



Working paper No. 1 (e) (2006)

27 August 2006

**Workshop on reducing emissions from deforestation in developing countries**

30 August - 1 September 2006, Rome, Italy

**BACKGROUND PAPER FOR THE WORKSHOP ON REDUCING EMISSIONS FROM  
DEFORESTATION IN DEVELOPING COUNTRIES**

**Addendum 2 – Part 2**

**Synthesis of submissions by accredited observers**\*

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\* This paper has not been subjected to editing. The information synthesized in this paper relates to the topics addressed in part I and part II of the workshop's background paper (see also topics listed in paragraph 52 (a) and (b) of document FCCC/SBSTA/2006/5).

## I. Introduction

1. This paper synthesises the views on issues relating to reducing emissions from deforestation in developing countries received from accredited observers. Four submissions were received from intergovernmental organizations (IGOs) and another thirteen submissions from non-governmental organizations (NGOs). The submissions by all accredited observers are posted on the UNFCCC website.<sup>1</sup>
2. The IGOs who provided submissions are: United Nations Convention to Combat Desertification (UNCCD), Food and Agriculture Organization of the United Nations (FAO), Global Terrestrial Observing System (GTOS) and Center of International Forestry Research (CIFOR). Due to the extensive experiences of these organizations on matters related to deforestation, the views provided by them were especially reflected in this synthesis paper.
3. The NGOs who provided submissions are: Climate Action Network International (CAN), Conservation International (CI), Centre for International Sustainable Development Law (CISDL), Environmental Defense, Friends of the Earth International (FoEI), Fundacion Amigos Naturaleza, Göteborg University, Amazon Institute for Environmental Research (IPAM), Joanneum Research, Sierra Club of Canada, The Nature Conservancy (TNC), Vitae Civilis Institute for Development, Environment and Peace and Woods Hole Research Center (WHRC). The synthesis of views from these organizations were included only in the case of additional elements not provided by Parties and IGOs, but does not include specific proposals of actions to be addressed by the COP or the SBSTA. This was done in order not to prejudge any conclusions by the COP or SBSTA. Readers are requested to refer to the original submissions for details.

## II. Scientific, socio-economic, technical and methodological issues

### A. Overview

4. This section focuses on scientific, socio-economic, technical, and methodological issues, including the role of forests, in particular tropical forests, in the global carbon cycle; definitional issues, including those relating to links between deforestation and degradation; data availability and quality; scale; rates and drivers of deforestation; estimation of changes in carbon stocks and forest cover; and related uncertainties, as addressed in submissions by accredited observers.
5. The structure of this synthesis follows that of the synthesis of submissions by Parties (part 1 of addendum 2 of the background paper for the workshop (working paper 1(d) (2005))). Due to the inter-linkages of some of the above listed items, including the close relationship to some issues related to policy approaches and positive incentives, the structure of the present section may not in all instances follow the above list of items; in addition, for practical reasons, terminology used and topics included in this part of the synthesis generally corresponds to that used by accredited observers in their submissions.

### B. Scientific aspects

6. A large number of submissions by accredited observers outlined scientific aspects, frequently referring to the IPCC or literature, regarding the role of tropical forests in the global carbon cycle, the importance of forest clearing as a significant source of CO<sub>2</sub> emissions in many developing countries and the consequences for climate change. As for example noted by CIFOR, deforestation is one of the main drivers for global environmental change. High rates of tropical deforestation have severe consequences for climate change, loss of biodiversity, reduced timber supply, flooding, siltation, soil degradation and threats to the livelihoods and cultural integrity of forest-dependent populations. Many other submissions also highlighted similar aspects, including the increased capability of tropical forests to hold carbon compared to other lands (WHRC), and the other multiple functions and ecosystem services that forests in

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<sup>1</sup> For submissions from IGOs see <[http://unfccc.int/parties\\_and\\_observers/igo/items/3714.php](http://unfccc.int/parties_and_observers/igo/items/3714.php)> and for those from NGOs see <[http://unfccc.int/parties\\_and\\_observers/ngo/items/3689.php](http://unfccc.int/parties_and_observers/ngo/items/3689.php)>.

the tropics provide, including the strong dependency of populations on forests, as emphasised, for example, by the Nature Conservancy, Friends of the Earth International, Sierra Club of Canada, CAN International, Conservation International, (Amazon Institute for Environmental Research) IPAM and Vitae Civilis. Environmental Defense elaborates on projected climate change impacts under different deforestation scenarios.

7. The submission by the UNCCD focuses on dryland ecosystems and their potential for carbon sequestration. The large surface area of drylands gives dryland carbon sequestration a global significance, with total dryland soil organic and inorganic carbon reserves comprising, respectively, 27% and 97% of the global soil carbon reserves. The potential of dryland ecosystems to sequester carbon has been estimated to be up to 0.4–0.6 billion tons of carbon a year if eroded and degraded dryland soils were restored and their further degradation were arrested, which can be further enhanced through additional measures. Restoration and enhancement of drylands, if undertaken at a global scale, could have a major impact on the global climate change patterns. The submission also includes information on the location and distribution of tropical dry forests, indicating that the most extensive continuous areas are located in South America.

8. The UNCCD further highlighted that tropical dry forests are the most threatened of all major tropical forest types. Referring to findings from the World Conservation Monitoring Center, 1,048,700 sq.km. of tropical dry forest remains distributed throughout the three tropical regions. Overall, 97% of the remaining area of tropical dry forest is at risk from one or more different threats, including climate change and conversion to cropland. In addition, according to findings from the Millennium Ecosystem Assessment (2006), eighteen percent of the area of the dryland system is occupied by the forest and woodland system, though the probability of encountering forests in drylands decreases with their aridity. The benefits of silviculture and horticulture for soil protection compared to agriculture, as well as the advantages of dryland afforestation were also highlighted. Though the global drylands are less efficient than non-drylands in carbon sequestration, their potential for further carbon sequestration is high and has not yet been developed, while non-dryland capacity is already close to the maximum.

### **C. Drivers and rates of deforestation**

9. The submissions by the Food and Agriculture Organization of the United Nations (FAO), CIFOR and other accredited observers contain detailed information on current deforestation rates, both at the global as well as at the regional and national level, and underlying drivers. Center for International Forestry Research (CIFOR), quoting the latest FAO's Global Forest Resources Assessment (FRA) (2005), indicates that current global area of forests is less than 4 billion hectares (about 30% of the land area),<sup>2</sup> unevenly distributed in the globe. As noted by CIFOR, the FRA affirms that deforestation continues at alarming rates. Latest figures from the FRA show an annual deforestation rate of 13 million hectares, accounting to a net loss of 7.3 million hectares per year for the period 2000–2005. It should be noted, however, that this figure implies a decrease from the period 1990–2000, whose average deforestation was 8.9 million hectares per year. Average long-term emissions caused by deforestation are 110 t C/ ha.

10. Highest deforestation occurred in South America, with 4.3 million hectares per year, followed by Africa with 4 million hectares per year, according to the FRA 2005 which illustrates differences in deforestation rates across regions.

11. As explained in CIFOR's submission, deforestation occurs when forest cover decreases below a 10% canopy cover threshold. Deforestation usually implies a drastic land use change and will often happen through the felling of trees and conversion to alternative land uses, but can also occur through

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<sup>2</sup> Forest is defined as: Land of more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use. Forest is determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 metres (m) in situ.

repeated burning, clearance of land for open-pit mining, urban sprawl or road building. Selective logging operations do usually not reduce canopy cover so much and hence do not cause deforestation, but cause forest degradation, which can promote forest fires that lead to deforestation. Forest degradation takes the form of e.g. large canopy gaps, fragmentation, active fire, and burned area. Logging is one of the main causes affecting forest degradation. In the context of deforestation avoidance, forest degradation could be defined as a partial loss of biomass due to logging or other removal of biomass. Forest degradation and deforestation happen because those engaging in these actions perceive a private, direct and tangible benefit from doing so, as noted by CIFOR.

12. The submission by the Göteborg University discusses results from recent studies<sup>3</sup> on the extent of damaged forests, including their regeneration, according to which the effects of selective logging may be twice as high as reported in earlier studies and have to a certain extent resulted in deforestation after a given period of time. Considerations limited to deforestation, i.e. complete land use conversions, would hence not cover the full range of impacts on forest systems. Also other NGO submissions noted the importance of forest degradation in the context of emissions from deforestation (e.g. Environmental Defense).

13. FAO, CIFOR and others emphasized the relevance of understanding the direct and underlying causes of deforestation. Behind forest clearing lies a complex set of social, economic and political realities, which make deforestation a multi-dimensional phenomenon. Moreover, most of the causes do not operate at the forest level, but originate from sectors such as agriculture, infrastructure development and others, as further explained below. Activities outside the forest sector usually contribute much more to deforestation than predatory forestry. Furthermore, the multi-dimensional causal factors can differ much across countries, making it difficult to generalize. The FAO's FRA 2000 showed that agricultural expansion and shifting cultivation are the major direct causes of deforestation, although the picture varies between regions, and usually a multiplicity of causes is jointly at work.

14. Behind the direct causes for deforestation, there is a complex set of underlying causes (economic, policy and institutional, technological, environmental, demographic, cultural and socio-political factors), as shown in the FAO's FRA 2000. As also outlined in the submission by CIFOR, two levels at which deforestation causes operate can be distinguished: factors that are directly linked to the act of clearing land (direct or proximate causes), versus background societal factors that drive these direct causes (underlying causes). Another distinction is between deforestation causes in the forest sector itself (intra-sectoral) versus factors originating from other activities (extra-sectoral factors).<sup>4</sup> Today, some consensus has been reached in that deforestation is best explained by a combination of proximate and underlying causes, interacting in complex and variable ways. Based on an analysis of deforestation patterns in 152 countries, three dominant proximate causes of deforestation are suggested (infrastructure extension, agricultural expansion, wood extraction), which interact with five principal underlying factors (demographic, economic, technological, policy and cultural variables). Biophysical, environmental and social events do also play a role in triggering deforestation. The *direct causes* were explained by CIFOR as follows:

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<sup>3</sup> Asner et al. (2005)

<sup>4</sup> For example, in the case of an urban income boom raising demand for meat, paper and housing construction, the urban income boom acts as the "underlying cause", which triggers one direct "extra-sectoral" cause (expansion of cattle ranching) and two direct "intra-sectoral" ones (forest harvest for construction timber and for pulpwood).

*Direct causes*

- Agricultural expansion: i.e. establishment of permanent crops, shifting cultivation and cattle ranching, expansion of the agricultural frontier; according to the literature, agricultural expansion is the main cause for deforestation, mainly in Latin America.
- Wood extraction: i.e. mainly clear-cutting for pulpwood and for fuelwood; though logging does not directly trigger deforestation, it causes degradation of forest resources. The building of roads to transport timber can open up access to new forest land and thus indirectly facilitate access to land converters. Logging has mainly led to deforestation in Southeast Asia, whereas unsustainable fuelwood extraction primarily occurs in the drier parts of Sub-Saharan Africa.
- Infrastructure expansion and others: i.e. construction of roads, settlements, public services, pipelines, open-pit mines, hydro-electric dams, etc. Road construction and infrastructure development contribute most to deforestation. Ecuador is one example where road building has been a prime driver.

15. As regards the *underlying causes* of forest clearing, CIFOR explains that in most cases macroeconomic and policy factors follow broader economic interests of higher priority than deforestation; hence, analysis of these effects can mainly serve to predict arising pressures on forests, and possibly take safeguards to counteract them. These underlying factors were explained as follows:

- Macroeconomic factors and market forces: i.e. accommodation of higher demands in response to market forces, economic growth at early economic development stages, rising demand for forest products and services; external debt, foreign exchange-rate policy, and trade policies of sectors linked to deforestation and degradation (mainly timber); rising agricultural output prices and reduced inputs prices.
- Policy, institutions and political decisions: i.e. undefined property rights, including rewarding deforestation with tenure establishment; ineffective agrarian and environmental policies, ambiguous forest policies.
- Demographic factors: i.e. increasing rural population resulting in rises for food demand, migration to the agricultural frontier.
- Technological factors: more land-intensive technologies can ultimately lead the more profitable production to expand, i.e. extensification of agriculture at the cost of forests; however, the role of improved agricultural technologies on deforestation is ambiguous, since it seriously depends on a series of framework variables.
- Cultural factors: e.g. cultures that go along with large meat consumption and forest clearing for pastures; on the other hand, sacred forest areas are often protected from land conversion and degradation.

16. Causes and rates of deforestation rates were also discussed in many other submissions by accredited observers. For example, IPAM provided detailed information on current deforestation rates in the Brazilian Amazon and the underlying causes.

17. CIFOR also outlines the concept of “Forest transition”, which describes a long-run process in which economic development drives a pattern of forest loss followed by forest recovery. Deforestation is in early development phases fuelled by the demand for agricultural products and related infrastructure development. At some stage, land clearance reaches a maximum and then declines.

## D. Technical and methodological issues

### 1. General technical and methodological considerations

18. The need for reliable sound methodological approaches to address reducing emissions from deforestation in developing countries was discussed in a large number of submissions. For such purpose the development of methodologies that are standardized, widely accepted, credible, and scientifically sound is required, as noted by CIFOR. Such methodologies should be cost-effective to attract wide participation of countries harboring significant amount of forested area storing carbon in the biomass.

19. The FAO submission highlighted the need for carefully defining the scope in establishing any instrument aimed at reducing emissions from deforestation. Main issues to consider would be:

- Which of the change processes should be included (i.e. deforestation, afforestation, reforestation, degradation and regeneration - for definitions see section below). The decision should, inter alia, consider the link between these processes and the goal of reduced emissions, the causality of the changes, the availability and quality of existing information and the marginal cost of collecting additional data for establishing baselines and for monitoring and verification;
- What land use categories should be covered, e.g. only *forest*, or also *other wooded land* and possibly *other land with tree cover* (e.g. fruit orchards)? The latter is a considerable carbon sink in many developing countries; however data are weak.

20. Also many other submissions by accredited observers, e.g. the Nature Conservancy, addressed the need for a sound methodological basis and comparable and cost-effective methods to address deforestation emissions (e.g. Conservation International, CAN International). Joanneum Research noted that time series consistency between methods for base period assessments and future estimation would be desirable. The Sierra Club of Canada recommended that also the link between deforestation and biomass energy be addressed.

### 2. Definitional issues

21. CIFOR noted the different uses of the term “deforestation” and explained that the FAO includes two different dimensions in defining deforestation. First, according to usage, deforestation is defined as the conversion of forest land to another land use; second, according to crown cover, deforestation is the long-term reduction of this parameter below a 10% threshold (see below for FAO definitions).

22. According to FAO, processes that define changes in forest area over time are:

- (a) *Deforestation* that changes forest to another land use, either through human-induced conversion (mainly to agriculture and settlements), or through natural disasters, such as volcanic eruptions, earthquakes or flooding;
- (b) *Afforestation* and *natural expansion* that convert areas under other land use to forest.

The *net change of forest area* is the net effect of these three change processes. It may differ considerably from deforestation. Removal of trees (e.g. as part of a forest management or through disturbance) is not considered to be deforestation, unless the land is also converted to another land use or regeneration of the forest is not possible.

- (c) *Reforestation* and *natural regeneration* bring new trees into the forest life cycle, while
- (d) *Forest degradation* refers to 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.

The capacity of the forest to supply products and/or services can also be *improved*, either through active management or natural recovery. Degradation and improvement must be related to a specific attribute in order to become meaningful. A forest that is degraded in terms of biomass-carrying capacity might be improved in terms of biodiversity and vice versa.

23. The relevant forest related definitions by FAO are included in the FAO's submission. According to these definitions, *deforestation* is defined as follows:

“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 note: 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. Deforestation includes areas of forest converted to agriculture, pasture, water reservoirs and urban areas. 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 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. Deforestation also includes areas where, for example, the impact of disturbance, over-utilization or changing environmental conditions affects the forest to an extent that it cannot sustain a tree cover above the 10 percent threshold.

24. These FAO definitions and terminology are chosen by common consent and used by all Parties in the process. In addition, FAO is leading a process of harmonizing definitions between different international reporting processes.

25. According to CIFOR, the two approaches used by FAO for defining deforestation can present problems at the time of assessing deforestation on the ground: while the first further requires a definition for forest, the second implies an arbitrary threshold. Studies have shown how choices may lead to considerable differences in the estimations. However, the problem is considerably reduced when rates of deforestation are estimated using consistent methods applied to all regions and time periods.

26. For the purpose of the Kyoto Protocol a definition for deforestation is in place, which applies to Articles 3.3, 3.4 and 12 of the Kyoto Protocol. It follows a usage approach, together with a definition for forest that is determined through three parameters: tree height, canopy cover and minimum area. Parties have some flexibility to set these parameters.

27. A number of other accredited observers also expressed views on definitions, e.g. Environmental Defense, IPAM; CAN International and Vitae Civilis suggested consideration of definitions based on biomes, and the Göteborg University expressed a need to re-consider current definitions for deforestation given that the definitions at a minimum 10-30% crown cover ignore degradation that later lead to deforestation; Göteborg University also sees a need for forest classifications that enable indication of the status of forest ecosystems.

### 3. Monitoring, measuring, estimation and reporting, and data issues

28. Issues related to the estimation and monitoring of emissions from deforestation were addressed in most submissions by accredited observers. The FAO submission noted that measures to address reducing emissions from deforestation will be most effective if based on accurate and timely data about states and trends from comprehensive forest assessments. Also efficient monitoring and verification would be needed. Existing information and processes for collecting data are essential for cost-effective monitoring of emissions from forest changes, which can be complemented with additional methods to increase the spatial and temporal intensity of data and collect a broader spectrum of information. Since data collection

and processing is demanding, expensive and time consuming, existing global forest information frameworks might be used as a basis.

29. Many technical options are available, ranging from remote sensing, combinations of remote sensing and ground observations, to extensive field inventories. Each method should be used to exploit its strengths to the fullest and minimize its weaknesses in an overall, concerted, optimal effort. Ample experiences regarding assessment of forests have been accumulated. According to FAO, the established process to obtain forest and forestry information for the national level is through field-based forest inventories and remote sensing that generate information to policy and decision making levels.

30. The submission by CIFOR also highlighted that satellite remote sensing of forest cover and its changes combined with robust verification and ground truthing of forest types and the associated carbon stocks are the most feasible techniques to monitor emission from deforestation. Once the choice of sensor's resolutions and verification procedures are standardized, the methodologies would guarantee the transparency, consistency and continuity of data acquisition and processing. Monitoring of forest area and estimation of carbon stocks should be carried out within acceptable interval allowing the detection of changes (see e.g. IPCC Good Practice Guidance for LULUCF), which would also assist in optimizing the costs of monitoring and verification.

31. Wall-to-wall mapping of forest cover should be carried out using moderate spatial resolution sensors. However, verification and validation are needed when hierarchical sampling scheme using higher resolution of sensors is adopted to assess deforestation hotspots and forest degradation. Ground survey to verify forest classes and their carbon stocks can be carried out at regular basis.

32. The possibility of using satellite imagery for obtaining information on changes in forest areas and hence enable estimation of sources and sinks of carbon over large areas was also noted in other submissions, e.g. by WHRC. The need for substantial monitoring was also frequently expressed, e.g. by CAN International. Joanneum Research suggested that methods for monitoring and estimation could build upon the IPCC Good Practice Guidance for LULUCF, expanded and modified as appropriate; cost effective and accurate monitoring based on remote sensing technology and ground truthing can meet good practice requirements. FAN Bolivia illustrated approaches to quantify and monitor deforestation and degradation based on experiences in Bolivia.

33. Forest degradation, as noted by CIFOR, can not be detected by moderate and low resolution sensors, but would require further development of methods and standards. The Göteborg University also highlighted several technical and methodological needs, such as a need for more high resolution empirically grounded assessments on forest status and dynamics.

34. With regard to estimates of actual emissions from deforestation, FAO noted that these related weakly to loss of forest area - a consequence of the natural variability of forest ecosystems, past human interventions, and the fate of wood removals, some of which are used in products with a long life span. The problem caused by gradual decay of wood products could be reduced by assuming, for accounting purposes and in accordance with applicable IPCC procedures, that emissions occur instantaneously after removal from the forest. Only changes in the main carbon pools, biomass and soil organic matter, would need to be assessed precisely. Still, considerable uncertainty will remain, mainly caused by the weakness in current estimates of carbon stock changes for many pools at country level.

35. The FAO submission provides the latest figures on deforestation from its Global Forest Resources Assessment (FRA 2005) as well as from all earlier FRAs (since 1948 FAO has assessed forests on a regular basis and since the 1980s, it has specifically addressed deforestation and net change of forest area). The most recent assessment, FRA 2005, gathered information on forest area from all countries and for 1990, 2000 and 2005. It is based on the best available information in each country and is the most comprehensive global dataset available containing country information on forest area and area changes, as well as other information related to climate-change and deforestation emissions.



36. The FAO process has produced some experiences regarding monitoring and verification from its processes for global monitoring and assessment that are relevant to the current attempts to consider reducing emissions from deforestation. These include close collaboration with countries to produce highly relevant data, transparency, and feedback to countries that has been shown to be vital for many questions of national forest policy, including policies to tackle deforestation and its causes; biomass and carbon changes are being reported for most of the world's forests. In addition, the history and long-term involvement of countries and stakeholders in the FRA process provides a solid basis and a framework that has a track record of being able to incorporate new developments and requirements.

37. The submission by the Global Terrestrial Observing System (GTOS) informed on the outcomes of a workshop on Monitoring Tropical Deforestation for Compensated Reductions (GOFC-GOLD),<sup>5</sup> at which an ad hoc working group was formed in order to provide technical guidance and support on remote sensing capabilities for monitoring tropical deforestation at the national level in the context of UNFCCC discussions on reducing emissions from deforestation in developing countries. The workshop considered current capabilities for monitoring deforestation and forest degradation at global and national levels utilizing satellite data and complemented by in situ validation. The major conclusion was that changes in forest area can be monitored through such methodologies with confidence. The remote sensing and forestry communities represented at the workshop are ready to provide support on the development of guidelines that can be implemented at the national level. The conclusions from this workshop were also highlighted in other submissions of accredited observers, e.g. by IPAM.

#### *Needs for technical support and capacity building*

38. The FAO noted that in developed countries, the practice of obtaining forest and forestry information through field-based forest inventories and remote sensing is well established. However, many developing countries lack resources and institutional capacity. Technical support to developing countries to implement national forest inventories and assessments therefore continues to be an essential tool to strengthen national forest programmes (see [www.fao.org/forestry/site/24672/en](http://www.fao.org/forestry/site/24672/en)). Such inventories and assessments are designed to supply information and knowledge for a wide range of parameters, including social, economic, environmental and cross-sectoral issues.

39. In addition, the use of satellite remote sensing and its validation with ground-based observations requires the involvement of national expertise and building capacities in developing countries to (a) ensure the technologies are applied appropriately and produce relevant and accurate results, (b) provide feedback to national policy processes.

40. The need to address methods for measuring, monitoring and verification, including the need for capacity building on these issues in developing countries was also discussed in other submissions, e.g. by the Nature Conservancy and Vitae Civilis.

#### 4. Baselines, additionality, leakage and permanence

41. The need to consider ways of measuring, monitoring and verifying reduced emissions from deforestation was mentioned in a large number of submissions. Many submissions by accredited observers discussed, providing different perspectives, the need for addressing leakage, additionality and permanence, selection of baselines and questions regarding monitoring, verification, certification and accounting (e.g. Friends of the Earth, Friends of Nature (FAN) Bolivia, Sierra Club of Canada, Climate Action Network (CAN) International, CAN International, Environmental Defense, IPAM, Vitae Civilis). For example, CISDL discusses problems associated with approaches determining baselines, defining boundaries, avoiding and quantifying leakage, and the monitoring of emissions reductions. The Nature

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<sup>5</sup> Workshop by the GTOS's Panel on Global Observations of Forest and Land Cover Dynamics (GOFC-GOLD) held in Jena, Germany in March 2006.

Conservancy and FAN Bolivia recognizes the existence of methods to reduce leakage and enable measuring, monitoring and verification of emissions from deforestation.

42. As outlined by FAO, establishing baselines requires knowledge of past deforestation or changes in forest area and a forecast of the most likely scenario without new policies and incentives (“business as usual”). The FRA 2005 dataset could be used for establishing a baseline for net change of forest area (but not for deforestation) provided that the data reported by the countries are considered to be reliable enough for that purpose. Another option would be to make a new and independent ex post assessment of deforestation and forest area change. This would increase the up-front costs, particularly if forest degradation is included in the baseline.

43. Baselines could be based on the current rate of deforestation expressed in absolute terms (hectares per year) or as a percentage annual change. The forecasting of the baseline scenario could involve a more or less complex modelling of future deforestation or it could be defined through a negotiation process.

44. According to CIFOR, a number of country-wide and project-based assessments were generally available during the decade of 1990. These may be used to reconstruct historical deforestation rates, which later may be used as baseline. In the absence of remote sensing data, aggregated statistical data on forest area and its changes should be treated cautiously.

45. Regarding leakage, the FAO noted that under the Kyoto Protocol not all emissions that may occur from all forest change processes are directly addressed. Fellings, disturbances or degradation may reduce stocking within forests without exceeding the threshold for deforestation as defined. In an extreme case, a country could reap incentives for reducing emissions from deforestation, while contributing on a much larger scale to emissions by using and/or degrading its remaining forests. Addressing this type of leakage calls for monitoring of changes in stocking and degradation. To illustrate, gross emissions from degradation through unsustainable selective logging on 3-8 ha would correspond roughly to long-term carbon emissions from 1 ha of deforestation. Carbon sequestration in above-ground biomass growth of more mature natural forests to offset such losses amounts to only 0.5–2 t / ha yr<sup>-1</sup>.

46. In another form of leakage, reduction of deforestation in one country leads to an increased deforestation or degradation in other countries. The occurrence of such leakage depends to a large extent on the type of land use conversion that takes place. Conversion to shifting cultivation and small scale subsistence agriculture is not likely to generate much cross-border leakage, as people or demand for land, timber or other forest products are unlikely to be displaced to other countries. However, if the current deforestation/ degradation pattern is dominated by commercial extraction or conversion of forest to large scale agriculture that will provide international markets with timber or agricultural products, demand or people might move to another country where land is more readily available for clearing.

47. CIFOR suggested that the development of national targets or caps, similar to emission reduction target in Annex I Parties, may eventually solve the issue of national leakage. Changes in forest area and the associated carbon stocks monitored with acceptable degree of accuracy will be compared against the target to calculate emissions reduction due to deforestation.

48. Knowledge gaps in terms of additionality, leakage, permanence and monitoring of dry tropical forest would also need to be filled, as noted by the UNCCD, by collecting information on credible rates of the extent and severity of soil degradation at different spatial scales; biotic and soil carbon pools and fluxes; the impact of land use changes and desertification on the carbon sequestration dynamics; and the cost-benefit ratio of soil improvement and carbon sequestration practices for small landholders and subsistence farmers in dryland ecosystems.

49. With regard to additionality, the UNCCD considers that the following questions may be critical for evaluating the use of the carbon sequestration service of drylands:

“ If forests do occur in the relatively humid range of the drylands and seem well adapted to these dryland conditions, why is their distribution patchy and not contiguous? Do the dryland forest patches occur in patches of locally less arid conditions, or is the patchiness a result of human exploitation?”

50. Furthermore, to assess tropical dry forest conservation status and emissions, information is required on its distribution pattern and the rate of change in forest extent. Therefore the UNCCD supports the technical issues related to additionality in which the establishment of national deforestation baseline rates (noting major forest types) are determined.

### **III. Policy approaches and positive incentives for reducing emissions from deforestation in developing countries**

#### **A. Overview**

51. In following the mandate of the COP, accredited observers provided views on policy approaches and positive incentives for reducing emissions from deforestation. This section provides a synthesis of these views, by referring to the key points provided by these observers. For the full details of the views provided by observers on the topics, the reader is requested to refer to the original submission(s).

52. This synthesis focuses on topics related to policy approaches and positive incentives, including bilateral and multilateral cooperation; activities of other relevant international bodies; enhancing sustainable forest management; capacity building; and financial mechanism and other alternatives, as addressed in submissions by accredited observers. The other topics on causes; short- and long-term effectiveness with respect to emissions reductions; and the displacement of emissions are discussed in section II of this synthesis.

53. The structure of this synthesis follows closely that of the synthesis of submissions by Parties (part I of addendum 2 of the background paper for the workshop). However, for practical reasons, not in every case, the terminology and topics included in this part of the synthesis correspond to that used in the synthesis of submissions by Parties. In some instances, new views and information on policy approaches and positive incentives provided by the observers (and not found in the submissions by Parties) are also synthesized here.

#### **B. Policy approaches**

54. The Center for International Forestry Research (CIFOR) provided a comprehensive coverage of policy instruments and incentives for reducing deforestation rates in their submission. According to CIFOR, deforestation results from an intricate linkage of people's behaviour, market conditions and policies (or lack of them), these further exacerbated by market failure. The Center also added that there is seldom a one-size-fits-all solution. A first step towards decreasing deforestation rates is to eliminate existing policies and other institutions that favour inappropriate deforestation (stop “lose-lose” scenarios).

55. In addition to providing information on policy approaches, CIFOR also cited the study of Kaimowitz, Byron and Sunderlin (1998)<sup>6</sup> that analysed the effectiveness, targetability, direct costs, indirect costs, equity and political viability of these policies. The reader is advised to read the submission by CIFOR for the complete details of policies noted here in this synthesis.

##### 1. Relation to sustainable development

56. FAO cited that studies suggest that the benefits of pursuing a programme of incentives to avoid deforestation should be considered within the broad context of sustainable development. Recent work by

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<sup>6</sup> Kaimowitz, D., Byron, N. & Sunderlin, W. 1998. Public policies to reduce inappropriate deforestation. In E. Lutz, ed. Agriculture and the environment: perspectives on sustainable rural development, p. 303-322. Washington, DC, USA, World Bank.

FAO ([http://www.fao.org/es/esa/en/pubs\\_pov04.htm](http://www.fao.org/es/esa/en/pubs_pov04.htm) ) indicates that payments for avoided deforestation could contribute to poverty reduction and food security, and thus to sustainable development. FAO work has also indicated that transaction costs of payments for carbon sequestration from land use change are high, and potentially exceed the benefits from participation ([http://www.fao.org/es/esa/en/pubs\\_pov03.htm](http://www.fao.org/es/esa/en/pubs_pov03.htm) (papers 03-06; 03-13)). FAO further suggested that an important issue to include in feasibility studies is the potential contribution from payments for avoided deforestation towards sustainable development.

57. According to CIFOR, links between deforestation and poverty are variable. Often, there are hard trade-offs between halting deforestation and improved livelihoods. Hence, some integrated approach to bridge these trade-offs is necessary to be effective.

58. Climate Action Network International noted that the need for environmental and social impact assessments for policies and measures to reduce deforestation should be assessed. Other NGOs that related addressing the issue to sustainable development include: the Amazon Institute for Environmental Research; Sierra Club of Canada; Vitae Civilis Institute; and Woods Hole Research Center.

## 2. Legal and institutional instruments

59. In the submission of CIFOR a number of policy approaches related to legal and institutional instruments were provided.

60. Direct regulation is the most common form of environmental policy and land-use planning. It directly addresses land conversion by making such action illegal. However, its effectiveness strongly depends on the ability of a government to enforce laws and to penalize non-compliance. Examples include the establishment of national parks, logging bans and land-use zoning.

61. Enhancement of property rights. Well-defined property rights are essential to realize the private benefits from use of natural benefits. In addition, it provides long-term certainty that could contribute to sustainable forest management as well as prevent land speculation.

62. Policies that discourage forest clearing to establish property rights. CIFOR noted that in some countries, property rights to land depend on whether land is used or not. Forest clearing is done to secure land tenure and avoid expropriation. Delinking forest clearing from land tenure is a crucial first step to discourage this kind of clearing. Such types of policies include land titling policies; support for common property regimes; land and capital gains taxes; fewer credit, tax and road subsidies; and anti-inflationary macro-policies. Only policies on support for common property regimes and fewer credit, tax and road subsidies have been shown to have moderate effectiveness. The effectiveness of the rest are either low or unknown.

63. In relation to land issues, Friends of the Earth International raised the concern of displacement of indigenous people and land sovereignty. They also raised the concern as to what efforts will be taken to safeguard the traditional knowledge and practices used to protect forests. Likewise, Vitae Civilis Institute also raised the issue of sustainable livelihoods for traditional forest dwellers and the impacts of any mechanism on them should be addressed.

## 3. Sustainable forest management

64. The submission by CIFOR identified several policies that increase the profitability of forest conservation and sustainable forest management. These policies include: niche marketing for tropical timbers including certification and ecolabelling; abolition of disincentives for long-term sustainable management; greater security of tenure for forest people; development of markets for non-timber forest products; and creation of a system for transfer payments for biodiversity conservation, carbon storage and watershed management. The effectiveness of most of these policies

are moderate, with the exception of policies related to transfer payments, the effectiveness of this being unknown.

65. In relating landscape restoration to sustainable forest management, UNCCD noted that benefits go beyond a specific site and affect a more extensive area of land. According to them:

“Additional priorities should be given to sustainable use of vulnerable areas where a synergistic approach is needed for combating soil erosion, preventing biodiversity losses and maintaining carbon stocks. Further work on collection, development and synthesis of traditional and scientific knowledge and its application to combating desertification, maintaining biodiversity and improving carbon stocks was strongly encouraged.”

#### 4. Integration with other land use activities/ economic activities

66. CIFOR also provided information on policies that relate deforestation to agriculture and other production activities.

67. Policies that affect prices and demand for tropical agricultural and forestry products. Such policies include: population control; limits on economic growth; appreciated exchange rates; price controls on tropical products; export bands and taxes on logging; and import restrictions on primary products (e.g. coffee, cocoa, timber or beef). Most of these policies have moderate effectiveness. Only population control have limited effectiveness.

68. Policies that make production associated with deforestation more costly and risky. By targeting the production activities that require land clearance implies the internalization of negative environmental impacts associated with the conversion of forests, making such activities more costly and risky. Policies that fall under this category include: reduced subsidies for certain agricultural inputs linked with expansion of farm areas; reduced support for colonization and settlement schemes; reduced technical and advisory support for activities on newly cleared lands; reduced road and transportation subsidies; removal of subsidies to logging and forest industries doing destructive exploitation; and removal of tax and credit subsidies for agriculture on newly cleared lands. Most of these policies have moderate effectiveness but the effectiveness of removal of tax and credit subsidies is high.

69. Policies relating to opportunity costs of capital and labour. Labour and capital are major factors for forest clearance and increasing opportunity costs of these could lead to decreased deforestation. Policies that increased urban employment and wages have moderate effectiveness. The work of CIFOR in Cameroon has shown that this type of urban labour absorption can be an effective pathway to halt poverty.

70. NGOs that provided similar views or examples on such types of policies include: Conservation International; and the Amazon Institute for Environmental Research.

71. Sierra Club of Canada suggests that the link between deforestation and bioenergy be given priority of any national initiative to reduce deforestation due to the sustainable development benefits to low-income communities.

#### 5. Linkages with other environmental issues and synergies with other global processes

72. Submissions by observers also related the need to look at linkages that reducing emissions from deforestation has with other environmental issues, and at the same time, promote and ensure synergies among related international processes on such matters.

73. UNCCD highlighted the Viterbo “Workshop on forests and forest ecosystems: Promoting synergy in the implementation of the three Rio conventions”. Outcomes from this workshop:

“... noted the global statistics on deforestation rates for indigenous forests, and the importance of employing new approaches to reverse these trends. Increasing interest was evident in managing forests as ecosystems through sustainable forest management, including by maintaining the environmental services (such as hydrological, soil stabilization, recreational, biodiversity, carbon sequestration services) provided by forests, and the promotion of market-based and policy tools to capture the value of these services, nationally and where applicable internationally. The economic potential for developing national and international markets and market transactions for such environmental services provided by forests was recognized.”

74. The FAO, in its submission, noted the importance of synergies to minimize the huge costs required for organizing, implementing and analyzing assessments of the world's forests. According to them, “creating a stand-alone effort for the sole purpose of measuring deforestation and related greenhouse gas emissions would come at a high total cost and may not produce additional, essential information needed for crafting an effective policy to reduce deforestation and manage forests sustainably in the national context.” Hence, by utilizing established partnerships through the Forest Resources Assessment (FRA) process, GTOS activities and FAO's in-house remote sensing capacity, might offer a solid basis and many synergies to integrate at a reasonable marginal cost such additional information. The scope of the FRA 2010 covers many data and information areas related to deforestation, degradation and fragmentation. In addition, the UNFCCC, IPCC and other international Conventions are official parties to the on-going preparatory process for FRA 2010.

75. NGOs that share the view that there should be recognition of other bilateral or multilateral agreements (e.g. CBD, UNCCD, MDG) that support reducing emissions from deforestation as well as synergies among these agreements include: Conservation International; Climate Action Network International; Sierra Club of Canada; and Vitae Civilis Institute.

### **C. Positive incentives**

#### **1. Flexible and voluntary approach**

76. Two NGOs provided the view that any regime/ scheme agreed on to reduce emissions from deforestation should be both flexible and voluntary. Joanneum Research, on behalf of the ENCOFOR project team, provided the principle that non-Annex I countries should be free to participate in this scheme and proposed three options to allow for flexibility. The options proposed are:

1. “At national or regional level, full carbon accounting of LULUCF without having to address leakage. The condition is to have an operational national LULUCF inventory system. In this case definitional issues (e.g., forest / non-forest) may no longer be relevant.
2. At national level, allow permanent credits for certain land conversion avoidance. Countries would have the option to only select deforestation, or deforestation + forest degradation, or deforestation + forest degradation + devegetation (DDD) of other lands. A condition is to have an operational national LULUCF inventory system for the said activity or activities. This can be seen as being similar to JI track 1, as it too requires the fulfilment of national inventory and reporting requirements.
3. At project level, allow DDD avoidance activities (similar to JI track 2). Methodologies would have to address leakage. This mechanism could result in temporary credits.”

77. Joanneum Research also recommend flexibility in setting national definitions, thresholds, base periods, spatial resolutions and other modalities, followed by UNFCCC approval.

78. Similarly, Fundación Amigos de la Naturaleza is of the view that the approach should be flexible and allow for voluntary targets by the host country.

#### **2. Sources of funding**

79. Conservation International was of the view that it is crucial to provide funding for developing countries to develop the necessary national frameworks to address deforestation. Funding for such efforts

could come from ODA, creation of a new World Bank capacity and market development programme, and a loan programme based on expected future emissions reductions.

80. Friends of the Earth International is of the view that an independent fund would have the potential of being simpler and separated from the flaws and complexities of the larger carbon market and sinks projects under the CDM. A separate scheme could incorporate incentives specific to supporting activities that reduce deforestation, such as transfer of technology and exchange of knowledge on forest protection.

81. The Amazon Institute for Environmental Research (IPAM) mentioned the “positive incentive funds” proposal that was announced by the Ministry of Foreign Affairs, Brazil at COP11. This proposal argues that efforts to reduce emissions must not discriminate against those that do not have forests. It consequently assumes that Annex I countries would provide financial resources for this fund in addition those already provided through GEF or international cooperation programmes.

82. IPAM also mentioned the case of Costa Rica where rural landowners are compensated for maintaining their forests. Up-front financing and investments (e.g. to develop deforestation monitoring systems) are required by developing countries to effectively carry out efforts to reduce deforestation. According to IPAM, external funding for investments to reduce deforestation could be in the form of concessional funds through the World Bank or bilateral cooperation. Depending on the situation in each country, these pre-investment funds could be negotiated in the form of subsidized loans or grants linked to their accreditation to participate in a mechanism such as “compensated reduction”.

83. Fundación Amigos de la Naturaleza also noted the necessity of up-front financing. This could come from debt-for-nature swaps, ODA funds, revolving funds, interparty incentives, loans with conditionality, advanced payments, and new donor programmes. The Nature Conservancy also expressed similar views in relation to up-front financing.

### 3. Market-based approaches

84. CIFOR noted a number of general economic and financial instruments that target the behaviour of individuals through price signals and by compensating providers for foregone profits from not converting land. These instruments include transfer payments; subsidies (providing incentives for good behaviours); taxes (e.g. taxing agricultural commodities that clear forest); permit trading; and certification schemes (e.g. products that avoid deforestation gain market advantages). Another form of financial instrument is microfinance schemes that give incentives to activities that do not clear forests such as intensification of agriculture or alternative income generating activities.

85. Conservation International provided several recommendations on market incentives. Their recommendations include: consideration of “Compensated Reductions structure” to create incentives under a cap and trade system; broad and flexible mechanisms that allow variation from market to market and country to country; and allowance for developing countries to implement and bank deforestation emissions reductions during the current commitment period. Market incentives should also consider developing links to other global conventions, markets and payment for ecosystem services.

### 4. Crediting/ Trading Mechanisms

86. Conservation International, in their submission, proposed flexible mechanisms that are sensitive to national contexts of countries and that include voluntary commitments, sectoral (e.g. forestry sector) commitments, and national caps or project level interventions and that deliver investment grade emission reductions. This NGO also proposed temporary credit mechanisms that provide a flexible way for countries to purchase short-term offsets while pursuing new technology pathways concurrently with these investments.

87. Fundación Amigos de la Naturaleza (FAN) provided the view that the fungibility of credits with emissions trading systems is essential. Fungibility facilitates markets and trading that are essential for the

self-sustainability of the measures and incentives to reduce deforestation. According to them, the climate change regime could either have emission reduction units that are fungible with those generated in other sectors and/or with emissions/ removals in other countries.

88. Climate Action Network International (CAN) is of the view that if emission reduction units from reducing deforestation are allowed to enter the international emissions trading system, then it may be necessary to address scale issues through various approaches such as limits on amount allowed to enter the system or permitted to be used towards meeting targets. Different options should be investigated, these could include but not limited to insurance, discounting, incentives, temporary emissions, buyer and seller liability and other elements of a compliance system.

89. The view of the Vitae Civilis Institute is that it is essential to undertake a full assessment of the potential of carbon markets and crediting systems to address tropical deforestation. Such an assessment should identify risks, pitfalls and opportunities such arrangements pose and suggest options for addressing the risks and pitfalls. The Institute also identified several key concerns that must be addressed in order for any crediting system to be minimally acceptable.

90. Stock-based Methodology. The Centre for International Sustainable Development Law (CISDL) proposed the “Stock-based Methodology” which is based on the following principles:

- “It would rely on a cap-and-trade approach.
- It would define a trading mechanism (the Carbon Reservoir Mechanism) which would be modelled after Joint Implementation (JI) rather than the CDM.
- Carbon credits would be issued for the carbon stock stored in tropical forest at a certain reference date.
- A quota of the credits would be made available for trading.
- Developing countries establish the amount they wish to make available for trading.
- The rest of the credits would be held in a reserve that would need to be maintained in order for a country to be eligible to trade its credits, similar to the current commitment period reserve.”

91. Full details of the approach can found in the submission of the Centre for International Sustainable Development Law.

92. Compensated Reduction. Environmental Defense provided a detailed submission on the Compensated Reduction approach, including proposing legal options for opening the carbon market to this approach and the associated advantages/ disadvantages of each option. Three options on what framework to place Compensated Reduction were proposed: in a “stand-alone” agreement; in subsequent commitment periods post-Kyoto; and “early action” agreement (early reductions earned prior to 2012 will be rewarded with carbon marker access). Environmental Defense is in favour of this third option, as they see this option not requiring amendment of either the Kyoto Protocol or the Marrakesh Accords since crediting is reserved for post-2012.

93. The Amazon Institute for Environmental Research (IPAM) also provided a detailed submission on the Compensated Reduction approach. In their submission, they proposed two scenarios, one in which there would be no compensation for deforestation and the second, Parties authorize a negotiated amount of deforestation offsets for Annex I countries, as long as these countries make deeper cuts than would otherwise have been the case. Under this second scenario, tropical nations would obtain significant rewards and developed countries would be stimulated to establish higher goals, while maintaining the current Kyoto model for the second commitment period.

94. According to IPAM, an effective compensated reduction programme must necessarily be a national programme. They provided proposals on how funds obtained from compensation for deforestation reduction would be invested:



“Funds obtained from compensation for deforestation reduction would be invested in public programs and policies aimed at enforcing environmental legislation, providing support to economic alternatives to extensive felling of the forest (including carbon credit). This would promote strengthening of institutional capacity in remote forest regions as recently demonstrated in parts of Brazilian Amazonia (FEMA, 2001; Nepstad *et al.*, 2002; Fearnside, 2003), through environmental licensing in the states of Amazonia and also the Deforestation Control Program. Furthermore, a substantial portion of the forest can be protected through conservation units if adequate funding is available (Bruner *et al.*, 2001; Pimm *et al.*, 2001; Nepstad *et al.*, 2006). As a means of addressing the issue to initial lack of funds for reducing deforestation, since remuneration for reduction follows verification, countries that desire advance financing for deforestation reduction could execute agreements with bilateral or multilateral financial institutions or attract investments from the private sector for this purpose. Public financing, however, should not be diverted from existing development assistance, as agreed upon in the Marrakesh Accords. Countries could also issue carbon bonds convertible in subsequent commitment periods, conditioned on verification and certification of reductions.”

95. The Nature Conservancy also proposed the compensated reductions approach in their submission.

96. No-regrets targets using a target corridor. In this approach, proposed by Joanneum Research, on behalf of ENCOFOR project team, incentives are given to reduce emissions below the target, but there is no penalty for exceeding the target. Joanneum Research, in their submission, described how such an approach would work:

“Targets could be set in the form of a corridor. This corridor could be derived using historical emissions, emission trends, and trends in underlying causes. If actual emissions are above the corridor, no credits can be sold but neither is there any liability (no-regret targets). If the actual emissions are within the corridor, the amount of credits per ton of emissions by which the country “undershoots” the ceiling, varies between zero (when the deforestation, degradation and devegetation (DDD) rate is at the ceiling of the corridor) and one (when the DDD rate is at the bottom of the corridor). This corridor approach reduces hot air and reduces the risk of missing a single-level target. Even when using the corridor approach, it is possible that emissions could exceed the corridor ceiling in some years. In order to mitigate this, a fraction of credits in other years could be kept in a buffer, to make up for any “shortfalls” when emissions are above the ceiling.”

## 5. Clean Development Mechanism (CDM)

97. Conservation International provided several suggestions on amending post-2012 CDM LULUCF rules to promote the development of land use and forestry projects that reduce deforestation pressure. They were of the view that the present limitations and criteria for CDM LULUCF projects should not be carried forward when considering incentive options or criteria for participating countries engaged in reducing emissions from deforestation and other land-use activities.

98. Sierra Club of Canada is of the view that national initiatives to reduce deforestation would be acceptable as part of the CDM (or its equivalent) in a post-2012 commitment period, subject to limitations:

“. . . only if the supply of credits averted deforestation would create were balanced by increased demand resulting from the adoption of deeper emission reduction credits on the part of developed countries, as called for under the Kyoto Protocol’s Article 3.9. An unbalanced carbon market dominated by low-cost credits originating from reducing deforestation would not generate the incentive necessary to shunt the economy of developed countries onto a more sustainable path where per capita emissions of developed countries were reduced to a level which would not pose a threat to the global climate.”

## 6. Credit for early action

99. Conservation International provided the view on strengthening the Kyoto Protocol to reward countries that produce measurable and verifiable emissions reduction and allow all or some of these

reductions to be creditable during the true-up period in 2013. Such an approach would reward early action by developing countries and might also encourage Annex I countries to consider taking more aggressive commitments.

100. Fundación Amigos de la Naturaleza was of the view that it is important to promote some voluntary national level pilot initiatives that could deliver experiences to support the development of positive incentives and to agree on outstanding technical and scientific issues. To stimulate participation in pilot programmes, early crediting of avoided emissions should be guaranteed. Early crediting and voluntary pilot initiatives could set up a framework for gaining practical experiences and benefit institutional learning.

101. Joanneum Research, on behalf of the ENCOFOR project team, also recommended early action. According to them,

“Early crediting could include a first accounting period from 2008-2012, with credits generated in that period to be used in the international market from 2013. During the first commitment period, a learning phase (similar as the Activities Implemented Jointly pilot phase) could be executed in order to get experience and knowledge. This could include pilot projects and collaboration with other UN institutions working in this area (e.g., FAO and ITTO).”

#### **D. Multilateral and bilateral cooperation**

102. Observers also provided views, information and experiences on several areas of multilateral or bilateral cooperation. They also noted areas for capacity building, exchanging information and experiences and pilot programmes.

103. The FAO highlighted their FRA process which, for over nearly six decades, has produced some experiences that are relevant to the current attempts to reduce deforestation under the international agreements on climate change. These experiences include:

- close collaboration with all countries produces highly relevant data, transparency, and feedback to countries that has been shown to be vital for many questions of national forest policy, including policies to tackle deforestation and its causes;
- by using sustainable forest management as a reporting framework, scope and reporting detail are relevant to international arrangements and agreements related to forests and to development, e.g. the Millennium Development Goals;
- biomass and carbon changes are being reported for most of the world's forests;
- coordination and harmonization with other international reporting processes within the Collaborative Partnership on Forests, e.g. UNFCCC, CBD, UNECE, ITTO, and the regional processes on Criteria and Indicators for Sustainable Forest Management is feasible;
- terminology and definitions are chosen by common consent and used by all parties to the process;
- the history and long-term involvement of countries and stakeholders in the FRA process provides a solid base and a framework, that has a track record of being able to incorporate new developments and requirements.”

104. FAO has also led the process (which it considers essential) of harmonizing definitions between different international reporting processes.

### 1. Capacity building

105. According to CIFOR, “capacity needs to be nurtured at several levels to ensure that each of these levels (national, regional and local) is allocated an adequate responsibility and counts with the resources to fulfil it.”

106. Conservation International is of the view that plans are needed to “provide financial and technical support to countries that desire to pilot new initiatives generating emissions reductions and sustainable development benefits as proposed by communal, private and indigenous land stewards. Technical support should include, for instance, inventory techniques, forestry expertise, methodological approaches, land tenure, financial, legal and regulatory support”. Similarly, the Nature Conservancy shares the view that additional capacity will be required by most developing countries to implement national programmes to monitor and quantify emissions from deforestation. Vitae Civilis Institute also provided similar views related to capacity building and monitoring of deforestation.

107. For Joanneum Research, on behalf of ENCOFOR project team, they are of the view that capacity building initiatives to support early action should be a priority and should begin immediately.

### 2. Exchanging information and experiences

108. Conservation International provided information on several projects which they undertook in developing countries. The Mantadia-Zahamena Corridor Restoration and Protection Project in the Republic of Madagascar conducts forest restoration and protection activities and has significantly increased forest cover and reduce deforestation, sequestering and avoiding approximately 17 million tons of CO<sub>2</sub>. Conservation International and their partners also studied the carbon storage values for five complexes of indigenous lands in five Amazonian countries. These complexes are estimated to store well over 12 million tons of CO<sub>2</sub>, a substantial portion of which could be emitted over the coming decades if base period conditions continue. In addition, this NGO was of the view that information sharing forums for countries and experts to collect and share national frameworks and alternative methodologies could work to expand the development of new programs and markets in the pre- and post-2012 timeframe.

109. The Amazon Institute for Environmental Research provided the example of the Brazilian Amazonia and cited studies of deforestation and emission rates in that region. They linked deforestation in the region to policies implemented and economic conditions.

110. The Fundación Amigos de la Naturaleza proposed several policies that could lead to a substantial reduction of deforestation in Bolivia. These policies include improving the economic performance of the forestry sector; enhancing law enforcement and governance; improving consistency in land use planning; extending protected, indigenous areas and forestry reserve schemes; and reducing unnecessary biomass loss. They added that all activities should be based on comprehensive participation of all stakeholders in design and implementation.

### 3. Pilot programs or areas of studies.

111. FAO proposed that before entering into detailed technical issues on how to design a global mechanism to reduce emissions from deforestation, a feasibility analysis should be conducted to establish the fundamentals for future negotiations. Such fundamentals would relate to whether novel payments will provide sufficient incentives to reduce deforestation; legal and institutional frameworks will channel incentives to where they bridle the most active primary and underlying causes of deforestation; the costs of negotiating and establishing modalities of a mechanism are prohibitive when compared to potential new revenues created for developing countries; and numerous ancillary benefits of reducing deforestation can be quantified and considered.

112. Göteborg University also proposed case studies to get empirical data to be used in policy-making to avoid generalization and to get a closer understanding of the causes behind land-use change.

113. Sierra Club of Canada proposed that for the time leading up to the post-2012 period, three national pilot projects in the regions of Africa, Latin America and Asia, supported by the international community, should be organized. These pilot projects would assess the feasibility of implementing and administering national initiatives to reduce deforestation in an open, transparent and equitable manner. The Sierra Club also proposed that the extent of risks and impacts of climate change on tropical forests be ascertained prior to the inclusion of reduced deforestation in any future climate change regime. This would allow determining the long-term contribution of tropical forests to climate change mitigation.

114. The Nature Conservancy also proposed new national or regional pilot initiatives that will test the effectiveness of policies and programmes to reduce emissions from deforestation. They recommended that Parties invest in a fund to provide resources for pilot programmes over the next 5 to 10 years that would demonstrate verifiable reductions in deforestation emissions at reasonable cost. The lessons learned from these on-the-ground activities would inform future policy-making decisions.

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