

Brazil beyond Kyoto: A review of options to promote sustainable forestry under a climate regime

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Abstract

Sinks have always been “a bone of contention”, especially the issue of avoiding deforestation. Now, looking ahead at negotiations for future climate regimes, we have to reconsider many of the issues. This report looks into modalities that aim to provide incentives to reduce deforestation, promote sustainable forestry and enhance the uptake in the terrestrial sink, without resulting in unduly generous crediting, besides reviewing the report of Persson & Azar (draft April 2004).

The report reviews options available to policy makers for the design of future climate regimes and how sinks could fit into such regimes. It continues with looking at some successful cases of slowing deforestation. One example, the case of Mato Grosso, owes its success to a new licensing and control system for deforestation and stringent law enforcement. Revenues of the tax system are redistributed into the area to contribute to sustainable development, rather than the revenues going to the federal government.

Another 2 cases illustrate how avoiding deforestation by creating national parks, can lead to significant avoidance of emissions. At the same time extensive community programmes bring sustainable forest management to the landowners in the buffer zones around the parks, hence avoiding leakage. Together this illustrates that good avoiding deforestation projects are feasible. However, we must develop appropriate modalities to ascertain the project are successful, leakage is minimised and no unduly crediting occurs. Hence, several modalities are proposed.

1. updating the baseline periodically, e.g. every 5 years;
2. taking the level of deforestation at the time of updating the baseline as the flat level to credit against, and not against the incremental deforestation curve that is to be expected over the entire period (this avoids awarding projected high deforestation rates in the near future); and,
3. reduce leakage by strong community programmes and introducing sustainable forest management in buffer zones around national parks or protected areas.

Finally, it is concluded that (a) the temporary Certified Emission Reduction concept is not applicable to avoiding deforestation projects, since that accounting regime was designed for sequestration which could be reversed and not for reducing emissions that are avoided forever: reducing emissions is the same in all sectors, and (b) we do not need modalities to factor out direct human-induced effects from natural and indirect human-induced effects because we credit against a baseline of *emissions* from deforestation, and the with-project scenario is a fixed number representing the average storage capacity of the vegetation type normally occurring on that particular spot. Hence, there is no enhanced *growth* in any of these numbers as we deal with emissions and stocks and not with removals that can be influenced by natural effects or indirect human-induced effect.



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Summary

Sinks have always been “a bone of contention”: not only **what** sinks could be used to offset greenhouse gas emissions of other sources (existing forests, new forests, agriculture, etc), but also to **what extent** they could be used (in relation to targets and caps), and **how** they could be used (under which rules, modalities and guidelines). There are ample reasons why sinks are so controversial, two of which are mentioned in the report. The 1st one is permanence or rather the “non-permanence” of carbon sequestration. The 2nd reason is that with our current scientific knowledge it cannot be determined hitherto what proportion of biomass growth is resulting from natural processes or are caused indirectly by anthropogenic actions, and what proportion results from direct human-induced influences.

Looking ahead at negotiations that should lead to intergovernmentally-agreed climate regimes in future it is of utmost importance that we find an appropriate way of addressing the sinks issues so as to enhance chances that Parties will “buy into” a future climate regime, especially those who now turned away from the Kyoto Protocol, notably the US and Australia, and those who may need to increase their level of participation in a possible future climate regimes, in particular Brazil, closely followed by India and China.

The main objective of this study is to give an in-depth review of the report “Brazil beyond Kyoto: Prospects and Problems in Handling Tropical Deforestation in a Second Commitment Period” by Martin Persson and Christian Azar and to commend and expand on the modalities issue in the report (the version that has been reviewed is dated April 2004). The modalities should aim to provide incentives for sustainable forestry and to enhance uptake in the terrestrial sink, without resulting in unduly generous crediting.

This report reviews the report of Persson & Azar and indicates areas where the report could be strengthened or complemented. It provides a brief review of sustainability and sustainable forest management and elaborates options that policy makers have at their disposal when working on the design of a future climate regime. Finally it addresses the question *how can we promote good forest management practice and enhance – or at least maintain – the sink and at the same time prevent unduly crediting.*

Review of the report

This section has been deleted in this version of the report at the request of the Swedish Energy Agency: the author has been given permission to use this report with the exception of the comments made with respect to the report produced by Persson & Azar.

Sustainable Forest Management

The debate on sustainable forest management has gained momentum over the last decades. Whilst forest managers could act in reasonable isolation in the past, forests and forest functions have now become of global interest. And with the transgression of that boundary

the range of stakeholders involved has broadened significantly. If sustainable yield was the biggest worry of managers in the past, they now have to address a whole array of requirements varying from local environmental and social considerations to national and international political concerns.

If we are to design a regime that caters for the interests of all stakeholder groups, it has to be **environmentally sound, socially responsible, economically viable and politically acceptable**. This is a daunting task as the actual physical protection of forest functions takes place on the level of the forest management unit, whilst the requirements are set on levels more distant from the forest; even up to a level of international negotiations under UN treaties. And although sustainable use and the preservation of forests and forest functions may be the optimal strategy collectively or globally, it might not be the dominant strategy for the nation or the people living directly in, in the vicinity of or from the forest: priorities of stakeholder groups do not always coexist in harmony. Bridging these gaps is the challenge we face.

There are numerous standards related to forestry and forest management. Less so that claim to guarantee sustainability. Even less so which are internationally applicable. The standard that has been most successful to date and that pushed all other standards and initiatives aside is interestingly enough the toughest standard in terms of forest management: the Forest Stewardship Council's Principles and Criteria. The area that has been certified against this standard is coming up to 42 million hectares in 60 countries, together representing 595 forest areas (last update March 2004: <http://www.fscoax.org/principal.htm>). It has the broad support of environmental groups, social groups and industry.

Types of Climate Regimes

The core element of any climate regime under the UNFCCC should be that it is environmentally effective: "stabilise greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (the objective of the UNFCCC as reflected in article 2 of the convention: UNFCCC, 1992). But besides **environmentally effective** a regime needs to be **scientifically sound, just in terms of ethics and equity, and as a consequence politically acceptable**.

A selection of options of how to "share the burden" or rather set targets is discussed, being:

1. the "traditional" approach; the way in which the Kyoto Protocol came into existence based on the willingness of countries to make commitments followed by negotiations to take specific 'wishes' into account.
2. the "Brazilian Proposal": individual country ceilings that together indicate the maximum increase in the global mean surface temperature that will be tolerated.
3. a separate sinks target for particular countries. Under such a regime various sub-categories can be envisaged. A description of pros and cons of all the sub-categories can be found in the full text. Here only the summarising figure is presented ranking the usefulness of the various sub-categories.

| Fungibility | | Sector to sector | |
|--------------------|-----|------------------|----|
| | | Yes | No |
| Country to country | Yes | -- | ++ |
| | No | + | -- |

4. a regime of “contraction and convergence” whereby a global emissions capacity (contraction: that overall level has to come down) is ultimately divided amongst countries on the basis of equity: the same amount per capita.
5. the “multi-stage regime”: a quantitative regime whereby countries gradually increase their level of participation in the regime by moving from one stage to a next depending on their level of development.

As rightfully concluded in the report of Persson & Azar and although driven by various forces, deforestation is mainly the result of the lack of law enforcement (most likely due to different priorities of federal and state governments) and a “chaotic property rights system”. The latter relates back to the fiscal system that is being employed to raise revenues from forestry activities. The redistribution of revenues should be allocated to support objectives such as sustainable forest management (SFM), environmental protections, good governance, community development, etc. in the region itself. Unfortunately, in Brazil such fees go to the federal government and not to local authorities who could allocate the resources back into the region and the forest.

National Parks, Forest Reserves and Nature Conservation

Brazil recognises many different types of protected areas, national parks, conservation units etc., all serving different purposes. Lack of resources unfortunately is quite common for programmes of conservation units and although this is sad, it creates an opportunity to take action under a climate regime as it creates an opportunity for sinks projects: *programme* additionality of such a project would be beyond any doubt.

The current area of 15.2 million hectares of “National Forests” (FLONAs) in the Amazon partially overlap the indigenous areas, leaving about 8 million hectares at the moment to supply internal and export markets of sustainable produced timber (the objective of FLONAs). According to Deusdará Filho (2001, cited in Fearnside 2003) an area of 50 million hectares would be required to satisfy demand and according to Veríssimo, Salomão & Barreto (2000, also cited in Fearnside, 2003) an area of 115 million hectares (or 23% of the Legal Amazon) is suitable for the creation of FLONAs in that it is neither indigenous land, a conservation unit, deforested, or inaccessible. Hence, there is an enormous potential here.

The case of Mato Grosso

Mato Grosso has been one of the Amazon states that traditionally have the highest deforestation rates but recently a state-level programme of licensing and controlling deforestation has been very successful. Here law enforcement did lead to slowing the loss



of Brazil's Amazon Forest as the programme is driven by the state itself and not by the federal government. The success illustrates that change can occur, even from within Brazil. Therefore, one of the major arguments that Brazil has always used in the negotiations – deforestation in the Amazon cannot be controlled – seems not to be true.

Successful projects arresting deforestation

Various projects have been initiated over the past decade that anticipated the inclusion of avoiding deforestation under the CDM. Two such projects are mentioned:

1. The FACE Foundation restoration projects in Uganda; and,
2. The Protected Areas Project in Costa Rica.

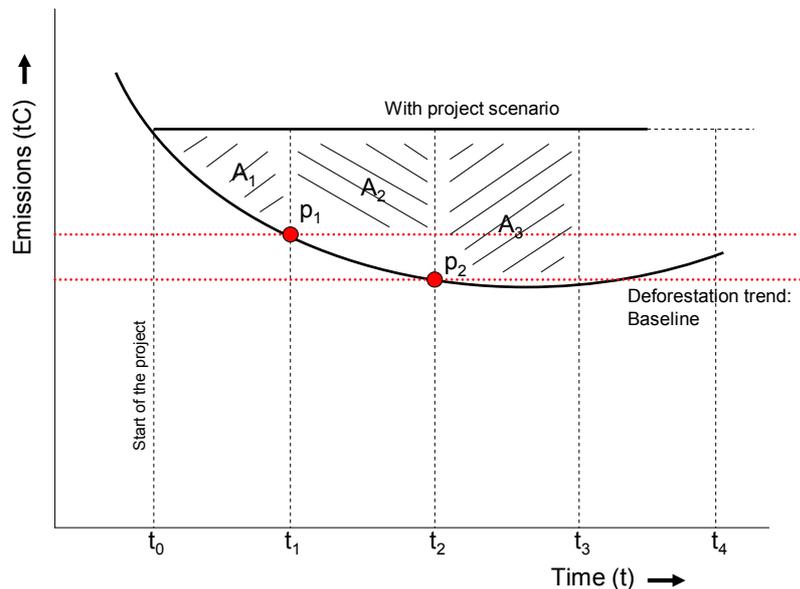
Both examples are avoiding deforestation in conjunction with a good community programme to avoid leakage, which leads to significant avoidance of emissions and contributes to sustainable development. In addition, the Costa Rican project introduces sustainable forest management in the buffer zones around the park to avoid leakage.

What has been demonstrated here is that good projects that reduce emissions from deforestation are possible **if** the will exists to do so, but we must design modalities that will facilitate appropriate accounting for the activities if they are implemented. In the context of reducing emissions from deforestation the baseline setting and leakage will most likely be the biggest challenges.

The choice of baseline on a national level can have a major impact on the integrity of an international climate baseline but project baselines can be much more precise than national or regional baselines in countries like Brazil.

One criticism with respect to baselines for avoiding deforestation projects has always been that bad performance of a country in terms of deforestation, is awarded with better opportunities for projects avoiding it. E.g. if credits are issued against a baseline looking for instance 30 years ahead, more credits will be issued if the prognoses for deforestation are high in that region.

This could be overcome to some extent by 2 modalities: (1) updating the baseline periodically, e.g. every 5 years, and (2) by taking the level of deforestation at the time of updating the baseline as the level to credit against, and not the incremental deforestation curve that is to be expected over the entire period. This is illustrated in the figure below with the lines running through p_1 and p_2 .



In the first period after initiating the project, credits could be issued against the baseline as estimated at the time of writing the Project Design Document (PDD). The amount of credits would equal A_1 . At the start of the next period at t_1 the level of deforestation could be assessed and be taken as the level over the entire period running from t_1 to t_2 . The amount of credits would then equal A_2 , and so forth.

This approach would deliver a baseline that is the closest proxy to the deforestation trend in the absence of the project, and it refrains from crediting possible bad performance in future. As illustrated in the examples, leakage can be reduced significantly if land users or owners are involved in the project. Hence, avoiding deforestation should be done in collaboration with land users: they are key in the protection and conservation of the forest vegetation. If their access to the resource is cut off or limited, communities are likely to turn against the project.

Accounting

The tCER concept is not applicable in cases of reducing emissions since that particular accounting regime was designed for sequestration which could be reversed and not for reducing emissions that are avoided for ever. Therefore, accounting rules that were required to deal with non-permanence for afforestation and reforestation projects are not necessary. Credits from avoiding deforestation as such are fully fungible with credits derived from other sectors.

“Factoring out” has been on the political agenda for a number of years now. It relates to separating direct human-induced effects on vegetation from natural and indirect human-induced effects. This can range from anything from natural fires, insect infestations, diseases and windstorms, to changing precipitation and temperature patterns, increased CO_2 levels and nitrogen deposition, and effects of pre-reference year practices and activities in forestry. The reason for wanting to factor out these effects is that the natural uptake and



indirect effects of human activities compensate on a global scale for emissions from tropical deforestation. The current state of science with respect to methodologies to factor out natural uptake and indirect effects of human activities is that it is currently not doable to develop such methodologies.

But the question arises whether we need to factor out these effects when looking at avoiding deforestation on project level. And the answer is a simple 'no': we do not need modalities to factor out on a project level because we credit against a baseline of *emissions* from deforestation. In practice, the with-project scenario does not include growth: it will be a fixed number that is the average storage capacity of the vegetation type that normally occurs on that particular spot. *E.g.* a particular forest type belonging to the high tropical forest belt in the example of the Mount Elgon National Park in Uganda contains approximately 220 tC ha⁻¹. If deforestation in the baseline scenario is *e.g.* 2% per year, this would result in a gross amount of offsets of 4.4 tC ha⁻¹. There is no enhanced *growth* in any of these numbers as we deal with stocks and not with fluxes and therefore, no growth that can be influenced by natural effects or indirect human-induced effect. Obviously it is a different case for areas where deforestation already took place and claims are made for the natural forest vegetation growing back: this is a totally different issue.

Also in the case of forest management we are dealing with an entirely different situation. If biomass stocks increase as a result of the improved management strategies, we would need to correct the offset claim for natural uptake, indirect effects of human activities, past management practices, etc. But in the case of avoided deforestation we do not need to factor out.

There might be a very slight chance that the average storage capacity for natural forest is influenced by environmental circumstances, such as higher temperatures etc. but the atmosphere is oblivious to that: what counts are the emissions. And avoided emissions are pure, no matter what. Hence, factoring out is not an issue in the case of avoiding deforestation on project level.

----- END of SUMMARY -----

1. Introduction

1.1 Background

1.1.1. The UNFCCC and the Kyoto Protocol

The United Nations Framework Convention on Climate Change (UNFCCC), in its Article 4(d) – “Commitments” – decides that all Parties shall “promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems” (UNFCCC, 1992). In consequence, the Kyoto Protocol – adopted in 1997 by the Conference of the Parties at its 3rd session (COP3) – included various references to sinks, most notably in its Articles 3.3 and 3.4 (Kyoto Protocol, 1997). However, sinks have always been “a bone of contention”: not only **what** sinks could be used to offset greenhouse gas emissions of other sources (existing forests, new forests, agriculture, etc), but also to **what extent** they could be used (in relation to targets and caps), and **how** they could be used (under which rules, modalities and guidelines). For example, rules, modalities and guidelines for the use of sinks under the Clean Development Mechanism (CDM) have only recently been adopted at COP9 in December 2003 in Milan, Italy.

1.1.2. Controversy over sinks

There are ample reasons why sinks are so controversial, two of which will be mentioned here. The 1st one is permanence or rather the “non-permanence” of carbon sequestration. Endless debates have been going on related to the usefulness of the temporary storage of carbon in biomass and wood products. A further elaboration of this issue goes beyond the scope of this report. But it is clear that any regime that includes sinks must be able to deal with the non-permanence issue. In the currently adopted COP decisions an adequate format and politically acceptable solution has been laid out to deal with the accounting of non-permanent emission reductions: the temporary Certified Emission Reduction (tCER).

The 2nd reason for controversy over sinks is more complicated and relates to the role of sinks in the terrestrial biosphere in the context of the global carbon budget. To put it plainly: science does not know exactly how much carbon is located where in the terrestrial biosphere part of the global carbon cycle. Despite the fact that emissions from land-use change (principally deforestation in the tropics) were 1.7 Gt carbon (± 0.8 Gt C yr⁻¹) in the period 1980 to 1989, the total global carbon uptake in terrestrial ecosystems led to a sink over that same period of time. This was due to land-use practices and natural regrowth in middle and high latitudes, the indirect effects of human activities (e.g. atmospheric CO₂ fertilization and nutrient deposition), and changing climate (both natural and anthropogenic) (IPCC, 2000), but it is unknown how much is due to which aspect of that list. With other words: science cannot determine hitherto what proportion of biomass growth is resulting from natural



processes and which ones from human-induced influences. Crediting existing forests in particular involves a high degree of uncertainty in this context.

1.1.3. Sinks in future climate regimes

These 2 issues (and others of course: it wasn't 'just' sinks) have led to significant debate in the policy arena and complications in reaching agreement in the negotiations. It took a Special Report on LULUCF (IPCC, 2000) and various years of working on the detailed implementation rules of the Kyoto Protocol, but with the adoption of the Marrakesh Accords (the results of COP7, 2001) there should be no hinder as to ratifying the Protocol and see it enter into force. The latest sinks decision adopted in Milan, provides further guidance on the operationalisation of the Kyoto Protocol.

However, since the Bonn Agreement was reached at COP6 in the year 2000 the geo-political landscape has changed radically and entry into force of the Kyoto Protocol seems further away than ever, even with or despite the Marrakesh Accords. Looking ahead at negotiations that should lead to intergovernmentally-agreed climate regimes in future, with or without the Kyoto Protocol entered into force, sinks remain a serious peril and a threat. After all, sinks have been close at the heart of those who now turned away from the protocol, notably the US and Australia, and of those who may need to face a next step in their level of participation in a possible future climate regime, in particular Brazil, closely followed by India and China. Therefore, it is of utmost importance that we find an appropriate way of addressing the sinks issues so as to enhance chances that Parties will "buy into" a future climate regime.

1.2 Purpose of the Study

The main objective of this study commissioned by the Swedish Energy Agency is to give an in-depth review of the report "Brazil beyond Kyoto: Prospects and Problems in Handling Tropical Deforestation in a Second Commitment Period" by Martin Persson and Christian Azar and to commend and expand on the modalities issue in the report (the version that has been reviewed is dated April 2004). The modalities should aim to provide incentives for sustainable forestry and to enhance uptake in the terrestrial sink, without resulting in unduly generous crediting.

A politically acceptable solution to the sinks issue and the 2 problems described above in section 1.1.2 could facilitate discussions that we will undoubtedly face in the near future when our work commences on designing a future climate regime.

1.3 Outline of this report

After chapter 1, which is an introduction to the report, the 2nd chapter reviews the report of Persson & Azar (draft version dated April 2004) and indicates areas where the report could be strengthened or complemented with additional material, without criticising the report: the report in general can be considered as very good. This section contains some general remarks and a number of detailed comments.



Chapter 3 is a very brief review of sustainability and sustainable forest management to depict the criteria that a future climate regime would need to meet from a forestry perspective, if it were to be successful.

Chapter 4 elaborates some of the options that policy makers have at their disposal when working on the design of a future climate regime, e.g. how targets can be set, and how those targets can be achieved; how incentives can be created for sustainable forestry and what problems may need to be faced when trying to promote and implement sustainable forest management practices. This could possibly be merged with section 4.3 of the Persson & Azar report.

Chapter 5 deals with the question: how can we promote good forest management practice and enhance – or at least maintain – the sink and at the same time prevent unduly crediting? The underlying thought here is: how can we use the sinks issue to persuade Brazil, and possibly other Parties (notably the US), to step-up their level of participation in the climate regime, to the benefit of the climate. It can be seen as an assignment to find the synergy between sinks, climate, and the broad participation in / acceptance of the structure of a possible future climate regime.

As this study mainly tries to review another report and provides material and insights that may be used in the Persson & Azar report, no extensive section with conclusions, discussions or recommendations has been provided.



2. Review of the report Brazil beyond Kyoto (Persson & Azar, draft April 2004)

This chapter has been deleted from this version of the report that is in the public domain at the request of the Swedish Energy Agency

3. Sustainable Forest Management

3.1 Introduction

The debate on sustainable forest management has gained momentum over the last decades. Whilst forest managers could act in reasonable isolation in the past, forests and forest functions have now become of global interest. And with the transgression of that boundary the range of stakeholders involved has broadened significantly. If sustainable yield was the biggest worry of managers in the past, they now have to address a whole array of requirements varying from local environmental and social considerations to national and international political concerns.

Some may argue that therefore, the concept of sustainability interferes with national or regional developmental priorities, while others take the opposite view, seeing sustainability as a good opportunity to lever the fulfilment of developmental needs from short-term, often depleting strategies, towards long-term solutions with the retention of resources.

3.2 The 4 cornerstones of sustainable forest management under a climate regime

If to date there were 3 cornerstones of sustainability, being environmental, social and economic acceptability, more recently the political dimension has become increasingly important. When trying to align these 4 aspects on all levels – from the local to the international level – it is obvious we are facing some challenges. On the global level we deal with interests related to e.g. CO₂ sequestration and the conservation of biodiversity. On the national level considerations related to development objectives and economic interest of the country play an important role. In addition, there is the issue of country sovereignty to deal with. Regionally watershed management, soil protection, landscape issues, employment, and the benefits for associated industries are amongst the issues to address. Whilst at the local level or even individual level the continued wellbeing of entire livelihoods may well be at stake: income, continued access to resources and possibly traditional and/or historic sites, work and working conditions, etc.

Hence, if we are to design a regime that caters for all of these interests it has to be **environmentally sound, socially responsible, economically viable and politically acceptable.**

This is a daunting task as the actual physical protection of forest functions takes place on the level of the forest management unit, whilst the requirements are set on levels more distant from the forest; even up to a level of international negotiations under UN treaties. The costs resulting from meeting the requirements set at high international levels come down on the

forest management unit and although sustainable use and the preservation of forests and forest functions may be the optimal strategy collectively or globally, it might not be the dominant strategy for the nation or the people living directly in, in the vicinity of or from the forest: priorities of stakeholder groups do not always coexist in harmony. Bridging these gaps is the challenge we face.

3.3 Defining Sustainability

A widely used definition of sustainable development comes from the 1987 WCED report "Our Common Future" where it is defined as: "development which meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). But how do we translate that to more practical levels?

As the lead negotiator on sinks of Brazil at the time of the COP6, 7 and 8, Dr. Gylvan Filho Meiro always used to say when he was representing the enormous large and heterogeneous Group of 77&China: "We start with the principles and work our way down". This is a good advice in this particular case as we are trying to capture commonalities between all the different groups of stakeholders and only on the general, conceptual level of principles can we achieve that.

Box 1: Definitions

Principles are "the key elements of a standard that define its scope and serve as a functional guide to action. They are usually general and outline the beliefs on which the standard is based" (IIED, 1995).

A Standard is defined by the International Organisation for Standardisation (ISO) as "a documented agreement containing technical specifications or other precise criteria to be used consistently as rules, guidelines or definitions or characteristics, to ensure that materials, products, processes and services are fit for their purpose" (ISO, 1995).

Criteria set out the key elements or dimensions that define and clarify the principles and they are defined by the Montreal Process as "a category of conditions or processes by which sustainable forest management may be assessed. They are characterized by one or more related indicators" (Anon, 1995).

An Indicator is "a measure(ment) of an aspect of the criterion; a quantitative or qualitative variable which can be measured or described and which, when observed periodically, demonstrates trends" (Anon, 1995).

There are numerous standards related to forestry and forest management. Less so that claim to guarantee sustainability. Even less so which are internationally applicable. But there are a number of standards that guarantee "good forest management practice" and they date back to the late 1980s and 1990s when various initiatives were battling for the lead in the market place and the consumer confidence. Obviously when a standard is met an enterprise wants to be able to market that and certification schemes assessing operations against these standards are operational to assist companies to do so.

The standard that has been most successful to date and that pushed all other standards and initiatives aside is interestingly enough the toughest standard in terms of forest management: the Forest Stewardship Council's Principles and Criteria (see appendix A). The Forest Stewardship Council is an international non-profit organization founded in 1993 to support



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environmentally appropriate, socially beneficial, and economically viable management of the world's forests.

The area that has been certified against this standard is coming up to 42 million hectares in 60 countries, together representing 595 forest areas (last update March 2004: <http://www.fscoax.org/principal.htm>). And it has the broad support of environmental groups, social groups and industry as it is a membership organisation with three voting chambers together representing these three “electorates”.

4. Possible Future Climate Regimes

4.1 Designing an acceptable climate regime

The core element of any climate regime under the UNFCCC should be that it is environmentally effective: “stabilise greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system” (the objective of the UNFCCC as reflected in article 2 of the convention: UNFCCC, 1992).

In order to determine whether a climate regime is environmentally effective, we need to understand the climate system in sufficient detail, have sufficient scientific understanding, and the regime needs to be based on that sound science. But even so, various choices can be made that can be considered sound, e.g. a regime based on emission levels and the willingness to commit of individual countries (the Kyoto Protocol), or per capita emissions (Contraction and Convergence), or a regime based on temperature rise (e.g. the Brazilian Proposal), etc. Not all approaches ultimately lead to the same global emission reduction target due to the assumptions that need to be made along the way (e.g. life times of GHG in the atmosphere, feedback systems that need to be modelled, radiative forcing capacity, etc.) but the outcomes can still be considered ‘sound’ or ‘just’ in their own right. But besides all this, the regime should be supported by a critical set of countries that together have the *ability* to prevent that dangerous anthropogenic interference.

Hence, besides the top-down scientific element of designing a climate regime, the diversity of countries that need to participate in the regime call for the need of the regime to have the ability to deal with country-specific circumstances and ethical considerations such as the issue of equity. This bottom-up input to the design is a crucial one, as well as a very complex one. Many views exist as to what is ‘fair’ in terms of sharing the burden and taking on responsibility for ‘the problem’. In that sense equity will be an essential element of any future international climate regimes that will be acceptable to all and thus most probably effective. This goes beyond principles and rules for the differentiation of mitigation commitments; it also concerns the distribution of costs for adaptation to and impacts of climate change (RIVM, 2003).

It is beyond the scope of this report to review all different perceptions of equity and fairness, not in the last place because the 3 main principles of equity have been put down in Article 3.1 of the UNFCCC: “The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of *equity* and in accordance with their common but differentiated *responsibilities* and respective *capabilities*” (UNFCCC, 1992). Hence, equity, responsibility and capability are key.

With all this in mind, it is justifiable to conclude that a regime needs to be **environmentally effective, scientifically sound, just in terms of ethics and equity, and as a consequence politically acceptable.**

4.2 Form of commitment and level of participation

Once a choice is made for the basis of a climate regime (emissions, temperature, equity, etc.) and an overall target is set, a discussion can evolve as to who should do what: how to share the burden. This question needs to be reassessed in the current geopolitical situation and the state of economic development that can be expected to occur in the nearby future in some key countries – whereby the world’s largest emitter (the USA) has withdrawn from the Kyoto Protocol and whereby it is estimated that absolute emission levels will supersede the current level of emissions of the US by 2020 in countries like China and India.

A selection of options - how to “share the burden” or rather set targets - are:¹

1. the “traditional” approach; the way in which the Kyoto Protocol came into existence based on the willingness of countries to make commitments followed by negotiations to take specific ‘wishes’ into account. For the sinks part of the regime this led to a limited set of eligible activities under the overall quantifiable target – some of which activities are capped – for a limited set of countries.
2. the “Brazilian Proposal”: individual country ceilings that together indicate the maximum increase in the global mean surface temperature that will be tolerated. The ceilings are calculated on the basis of a temperature reduction target for all participating countries together. The calculation is based on the predicted temperature increase that results if the emissions of this group of countries remain constant and equal to 1990 emission levels throughout the period from 1990 to 2020.
3. a separate sinks target for particular countries (which could be a subset of a “global triptych approach”²). Some have referred to this as ‘a sinks protocol’. Under such a regime two sub-categories can be envisaged: a system with emission reductions that are fungible with those generated in other sectors (e.g. energy or industry) and/or fungible with other countries, and without this option of fungibility.
4. a regime of “contraction and convergence” whereby a global emissions capacity (contraction: that overall level has to come down) is ultimately divided amongst countries on the basis of equity: the same amount per capita. Hence, the distribution of emissions capacity has to move from the current level of emissions per capita towards a per capita volume of emissions that is equal for every person in the world (convergence). Timing the moment of total convergence is likely to be the most complicated aspect of this regime.
5. the “multi-stage regime”: a quantitative regime whereby countries gradually increase their level of participation in the regime by moving from one stage to a next depending on their level of development. The stages can be an endless list of options together forming a chain through which countries can move to total

¹ A good overview of plausible regimes is given at: <http://www.fiacc.net/> under the section ‘approaches’.

² The global Triptych approach is not mentioned separately here as it relates to targets for various sectors that are grouped together for each country. Sinks would be a subset of one of these clusters. Hence, from a sinks perspective this is not interesting to discuss: any of the above approaches could still be employed.

participation at their own pace. Stages could be 1) policies and measures; 2) sustainable development policies and measures; 3) a sectoral CDM; 4) non-binding emission ceiling; 5) relative emission ceiling; to 6) binding emission ceiling. Or any variation that is deemed desirable. Also with this regime the timing aspect is of the essence: when do countries move from one phase to the next. Hence, determination of the threshold will be critical.

As can be noted, all these options involve quantified targets at some stages. Options such as those based on carbon taxes or solely based on policies and measures are not discussed as they do not seem an option if incentives are to be provided directly to sustainable forestry.

4.2.1 The “Traditional Approach” – Kyoto style

With the “traditional approach” is meant the regime as it has been designed under the Kyoto Protocol: quantifiable targets – some of which are capped – for a limited set of countries, for a limited set of activities.

Under this regime industrialised countries and countries with an economy in transition have taken on “quantified emission limitations and reduction commitments” (QELRC). These QELRCs, listed in annex B of the Kyoto Protocol, can be offset by the use of the flexible mechanisms (the Clean Development Mechanism (CDM), Joint Implementation (JI), and Emissions Trading (ET)) and sinks: if a particular country acquires carbon credits or enlarges its biomass by undertaking eligible sinks activities, it creates an allowance to emit more in the sectors listed in Annex A of the Kyoto Protocol (energy, industrial processes, solvent and other product use, agriculture, and waste). This way, emissions in non-LULUCF sectors can be offset by additions to the assigned amount resulting from net removals by sinks, but only those generated by particular eligible activities, and in some cases only up to a certain level.

4.2.2 The Brazilian Proposal

The basis for the Brazilian Proposal is the assumption that annual emissions are not a measure of climate change. Therefore, the Brazilian Proposal differs from the current regime under the Kyoto Protocol as it focuses on temperature increases caused by individual countries rather than their (current and/or historic) emission levels. This proposal takes account of the different impact of emissions in relation to the moment they occur: the actual climate change induced by the emissions. This is fundamentally different from the way that responsibilities are divided among countries under the Kyoto Protocol right now: on the basis of current emissions.

According to the Brazilian proposal, industrialized countries will have an individual ceiling that indicates the maximum increase in the global mean surface temperature that will be tolerated. This individual ceiling will be calculated taking as a basis the temperature reduction target for all developed countries together, the calculation of which is based on the predicted temperature increase that results if the emissions of this group of countries remain constant and equal to 1990 emission levels throughout the period from 1990 to 2020.³

³ This is the latest version of the Brazilian Proposal. Earlier versions referred to “historic emissions” without specifying to what period of time that related.



This overall reduction target will be divided into individual targets for the reduction of the temperature increase predicted for each industrialized country, according to the actual responsibility of each country for causing the greenhouse effect. (Meira Filho and Domingos Gonzalez Miguez, 1998). It should be mentioned here that the Brazilian Proposal scores high with respect to being based on sound science and therefore, most likely on environmental effectiveness, but scores less well on taking due account of all country-specific and ethical considerations. Hence, it does have a weak side.

To operationalise this regime Parties must start to report their 'historic' emissions, 'historic' relating to a certain period of time. Indicators that will be used for the attribution to climate change are: cumulative emissions, concentrations, integrated concentrations with climate response, radiative forcing due to increased concentrations, integrated past radiative forcing, integrated future radiative forcing, temperature increase, rate of temperature change, and sea level rise (IISD, 2003).

4.2.3 The separate sinks target or the "Sinks Protocol"

One of the main criticisms on the role of sinks under the Kyoto Protocol has always been that emissions that cannot be reversed from any of the annex A sectors, are compensated by removals in the land use, land-use change and forestry sector (LULUCF) that are or may well be temporary. The counter argument has been that the LULUCF sector is globally responsible for a significant quantity of emissions and that it therefore, would be unwise to leave this sector outside the regime. This controversy exists to date, has yielded significant debate in the past and may well continue to do so in the future. An additional argument has been that as long as a country would undertake enough sinks activities, it could continue to emit in the industrial, energy, transport and waste sectors.

The here described regime provides for separate targets: one for the non-LULUCF sectors (Annex A minus Agriculture) and one for LULUCF. Emissions and removals under both targets could either be inter-exchangeable (fungible) between countries (or not) and between sectors (or not).

| Fungibility | | Sector to sector | |
|--------------------|------------|------------------|-----------|
| | | Yes | No |
| Country to country | Yes | A | B |
| | No | C | D |

Figure 4.1: Options for Fungibility

This type of regime can also be employed in the multi-stage regime discussed later, as it leaves the option open of not taking on any target for sinks, or conversely take on a target just for the sinks sector and not for other sectors.

Under option A credits could move around most liberal and it would basically boil down to countries being totally free in how they meet their target. This would not make a significant positive contribution to dealing with the criticisms outlined above.

Under option D credits could not move around at all and only the country itself could benefit from initiatives undertaken in the domestic sinks sector. This obviously would have

ramifications for JI or CDM type arrangements and sinks eligibility under such mechanisms. It would also put countries in boreal and temperate regions at a competitive disadvantage as growth figures are lower compared to those in the tropics.

Option B would allow credits to be transferred between countries but not between sectors. This would facilitate a most cost effective mitigation strategy within the sinks sector but without offsetting emission in non-LULUCF sectors.

Finally, option C would prohibit credits from moving between countries, but would allow for using domestically generated offsets. Therefore, this option only seems acceptable in very stringent climate regimes as, like with option D, this option puts countries in boreal and temperate regions at a competitive disadvantage as growth figures are lower compared to those in the tropics.

In summary, option A & D do not seem useful suggestions. Option C could have some benefits but option B appears to be the option that holds most promises.

| Fungibility | | Sector to sector | |
|--------------------|-----|------------------|--------------|
| | | Yes | No |
| Country to country | Yes | A: -- | B: ++ |
| | No | C: + | D: -- |

Figure 4.2: Ranking of options for Fungibility

Obviously all of the options should be discussed in conjunction with modalities under the mechanisms: if we try to prevent particular transactions but via another mechanisms it can still occur (e.g. choosing option C but allow for JI sinks projects) the purpose of the exercise is defeated.

A final remark should be that Parties who do not wish to take on a target on principle grounds (*i.e.* sinks should not be part of a climate regime) should only be allowed to do so if their sinks sector is not a significant source of emissions.

4.2.4 Contraction and Convergence

A regime of “contraction and convergence” is a regime whereby a global emissions capacity (contraction: because the overall level of emissions has to come down) is ultimately divided amongst countries on the basis of equity: the same amount per capita. Hence, the distribution of emissions capacity has to move from the current level of emissions per capita towards a per capita volume of emissions that is equal for every person in the world (convergence).

Clearly this option scores high conceptually in terms of equity. However, politically and practically all sorts of problems occur. For a start the regime takes no account of national circumstances: being situated in Siberia puts other demands on heating systems than being in e.g. Sudan. Furthermore, if emission trading has to cater for a redistribution of emission allowances from those who do not need them in the beginning (developing countries that are not using their allowances) to those who do (industrialised countries), this will lead to an enormous transfer of finances without any environmental benefit (referred to as “hot air”). And although it seems a merit that all countries will participate from the moment the regime

comes into force, it also means all parties will have to have quite sophisticated national systems in place from day one, e.g. inventory and monitoring systems, registries, etc.

The single most important political dimension of this regime is determining the moment that total convergence needs to be achieved, followed closely by the determination of the modalities on how the convergence needs to be achieved, through what mechanisms. Obviously here we find a window of opportunity to combine a regime that scores well on the equity axis, with a process that may lead to political acceptance of the regime when modalities are designed that take account of national circumstances and cost aspects.

4.2.5 *The multi-stage regime*

One way of facilitating easier participation in a climate regime for countries that have not taken on QELRCs under the Kyoto Protocol to date is to design a multi-stage regime whereby countries can move from one stage to the next at an appropriate point of time, depending on country-specific circumstances. Hence, this is a quantitative regime whereby countries gradually increase their level of participation in the regime by moving from one stage to a next depending on their level of development.

The different stages together form a continuum or chain through which countries can move towards total participation at their own pace. Stages could be 1) policies and measures; 2) sustainable development policies and measures; 3) a sectoral CDM; 4) non-binding emission ceiling; 5) relative emission ceiling; to 6) binding emission ceiling; or any variation that is deemed desirable.

For each of the transition moments whereby a party moves from one stage to the next, thresholds need to be determined. Hence, there are many points that require a decision/consensus amongst parties: a major challenge of finding acceptable thresholds that also lead to an environmentally effective and ethically/politically acceptable regime. And even if those thresholds are found (which in itself is a daunting task), it may well be unclear whether that design leads to the environmental effectiveness that we require to “prevent dangerous anthropogenic interference with the climate system”.

5. Specific measures to promote good forest management whilst enhancing the sink

As rightfully concluded in the report of Persson & Azar and although driven by various forces, deforestation is mainly the result of the lack of law enforcement (most likely due to different priorities of federal and state governments) and a “chaotic property rights system”. In addition, one could add that with respect to the logging companies the design of concession and revenue systems in most tropical countries with large forest estates – including Brazil – promote a rapid depletion of resources as companies are subjected to stump or export taxes, both promoting high yields and corruption.

The above also means – as also stated in the Persson & Azar report, and confirmed by the Brazilian stakeholders – that change can only come from within Brazil itself and outside coercion will not contribute positively and significantly to that change. On the contrary, although the legitimacy of the principle of sovereignty is being eroded in international environmental law⁴, Brazil will fiercely continue to play that card as long as it is pressurised.

However, if international environmental policies are designed in a particular way, they become an incentive by itself and gradually *tempt* nations into compliance rather than being forced into compliance. This now is the challenge.

Let’s imagine for a moment that avoiding deforestation would be an eligible activity, Brazil would have a lot to gain from promoting such project activities. But as we have concluded in the previous chapters, forest management needs to be **environmentally sound, socially responsible, economically viable and politically acceptable** and a future climate regime needs to be **environmentally effective, scientifically sound, just in terms of ethics and equity, and as a consequence politically acceptable**. But can any international environmental policy meet all these requirements?

First of all, let’s take a closer look at the forest fiscal system. After that we’ll have a look at the latest findings of a more positive nature with respect to law enforcement – the case of Mato Grosso – and 2 successful projects that reduce deforestation rates with the full participation of the previous forest invaders. To conclude, an option will be presented that combines all of the aspects discussed before into a viable option to reduce emissions from deforestation and enhance the sinks (forest conservation through protected areas in combination with sustainable forest management), assisted with an effective forest fiscal system and appropriate law enforcement.

⁴ According to international environmental law, states should prevent trans-boundary damage resulting from activities on their territory. (RIVM, 2002)

5.1 Forest Fiscal Systems⁵

Forest Fiscal Systems can entail many different components such as: timber royalties, concession fees (area or stump taxes), forest-related taxes and fees, export duties, exemptions, grants or preferential interest rates. The mix of the measures employed by countries and who takes the benefits of the system often determines the successfulness of a particular mix of measures. For every country there is an optimal mix: there is not one perfect recipe - what works for one country doesn't necessarily work for the other. In the proceedings of the International Workshop "Reforming Forest Fiscal Systems to Promote Poverty Reduction, and Sustainable Forest Management" it is stated that "ideally the package of fiscal instruments meets the criteria of being economically efficient, administratively feasible, and supportive of broader social and environmental objectives" (World Bank, 2003).⁶

But not only these criteria are important, the redistribution of revenues should be taken seriously as well: collected forest fees should be allocated to support objectives such as sustainable forest management (SFM), environmental protections, good governance, community development, etc. Unfortunately, in general such fees go to the federal government and not to local authorities who could allocate the resources back into the region and the forest. Hence, Persson & Azar rightfully state that corruption and vested interests of local authorities prohibit the effective resource distribution.

This leads to the conclusion that there is a need for a nested system, combining order and freedom: the *freedom* to allocate the resources where they are needed, but under the umbrella of *order* provided by guidelines for the revenue use. This will create the incentive for local authorities to combat corruption and enforce the fiscal system. Experience shows that a well-designed and effectively implemented concession and revenue system, particularly one emphasizing incentives to SFM and investment in value-added processing industries, can be a much more effective instrument to increase the forestry sector's contribution to growth and development than a narrow regulatory-based approach.

In Brazil, where the forestry sector accounts for 7.1% of exports, 2 million jobs, and 4% GDP and where the Amazon is 70% publicly owned, earlier efforts to improve sustainability in the forest sector through regulations and monitoring and assessment resulted in land conversion for agricultural use to avoid regulations (World Bank, 2003). This could partially be caused by the fact that except for the forest recovery fee, **all** revenues go to the federal government in Brazil. Now, policy is focused on amongst other things motivating forest producers toward sustainable practices and markets. A next step in the shape of a forest concession system is envisaged to allocate forest for protection and production in the Amazon, and includes

⁵ This section could be used to complement section 4.1 and box 4.1 of the Persson & Azar report.

⁶ Representatives of Brazil who participated in the workshop are: Mr Felicio Pontes, Attorney, Brazilian Attorney General's Office, Belem; Mr Tasso Rezende De Azevedo, Deputy Head of the Brazilian National Forest Programme, Ministry of the Environment, Brasilia D.F.; and, Mr Adalberto Verisimo, Researcher, Amazon Institute of People & Environment (Imazon), Ananindeua, PA. It is their views that are reflected in the Workshop Proceedings. This section of the report is based on these proceedings and the authors own experiences and views.

national forest information systems, and the development of a third-party logging control system.

Apparently, Brazil plans to develop a system for forest concessions in the Brazilian Amazon that comprises two types of concessions: 100 million ha under a system of forest conservation unit concessions and 150 million ha under public land concessions. A law regarding this system was recently submitted to Congress for debate and approval. The outcome of that discussion is not mentioned in the Workshop Proceedings.

Obviously here is not the right place to design a forest fiscal system but it is worth mentioning that area taxes have a high recovery rate and low administrative costs, while stumpage taxes involve a greater knowledge of the forest (how much timber is harvestable) and more monitoring costs. Finally, export taxes on unprocessed timber is sometimes perceived as helpful but too high taxes in countries where distances to the market is long (like in Brazil) and domestic processing capacity is poor, such policies can be detrimental.

5.2 Protected Areas

Brazil recognises many different types of protected areas, national parks, conservation units etc., all serving different purposes. A good up to date review is provided in a paper by Fearnside (2003) that was published in *World Development, Volume 31*. Here only a few types will be mentioned. Most of the information in this section is derived from Fearnside (2003) unless otherwise is stated.

In 1996 a new category called a “sustainable development reserve” (RDS) was created in the state of Amazonas. This category of conservation unit consists of an entirely protected part and a buffer zone around that core where the local population can extract forest products in a controlled manner. This template will come back in section 5.4 as it seems a very promising template to use for forest conservation through sustainable forest management that is conducted for and by the local communities/inhabitants.

Then there is a “National System of Conservation Units” (SNUC) that was approved by the National Congress in July 2000 (law no. 9985/2000) and various pilot programmes for conservation. The two worth referring to here are the Extractive Reserves (RESEX) and the Integrated Project for Protection of Indigenous Populations and Lands (PPTAL).

The RESEX date back to 1985 and the concept finds its origin with the National Council of Rubbertappers under the leadership of Chico Mendes at the time. The system is driven by the communities themselves, living in the reserves and extracting products: they apply for the status of extractive reserve, which enables them to create a more stable income. In addition, they receive assistance with getting access to basic services such as health care and education. Furthermore, the communities are strengthened as capacity is build in areas such as marketing. At present the area under this form of protection is 3 million hectares.

So far 29 million hectares in 53 reserves have been demarcated under the PPTAL. The main objective is to encourage the population (approximately 62.000) to solve its own problems with a minimum of dependence on outside resources and initiatives. Although the programme has met significant problems along the way, great progress has been achieved in reaching the goal of demarcating all indigenous lands. Obviously these peoples organising themselves is a more effective way of protecting their livelihoods than dealing with the involvement of foreign countries. Having said that, the lack of domestic resources does slow down progress.

Lack of resources unfortunately is quite common for programmes of conservation units and although this is sad, as will be discussed in the last section of this chapter, it creates an opportunity to take action under a climate regime as it creates an opportunity for sinks projects: programme additionality of such a project would be beyond any doubt.

The National Forest Programme (PNF) which was established in 2000 aims to increase the area of “National Forests” (FLONA) to supply internal and export markets of sustainable produced timber. The emphasis should be on the domestic market as most of the wood that is harvested in the Amazon is for domestic use: 86-90% in 1997 (Fearnside, 2003)⁷. The current area of 15.2 million hectares of FLONAs in the Amazon partially overlap the indigenous areas, which leaves about 8 million hectares. According to Deusdará Filho (2001, cited in Fearnside 2003) an area of 50 million hectares would be required to satisfy demand. And according to Veríssimo, Salomão & Barreto (2000, also cited in Fearnside, 2003) an area of 115 million hectares (or 23% of the Legal Amazon) is suitable for the creation of FLONAs in that it is neither indigenous land, a conservation unit, deforested, or inaccessible.

A lot has been said in the recent past during the negotiations with respect to the creation of what is referred to as “paper parks”. These are parks that are gazetted recently but they still contain occupants that are undertaking their normal agricultural activities, even having homesteads within the park boundaries. They can be occupants from before the park was gazetted or encroachers / invaders who have moved into the park after it was gazetted but that are not evicted (yet) due to a lack of law enforcement. And although a number of countries that have such situations occurring under their protected areas that have been accused of window-dressing, having such an infrastructure established, especially with the support of or even by the local population, greatly enhances the chances for successful (sinks) projects in such areas. We will get back to this in section 5.4.

5.3 The case of Mato Grosso⁸

Mato Grosso has been one of the Amazon states that traditionally have the highest deforestation rates but recently a state-level programme of licensing and controlling deforestation has been very successful. Here law enforcement did lead to slowing the loss of Brazil’s Amazon Forest. One of the factors leading to this success must be the fact that the programme is driven by the state itself and not by the federal government. The success illustrates that change can occur, even from within Brazil. Therefore, one of the major arguments that Brazil has always used in the negotiations – deforestation in the Amazon cannot be controlled – seems not to be true.

Before going into details it must be said that many question surround the issue of deforestation numbers for the Amazon. This is not the place to debate the different approaches and reports but the trends are interesting and reported by both the two most respected institutions that report deforestation numbers: INPE and FEMA. Hence, we’ll concentrate on the trends here and not on the absolute numbers.

⁷ This timber is used for any purpose, also cement crating and plywood. Hence, it is an understatement to say that the consumer-driven demand for certified timber in Brazil is only marginal.

⁸ This section could be used to improve section 3.2 of the Persson & Azar report.

From 1997 to 2000 deforestation rates have gone up in the legal Amazon. A major increase in deforestation is also reported for 2002: 55% in all of the Legal Amazonia except for Mato Grosso and 23% for Mato Grosso itself (Fearnside, 2003(b)). Mato Grosso has introduced a deforestation licensing and control system in 1999 and since the introduction Mato Grosso tries to bring landowners into compliance with the "Forestry Code": Brazil's legislation on forestry. Since 2000, federal requirements specify that private properties of native vegetation must leave 80% of the vegetation in the case of forest and 35% in the case of cerrado untouched as a "legal reserve". Before field campaigns start, illegal clearings are identified using satellite imagery, down to a size as small as 1 hectare and clearings and landowners are listed on a website that is open to the public. This way not only deforestation is controlled and penalised, but a system of "name and shame" warrants those who come next. And it seems to be effective.

According to numbers from IBAMA and FEMA illegal clearings of areas larger than 200 hectares each, total an amount of 750.000 ha in the period 2000-2001, which is 95% of all clearings (40.000 hectares were licensed only) (Fearnside, 2003(b)). Most clearings are larger than 100 ha (64%). Family/farmer clearings are normally about 3 ha per family per year. This means that the deforestation control is actually very effective in "tracing" activities of companies as well of those of families (any clearing from 1 hectare up can be traced), although the emphasis is on those of companies.

Once again, disagreement exists about the exact degree of slowing deforestation but it is the trend that counts and the fact that the trend is caused primarily by the effective implementation of a licensing and control mechanism.

5.4 Restoration of logged-over forest, SFM and National Parks

Various projects have been initiated over the past decade that anticipated the inclusion of avoiding deforestation under the CDM. Although this was a bad bet, they make very interesting cases to derive "lessons learned". Two such projects need a mention here

3. The FACE Foundation restoration projects in Uganda; and,
4. The Protected Areas Project in Costa Rica.

5.4.1 Natural Forest Restoration projects in Uganda

The FACE Foundation⁹ has initiated 2 projects in Uganda in collaboration with the Uganda Wildlife Authority (UWA). UWA manages and protects the national parks and forest reserves in Uganda. One project is the establishment of a restoration zone in a previous encroached area of the Mount Elgon National Park (near the Kenyan border) and the other one is situated in Kibale National Park (near the Congolese border). The two projects are very similar in design, although the Mount Elgon National Park's (MENP) project is facing more

⁹ For more information on the FACE Foundation, its origin and its activities see <http://www.stichtingface.nl/>.

challenges as the population pressure surrounding the park is significantly higher in comparison to the Kibale National Park. Therefore, only the MENP will be described here.



Key:

- Pink line: park boundary
- Blue: encroached area 26.000 ha (restoration zone with planting)
- Green: various forest types
- Dark brown: bamboo zone
- Light brown: heath zone

Map 5.1: Mount Elgon National Park

The high population pressures around MENP combined with political instability resulted in high rates of encroachment into the park (the areas around MENP carry some of the highest population densities in Uganda): some 26.000 ha was affected. In the early 1990s, the Ugandan Government took the decision to evict illegal encroachers and settlers from the park. This was not a peaceful eviction and as a result, population pressures remained high in the immediate surroundings of the park, and in the absence of sufficient control measures, encroachment has continued.

The FACE project started in 1994 and the project, with a major community development component, started to work with the local communities to restore the park's forest vegetation by planting and to help the communities to built livelihoods outside the park whilst being allowed to use the available resources of the park. The homesteads in the park had to be left and after various years of transition – where encroachers were still allowed to harvest their crops inside the park boundaries – all encroachers have now left the park. The areas that used to be cultivated are colonised by 3 types of persistent vegetation that prohibit the natural forest vegetation from re-growing and UWA is planting saplings and fighting the fires, ferns, climbers and vines that would otherwise suppress and kill the saplings. Casual workers are provided by the local communities and their main activities are to produce

saplings on small private nurseries, plant, and maintain the plantings on abandoned areas of farmland within the park boundaries to restore the natural high forest in the park.



Figure 5.1: local nursery

This restoration vegetation – all indigenous species planted in naturally occurring ratios – will become self-regenerating and speed up the re-establishment of natural forests and the local people are able to continue to collect non-timber products from the MENP under community agreements with UWA (place bee hives for honey, harvest bamboo shoots, collect fire wood, gather medicinal plants, etc.).

Furthermore a park boundary of 10 metres wide over the entire boundary of 211 km is established from a non-invasive eucalypt variety to demarcate the boundary clearly. This boundary is managed under a community agreement with UWA by the local population itself and provides poles and firewood. This reduces the pressure on the park's resources.



Figure 5.2: boundary demarcation of eucalypt with park on left and community fields on right

Besides community work, the protection of the planted areas (both indigenous (over 3000 ha of restoration area planted since the initiation of the project) and exotic (211 km of eucalypt



boundary)) remains an important part of the project's activity. The young trees need to be protected from fire, weed competition and illegal felling and grazing.

The additionality of this project is clear as the government couldn't stop encroachment before the project started. The local communities are now content in their situation which has improved (work opportunities, steady income, etc.) and they have taken ownership of the project activities and control each other. The restoration activities have truly led to a rapid re-establishment of native high forest (this is independently verified by various institutes monitoring growth, etc.) where normally climber, vines and ferns would smother any natural regeneration.

Hence, this is a good project example where avoiding deforestation (in total an area of 1145 km² would have been stripped of natural high forest over the coming decades), in conjunction with a good community project to avoid leakage, leads to significant avoidance of emissions and contributes to sustainable development. Just for interest's sake, the project is not claiming any credits for avoiding deforestation: the amount of carbon sequestered by the restoration zone of indigenous species (excluding the boundary demarcation of eucalypts) – just over 3000 ha planted to date from the 26.000 hectares that comprises the project area – has been independently verified and quantified by an operational entity. However, as the project started in 1994 it cannot claim any tonnes pre 2000 as the modalities for afforestation and reforestation determine that project activities must have started after 31-12-1999.

5.4.2 Protected Areas Project in Costa Rica

The Protected Areas Project (PAP) in Costa Rica, is by now one of the most studied projects and the baseline claims have been very controversial. It is not the intent here to re-assess all that work or the project itself. Again, it is the concept that is of interest here.

The primary objective of the PAP was to consolidate approximately 530.000 ha of primary and secondary forest and pasture in 27 National Parks and Biological Reserves spread throughout Costa Rica. Most of that land was gazetted as protected by the time of the start of the project, but close to 95% of the area was still privately owned. Hence, the state wanted to acquire the land and transfer the ownership to the state. With seed money the government intended to buy the first tranches of land. With the credits claimed from that land due to avoided deforestation the next tranche of land consolidation would be financed, and so on, creating a rolling system of land acquisitions. But avoiding deforestation never made it into the Kyoto Protocol. Deforestation is likely to continue as land owners took the government to court over the land-use rights and the court ruled: although the land is gazetted, if the government cannot acquire the land, land owners can continue to use the land. And hence, deforest.

One of the main criticisms against the design of this project was leakage: where would landowners go with their money and their activities once their land had been sold to the State? This is the interesting part, as parallel to the PAP the government initiated the Private Forestry Project (PFP). This scheme assists landowners to sustainably manage their forest resource. Each area which is privately owned only receives a harvesting license if the management plan was prepared by chartered foresters, consistent with the FSC Principles and Criteria and approved by the Ministry of Environment.



The harvesting levels for these privately owned areas were based not only on what the forest could sustain (or endure without altering the species composition etc.), but also on a regular source of income for the land owners. Calculations were made what could be harvested to give the land owner a steady source of income every 5-20 years without depleting or degrading the forest. The planning was done by chartered foresters and the harvesting operations were controlled by the Ministry of Environment. The timber derived from such forests were allowed to use the FSC logo and upgrading and processing was done in sawmills that were 100% supplied by these PFP areas. Hence, FSC certified furniture, doors, floorboards, and construction timber was locally produced.

If a private forest owner was not interested in harvesting, or the area was too steep, didn't have enough marketable timber, or was too remote or so inaccessible that it was not worth deriving timber from, the land owner could sign an agreement with the Ministry that marks the area for conservation for a fixed period of time. The landowner would then be compensated financially and receive an "environmental services payment" of the government to negate the income deprivation. As said, the entire PFP scheme has been FSC certified from the mid 1990s onward.

Hence, this is a successful example of combining the establishment of protected areas with avoiding leakage by introducing sustainable forest management in the buffer zones around the park, a strong community component whereby the livelihoods of local land owners are safeguarded and stringent enforcement of forest regulations and/or legislation.

5.5 Combining it all: The fiscal system, the law enforcement, and forest conservation through protected areas in combination with sustainable forest management and community programmes

In the previous sections all elements that are important for the successful promotion of SFM have been discussed and illustrated with real life examples. It basically is a cocktail of a sound fiscal system that redistributes its revenues to the right places, strict law enforcement assisted with reliable satellite imagery, and an infrastructure that brings doable procedures for SFM to the land owners, possibly in combination with the establishment of protected areas or national parks. A good fiscal system, law enforcement and a strong community programme: who said forestry is about trees?

Let's test this template against all the prerequisites that have been suggested throughout the document. SFM and a climate regime had to be environmentally sound and effective, socially responsible or just in terms of ethics and equity, economically viable, scientifically sound and politically acceptable. In this proposal the forest management is environmentally sound and effective and economically viable as the procedures and the management are sustainable and the template is socially responsible as it has an important community programme. What remains is the political acceptability. This is a hard nut to crack.

We come back to the initial debate: should avoided deforestation be an eligible option under the CDM, or in general in future climate regimes, irrespective of the entry into force of the Kyoto Protocol. What has been demonstrated here is that good projects that reduce

emissions from deforestation are possible **if** the will exists to do so. So, maybe we pose the wrong question when we ask whether avoiding deforestation is politically acceptable. Maybe the question should be: **is there a political will to avoid deforestation?** And secondary, should that be promoted in a climate regime? If the answer is yes, there are templates available to do it.

Both protagonist and antagonist can find sufficient arguments to make their case, and even support it with “real life examples”, as has been done here. But the deeper lying question is: do sinks contribute to mitigating climate change? Temporarily most certainly: nobody can deny this. But do we find it acceptable? And will we not unduly credit?

In the past series of negotiation rounds leading up to COP9 in Milan, Parties have come closer on this subject: bridging political differences of opinion with sound technical solutions. We have developed rules, modalities and guidelines that create a conducive environment for afforestation and reforestation project activities. Can we do the same for avoiding deforestation or reducing emissions from deforestation?

Obviously, it will be undoable to design modalities that prescribe the reform of the fiscal system in host countries. What may be doable is to design modalities that will facilitate appropriate accounting for the activities if they are implemented. In the context of reducing emissions from deforestation the baseline setting and leakage will most likely be the biggest challenges. These will be discussed briefly, complemented with a brief paragraph on accounting.

5.5.1 Baseline

In the run-up to the Bonn Agreement fierce debate has been going on related to sectoral, regional or even national baselines. Obviously we can repeat that discussion over the next coming years if insights have changed, but in the past most experts came to the conclusion that at the end of the day a project-specific baseline was the best way to obtain the closest proxy to a project’s performance in the absence of the project. Hence, the Marrakesh Accords and sinks decision in Milan both decided that baselines shall be project specific. But it remains a counter-factual construct: demonstrating the appropriate positioning of the baseline beyond any doubt remains impossible: reasonable doubt is the best we can aspire for.

As is explained in section 4.2 of the Persson & Azar report, the choice of baseline on a national level can have a major impact on the integrity of an international climate baseline. But as decided for the operationalisation of the Kyoto Protocol, baselines shall be project-specific. And fortunately project baselines can be much more precise than national or regional baselines in countries like Brazil. Even the antagonist of sinks in Brazil will argue that they have good numbers on deforestation locally, assisted by high tech satellite imagery. This aspect is missing from section 4.2 of the Persson & Azar report: it only reviews a situation whereby Brazil would take on a national target, and not a situation whereby avoiding deforestation would be eligible under a CDM-type framework.

A schematic depiction of a project reducing emissions from deforestation is presented in figure 5.1 below.

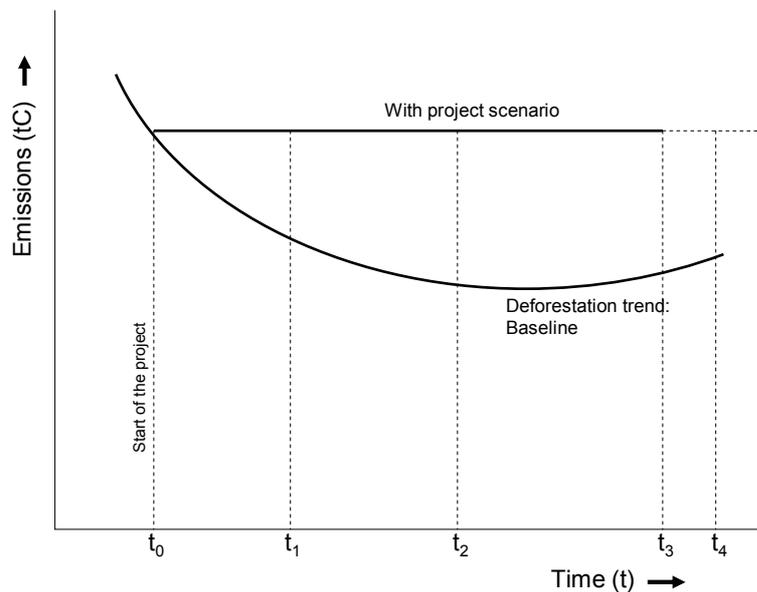


Figure 5.1: Schematic representation of a project reducing emissions from deforestation.

The curve describing the deforestation trend gradually levels off at t_2 and ultimately comes up after t_3 , as in most regions deforestation slows down at some stage due to the depletion level of the resource: there simply isn't any more forest to deforest. The project's lifetime and the estimated time that this will occur is obviously key in the project's performance and the appropriate crediting period and scheme.

Deforestation trends covering larger areas are not represented by a fluent curve, but more often by an old worn saw-tooth profile as demonstrated in figure 5.2 (the coarsely dotted line starting at about 1960 represents deforestation in Brazil).

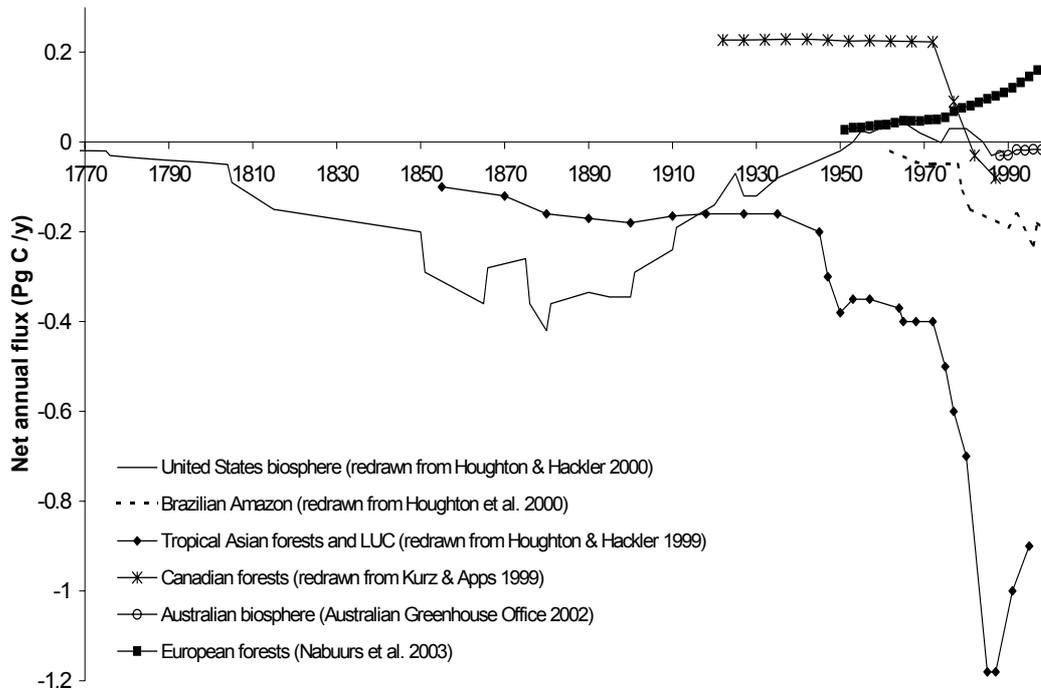


Figure 5.2. Historic functioning of the biosphere per continent or large country (sink = positive) for six global regional case studies. Note that for Canada the net flux is the result of changes in natural dynamics, while for the other continents the dynamics are the result of land-use changes and vegetation rebound (Nabuurs 2004).

One criticism with respect to baselines for avoiding deforestation projects has always been that bad performance of a country in terms of deforestation, is awarded with better opportunities for projects avoiding it. E.g. if credits are issued against a baseline looking for instance 30 years ahead, more credits will be issued if the prognoses for deforestation are high in that region.

This could be overcome to some extent by 2 modalities: (1) updating the baseline periodically, e.g. every 5 years, and (2) by taking the level of deforestation at the time of updating the baseline as the level to credit against, and not the incremental deforestation curve that is to be expected over the entire period. This is illustrated in figure 5.3 with the lines running through p_1 and p_2 .

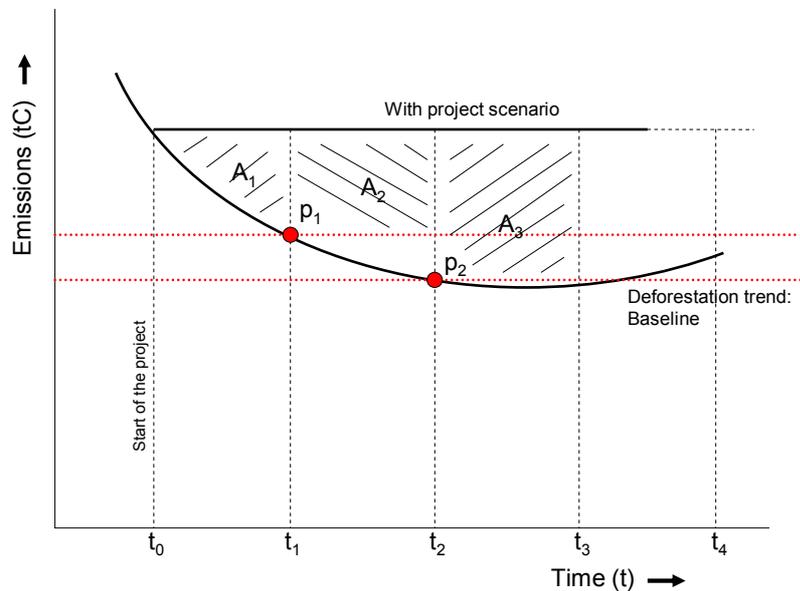


Figure 5.3: Flat rate crediting against updated baseline at periodic intervals

In the first period after initiating the project, credits could be issued against the baseline as estimated at the time of writing the Project Design Document (PDD). The amount of credits would equal A_1 . At the start of the next period at t_1 the level of deforestation could be assessed and be taken as the level over the entire period running from t_1 to t_2 . The amount of credits would then equal A_2 , and so forth.

If this approach was taken, modalities would require the establishment of a reference case where deforestation levels in the region would be indicative for the baseline of the project.

This approach would deliver a baseline that is the closest proxy to the deforestation trend in the absence of the project, and it refrains from crediting possible bad performance in future.

5.5.2 Leakage

As illustrated in the examples, leakage can be reduced significantly if land users or owners are involved in the project. Hence, avoiding deforestation should be done in collaboration with land users: they are key in the protection and conservation of the forest vegetation. If their access to the resource is cut off or limited, communities are likely to turn against the project.

Therefore, modalities should require projects to make an assessment of leakage and address that through community programmes, involving those who were deforesting before the initiation of the project. The chance of the project being successful increase significantly if those land users take ownership of the project.

5.5.3 Accounting

The tCER concept

The tCER concept is not applicable in cases of reducing emissions since that accounting regime was designed for sequestration which could be reversed and not for reducing emissions that are avoided for ever: reducing emissions is the same in all sectors. Therefore, accounting rules that were required to deal with non-permanence are not necessary. Credits from avoiding deforestation as such are fully fungible with credits derived from other sectors.

“Factoring out”

“Factoring out” has been on the political agenda for a number of years now. It relates to separating direct human-induced effects on vegetation from natural and indirect human-induced effects. This can range from anything from natural fires, insect infestations, diseases and windstorms, to changing precipitation and temperature patterns, increased CO₂ levels and nitrogen deposition, and effects of pre-reference year practices and activities in forestry. The reason for wanting to factor out these effects is that the natural uptake and indirect effects of human activities compensate on a global scale for emissions from tropical deforestation. The current state of science with respect to methodologies to factor out natural uptake and indirect effects of human activities is that it is currently not doable to develop such methodologies.

But the question arises whether we need to factor out these effects when looking at avoiding deforestation on project level. And the answer is a simple ‘no’: we do not need modalities to factor out on a project level because we credit against a baseline of *emissions* from deforestation. In practice, the with-project scenario does not include growth: it will be a fixed number that is the average storage capacity of the vegetation type that normally occurs on that particular spot. *E.g.* a particular forest type belonging to the high tropical forest belt in the example of the Mount Elgon National Park in Uganda contains approximately 220 tC ha⁻¹. If deforestation in the baseline scenario is *e.g.* 2% per year, this would result in a gross amount of offsets of 4.4 tC ha⁻¹. There is no enhanced *growth* in any of these numbers as we deal with stocks and not with fluxes and therefore, no growth that can be influenced by natural effects or indirect human-induced effect. Obviously it is a different case for areas where deforestation already took place and claims are made for the natural forest vegetation growing back: this is a totally different issue.

Also in the case of forest management we are dealing with an entirely different situation. If biomass stocks increase as a result of the improved management strategies, we would need to correct the offset claim for natural uptake, indirect effects of human activities, past management practices, etc. But in the case of avoided deforestation we do not need to factor out.

There might be a very slight chance that the average storage capacity for natural forest is influenced by environmental circumstances, such as higher temperatures etc. but the atmosphere is oblivious to that: what counts are the emissions. And avoided emissions are pure, no matter what. Hence, factoring out is not an issue in the case of avoiding deforestation on project level.

----- E N D -----

References

- Anon, 1995: "Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests, the Montreal Process". The Canadian Forest Service, Natural Resources Canada, Quebec, Canada.
- IIED, 1995: "Sustainable Forest Management: and Analysis of Principles, Criteria and Standards", a study prepared for the WBCSD by IIED and SGS Forestry, 2nd draft.
- IPCC, 2000: "Land use, land-use change and forestry". A special report of the IPCC. Published for the IPCC by Cambridge University Press, Cambridge, England. Edited by R.Watson, I.Noble, B.Bolin, N.Ravindranath, D.Verardo and D.Dokken. See also www.ipcc.ch.
- IPCC SPM, 2000: "IPCC Special Report; Land use, land-use change and forestry – Summary for Policy Makers". Published for the IPCC by Cambridge University Press, Cambridge, England.
- ISO, 1995: "Environmental Management Systems – Specification with Guidance for Use". Draft ISO/DIS 14001, ISO/TC 207/SC1, International Organization for Standardization.
- Kyoto Protocol, 1997: "The Kyoto Protocol to the Convention on Climate Change". Published for the Climate Change Secretariat by UNEP's Information Unit for Conventions (IUC), Châtelaine, Switzerland. See also www.unfccc.int and/or www.unep.org.
- Nabuurs, G.J. 2004. Current consequences of past actions, or how to separate direct from indirect. In: The Global Carbon Cycle: Integrating Humans, Climate, and the Natural World. SCOPE 62, Island Press, December 2003 Edited by Christopher B. Field & Michael R. Raupach, A SCOPE/GCP Rapid Assessment Project.
- RIVM, 2003: "Climate Options for the long term – Global dialogue Synthesis Report". RIVM report 490200003 2001/2002 by M.M.Berk, J.G.van Minnen, B.Metz, W.Moomaw, M.G.J.den Elzen, D.P.van Vuuren and J.Gupta. Published by RIVM, Bilthoven, the Netherlands.
- UNFCCC, 1992: "United Nations Framework Convention on Climate Change". Published for the Climate Change Secretariat by UNEP's Information Unit for Conventions (IUC), Châtelaine, Switzerland. See also www.unfccc.int and/or www.unep.org.
- WCED, 1987: (World Commission on Environment and Development) "Our Common Future", Oxford University Press, Oxford, U.K.
- World Bank, 2003: Reforming Forest Fiscal Systems to Promote Poverty Reduction, and Sustainable Forest Management, proceedings of the International Workshop. October 19-21, 2003, World Bank, Washington, USA.



*Brazil beyond Kyoto:
A review of options to promote
sustainable forestry under a
climate regime*

Appendix A.

Forest Stewardship Council's Principles and Criteria

Forest Stewardship Council's Principles and Criteria

(source: http://www.fscus.org/standards_policies/principles_criteria/principle10.html)

Principle 1: Compliance with Laws and FSC Principles

Forest management shall respect all applicable laws of the country in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria.

Principle 2: Tenure And Use Rights And Responsibilities

Long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established.

Principle 3: Indigenous Peoples' Rights

The legal and customary rights of indigenous peoples to own, use and manage their lands, territories, and resources shall be recognized and respected.

Principle 4: Community Relations And Workers' Rights

Forest management operations shall maintain or enhance the long-term social and economic well-being of forest workers and local communities.

Principle 5: Benefits From The Forest

Forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits.

Principle 6: Environmental Impact

Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.

Principle 7: Management Plan

A management plan -- appropriate to the scale and intensity of the operations -- shall be written, implemented, and kept up to date. The long term objectives of management, and the means of achieving them, shall be clearly stated.

Principle 8: Monitoring and Assessment

Monitoring shall be conducted -- appropriate to the scale and intensity of forest management -- to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.

Principle 9: Maintenance Of High Conservation Value Forests

Management activities in high conservation value forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.

Principle 10: Plantations

Plantations shall be planned and managed in accordance with Principles and Criteria 1-9, and Principle 10 and its Criteria. While plantations can provide an array of social and economic benefits, and can contribute to satisfying the world's needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.