if it is a fund-based mechanism) would decide which REDD projects to invest in.

¹⁵ Note that even in Phase 3 one could have a mechanism that generates funding through the market but is not necessarily fungible with carbon markets.

¹⁶ There are different views regarding what data/ methodology the REDD baselines/reference levels could be based upon. These include the use of historic data; historic with a development adjustment factor; or via projections (see *e.g.*, GCP, 2009 for a summary). REDD credits/payments would not necessarily be generated for deviation below business-as-usual (BAU) projections: Several Parties (*e.g.* the EU, Papua New Guinea) have called for ambitious baselines (*i.e.* below BAU projections) taking into account respective capabilities of developing countries. This would, in effect, move beyond current offsetting practices, prevalent in the CDM, to *supplemental* global emission reductions.

¹⁷ The extent of leakage depends on the elasticity of demand.

¹⁸ Monitoring emission reductions from deforestation/degradation requires two types of data: changes in forest stocks and changes in carbon stocks.

¹⁹ If a REDD mechanism is developed at the national scale, there is a risk of double counting for voluntary markets. To address this, a national registry, that would be needed for REDD implementation, might therefore also require that all voluntary credits are centrally registered.

2.2.4 *Permanence*

Permanence in the context of REDD refers to the possibility that emission reductions which are credited or paid for in one period, may subsequently be emitted at a later date due to natural or anthropogenic disturbances. There are a number of ways however in which the permanence issue can be addressed in REDD policy design. The establishment of credit reserves or insurance mechanisms are two examples.

There is a further permanence issue more closely related to biodiversity, via the links between biodiversity to facilitate climate change mitigation and adaptation. More specifically, Thompson *et al.* (2009) state “The permanence of efforts under UNFCCC negotiations, such as reducing emissions from deforestation and forest degradation (REDD), and of other forest-based climate change mitigation and adaptation policies and measures, is linked to the resilience of forests, and thus to forest biodiversity. REDD activities therefore should take biodiversity conservation into consideration, as this will help maintain forest ecosystem resilience and the long-term stability of the carbon pool.”

2.2.5 *Gross vs. net deforestation*

A further issue that remains to be negotiated is whether gross or net deforestation rates will be considered when estimating emission reductions. Net deforestation (net loss of forest area) is defined in the FAO Global Forest Resources Assessment (2005) as overall deforestation minus changes in forest area due to forest planting, landscape restoration and natural expansion of forests. From a climate perspective, the most relevant carbon figure is what the atmosphere experiences (which is rationale for using net-values). The use of net rates however could hide the loss of mature (*i.e.* primary and modified natural) forests and their replacement *in situ* or elsewhere with areas of new forest. This could be accompanied by significant losses in biodiversity (see CBD 2009).

2.2.6 *Local communities and indigenous peoples*

The need and possible approaches to appropriately account for any potential risks of REDD on local communities and indigenous peoples are also being discussed (see Pesket *et al.* 2008). Potential adverse impacts stem primarily from the lack of clearly defined and well-established and enforced property rights in some potential REDD-host countries. Indigenous peoples play an important role in biodiversity conservation and sustainable use (Sobrevila, 2008). Inadequate safeguards to protect their rights might therefore have indirect adverse impacts for biodiversity.

3. Promoting Biodiversity Co-benefits in REDD: Targeting Multiple Ecosystem Services

In addition to the internationally-agreed design characteristics of a REDD financial mechanism, there are specific ways that biodiversity co-benefits of REDD can be promoted and/or maximised in REDD implementation. The notion of promoting or maximising biodiversity co-benefits under a REDD financial mechanism (whose ultimate aim is to mitigate climate change) is essentially that of targeting multiple ecosystem services. To achieve cost-effective outcomes, which in turn enable greater environmental benefits to be achieved, targeting multiple ecosystem services requires spatially explicit cost-benefit analysis. This involves the following:

- Identifying areas with high ecosystem services benefits (in this case carbon and biodiversity)
- Identifying areas of high risk of deforestation and degradation
- Evaluating opportunity costs

Once these have been addressed, it is necessary to develop the appropriate policies and incentives to capture and market the benefits.

3.1 *Identifying areas with high ecosystem services benefits*

Identifying areas with high carbon benefits, as well as those with high biodiversity benefits, requires tools to assess where these occur geographically and where they are spatially correlated. By economically evaluating and mapping where areas with high carbon benefits overlap with high biodiversity benefits, government and/or private-sector investors can potentially capture two environmental services for the price of one.

To ensure national ownership of any list of identified areas, this also requires a stakeholder and expert process, driven by the sovereign government. A blueprint for this exercise, as well as first results that can be used for the purpose of identifying priority REDD areas, are available through the national gap analyses under the CBD Programme of Work on Protected Areas.²⁰ The national gap analyses, carried out by Parties to the CBD, could be a useful tool for identifying areas for the location of REDD activities, in particular regarding the identification of priority forest areas for REDD activities at national level (CBD, 2009).²¹

Several efforts have been initiated at international level to establish and improve such tools/maps. One example is the Carbon and Biodiversity Demonstration Atlas, produced by UNEP's World Conservation Monitoring Centre (WCMC) (Kapos *et al.* 2008). The Atlas includes regional maps as well as national maps for six tropical countries showing where areas of high carbon storage coincide with areas of biodiversity importance. Figure 1 illustrates the national map for Panama, where it is estimated that 20% of carbon is stored in high carbon, high biodiversity areas. The maps also show where existing protected areas are high in both carbon and biodiversity.

As mentioned above, carbon is measured in units of tCO_{2e}. In contrast, Figure 1 suggests the variety of possible approaches to identify areas of high biodiversity. UNEP-WCMC has used 6 indicators for biodiversity, namely Conservation International's Hotspots, WWF 200 Ecoregions, Birdlife International Endemic Bird Areas, Amphibian Diversity Areas, Centers of Plant Diversity, and the Alliance for Zero Extinction Sites. Areas of "high biodiversity", as classified by UNEP-WCMC, are areas where at least four of the global priorities overlap, with areas in dark green indicating a greater degree of overlap.²²

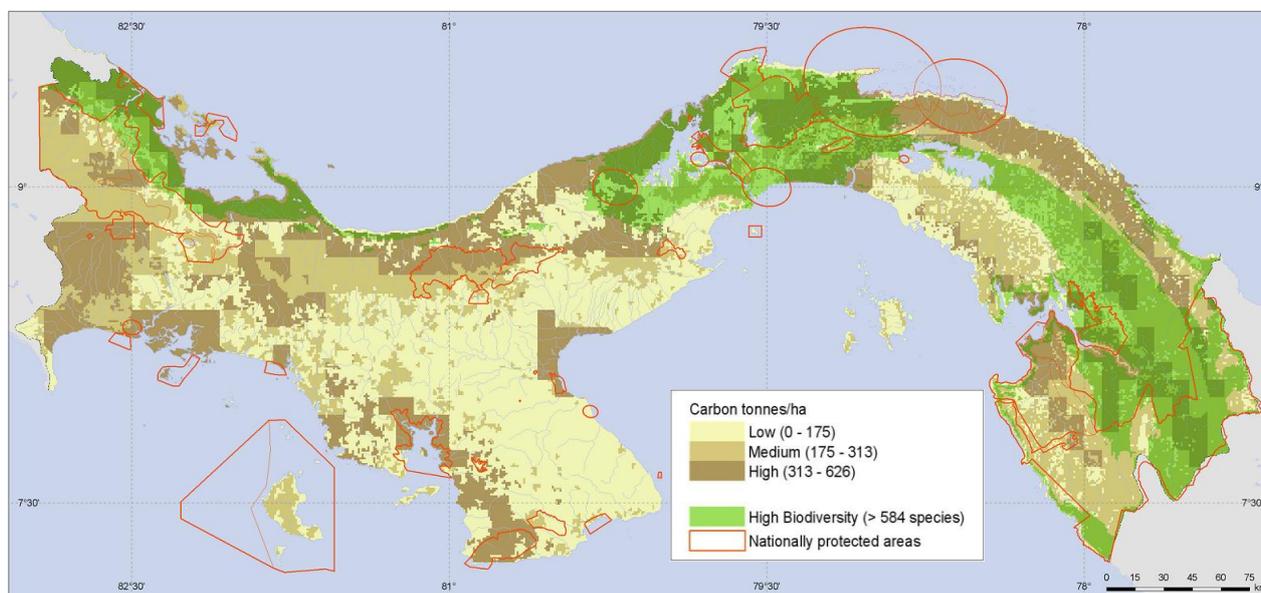
These types of maps represent areas of biodiversity priorities as defined by different groups. They do not necessarily identify areas with high biodiversity benefits in economic terms. Ideally, spatial maps on biodiversity benefits would incorporate the total economic value of these sites, with an assessment of both direct and indirect use values. Benefits transfer methods, which involve taking economic values from one context and applying them to another, could potentially be used to help establish these values, where site-specific analyses do not exist, but it is still likely to be a data and time-intensive exercise.

²⁰ www.cbd.int/doc/programmes/cro-cut/pa/pa-redd-2008-12-01-en.pdf

²¹ The World Bank Forest Carbon Partnership Facility (FCPF) and the UN-REDD programme are also working to identify ways to enhance biodiversity co-benefits in REDD in the ongoing REDD demonstration activities. See Annex I for information on the FCPF.

²² These national-scale maps draw, where possible, on finer scale nationally developed biodiversity datasets. The WCMC maps are intended solely as demonstrations of how combining spatial data can help to identify areas where carbon and biodiversity benefits coincide.

Figure 1. Example of a UNEP WCMC National Map: Panama



Source: Kapos *et al.* 2008.

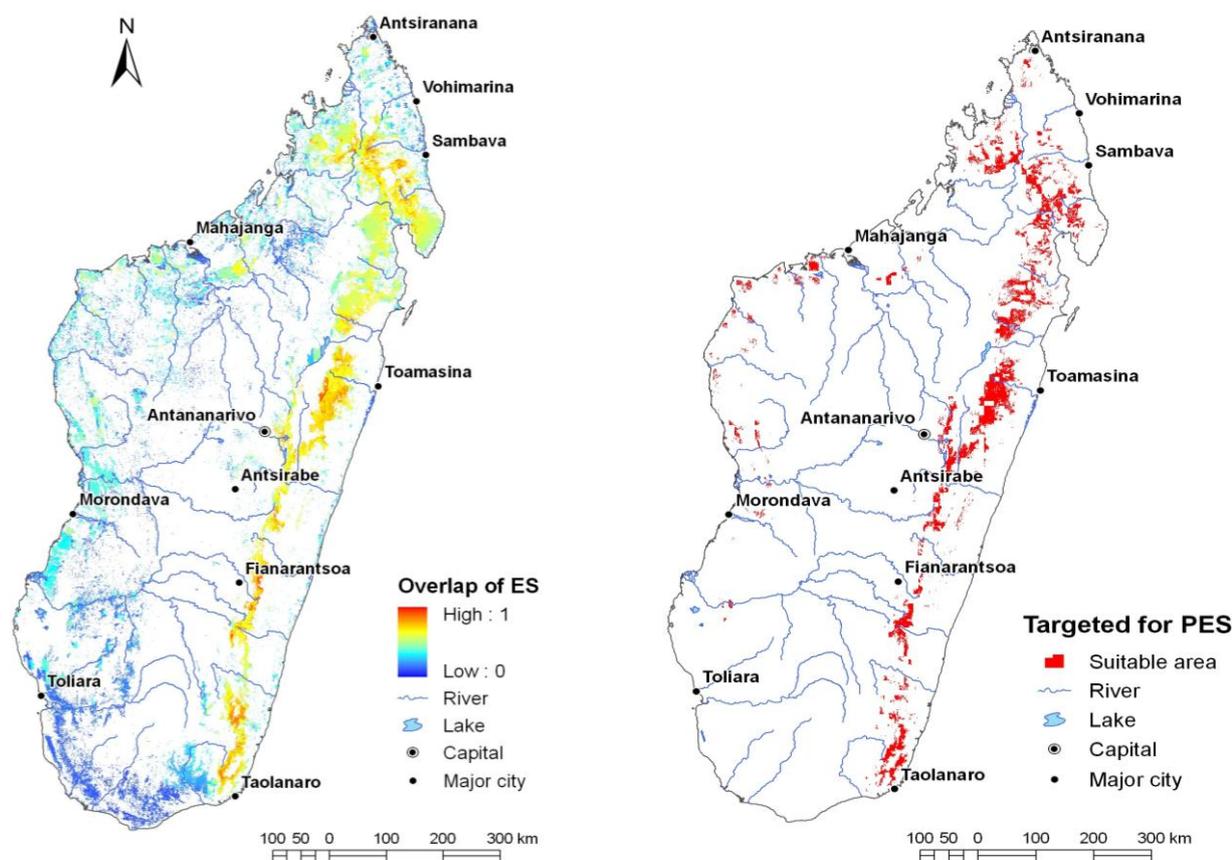
Efforts to estimate the economic values of biodiversity at spatial scale are already underway in certain locations (*e.g.* Wuensher *et al.* 2008; Wendland *et al.* 2009), including those by Conservation International (CI) and other NGOs. For example, Wendland *et al.* (2009) estimated the probability of deforestation in Madagascar and created an opportunity cost layer based on land used for agricultural production and land used for subsistence crops. A ranking system was then devised for high vs. low opportunity cost areas. The left panel of Figure 2 depicts the overlap between multiple ecosystem services in forest and wetlands; the right panel indicates where payments would be suitable, after taking account of additionality (*i.e.* that payments result in the provision of ecosystem services, additional to what would have occurred anyway) and opportunity cost issues.²³

According to UNEP-WCMC (2008), “REDD-related decision-making at the national scale will need to be based, if at all possible, on nationally developed data for both carbon stocks and biodiversity”. The IPCC has already established Good Practice Guidance for Land Use, Land Use Change and Forestry and methodologies for GHG emissions.²⁴ A technical expert group could be established to develop best-practice methods or guidance for how nationally-developed data for biodiversity could be collected to maximise synergies with REDD data collection and REDD implementation. Any such expert group should include representatives of forest-dwelling indigenous peoples and local communities in order to integrate traditional knowledge related to biodiversity within mapping processes.

²³ See www.oecd.org/env/biodiversity for all presentations from the OECD workshop on Incentives to Capture Biodiversity and Carbon Benefits for Reducing Deforestation (March 26, 2008), and other information.

²⁴ IPCC GPG-LULUCF provides supplementary methods and good practice guidance for estimating, measuring, monitoring and reporting on carbon stock changes and GHG emissions from LULUCF activities. This consists of a three tiered approach.

Figure 2. Targeted Payments for Ecosystem Services in Madagascar



Source: Adapted from Wendland *et al.* 2009.

3.2 Identifying high risks of deforestation and degradation

To ensure that financial incentives are indeed effectively reducing deforestation and forest degradation, payments must be targeted to forest areas that are at risk of conversion to alternative land-uses. Payments would otherwise be made to areas that would have been conserved anyway, implying that limited financial resources would be squandered. This is the additionality issue, a key issue under the REDD climate negotiations, and is intricately linked to baselines / reference levels (as discussed in section 2.1.3). This issue is therefore not specific to promoting biodiversity co-benefits in REDD and is not addressed here.

Identifying areas with high risks of deforestation and forest degradation should not necessarily result in the exclusion from eligibility of protected areas. Many protected areas suffer from poor management or a lack of adequate resources including for enforcement, which make them unable to adequately protect forest species and ecosystems. However, provisions for protected areas need to be designed with care as there are possibilities for perverse incentives on both accounts: some developing countries may have incentives to degazette their protected areas in anticipation of REDD payments. If protected areas are included however, it will be important to ensure that REDD payments are indeed additional. Including protected areas *de facto* may provide incentives for governments to claim they cannot sufficiently fund protected areas (and even reduce national funding to protected areas) so as to obtain international financing via a REDD mechanism. This may also raise fairness issues with other developing countries that have

made the needed investments for effectively protecting areas. The inclusion, or not, of protected areas as eligible in a potential REDD mechanism will clearly be a difficult issue to resolve and, if they are included, measures will be needed to avoid these perverse effects.

3.3 *Evaluating opportunity costs*

Evaluating opportunity costs of alternative land uses is needed to ensure that the limited financial resources are allocated in the most cost-effective manner. This issue is not specific to biodiversity and will be addressed via REDD. In general (albeit simplistically), if a market-based approach is used for REDD, the market will drive REDD activities to least-cost activities. If a fund-based approach is used for REDD, methods will be needed to ensure that funds are disbursed in a cost-effective manner (there is an increasingly large literature for example on improving the cost-effectiveness of Payments for Ecosystem Services).²⁵

With respect to developing the appropriate policies and incentives to capture and market the benefits, section 2 outlined how REDD could be designed to enhance and maximise biodiversity co-benefits. Section 4 examines how policies and incentives to complement any future REDD mechanism could be designed to go beyond the biodiversity *co*-benefits, to target and capture biodiversity benefits directly.

4. **Beyond Biodiversity Co-benefits in REDD: Multiple Payments for Multiple Benefits**

It is possible to capture more than the biodiversity *co*-benefits in REDD (*i.e.* which implies two for the price of one) by creating supplementary incentives to capture and market additional biodiversity benefits. This involves making multiple payments for the multiple benefits provided by forests. Such payments for biodiversity conservation can be mobilised via voluntary or regulatory approaches, and can be designed as either market- or fund-based instruments.

Voluntary markets enable companies and individuals to purchase “units” of ecosystem services on a purely voluntary basis²⁶; regulatory markets are created and regulated by mandatory regional, national, and/or international regimes, whereby such units are used for compliance purposes. Similarly, voluntary or regulatory fund-based approaches for biodiversity conservation could also be used to supplement REDD finances so as to explicitly target areas with high biodiversity benefits.²⁷

Voluntary Markets that Bundle Carbon and Biodiversity Benefits

Similar to existing Gold Standard CDM credits²⁸, voluntary premiums for “Green Standard” REDD credits are also possible *i.e.*, voluntary premiums for REDD credits that provide additional biodiversity benefits. Indeed there are to date already several examples of initiatives that bundle carbon and biodiversity benefits for the voluntary carbon market. These include, *inter alia*, the Climate, Community

²⁵ See May 2008 Special Issue of Ecological Economics.

²⁶ Willingness-to-pay for this premium is motivated by *inter alia* the possibility to retain a competitive edge in an industry with environmentally-minded customers, or at the individual level, for intrinsic or altruistic reasons.

²⁷ These initiatives could be undertaken unilaterally, bilaterally or multilaterally at government, private sector or NGO level. For multilateral government level involvement, the domain for these decisions would be the UNCBD; not the UNFCCC.

²⁸ Gold Standard CDM credits in effect bundle GHG emission reductions (carbon benefits) with sustainable development benefits. For a CDM project to generate Gold Standard CDM credits, specific sustainable development criteria must be met, *i.e.*, above and beyond requirements under the UNFCCC. Gold Standard CDM credits are voluntary, and due to their higher “quality”, entail a price premium in comparison with a UNFCCC accredited CDM credit. For more information see www.cdmgoldstandard.org/

and Biodiversity Alliance (CCBA), Plan Vivo, CarbonFix, Social Carbon, and the Californian Climate Action Registry (CCAR)²⁹ (see Box 1).

Box 1. Examples of Voluntary REDD-Bundling Initiatives

- The Climate, Community and Biodiversity Alliance – a partnership between research institutions, corporations and non-governmental organisations- has developed voluntary standards to help design and identify land management projects that simultaneously minimize climate change, support sustainable development and conserve biodiversity. The CCBA has 17 Standards criteria, 14 of which are required and 3 of which are optional. Three of the required criteria pertinent to biodiversity are: 1) Net positive biodiversity impacts; 2) Offsite biodiversity impacts; and 3) Biodiversity impact monitoring. Projects are audited by independent third party certifiers and each project is subject to a 21 day public comment period.
- CarbonFix has developed a standard to help ensure positive socio-economic and ecological benefits of climate forestation projects. They recently issued the first *green* carbon credits. CarbonFix requires that 30% of credits be retained in a buffer reserve and replanting to be undertaken 12 months after harvesting. Dual certifications under CarbonFix and the CCB Standard or Forests Stewardship Council are already possible.
- A Plan Vivo Certificate is an environmental service certificate representing the long-term sequestration of one tonne CO₂, plus additional ecosystem and livelihood benefits, including biodiversity conservation through expansion and strengthening of protected areas and native species.
- Social Carbon has designed a social carbon methodology (SCM) which examines 6 areas/objectives:
 - Biodiversity Resource The combination of species, ecosystems and genes that form the biological diversity present in any region. Relevant aspects of this component are the integrity of natural communities, the way people use and interact with biodiversity, the state of conservation, pressures and threats imposed on native species, and the existence of priority areas for conservation.
 - Natural Resource The stock of natural resources (e.g. soil, water, air, genetic resources) and environmental services (soil protection, maintenance of hydrological cycles, absorption of pollution, pest control, etc.) from which those resources derive.
 - Financial Resource The basic capital (money, credit/debt and other economic goods) available to people and organizations.
 - Human Resource The skill, knowledge and capacity for work that people possess, as well as good health.
 - Social Resources Work networks, social demands, social relations, relationships of trust, and association in social groups.
 - Carbon Resource The type of carbon project being developed.

Current Status in Selected Voluntary REDD-bundling Initiatives

	Number of projects
Climate, Community and Biodiversity Alliance	13 approved 25 undergoing validation
CarbonFix	1 certified 7 in the pipeline
Plan Vivo	3 operational 10 in application process

Source: Author, as of November 2009.

²⁹ For more information see: www.climate-standards.org; www.carbonfix.info; www.planvivo.org; www.socialcarbon.org

Prices of these voluntary REDD-bundling credits vary according to integrity of the standard applied but should be only be taken as indicative at this stage. Price differentiation will become clearer between the standards as the market matures.³⁰ According to the 2009 forest carbon offsetting survey, one of the three most important factors in the purchasing decisions of buyers of forestry credits is the potential for generating biodiversity benefits (which ranked equally important with the type of the project and the price). About a third of the respondents to the survey indicated that they would be willing-to-pay premiums of USD 4 and more per offsets that are also CCBA certified (Ecosecurities, 2009).

Though such voluntary biodiversity premiums in REDD can help to capture and market more than just the biodiversity *co*-benefits associated with REDD, it is important to note that voluntary schemes are unlikely to provide the scale necessary to create a global demand for biodiversity and change land prices fundamentally (Blom *et al.* 2008). Just as demand for carbon allowances, CDM CERs – and potentially REDD credits in the future – is driven by legally-binding GHG emission reduction commitments and regulated via an international carbon market, large scale international demand for biodiversity would come from large scale regulatory policies to ensure biodiversity conservation and sustainable use.

5. Concluding Remarks

Successful agreement on a future REDD mechanism at UNFCCC COP-15 and beyond would represent a substantial and unprecedented development in the creation of an international mechanism to help internalise the carbon-related ecosystem services from forests. By providing positive incentives to reduce emissions from deforestation and forest degradation in developing countries, a future REDD mechanism is likely to result in significantly promoting biodiversity *co*-benefits. If REDD includes conservation, sustainable forest management, and the enhancement of carbon stocks, even more so.

Some international REDD design elements however may pose risks to biodiversity, for example by providing perverse incentives to deforest in advance of a REDD mechanism coming in to force (*e.g.* so as to lower the baseline of forested area) or by encouraging the use of mono-plantations in afforestation/reforestation activities rather than the use of mixed native forest species. There is a need therefore for safeguards to avoid potential negative effects on biodiversity.

At the same time, overemphasis on non-climate change objectives and related biodiversity criteria in a REDD mechanism carries the risk of raising transaction costs associated with REDD, thereby resulting in less forest conservation and could therefore ultimately be counter-productive for biodiversity conservation and sustainable use. Though a REDD mechanism offers opportunities to realise both carbon and promote biodiversity *co*-benefits, the limitations of a REDD mechanism to act as a panacea for biodiversity loss need to be recognised. This report has examined ways in which biodiversity *co*-benefits in REDD can be promoted at the design and implementation phase, and how supplementary incentives to capture and market additional biodiversity benefits can be created and bundled together with a REDD mechanism.

Specific suggestions for biodiversity policy-makers include the following:

- Some international financing would be well-invested in economically evaluating and geographically mapping biodiversity and ecosystem services benefits as this can provide an important input to national REDD planning and implementation. An improved information base on national biodiversity will increase the likelihood of achieving and maximising biodiversity *co*-benefits in REDD.

³⁰ www.carbonpositive.net.

- For OECD countries, biodiversity-targeted international funding should be flexible and seek to avoid double payments. Rather, biodiversity-targeted funding should aim to complement REDD financing *e.g.* focussing in areas with high biodiversity and low carbon benefits.
- The on-going REDD demonstration activities provide an invaluable opportunity for biodiversity policy-makers to promote and financially support biodiversity monitoring, reporting and verification in REDD demonstration activities to enable biodiversity performance assessment over time. This will enable the analysis, comparison, and evaluation of different approaches and methods used to promote biodiversity co-benefits in REDD. Lessons learned during the implementation of these REDD demonstration activities can ultimately feed into the international and national level policy-making processes.
- Finally, biodiversity policy-makers may wish to consider the creation of a technical expert group on Promoting REDD Biodiversity Co-benefits to establish best-practice guidelines and principles, including on indicators for biodiversity. Such a group could in effect develop a “how-to” tool-kit for developing countries that are implementing REDD activities at the national, regional and/or local level.

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ANNEX 1:

REDD DEMONSTRATION ACTIVITIES, THE FCPF AND BIODIVERSITY

“As of March 13, 2009, 37 countries from Asia, Latin and Central America, and Africa have been selected as REDD Country Participants in the FCPF Readiness Mechanism, based on Readiness Plan Idea Notes reviewed by the Participants Committee and independent reviews by a Technical Advisory Panel. Many of these REDD Country Participants will receive grant support to develop a Readiness Plan, which contains a detailed assessment of the drivers of deforestation and degradation, terms of reference for defining their emissions reference level based on past emission rates and future emissions estimates, establishing a monitoring, reporting and verification system for REDD, and adopting or complementing their national REDD strategy.”

“So far about US\$107 million has been contributed by 11 Donor Country Participants in the Readiness Fund, with the target being to raise US\$185 million to support the REDD Readiness efforts of the 37 countries selected into the FCPF. The target for the Carbon Fund is US\$200 million, of which about US\$51 million has been pledged already.”

Source: <http://www.forestcarbonpartnership.org/fcp/node/12>

The REDD Readiness Preparation Proposal (R-PP) template (v.3 09-04-09) includes guidance relevant to biodiversity, namely:

Under Section 2b on REDD Strategy Options, para 3(iii) calls for “Sustainability and integration with other sector policies and strategies:

Synergies (or conflicts) between the identified options and other national development priorities, including assessment of trade-offs across development goals or sectors (*e.g.*, enhanced carbon stocks or land management capacity, but reduced local rural incomes or biodiversity in surrounding lands)”

Under Section 2d on Social and Environmental Impacts, the R-PP template states: “The assessments should give special consideration to livelihoods, rights (including those of Indigenous Peoples), biodiversity, cultural heritage, gender, the special protection of vulnerable groups in society, capacity development, governance, etc.”

In addition, under Component 4: Design a Monitoring System, the template states: “In addition, a monitoring system also builds accountability and trust among local constituencies. The system design should include early ideas on including capability (either within an integrated system, or in coordinated activities) to monitor rural livelihoods, conservation of biodiversity, key governance factors directly pertinent to REDD implementation in the country, and to assess the impacts of the REDD strategy in the forest sector. Section 4b should be targeted to design a system for monitoring these variables”...

For further information see <http://www.forestcarbonpartnership.org/fcp/>

GLOSSARY

AAU	Assigned Amount Unit
A/R	Afforestation/Reforestation
CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
ERU	Emission Reduction Unit
EUA	European Union Allowance
EU ETS	European Union Emissions Trading Scheme
FCPF	Forest Carbon Partnership Facility (World Bank)
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
LULUCF	Land Use, Land Use Change and Forestry
ODA	Official Development Assistance
OECD	Organisation for Economic Cooperation and Development
QELRO	Quantified Emission Limitation and Reduction Objective
REDD	Reducing Emissions from Deforestation and Forest Degradation
UNFCCC	United Nations Framework Convention on Climate Change
WCMC	World Conservation Monitoring Centre (UNEP)