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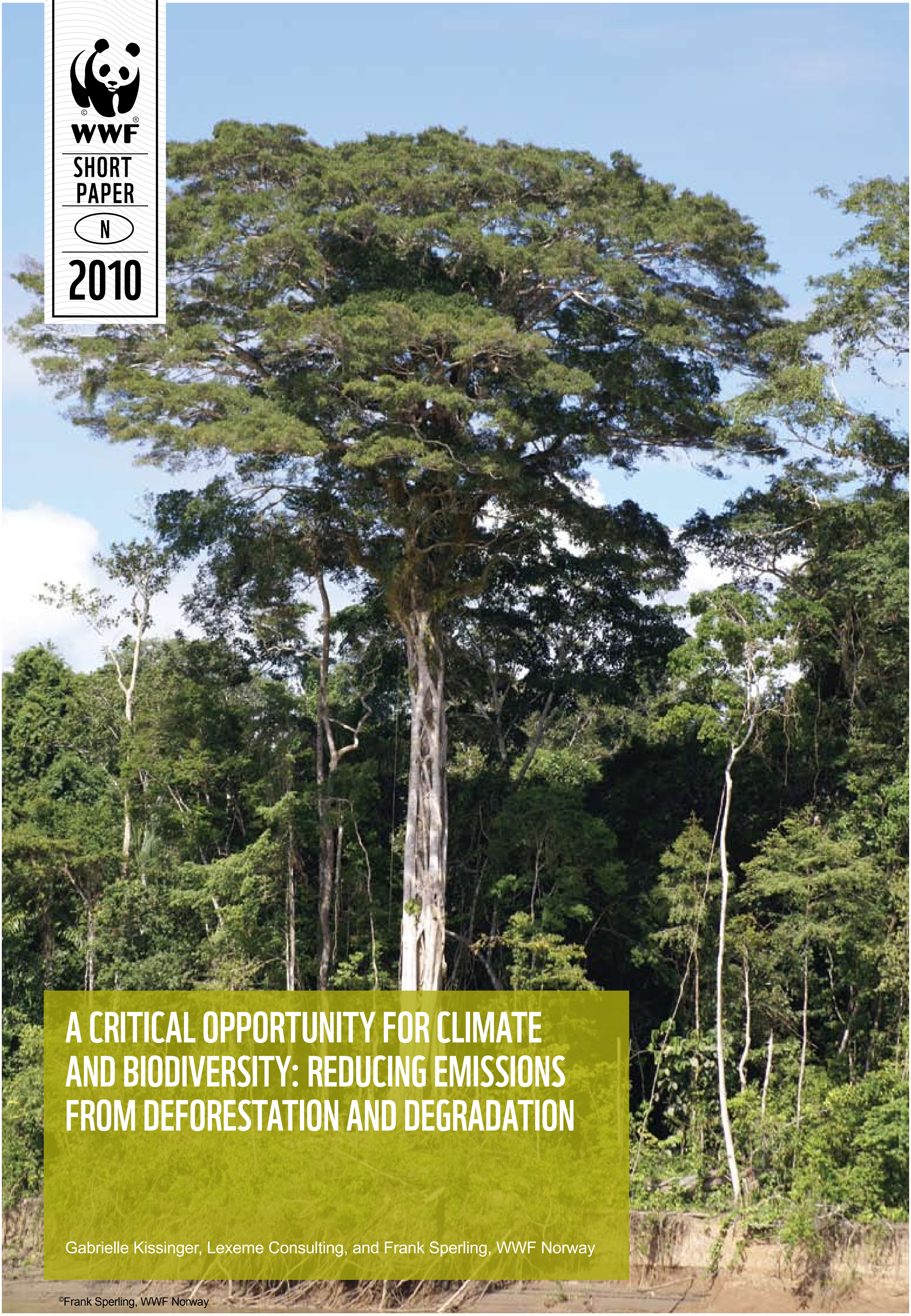

A CRITICAL OPPORTUNITY FOR CLIMATE AND BIODIVERSITY: REDUCING EMISSIONS FROM DEFORESTATION AND DEGRADATION

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Halting and reversing the loss and degradation of forests is essential for rapidly reducing greenhouse gas emissions. It also represents an opportunity to protect much of world's terrestrial biodiversity and maintain ecosystem goods and services, if the right policies and measures are implemented.

HEALTHY FORESTS ARE AN INSURANCE AGAINST CLIMATE CHANGE

Urgent action is required to limit global warming to safe levels. The ultimate objective of the United Nations Framework Convention on Climate Change is the *"... stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system…"*[1]. With rising global temperature averages the adverse impacts of climate change are generally expected to become more severe and wide-spread[2], increasing the risk of climatic changes and hazards that some species, ecosystems and societies can no longer adapt to. In order to ensure an equitable and climate resilient future, WWF calls for greenhouse gas emissions to peak by 2015 and a shift to low carbon development paths that limit global warming to 1.5 ^{O}C.

Policies and commitment are currently insufficient for meeting this target[3]. The ambition and effective implementation of mitigation efforts needs to be strengthened, including also a rapid stop of emissions from deforestation and degradation, and shift to sustainable natural resource and land management[4].

Forests around the world absorb and store vast quantities of carbon in their vegetation and soils. However, when they are destroyed or degraded, forests release this carbon as gas into the earth's atmosphere. The rapid destruction of forests, particularly in the tropics, accounts for 12-20% of all global carbon emissions[5], thus making it one of the largest contributors to climate change, following on the heels of carbon emissions from the energy and transportation sectors.

Reducing deforestation and forest degradation, promoting forest conservation, sustainable management of forests and enhancement of forest carbon stocks (i.e. REDD+) represents one of the most cost-effective approaches to mitigating climate change[6]. Together with a mix of other mitigation efforts, such as improving energy efficiency and clean energy access, maintaining forest carbon stocks and enhancing carbon sequestration are essential for attaining low carbon development path, which limits global warming and avoids crossing ecological tipping points.

PROTECTING CARBON RICH FORESTS CAN HELP MAINTAIN BIODIVERSITY

In addition to its importance for limiting the rate and magnitude of climate change, a successful framework for REDD+ within a post 2012 climate policy regime under the UNFCCC has also the potential to conserve biodiversity and protect ecosystem goods and services.

There are clear overlaps between carbon-rich and biodiversity-rich forests worldwide. Research is increasingly demonstrating that linkages between forest carbon and biodiversity values are high. Furthermore, a growing number of field-based studies demonstrate that carbon sequestration is enhanced by the presence of biodiversity in forests.

Tropical forest ecosystems contain the richest terrestrial biodiversity on earth. Biodiversity is highest in the forest canopy, where species abundance is higher than in any other terrestrial ecosystem. Half of the world's species may live in these forests, where a square kilometre may be home to more than 1,000 tree species[7]. These forests are found around the world, particularly in the Indo-Malayan Archipelago if Asia, the Amazon Basin and the African Congo.

Biodiversity decreases the more forest habitats are disturbed by humans. Primary tropical forests are roughly 50% more biodiverse than secondary forests in both tropical wet and tropical montane climate regions, and as human impacts increase, biodiversity dramatically decreases. The most extreme example is the conversion of tropical moist forests in Indonesia for oil palm plantations, where only 15% of primary forest species remain[8]. Different species respond to the impacts of logging in various ways, depending on their life-history strategies and resource requirements. Generally, forest-dependent and specialist-species decline first, while generalist species may adapt.

Loss of habitat area through clearing or degradation is currently the primary cause of biodiversity loss. Increased urbanization and export crops are the primary drivers of deforestation. The major impacts of humans on forest ecosystems include loss of forest area, habitat fragmentation, soil degradation, depletion of biomass and associated carbon stocks, transformation of forest stand age and species composition, species loss, the introduction of new species, and the ensuing cascading effects, such as increasing risk of fire and decreased resilience in the face of climate change impacts. Forest loss is greatest in South America, Africa and South-east Asia. Forest degradation (such as logging, fire, and fuelwood harvest) is often a catalyst leading to deforestation. For instance, in many forests, degradation from logging increases the likelihood of additional carbon emissions from increased incidences of fire and subsequent deforestation.

Climate change is projected to accelerate species extinction rates, with approximately 10% of the species assessed so far at an increasingly high risk of extinction for every 1°C rise in global mean surface temperature[9]. There are increasing examples species being responding to and being threatened by the effects of climate change. Even if stemming carbon emissions to decrease global climate change were of no matter, we would still have a global biodiversity crisis to address, with the tropics being front and centre.

Primary (old growth) forests are a bulwark against climate change impacts. Primary forests are generally more resilient (and stable, resistant, and adaptive) than modified natural forests or plantations, to the effects of climate change. The carbon pool is largest in old primary forests, especially in the wet tropics. The massive carbon carrying capacity of natural, undisturbed forests is only beginning to be realized.

Current protected area networks are not enough to protect biodiversity and stabilize carbon emissions. While 12% of land globally is in some form of protection, nearly half (44%) of our most valued biomes fall below 10% protection and many of the most critical sites for biodiversity lie outside the protected areas[10]. The value of the current protected areas in mitigating and adapting to climate change -- via carbon sequestration, disaster relief and supplying human needs -- has generally been undervalued. This, however, is changing.

ESTIMATING THE IMPACTS OF REDD+ ON BIODIVERSITY

In order to assess the effect of REDD+ on specific countries an economic model was applied. The general results are outlined here, while a description of the model and the approach can be found in the companion report "The link between reducing deforestation and forest degradation and biodiversity conservation".

The model outcomes demonstrate that those countries with the highest rates of biodiversity (and highest rates of carbon storage) are most likely to participate in REDD+ and see dramatic reductions in deforestation and rates of biodiversity loss. These countries include Indonesia, Brazil, Madagascar, Mexico, Papua New Guinea, Columbia, Peru and the Philippines. This illustrates a very strong correlation between REDD and biodiversity, especially as we consider that those reversals occur in some of the most at-risk landscapes, such as in Indonesia and Brazil. No countries with high-endemism opt out of REDD in our scenario.

HOW CAN BIODIVERSITY VALUES BE REFLECTED IN A REDD+ MECHANISM?

REDD+ has great potential to safeguard the most biologically-rich forests of the world. Forests with high carbon stocks tend to also have a high level of biodiversity. For forests with comparable carbon stocks, prioritization of REDD implementation should occur in forests of greatest biodiversity value, and forests which contribute the most to landscape connectivity. Voluntary carbon markets already include biodiversity as a valued co-benefit of REDD projects, as forest carbon projects with multiple ecosystem services, certified and monitored as such, are viewed as safer investments. The challenge ahead is to ensure that compliance markets for REDD+ carry the same commitment to social and ecological co-benefits. Below is a summary of key policy recommendations and actions that will support the biodiversity co-benefits of a REDD+ mechanism, followed by a brief investigation into the inclusion of biodiversity co-benefits in both voluntary and compliance forest carbon markets.

RECOMMENDATIONS FOR ENSURING BIODIVERSITY CO-BENEFITS OF A REDD+ MECHANISM:

Preference should be given to those REDD+ projects or programmes that include primary forest and biodiversity conservation as a key objective: While the payments for reductions in emissions will be based on the amount of carbon not released into the atmosphere, a side-benefit is that we protect biodiversity in the process.

The carbon-carrying capacity of primary forests must be properly accounted for, and methodologies to measure and monitor carbon stocks should be pursued at highest resolution and include biodiversity as an attribute: Carbon accounting schemes must be robust, strive for IPCC Tier-3 resolution at a fine-scale, and adequately account for a forest's natural carbon-carrying capacity (including living and dead biomass and soil). The accuracy and cost-effectiveness of light detection and ranging (LiDAR) to create high-resolution carbon maps of above-ground biomass is a proven means to achieve that[11], and holds great potential to include measurements and monitoring of biodiversity.

REDD+ strategies at the national and sub-regional level should be integrated with associated climate change adaptation strategies and protected area networks: Assessment of minimum distribution and range requirements for important communities and species must form the basis of projections on adaptation and vulnerability to climate change, and this should be incorporated into national-level REDD monitoring, reporting and evaluation activities.

Conserving forests, even if they are currently not threatened, has a strong mitigation benefit: Including forest conservation as a mitigation option within REDD+ is very important for biodiversity conservation, particularly for high forest cover, low deforestation countries, as it will create incentives for countries to conserve large areas of forests even if current drivers of deforestation do not threaten these areas. Countries that have smaller fragments of primary forest nested in matrices of low carbon and medium-to-low-biodiversity forests, plantations, and agricultural areas will need to pursue a mix of incentives, including REDD, to keep primary forests intact.

Existing forest certification systems, such as the Forest Stewardship Council, can be complimentary to REDD and should be promoted: In particular, FSC employs ground-based auditing of specific logging practices and offers independent, third-party verification of compliance with social and biodiversity co-benefits. It is potentially very compatible with REDD+ in its ability to assist measurement and monitoring practices designed to reduce emissions. Explicit links should be developed between existing forest management standards (such as FSC) and forest carbon standards (such as the Voluntary Carbon Standard) and social and ecological co-benefit standards (such as Climate, Community and Biodiversity Alliance standards).

The Climate, Community and Biodiversity (CCB) and Voluntary Carbon Standard (VCS) standards should be promoted in the voluntary market, and their principles and indicators transferred to the compliance market as requirements.

REDD+ compliance markets need to incorporate consideration of co-benefits: This is achievable via the point above, and in addition: 1) preferential demand, similar to supply agreements, where a credit buyer or government expresses interest in credits with multiple co-benefits, and 2) the supply of multiple co-benefit projects be promoted at regional and national levels, with the help of the engagement of civil society and added capacity and technical support to bring projects and deals to maturation, in order to ensure transaction costs are lowered but standards remain high.

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Why we are here.
To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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The brief is accompanied by a complementary detailed report: Kissinger, G. (2010): The Link between Reducing Deforestation and Degradation and Biodiversity Conservation. WWF Norway.
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