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Submission to the SBSTA

Information and views on estimating and monitoring changes in forest cover: A simple and cost effective approach to REDD

15 February 2009

Greenpeace welcomes the opportunity to provide input to the discussions moving towards a post 2012 agreement and note the invitation by SBSTA in the document FCCC/SBSTA/2008/L.23 for Parties to submit to the secretariat, by 15 February 2009, information on their experiences and views, and to provide country-specific information where possible, on needs for technical and institutional capacity-building and cooperation in, inter alia, the implementation of methodologies for estimating and monitoring changes in forest cover and associated carbon stocks and greenhouse gas emissions, incremental changes due to sustainable management of forests, reduction of emissions from deforestation and forest degradation, national and subnational monitoring and reporting systems, and methodologies for forest inventories, ground-based and remote-sensing approaches.

Given the long-term involvement by Greenpeace in UNFCCC negotiations and the technical expertise we possess in the specific area on which the SBSTA now seeks input, we take this opportunity to make available our expertise and views.

Introduction

There are a number of difficulties associated with estimating and monitoring changes in forest cover, carbon stocks and greenhouse gas (GHG) emissions from deforestation and forest degradation that remain outstanding. UNFCCC discussions to date do not seem to be making significant progress in addressing these difficulties. Expert working groups charged with developing a rational framework for estimating carbon stocks appear to be overcomplicating the issue in an attempt at providing accurate carbon accounting for trading of REDD credits. This may not be possible in many developing countries within the foreseeable future, and certainly not within the next commitment period.

Clearly, measuring carbon storage and fluxes in forest ecosystems, and their response to disturbance is not possible with any degree of accuracy. For example, the IPCC (2007[i]) states there is “continuing uncertainty in the net CO_2 emissions due to land use change”. Estimates range between 0.5 and 2.7 Gt C/yr, with a best estimate of 1.6 Gt C/yr. This represents an error of roughly +/- 70 %. This 70 % error is cumulative from several sources, including the original carbon content of the forest ecosystem and what the carbon response is upon disturbance. Both of these are poorly known or understood and probably highly variable. This high error has lead to papers published in the scientific literature entitled “Challenges to estimating carbon emissions from tropical deforestation” (Ramankutty *et al*, 2007[ii]) and “Why are estimates of the terrestrial carbon balance so different”? (Houghton, 2003[iii])

Estimating terrestrial carbon emissions and reference levels is not like measuring carbon from a factory chimney, there are many unknowns and uncertainties that make precise detailed terrestrial carbon accounting impossible.

Gross Deforestation

Deforestation rates can be measured reasonably accurately, either on the ground or by satellite, as the carbon fraction of biomass varies little between forest types. However, errors are introduced converting volume to biomass of trees with different densities. Also, trees have different ratios for above ground biomass to below ground biomass. A recent comparison of estimates (Gibbs *et al*, 2007[iv]) for biomass carbon stocks reveals differences up to 2 fold – this depends on the method of assessment.

The living biomass of a forest varies, not only with region (e.g. tropics, temperate), but also with forest type (moist or dry), and also spatially. Indeed, recent estimates for the amount of carbon in the forests of the Amazon described 11 biomass (and hence carbon) classes ranging from 0 to >400 Mg/ha (Saatchi *et al*, 2007[v]). But in which of these 11 classes does deforestation occur? It does not occur uniformly so new estimates are needed of biomass in the arc of deforestation (Nogueira *et al,* 2007[vi]).

Due to the urgency of climate change and the need to stop the destruction of the worlds remaining tropical forests, parties should come to quick agreement on a simple method that will allow them to measure progress towards substantive climate goal

Therefore, efforts to quantify carbon losses from gross deforestation should be based on deforestation rates using nominal carbon values (e.g. IPCC, 2006[vii]) rather than trying to account for carbon in a system that is poorly understood and not well defined.

Nominal values for many aspects of carbon in forest ecosystem described in the IPCC LULUCF Good Practice Guidelines for use at a Tier 1 level should be used in conjunction with efforts to increase the monitoring and accuracy of measuring deforestation rates.

Forest Degradation

Estimating and monitoring forest degradation is more problematic. While it may be necessary to demand Annex 1 countries to account for carbon stock change under a Tier 3 accounting framework, it is unlikely that similar accounting standards can be demanded from developing countries. The compliance costs alone associated with accurate forest carbon inventories over a single commitment t period will prove prohibitive for many developing countries and likely to require massive investments in on-going capacity building programs by Annex 1 countries. Given the scale and urgency of addressing deforestation and forest degradation rates and their associated emissions, it is therefore, questionable whether such investment, and the necessary time taken for such capacity building is desirable or indeed necessary.

With the climate imperative of having emissions peak in 2015, Parties must decide whether they genuinely wish to spend several years debating and gaining agreement on the complex methodologies to account for carbon stock changes in addition to spending countless millions (of billions) of dollars on complex monitoring and accounting practices, which could have otherwise gone to forest protection programmes and local communities under a simpler accounting regime.In addition, accurate inventories of human-induced emission in developing countries are impossible without adequately factoring out natural disturbances, changes resulting from increased growth by CO_2 fertilization etc and the dynamic effects of age structure resulting from past activities and practices.

Rather than accounting for the change in carbon stock to estimate forest degradation, it may be best for developing countries to compare change in condition against a reference forest state from which national degradation levels can be compared within the term of a commitment period. Intact Forest Landscapes (IFLs) is just such a workable reference state. Recent comprehensive mapping of IFLs makes it now possible to study the degree of intactness of different biomes. (Potapove *et al*, 2008[viii]).

The distribution of IFLs reflects differences in history and intensity of economic development and therefore GHG emissions from forest degradation. In developing countries IFLs are found mainly in the large tropical forests of the Amazon Congo Basins, and in Southeast Asia on the islands of Borneo and New Guinea (Potapove *et al*, 2008).

Protection of large natural forest landscapes will help fulfil different international strategic initiatives to reduce carbon emissions from deforestation (IGBP, 1998[ix]; Mollicone *et al*, 2007[x]), protect forest biodiversity (SCBD 2001[xi]),stimulate the use of sustainable forest management practices (FSC, 2004[xii]), and reduce poverty.

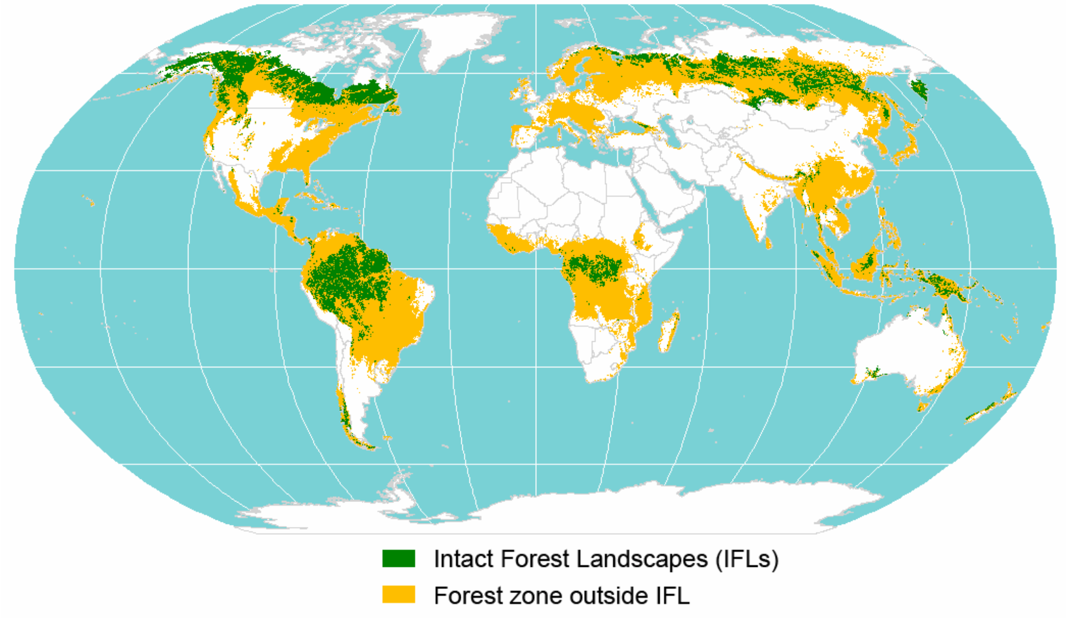
These areas are often comparatively cheap to conserve, as their remoteness and low current economic value protect them from human disturbance (Yaroshenko *et al*, 2001[xiii]; Mollicone *et al*, 2006[xiv]). The time for data analysis, necessitating a long change detection interval of up to 3–5 years, fits well with the current UNFCCC commitment period.

The 12 developing countries with the largest areas of IFLs

Country	Natural Forest (million ha)*	Intact Forest Landscapes – (million ha)	Compensation for IFL maintenance @ $2-$5 per ha ($million)
Brazi	478	248	496-1,240
Peru	68	68	136-340
DRC	134	57	114--285
Indonesia	88	37	74 -185
Colombia	61	36	72-180
Venezuela	48	32	64-160
Bolivia	59	23	46-115
PNG	29	16	32-80
Guyana	15	15	30-75
Congo	22	14	28-70
China	197	12	24-60
Suriname	15	11	22-55

*(FOA, 2005[xv])

Global IFL Map



The global IFL map is the first assessment based on high spatial resolution Landsat satellite imagery- availability at no cost, e.g., as made available through the Global Land Cover Facility (http://www.glcf.umiacs.umd.edu) - that allows mapping of disturbances and infrastructure directly and precisely, to create a fine-scale IFL map, and area estimates (Potapove *et al*, 2008).

The criteria used to delineate a patch of IFL is as follows

- larger than 500 km^2;
- at least 10 km wide at the broadest place (measured as the diameter of the largest circle that can be fitted inside the patch); and
- at least 2 km wide in corridors or appendages to areas that meet the above criteria (Potapove *et al*, 2008)

The cost of protecting IFLs in terms of lost opportunities appears to be small in most cases. Most IFLs are remote and difficult to exploit - this is typically the reason why they are still intact - and are threatened mainly by the loss of more attractive forest resources and agricultural lands through degradation (Potapove *et al*, 2008).

The cost of protecting IFLs is low also in terms of effort. Large forest landscapes are significantly less expensive to protect than a large number of small fragments in an otherwise transformed landscape. This is an important in terms of maximising permanence. Of great significance is the ecological integrity of large IFLs that allows them to maintain their value regardless of large natural disturbance events and long-term climate change (Yaroshenko *et al*, 2001).

The flexibility of using IFLs as a surrogate for non-degraded forest is that it avoids the requirement to measuring changes in carbon stocks over time. Areas with evidence of low-intensity and old disturbances can be treated as subject to “background” influence and are eligible for inclusion in an IFL. This allows for the possibility of incremental gains in carbon stocks as some countries IFL area could potentially increase over time. Sources of background influence include local shifting cultivation activities, diffuse grazing by domestic animals, low-intensity selective logging, and hunting.

Compensating developing countries for maintaining existing levels of IFLs would be a simple method by which emissions from degradation could be reduced, important drivers of deforestation overcome and much of the potential REDD leakage addressed.

Funding for protecting IFLs could be provided at a rate commensurate with the lost opportunity costs associated with degrading IFLs, which in most cases would be logging. The actual compensation per hectare would need to be negotiated with those countries a nd communities likely to benefit. For the purposes of comparison a figure of between $2 and $5 (US) per hectare would provide developing countries with IFLs a combined annual compensation rate of between $1 and $6 billion.

Conclusion

The straight-forward and cost-effective approaches outlined above could very quickly become realized through the use of flexible funding mechanism based on genuinely additional financing from non-market and market-linked sources. This is an example of the flexibility inherent in a fund-based approach to REDD, such as the Forest for Climate/TDERM (Tropical Deforestation Emission Reduction Mechanism) proposal by Greenpeace, which can be found at www.greenpeace.org/forestsforclimate. Such an approach would not be easily reconciled with a market offset mechanism for REDD. Parties should continue to oppose the inclusion of forests as fungible market offset credits for Annex 1 GHG emissions for environmental integrity, equity, and efficiency reasons.

We look forward to receiving feedback on these views and how they can move the negotiations forward.

End notes

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