Title of Paper: Comparing Legal Notions of Deforestation and Forest Degradation: A Brief Review of International Agreements and National Forest Legislations in the context of REDDs.

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Abstract: The option of accounting for emission reductions from avoiding deforestation and degradation of tropical forest is gaining momentum. The legal concepts of deforestation and forest degradation are poised to play a most important role in building a post-2012 global climate governance scheme as they will serve as a cornerstone for the development of deforestation baseline methodologies and other carbon accountability issues. Presently, and under the Kyoto Protocol (KP), the Marrakesh Accords (MA) offers a definition of deforestation but not one of forest degradation. National level forest sector legislations have a variety, or lack of, such definitions. This paper identifies and compares definitions of deforestation and forest degradation.

Keywords: Deforestation, forest degradation, definitions, Kyoto Protocol, REDD.

I. Introduction

The ongoing negotiations under the UNFCCC process to include a mechanism to reward reductions of CO2 emissions from deforestation and forest degradation in tropical forest (REDD) in the second commitment period (CP2) of the KP face many of the same uncertainty issues that neglected its presence in the Clean Development Mechanism (CDM) during CP1. Basically, accountability of net reductions of CO2 emissions is complicated by the dynamics of removals and release of carbon which are unique to land use and forestry activities, unlike other sectors where removals are non-existent. As well, there are concerns about the ability of developing countries to establish credible deforestation reference scenarios and to monitor deforestation and variations in forest carbon stocks. In contrast with the CDM CP1 requirement for project specific baselines, some of the leading

mechanisms proposal for REDD call for the generation of national deforestation baselines, that would then "nest" subnational or project specific baselines.[1] Definitions of forest, deforestation and forest degradation at the national level are relevant in this context as such would legally determine the legal nature, scope and extent of subnational REDD activities and therefore facilitate coherent national forest carbon accounting while providing with legal certainty to public and private investors. The hypothesis of this paper is that clear, simplified and compatible legal definitions on deforestation and forest degradation on the national and international level would serve negotiations and design of a REDD mechanism and facilitate its implementation. Chapter II discusses policy issues directly connected to the terms deforestation and forest degradation. Chapter III identifies and compares major international law terminology. Chapter IV compares definitions from countries with large amounts of tropical forest. A discussion follows in Chapter V. Finally, Chapter VI concludes.

II. Background and Context

1. Why definitions matter?

Generating a definition of deforestation and forest degradation in the context of climate change mitigation implies a non-traditional view of forests and its quantitative and qualitative biological variations; "…definitions draw boundaries around various sets or subsets of data on the extent, structure or characteristics, stocks, goods, services, management and use of forest resources."[2] Historically, FAO has had a mandate to assess forest resources; however, the objectives of such assessments have change through time.[3] It is no longer just an assessment of forest surface and land use changes; in a REDD perspective, the long due accounting of CO2 emissions from deforestation involves a revised approach in which two variables: forest surface and forest carbon stock are not only to coexists, but complement and even compete among each other depending on the

[1] See "The Nested Approach. A flexible mechanism to reduce emissions from deforestation" from the Centro Agronómico Tropical de Investigación y Enseñanza-CATIE, CLIMATEFOCUS, the Global Public Policy Institute-GPPi, TerraCarbon LLC and Biocarbon Consult (2007). National positions embracing the nested approach during REDD negotiations include Nepal, Vanuatu and Colombia, among others.
[2] FAO. "Global Forest Resources Assessment Update 2005 Terms and Definitions." Forest Resources Assessment Programme. Working Paper 83/E, Rome 2004 at 5.
[3] Loffeier, Martin-Eric and Brayer, Julia. "The changing objectives of FAO forest resource evaluation", in Babin, Didier, ed. "Beyond Tropical Deforestation". UNESCO-CIRAD 2004 at 3.

international agreements reached in the post Kyoto roadmap. Some international actors demand REDDs to accommodate a wide range of forest environmental services into the definition of forest degradation while others rather limit the term to the thinning of biomass carbon stock. Obviously, this confrontation enables multiple implications in terms of the future of the REDDs instrument. IUCN for example calls for an ecosystem approach[4] to REDDs recognizing the social dimension of land-use transformations and its relation to gender issues as well. Definitions should be designed to clarify and support policies objectives agreed at international forums. An open question revolves on whether national authorities should wait for a potential set of international definitions of forest, deforestation and forest degradation in the context of REDDs negotiations or if it would be advisable to legislate such definitions in the short term in order to participate more effectively in the wave of pilot REDD activities taking shape at this moment.

Arguably, in a post Kyoto scenario that includes a mechanism to provide positive economic incentives for the reduction of deforestation and forest degradation, definitions may need to be constructed. It would facilitate the production of important key elements of the project cycle,[5] primarily, the baseline[6]. Consequently, establishing legal definitions of deforestation and forest degradation equates to develop a basic element for global, and local, climate change governance. Imprecise definitions impede objective and clear land use change assessments;[7] in fact, Colombia is emphatic in calling the REDDs international discussion process to revisit definitional issues as a fundamental element for negotiations to move forward.[8]

[4] IUCN. Documento de posición para la CP13/CMP3 de la CMNUCC. Bali, Indonesia 3-14 diciembre de 2007.
[5] See Brown, S., Hall, M. et al. "Baselines for land-use change in the tropics: application to avoided deforestation projects." Mitig Adapt Strat Glob Change (2007) 12:1001–1026 at 1001.
[6] Kunninen, M., Murdiyaso, D. "Do trees grow on money? The Implications of deforestation research for policies to promote REDD. Indonesia. Center for International Forestry Research (CIFOR) 2007 at 12.
[7] Piketty, Marie-G. and Laumonier, Yves. "The Changes in Indonesian forests: Available tools and indicators", in Babin, Didier, ed. "Beyond Tropical Deforestation". UNESCO-CIRAD 2004 at 41.
[8] "Reducing Emission from Deforestation: Consideration of Relevant Methodological Issues." Submission of Colombia to the Subsidiary Body for Scientific and Technological Advice, Twenty-eight session, Bonn 4-13 June 2008. UN Doc FCCC/SBSTA/2008/MISC.4 at 9.

2. Technical and policy considerations

It has been established as a fact that around 20% of global annual CO2 emissions have their origin in land use changes, particularly due to deforestation in the tropics. Reducing emissions from deforestation is a "highly cost-effective way of reducing greenhouse gas emissions and has the potential to offer significant reductions fairly quickly."[9] Recent research suggests that in the context of a target of stabilizing CO2 concentrations at a level of 550ppm, forest sinks have the potential to contribute up to one-third of total abatement by 2050, with the largest share coming from avoided deforestation[10] in tropical forests. If a future REDD mechanism is to rely on incentives created by carbon finance, it is essential to produce reliable, credible estimates of net releases and removals of CO2 from tropical forests. Legally, concepts such as forest, deforestation and forest degradation must be defined. Presently, neither international law nor domestic forest legislations can rely on a harmonized and consistent set of definitions of deforestation and forest degradation. At the international level FAO, CBD and UNFCCC among others have all done substantive work towards clarifying basic values necessary to construct acceptable definitions. Policy wise, environmental non-governmental organizations, international organisms and forest research centres have drafted proposal definitions which are in fact competing as *de facto quasi* sources of public law in international forums to feed an international agreement on what is to legally constitute deforestation and forest degradation in international climate law.

At the national level, as we will review below, it could be argued that developing countries are not ideally equipped in terms of national forest legislations to the legal logic of CP1 forestry activities revolving around reforestation and afforestation projects. One cause being perhaps the little contention about the failure of CP1 forestry activities as merely one afforestation-reforestation project[11] has been approved in the CDM for CP1. Such failure implies that "not even 1 percent of the allowed 1 percent of base-year emissions of Annex I

[9] Stern, Nicholas. "The Economics of Climate Change. The Stern Review". Cambridge University Press, 2007 at 537.
[10] Tavoni, M., Sohngen, B., Bosetti, V. "Forestry and the carbon market response to stabilize climate". Energy Policy 35 (2007) at 5347.
[11] The project entitled "Facilitating Reforestation for Guangxi Watershed Management in Pearl River Basin" is hosted by China and was registered at CDM on 10 November 2006. Emission reductions are expected to top 340,223 tCO2 during CP1. For a detailed analysis of the CDM performance see "IGES CDM Project Data Analysis" from the Institute for Global Environmental Strategies in http://www.iges.or.jp/en/cdm/report.html

parties time five will be realized during the first commitment period."[12] In terms of definitions, it is relevant to remember that only Annex I parties are obliged to provide a definition of forest; non-Annex I parties, shall only do so if they intent to participate in the CDM forest carbon market. As developing countries face a complex and onerous system of rules for the LULUCF sector, few have jumped into generating reforms in their national legislations to redefine terms as forest, deforestation, afforestation and reforestation for CP1.

Deforestation and forest degradation are distinct in its origins, factors and dynamics.[13] Traditionally, deforestation has been construed as a permanent or long term change of the use of land from forest into a different land-use, typically for agriculture or urbanization or as the result of unsustainable logging; it is regularly measured in terms of surface area and its definition usually involves a range of canopy cover. The IPCC has pointed out that limiting the variables to canopy cover could risk large amounts of carbon fluxes to not being properly accounted.[14] To Verdeaux, deforestation comprehends a "wide range of environmental conversion patterns that have very contrasting ecological impacts, at least if one considers these phenomena for what they are: historical processes of reciprocal adjustment between human communities and the rest of their ecosystem, in this case, forest."[15]

The concept of forest degradation, on the other hand, presents a different phenomenon, one which is not bi-dimensional, but tridimensional[16]; it refers to the negative effect of disturbance factors into its integrity. Depending on the criteria selected to understand it, two broad visions can be identified, a first which refers to the overall declining of the

[12]Trines, Eveline. "History and Context of LULUCF in the Climate Regime." In Streck, C., O'Sullivan, R. et al. Eds. "Climate Change and Forest." Royal Institute of International Affairs, 2008 at 39.
[13] Lanly, Jean-Paul. "Deforestation and forest degradation factors." From internet source: http://www.fao.org/DOCREP/ARTICLE/WFC/XII/MS12A-E.HTM
[14] Watson, R., Noble, I. et al. "Land Use, Land-use Change and Forestry. A Special Report of the IPCC." Intergovernmental Panel on Climate Change. Cambridge University Press 2000 at 55.
[15] Verdeaux, Francois. "Forest deforestation and reconstruction" in Babin, Didier, ed. "Beyond Tropical Deforestation". UNESCO-CIRAD 2004 at 413.
[16] M. Skutsch, N. Bird, E. Trines, M. Dutschke, P. Frumhoff, B.H.J. de Jong, P. van Laake, O. Masera, D. Murdiyarso. "Clearing the way for reducing emissions from tropical deforestation". Environmental Science and Policy 10 (2007) at 323.

capacities of a given forest ecosystem to produce and sustain its ecological services and goods, including biodiversity support, watershed protection, microclimate stabilization, carbon sequestration and storage, landscape, among others. A second, more specific vision, refers uniquely to the quantitative thinning of the biomass carbon stocks of a particular forested area. These two visions coexist in competence throughout the REDDs discourse; in fact, some propose to even subdivide the concept of carbon forest degradation to give space to social and equity concerns. In fact, Nepal recently proposed a coexisting parallel system of reference scenarios at the national level: one to assess deforestation rates and a second, differentiated system for estimating forest degradation; even further, Nepal divides its reference scenario for forest degradation into, first, forest degradation occurring for communities subsistence and a second estimation for degradation product of selective logging.[17]

The evolution from international sectorial to more integrated, market-oriented, policies for the management of natural resources and an unbalanced, fragmented international legal framework, with overlapping multilateral conventions and just a set of principles for forest management served as a fertile ground for the UNFCCC process to become a major force in setting the rhythm and tonality of forest policies worldwide. On its side, the UN Forest Forum, while catching up, managed to produce, after a long and criticized process, another set of global objectives and strategies entitled "Non-legally binding instrument on all types of forest"[18] (NBLIF). Although the correspondent negotiations of UNFF-5 and 6 where temporally parallel to the discussion and policy rebirth of REDDs in the UNFCCC process, little formal attention was given to openly seek for opportunities for synergies between those legal instruments.[19] However, there is opportunity for enhancing synergies between treaties[20] and international policy instruments, as NBLIF calls for the reduction of

[17] "Reducing Emissions from Deforestation in Developing Countries". Submission by Nepal, 21 March 2008 to the Subsidiary Body for Scientific and Technological Advice, Twenty-eight session, Bonn 4-13 June 2008. UN Doc FCCC/SBSTA/2008/MISC.4

[18] United Nations Non-legally binding instrument on all types of forests. United Nations A/C.2/62/L.5 General Assembly 22 October 2007.

[19] With barely one reference to climate change on the NBLIF Preamble.

[20] See Van Asselt, Harro. 2007. "Dealing with the Fragmentation of Global Climate Governance. Legal and Political Approaches in Interplay Management." Global Governance Working Paper No 30. Amsterdam et al.: The Global Governance Project.

deforestation and forest degradation as a global objective,[21] very much in line with recent climate change mitigation policy development.

III. Sources of international law.

1. Definitions of Deforestation

a. United Nations Framework Convention on Climate Change-UNFCCC

Decision 11/CP.7 on Land use, land-use change and forestry is essential in two basic aspects: first, it provides with a set of definitions, including that of deforestation; and, second, it limits the "…eligibility of land use, land-use change and forestry project activities…to afforestation and reforestation";[22] by so doing, it determined that avoided deforestation was not to be accounted for in CP1 and allowed only carbon removals directly related to reforestation/afforestation activities to be accounted for. However, the CDM Land Use, Land Use Change and Forestry (LULUCF) rules for CP1 became operational only after COP-9 in Milan in 2003, where the document "Good Practice Guidance and Other Information on Land Use, Land-use Change and Forestry"[23], prepared by the IPCC was adopted; it serves to facilitate consistency in the reporting obligations for national forest accountability to which Annex I Parties are mandated under Article 3.3 of the Kyoto Protocol. Decision 11/CP.7 establishes the following definition of deforestation:

> "…the direct human-induced conversion of forested land to non-forested land."[24]

We are now obliged to look at the definition of forest provided by the same Decision 11/CP.7 in order to identify a couple of elements of the Deforestation definition, namely, that it implies a quantitative conversion in canopy cover which should fall below the threshold range of 10-30 percent. Complementarily, the Marrakesh definition of forest involves a larger area as it includes unstocked areas expected to revert to forest, therefore,

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[21] Supra, note 18, Article IV (5).
[22] Decision 11/CP.7 in Report of the Conference of the Parties on Its Seventh Session, held at Marrakesh from 29 October to 10 November 2001. UN Document FCCC/CP/2001/13/Add.1
[23] IPCC. "Good Practice Guidance and Other Information on Land Use, Land-use Change and Forestry", adopted at the Ninth Session of the Conference of the Parties and the Nineteenth Sessions of the Subsidiary Bodies, 1-12 December 2003 Milan, Italy. Official document FCCC/SBSTA/2003/L.22/Add.1 Internet resource at http://unfccc.int/cop9/latest/sbsta_l.22_add1.pdf
[24] Supra, note 22 at Annex, Section A (1)(d) at 58.

temporary clearing based on sustainable logging policies is not accounted as deforestation, nor are natural forest losses due to natural fires.[25] Under this definition, the conversion from forest to non-forest must be directly induced by human activities in order to be considered deforestation. It is therefore interesting to reflect on how it may affect the issue of non-permanence in REDD activities as natural occurrence of forest fires are high on the list of risks to carbon to remain effectively stored during, and after, the length of the REDD project cycle.

b. UN Food and Agriculture Organization – FAO

FAO has undergone an important process towards advancing on definitional issues in forest policy, having conducted a set of specialized workshops on definitional issues related to forestry and climate change. In 2004 FAO provided the following definition of Deforestation:

> "The conversion of forest to another land use *or* the long-term reduction of the tree canopy cover below the minimum 10 percent threshold."
>
> Explanatory notes
>
> 1. Deforestation implies the long-term or permanent loss of forest cover and implies transformation into another land use. Such a loss can only be caused and maintained by a continued human-induced or natural perturbation.
>
> 2. Deforestation includes areas of forest converted to agriculture, pasture, water reservoirs and urban areas.
>
> 3. The term specifically excludes areas where the trees have been removed as a result of harvesting or logging, and where the forest is expected to regenerate naturally or with the aid of silvicultural measures. Unless logging is followed by the clearing of the remaining logged-over forest for the introduction of alternative land uses, or the maintenance of the clearings through continued disturbance, forests

[25] Decision 11/CP.7 defines: "Forest is 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 having the potential to reach a minimum height of 2-5 metres at maturity in situ. A forest may consist either of closed forest formations, where trees of various storeys and undergrowth cover a high proportion of the ground, or open forest. Young natural stands and all plantations which have yet to reach a crown density of 10-30 per cent or tree height of 2-5 metres are included under forest, as are areas normally forming part of the forest area which are temporarily unstocked as a result of human intervention such as harvesting or natural causes but which are expected to revert to forest."

commonly regenerate, although often to a different, secondary condition. In areas of shifting agriculture, forest, forest fallow and agricultural lands appear in a dynamic pattern where deforestation and the return of forest occur frequently in small patches. To simplify reporting of such areas, the net change over a larger area is typically used.

4. Deforestation also includes areas where, for example, the impact of disturbance, overutilization or changing environmental conditions affects the forest to an extent that it cannot sustain a tree cover above the 10 percent threshold. [26]

c. UN Non-legally binding instrument on all types of forest - NLBIF

Although it does not provide with definitions on deforestation or forest degradation this non-legally binding, voluntary instrument makes use of some interesting language which contextually provides some light. In setting the first Global Objective of the NLBIF:

> "Reverse the loss of forest cover worldwide through sustainable forest management, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation"[27]

Although in the Preamble it makes explicit use of the term deforestation, the actual text of the instrument is cautious on its definitional treatment and rather describes the phenomena as "…the loss of forest cover worldwide". We can clearly see that there is no mention to technical thresholds, nor a link to human induction, nor any temporality involved in the description.

2. Definitions of Forest Degradation

a. Intergovernmental Panel on Climate Change –IPCC

Decision 11/CP.7 asked the IPCC to generate definitions for directly induced forest degradation and devegetation[28]. The IPCC conducted a detailed review of existing

[26] Supra, note 2 at 25-6.
[27] Supra, note 18, Article IV (5)(I).
[28] Supra, note 22, Article 3(c).

scientific, policy and legal definitions of forest degradation and devegetation.[29] The panel recognized the complexity of the task of defining forest degradation.[30] It further noted that ambiguous terms may pose threats to the functional integrity of definitions. It finally stated that the integration of other forest values into a REDDs definition may "prove exceedingly difficult to implement in a consistent, transparent manner,"[31] recognizing that none of the analyzed definitions served well enough the purposes of the CDM elaborated the following definition of forest degradation that may serve REDDs negotiations:

> "A direct human-induced long term loss (persistent for X years or more) of at least Y% of forest carbon stocks [and forest values] since time T and not qualifying as deforestation or an elected activity under Article 3.4 of the Kyoto Protocol."[32]

b. UN Food and Agriculture Organization – FAO

In terms of Forest Degradation FAO conceptualizes it as:

> **"**Changes within the forest which negatively affect the structure or function of the stand or site, and thereby lower the capacity to supply products and/or services."[33]

c. UN Non-legally binding instrument on all types of forest - NLBIF

The NLBIF is the result of years of negotiation by the United Nations Forest Forum which in the end failed to generate a legally binding instrument for the sustainable management of the global forests. It does not provide with definitions on deforestation or forest degradation. This non-legally binding, voluntary instrument makes use of some interesting language which in context provides some light. The first Global Objective of the NLBIF aims to:

> "Reverse the loss of forest cover worldwide through sustainable forest management, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation"[34]

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[29] IPCC. "Definitions and Methodological Options to Inventory Emissions from Direct Human-induced Degradation of Forests and Devegetation of Other Vegetation Types." [Penman, J., Gytarsky, M., Hirashi, T. et al] IPCC National Greenhouse Gas Inventories Programme. IGES Japan 2003.
[30] Idem at 13.
[31] Idem at 16.
[32] Idem at 16.
[33] Supra, note 2 at 26.
[34] Supra, note 18, Article IV(5)(I).

Although the Global Objective refers to loss of forest cover, and not to deforestation, perhaps precisely for definitional uncertainties, it is quite straightforward with the use of the term forest degradation. It should be noted that the two phenomenons are mentioned together both in the Preamble and in the body of the text of the instrument, arguably influenced by the REDD policy process undergoing on the UNFCCC.

d. UN Convention on Biological Diversity -CBD

The CBD is relevant because forest, especially in inter tropical regions, is host to a large share of the worlds biological diversity. In 2001, the CBD produced the following definition directly related to forest degradation:

> "A degraded forest is a secondary forest that has lost, through human activities, the structure, function, species composition or productivity normally associated with a natural forest type expected on that site. Hence, a degraded forest delivers a reduced supply of goods and services from the given site and maintains only limited biological diversity. Biological diversity of degraded forest includes many non-tree components, which may dominate in the under-canopy vegetation."[35]

Notice the direct linkage to human induction of forest degradation in light of the MA definition of deforestation. As well, it is clear that CBD conceptualize forest degradation within a spectrum larger than the mere thinning of its carbon biomass stock; includes other forest values as wildlife components, non-tree vegetation and ecological processes and services. Such definition is in line with the ecosystem approach generated under CBD policy processes. Some conservation groups see in REDD an opportunity for financing protected areas and have an interest to have biological diversity concerns included into definitional issues.

IV. National forest legislations

1. Brazil

[35] Report on the Ad Hoc Technical Expert Group on Forest Biological Diversity. Subsidiary Body for Scientific, Technical and Technological Advice, Seventh Meeting, Montreal, 12-16 November 2001.

Brazil holds the largest portion of the Amazon rainforest with a deforestation rate that went from 0.5% during 1990-2000 to 0.6% from 2000-2005.[36] Brazil recently enacted new forest legislation: Lei Nº 11.284, de 2 de Março de 2006 (Law for the Management of Public Forests). Lei 11.284 does not include a specific definition of either deforestation or forest degradation. However, Lei 6.938 de 31 de Agosto de 1981 da Política Nacional Do Meio Ambiente (National Environmental Policy Law) in its Article 2 (VIII) establishes the restoration of degraded areas as a principle of its national environmental policy and refers to a specific regulation, Decreto No 97.632, de 10 de Abril de 1989, which in its Article 2 defines degradation as:

> …the resulting processes of the damages to the environment by which some of its properties are lost or reduced, such as the productive quality or capacity of environmental resources.[37]

We could therefore interpret that in Brazil forest degradation may be interpreted as the reduction or elimination of productive qualities and capacities of their forests.

2. Indonesia

Indonesia holds the largest tropical forests in Southeast Asia with 88.5 million ha with an estimated deforestation rate of 1.7% during 1990-2000 which increased to 2% during 2000-2005.[38] Indonesia's main forest legislation is the Law of the Republic of Indonesia Number 41 Year 1999 on Forestry. Indonesia´s Forest Law does not provide with a legal definition of neither deforestation nor forest degradation. It does, however, provide some indirect guidance in terms of a specific mandate on Article 18 (2):

> "The extent of forest area to be retained as referred to in paragraph (1), is at minimum 30% of the total area of watershed and or island which should be evenly (or proportionally) distributed."[39]

[36] FAO. State of the Forest 2007. Rome 2007 at 114.
[37] Free translation by the author. The original in Portuguese is: "Article 2° Para efeito deste Decreto são considerados como degradação os processos resultantes dos danos ao meio ambiente, pelos quais se perdem ou se reduzem algumas de suas propriedades, tais como, a qualidade ou capacidade produtiva dos recursos ambientais."
[38] Supra, note 36 at 111.
[39] Article 18 (2), The Law of the Republic of Indonesia Number 41 Year 1999 on Forestry.

A clear indirect reference to the commonly accepted concept of forest related to canopy cover over 10-30%, Article 18(2) mandates to retain such percentage could be interpreted as a general threshold for forest resource use in order not to fall into deforestation by default. It may be argued that the 10-30% canopy cover rule from the MA provides a policy signal to use forest resources all the way to such threshold[40] which in closed, dense tropical forest with large canopy cover may imply a significant amount of CO2 releases to go unaccounted[41]. It is precisely that gap which should be covered by the accountability of forest degradation, under a principle of complementarity, much in the spirit of a recent Nepal proposal to the SBSTA[42]. In terms of Forest Degradation Indonesia´s Forest Legislation does not provide a specific, direct legal definition but it does refer to disturbances as a supportive term.[43]

3. Democratic Republic of Congo

Democratic Republic of Congo holds the largest tropical forest in the Congo River basin with an estimated deforestation rate of 0.4% during 1990-2000, decreasing to 0.2% during 2000-2005.[44] Its main forest legislation is Loi No. 11/2002 du 29 Aout 2002 Portant Code Forestier (2002 Forest Code) which in its Article 1(6) provides a definition of deforestation in the following form:

> "Deforestation: operation consisting in the clearing of a forested land by logging or removing its woody vegetation to change the land use"[45]

Such definition does refer to the clearing of forested lands in view of changing its land use. We should notice however that it does not make any reference to human or non-human direct or indirect causation; neither does it refer to a percentage threshold of canopy cover below 10 or 30%.

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[40] Supra, note 16 at 327.
[41] See Kirby, Kathryn R., Laurance, W., Albernaz, Ana K. et al. "The future of deforestation in the Brazilian Amazon." Futures 38 (2006) at 438.
[42] Supra, note 17.
[43] See Schoene, D., Killman, W. et al. "Definitional issues related to reducing emissions from deforestation in developing countries." FAO. Forest and Climate Change Working Paper 5. Rome, 2007 at12.
[44] Supra, note 36 at 102.
[45] Free translation by the author. The original in French is: "deboisement: operation consistant a defricher un terre forestiere ou a couper ou a extirper ses végétaux ligneux en vue de changer l'affectation du sol."

V. Discussion

The "direct human inducement" factor is crucial as it would serve as a key to lock-in or lock-out the accountability of large amounts of CO2 forest carbon fluxes from a number of activities. Choosing to have the "direct human inducement" factor in a future definition of deforestation in a REDD context may imply that CO2 emissions from a natural originated forest fire may not be considered a release as such forest and its associated emissions were not directly induced by humans. It would then raise issues of permanence and leakage. In terms of the human definitional variable, it is interesting to identify how two major Rio Conventions, the UNFCCC -with the MA definition of deforestation and the IPCC definition of degradation- and the CBD definition of degraded forest, include the human causation factor. On its side, FAO provides with views closer to the traditional forest sector. It is noteworthy to appreciate the lack of definitional language in the NLBIF despite having a privilege of sectorial origin.

Table 1. Definitions of deforestation in international agreements

Parameters	***Marrakesh Accords***	***FAO***
Transition from forest to non-forest	YES	YES
Land-use change	NO	YES
Canopy cover change	<10-30%	<10%
Only direclty induced by humans	YES	NO
Temporarily non-stocked condition is not deforestation	YES	YES

Adapted from Schoene, Killman et al. "Definitional issues related to reducing emissions from deforestation in developing countries." FAO 2007.

One of the basic issues underlying a definition of deforestation has to do with the object of measurement. Should it provide with the elements to measure gross deforestation or net forest area change? This point is particularly important as it is essential to avoid ambiguities that may open cracks for perverse accounting that may not register as deforestation certain types of activities or certain amounts of land use change. This is particularly important when considering that the prime objective of REDDs is to stop land

use change in dense, tropical countries as Brazil, Indonesia or Congo. Therefore, a definition of deforestation in the context of REDDs should reflect the forest characteristics of those countries where the majority of the CO2 emissions from this sector are taking place.

It is important to emphasize that each of the definitions reviewed has a unique legal status. For example, the CBD definition of forest degradation is one produced in light and in the context of the CBDs work on forest biological diversity. Its original legal and policy function is not to serve a climate mitigation forest sector strategy. On the other hand FAO, despite being a head forest sector organization within the UN system, is not binding in nature; although, FAO´s work in support of integral policy making along the UNFCCC is remarkable. The UNFF once charged with the goal to produce a forest convention failed to produce it and failed to generate significant synergies with the UNFCCC. Lastly, the UNFCCC has taken a much stronger role in forest policy as its LULUCF rules are binding to Parties, therefore, it can be argued that the presently binding definitions of forest and deforestation are contained in LULUCF and not in a forest instrument.

In any case, *ex ante* agreement on definitional issues would certainly facilitate negotiations as parties would have the opportunity to quantitatively assess the impact of those definitions and act upon their national interest. *Ex ante* agreement would also avoid having to be satisfied with definitions representing "the smallest common denominator of what might be considered a forest,"[46] as was the case in the Marrakesh Accords.

The "direct human inducement" factor is crucial as it would serve as a key to lock-in or lock-out the accountability of large amounts of CO2 forest carbon fluxes from a number of activities. Choosing to have the "direct human inducement" factor in a future definition of deforestation in a REDD context may imply that CO2 emissions from a natural originated forest fire may not be considered a release as such forest and its associated emissions were not directly induced by humans. It would then raise issues of permanence and leakage.

[46] See Dutschke, M. and Pistorius, T. "Will the future be REDD? Consistent carbon accounting for land use". Interner resource from www.biocarbon.net

In terms of definitional issues in national legislations, it is a rule that any party which intends to participate in forest activities in Kyoto CP1, on either JI or CDM, have to produce and report to the UNFCCC Secretariat the relevant national definitions for the incumbent activity. It is clear to foresee a requirement to produce definitions on both, deforestation and forest degradation, for potential REDD participants.

Table 2. Definitions at selected national legislations.

Country	***Definition of Deforestation***	***Definition of Forest Degradation***
Brazil	NO	NO
DR Congo	YES	NO
Indonesia	NO	NO

By leaving out avoided deforestation and forest degradation from the CDM carbon accounting system for CP1, a signal was sent to legislators in the sense of the dominant logic of reforestation/afforestation as the one option to gain access to international carbon markets. It explains the constant lack of specific definitions of deforestation and forest degradation into national forest legislations because there was no point in producing such definitions. On the other hand definitions of forest and reforestation are present in most legislations. None of the national legislations examined provided a definition of forest degradation and only one produced a definition of deforestation. In terms of the negotiation of REDDs, some countries see a risk in going forward with a carbon-oriented definition of forest degradation as it may account biomass extracted through sustainable forest management as CO2 releases. Countries as Colombia has expressed that sustainable forest management (SFM) may not be oriented towards carbon stock maximization.[47] Such paradox may bring confrontation in the implementation of competing policies and may even serve as friendly field for perverse incentives.

[47] "Reducing Emission from Deforestation: Consideration of Relevant Methodological Issues." Submission of Colombia to the Subsidiary Body for Scientific and Technological Advice, Twenty-eight session, Bonn 4-13 June 2008. UN Doc FCCC/SBSTA/2008/MISC.4 at 9.

Although a number of national legislations refer to forest degradation and deforestation in their forest inventories programs, national congresses or other high level legislative bodies should seize the opportunity to generate definitions of deforestation and forest degradation in the text of their main forest legislations. Leaving such crucial definitions to administrative or second level regulatory institutions may generate REDD policy inconsistencies at the implementation level.

Table 3. Parameters contained in definitions of forest degradation

Source of definition	***Temporality***	***Carbon stock specific***	***Biological diversity affectations***	***Induced by humans***	***Reduction of environmen-tal services***	***Forests structural impacts***
IPCC	YES	YES		YES	[YES]	
FAO					YES	YES
NLBIF						
CBD			YES	YES	YES	YES

Adapted from Schoene, Killman et al. "Definitional issues related to reducing emissions from deforestation in developing countries." FAO 2007.

The issue of the overall sense of the coexistence of parallel systems of deforestation and forest degradation at the national level brings about a reflection over whether to jump into a new paradigm of GHG accounting in forest activities to assess net national variations of deforestation and forest degradation "rather than the area of deforestation alone, should be the ultimate goal."[48]

Special attention is to be given to REDD pilot activities. A number of REDD pilot activities at differentiated planning and implementation stages are taking place in tropical countries. Some of those are mature enough and predate the renaissance of REDDs in 2005, as is the case of Scolel-Té in Mexico and the Noel Kempff Reserve Carbon Project in Bolivia. The majority are just launching their activities in response to clear and growing funding opportunities i.e. Juma Reserve Project in Brazil, the Pax Natura Costa Rica Project, the Ulu Masen RED project in Indonesia, among others. Obviously, these pilot projects have

[48] Supra, note 16 at 327.

various objectives as testing baseline production methodologies at the national and subnational level, assessing forest governance structures, improving and testing remote and ground-based monitoring. In terms of remote sensing, ongoing projects have the task to assess the monitoring capacities of existing technologies for detection of not only land-use change, but also variations in forest biomass stocking to determine forest degradation. It is essential that project developers pay full attention to definitional issues and its potential consequences.

A brief review of recently launched projects shows inconsistencies in the use of definitions, for example, the Project Proposal "Avoided Deforestation through the Payment for Environmental Services in Rainforests located on Private Lands in the Conservation Area of the Central Volcanic Mountain Range of Costa Rica", in the section describing methods for quantification of carbon, defines deforestation as follows:

> "Traditionally, deforestation is recognized as a condition that represents the loss of land cover where it used to exist and which has a direct influence on human activity. In the document, "State of the World's Forests" by FAO, 1995, deforestation is defined as a "variation in forests with a depletion of tree crown cover of at least 10%" (FAO, 1995)."

We can observe a series of technical and legal inconsistencies that may have an ultimate effect towards a precise quantification of forest carbon fluxes in the project. First it does not provide with a legally binding definition at the national level, in comparison with a previous section where it presented a highly technical definition of forests. Second, it refers to human activity as influenced by deforestation, leaving out the recognition of human-induced drivers for deforestation. Third, an adjacent reference to a thirteen years old definition of deforestation by FAO is misleading. A closer look at the actual FAO State of the Forest 1995 revealed that the definition used in the Costa Rica project is not the one contained in the report. The 1995 FAO Report establishes the following definition:

> ***"Deforestation:*** change of forest with depletion of tree crown cover to less than 10 percent." [49]

[49] *See* http://www.fao.org/DOCREP/003/X6953E/X6953E04.htm#an1

Basically, the wrong lies in the determination of the thresholds of canopy cover amount. The Costa Rica Project's definition implies that deforestation is to be accounted for in their project whenever a negative change on the percentage of canopy cover surpasses 10%. That is, any forest which is diminished in its canopy tree at least 10% will be considered and accounted for as deforested. On the other hand, the actual definition provided by FAO 1995 FRA Report stated that a forest was to be considered deforested when its tree canopy cover had been reduced below 10%. Therefore, in order to consider a land as deforested it should have a canopy cover over 10% and then cross negatively that threshold to be below 10%. Therefore, we can appreciate a failure in the use of a FAO definition which may suggest a trivial approach to definitional issues. Perhaps it would bear not a big consequence on a project proposal, but if such ambiguous and trivial use of definitions reaches contractual spheres, then serious problems may arise for the determination of forest biomass carbon fluxes.

In terms of improvement of governance, including criminalization of deforestation and overall increase of enforcement of forest, land use and environmental legislations, clear and unambiguous definitions of deforestation and forest degradation are essential. Solid definitions would facilitate criminal and administrative procedures.

VI. Conclusions

1. REDDs have the potential to become a significant driver for SFM by bringing a shift in forest policy making which would present opportunities for forest conservation and sustainable use through an international market-based mechanism: REDDS. Therefore climate change policies would increase its influence in forest management in developing nations where avoiding deforestation and reducing forest degradation activities are suitable.

2. Further research is needed to analyze the impact of global climate change mitigation strategies in the development of international legal frameworks for the sustainable management of forests. The failure of the UNFF to negotiate an internationally

binding convention is in sharp contrast with the growing influence of the UNFCCC in forest management in tropical countries. REDDs may serve as a catalytic towards more integrated forest management, the reduction of rates of deforestation and better governance over forest resources. In other words, it would be the climate change movement and not the long immobile forest diplomats who may be setting the basic policies for the future of forest.

3. Diplomatic agreement on definitional issues over deforestation and forest degradation is essential in order to facilitate pilot activities to produce credible reductions of deforestation and forest degradation to curb down GHG emissions in the short term. However, it is clear that a wider set of policy instruments is likely to be needed; a single economic incentive from international sources is not likely to satisfy financial and institutional needs to counter long established perverse subsidies, market-driven commodities pressures –cattle, soy, oil palm, others- and nation specific underlying causes of deforestation and forest degradation. The accountability effect of the definitions will be key to achieve a quantitative complementarity of two systems -forest degradation and deforestation- that are likely to coexist if nested approaches for REDDs are agreed internationally.

4. At the international level REDDs should provide for the carbon biomass variable in the forest degradation concept. Individual nations should consider constructing its legal definitions of deforestation and forest degradation according to particular situations depending on specific drivers, ecological conditions, watershed management strategies, or forest biodiversity. The choice of definitions at the national level will determine the “add-ons” to REDDs at the project or subnational level.

5. Mixing international carbon revenues with local markets for ancillary forest ecosystem services may enhance implementation of REDDs activities. One possible model would have national REDD systems integrate payments for environmental services, with some financial flows coming from international REDD carbon

finance, and supplementary funds generated by local buyers of other forest ecosystem services or values, i.e. watershed protection, conservation of critical habitats. That way REDD project activities at project or subnational level would seize finance, conservation and forest management opportunities and challenges that are specific to each project. A project to deter deforestation and improve management in a forest watershed upstream of medium size cities facing water shortages may decide to combine international carbon finance with a local or regional system to collect fees for watershed management to generate a more attractive payment to local communities. Such system may have other financial add-ons, for example, user fees paid by eco-tourists or payments for the value of pollination of nearby agricultural plantations.

6. Particular attention should be placed on the use of definitions of forest, deforestation and forest degradation in pilot REDD activities. The opportunity to test diverse definitions can only be catalyzed by specific comparative research to identify, register and compare the use of definitions with a particular emphasis on its use throughout the project cycle: from project proposals, to project design documents to contracts for the selling of carbon credits. Results from such comparative research should offer useful lessons to advance on the construction of a global set of definitions and over flexibility tools that may be needed to accommodate particular forest and governance conditions at the national and even subnational level.

7. Once definitional issues on deforestation and forest degradation have been solved and ambiguities eliminated only then a definitive, legally bound definition of REDDs can be attempted. Further research is needed to assess implementation of LULUCF definitional issues related to CP1 at national level. Lessons learned may serve to accelerate definitional implementation for CP2.