Principles and Criteria Review

Briefing Paper on Sustainability

Bonn, 08th November 2010

This paper was produced by the P&C Review Working Group to explain its approach and address stakeholder concerns raised in relation to sustained yield. The paper will also serve as a basis for further discussions at the P&C Review Workshop on the 15th and 16th of November 2010. The P&C Review Working Group does not pretend that this could be The Last Word on the issue.

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In accordance with its terms of reference the tasks of the FSC Working Group for the revision of the global Principles and Criteria for Forest Stewardship are mainly:

a. to clarify the FSC requirements, so as to reduce disparities in evaluations by ASI-accredited conformity assessment bodies;
b. to shift the wording of Criteria towards outcomes where practicable; and
c. to minimize the variety of interpretations found in national forest stewardship standards and national adaptations of the generic standards developed by the conformity assessment bodies.

What is the issue as perceived by some FSC stakeholders?
Many submitters expressed a preference for the current wording of the P&C, which refers to harvesting levels that can be permanently sustained.

What is the response of the P&C Review WG?
Current Criterion 5.6 reads 'The rate of harvest of forest products shall not exceed levels which can be permanently sustained.'

This wording has remained unchanged since 1995. The Working Group concluded that the aim is not to insist on Sustained Yields in any classical forestry sense of an even flow of products from a normal forest. There were strong criticisms of the suggestion of including the term Sustained Yield in the final drafts of the P&C in 1993-4. FSC has drafted neither rules nor a definition for Sustained Yields. The word Sustainable seldom appears in FSC documents because of confusions in the way it is used, and the existence even by the late 1970s of over 270 definitions of sustainable forest management.

The WG concluded that this criterion and its proposed replacement should be seen as contributing to the modern concept of sustainable management and adaptive management. The desired outcome of this Criterion is a Management Unit which main-

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tains its ability to produce environmental values (ecosystem services / ecological functionality) at stable, long-term rates adapted to the productive capacity of the site.

The Criterion aims to make sure that all the following elements are properly implemented:

1. There must be an effective yield control system, consistent with the objectives of the management plan, as required under revised criteria 7.1.d and 7.1.e and implied in revised criteria 8.2.b, 10.6 and elsewhere, and
2. Harvesting rates in practice must not impair the objectives for long term production of forest products as described in the management plan (which is itself open to evaluation by CBs and by stakeholders during certification assessments), although the rate may vary within limits described in the management plan as a result of unforeseen events and market changes. (In other words, harvesting must not be accelerated to the extent that it becomes impossible to achieve the long-term production targets set in the approved management plan, leading to a failure in sustainable forest management after the period of the plan), **and**
3. Harvesting rates and techniques for timber and non-timber products must not impair any environmental services or values (as defined), nor the long-term viability of species in the management unit, nor the productive capacity of the site, such that harvested species retain the capacity to maintain or increase their future populations and the management unit retains resilience to adapt to changing circumstances, climate and objectives.

Accordingly the P&C Review WG proposes the following wording to replace current Criterion 5.6:

‘The harvesting rates and yields of products and other services from the Management Unit shall not impair the ability of the management unit to continue yielding those products and services, the ecosystem functions and environmental services of the unit, including the survival of the component species.’

Conclusion:

1. FSC does not insist on “sustained yields” in the sense that the quantity of any specific product harvested in any one year or period must always equal another quantity calculated from current, past or future growth rates.
2. FSC does not rule against selective harvesting, except in extreme forms such as “creaming” (See Annex below).
3. FSC does not rule against temporary or long-term changes in the yield or standing volumes of any specific forest product arising from management activities,

provided that:

4. Ecosystem functions, environmental services (as defined) and the continued existence of viable populations of native species are not impaird by management activities or by the changes they produce

5. The expected changes in yields and volumes are explained in the approved management planning documents, to a level of detail appropriate for the scale and intensity and risks of those changes,
6. The changes in yields or standing volumes of any specific forest product do not impair achieving the long-term objectives described in the approved management documents,
7. Changes in yields or volumes of products do not impair the long term security of workers and local communities, and/or that compensation is provided for negative effects according to legal requirements.

Annex: The concept of Sustainability in forest management

1 What does Sustainability mean?

This concept is a classic assumption or paradigm of forest management, in the sense of both sustained yield and sustainable management – that it is technically possible and socio-economically desirable to have an operational objective of sustainable production, and is implicit in FSC certification. However, FSC has no clear explanation of its application or implications. This note is an attempt to clarify some elements of the concept:

First: Sustainable Development: This can be understood as development which satisfies the needs of today without compromising the ability of future generations to satisfy their own needs (WCED 1987). The concept of development implies changes, innovations and improvements, with the result that people have greater possibilities of improving their own lives.

This has implications for all projects and programmes of land use. Long term conservation programmes, such as National Parks, should take account of the needs of local inhabitants; if they don't, the sustainability of the programme itself is at risk. Production projects based on replacing or manipulating forests or other natural resources, with shorter time-horizons, should take account of elements like contamination, water resources and environmental protection; if they don't, the benefits for society may be less that the long-term losses.

Second: Sustainable Forest Management: In forestry, the concept of sustainable development justifies timber and non-timber production as components of **SFM**, when these products are needed by the local or regional society, always under the condition that the forest maintains the capacity to continue producing a similar mixture of similar products in future (within the limits of variations caused by weather, climate, pests, extreme events, Acts of God etc.), together with its wide variety of other environmental, ecological, social and even spiritual services and products.

There are numerous definitions and interpretations of this concept, including:

- "The continuous long-term production of timber and other products, maintaining the environmental services" (Pearce et al. 2003)
- "The process of managing forests to achieve one or more clearly specified management objectives, for the production of a continuous flow of the required forest products and services, without an undue reduction in the inherent values and future productivity, and without undesired effects on the physical or social environment" (ITTO 1998)
- According to Patiño & Marín (2003), sustainable management is management which conserves the forest's productivity, structure and biodiversity, and the basic ecological processes of the populations, communities and ecosystems.

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- According the environmental law of Mexico, SFM is a process which combines a range of activities and procedures with the object of planning, cultivating, protecting, conserving, restoring and harvesting of forest resources in a forest ecosystem, taking account of ecological principles respecting the functional integrity and interdependence of resources and without prejudicing the productive capacity of the existing ecosystems and resources.

These concepts provide a collection of implications for good forest management, including economic, social, environmental and legal elements. These elements appear in countless books and reports, including FSC rules. They include, for example:

- the maintenance of ecological functions and biological diversity,
- the assurance that the people who work or live in the forest receive a fair share of the benefits of management,
- economic viability, assuring that the economic and forest resources are exploited and used efficiently, and not wasted.

Third - Sustainable or Sustained Yield: This concept was known in ancient Greece and old India and China, and was built into the modern concept of Sustainable Forest Management, with many different interpretations and implications. The classical concept was designed to control harvests in the managed temperate forests of Europe, and not the first harvests in unharvested forests, much less in tropical forests.

Among the many available definitions are the following:

- "The production which a forest area can generate in the long term, without prejudicing its productive capacity" (Forest law of Mexico, SEMARNAT 2005).
- The "achievement and maintenance in perpetuity of a high level of annual or regular periodic output of the various renewable resources of the national forests without impairment of the productivity of the land" (Multiple Use, Sustained Yield Act, USA, 1960, for the US National Forest estate (Wikipedia)).

For FSC-purposes, a more general interpretation could be:
SFM maintains the timber and non-timber production in a managed forest in equilibrium with the productive capacity of the forest, and ensures that harvesting does not impair the productive capacity or environmental services of the forest, nor the continued existence and regeneration or any species.

2 Notes on Sustained or Sustainable Yield:

The concept of Sustained Yield as a forestry discipline was first developed in Austria near the end of the C18th as a means of calculating the taxes due from managed forests (Osmaston 1968), and was adopted an objective of forest management in Austria and Germany as a way of perfecting the management of forests which were already under management. It complemented the idea of the Normal Forest as the ideal forest, with an exactly balanced distribution of ages, and an exactly equal annual vo-

lume production. It was seldom fully implemented in temperate forests, and never in tropical forests, but in the early C19th the concept of sustained yield was used to justify limitations on logging by mercantile logging companies in India.

In principle, it is possible to extract exactly equal volumes every year, if there is enough information and experience available about the forest's production capacity. However, with variations in productivity of different sites, these equal yields would not come from exactly equal areas. Some stands would be cut before they reached their maximum rates of production, and others would be cut later when past their prime. In the 18th and 19th centuries, it was often essential to supply local communities or individual industries with nearly constant and equal annual quantities of raw materials. Now, with improved transport and mobility of labour forces, "sustainable management" depends much less on maintaining exactly equal annual production, and more on maintaining flexibility to respond to changes in demand and market prices but without impairing the basic production capacity.

For at least half a century, it has been clear that it is no longer essential to ensure an equal annual volume production from individual forests, nor even from a region, much less from individual species (Osmaston 1968 Cap.3, Johnston et al. 1967, Cap.21). An increasing number of studies have shown the disadvantages of limiting annual production to a fixed annual quantity, ignoring the annual changes and longer trends in prices, demand and the need for cash flow (Luckert & Williamson 2005).

For some industries or communities, a stable annual production has some advantages in terms of planning and control. It also suits government agencies interested in regulating the activities of forest managers and securing a predictable stream of tax revenue. However, a rigid emphasis on fixed and pre-determined yields can reduce the flexibility needed for good management in the face of changes in prices and demand, variations in the composition and productivity of the forest, and the options and priorities of the owners.

In some parts of Latin America, an original version of sustained yield has emerged, with the expectation that the first harvest of timber in intact forests should be equal to the second harvest expected 25 – 30 years later. This concept is not always stated explicitly, and does not match the experiences of harvesting in Africa or Asia (where logging cycles are typically longer, for just that reason). Still, the observation that the second harvest of some individual species turns out to be smaller than the first harvest has been interpreted as a failure of sustainability.

It is quite predictable that the first harvests of some species and categories in ancient undisturbed natural forests yield higher volumes than the second, when the second harvest follows after only 25 or 30 years. The yield of those categories (of quality, size or species) will not be at an equal level, when the second harvest is formed only of the

increments during 25-30 years. Great variations also occur in forests disturbed by climatic events – storms, volcanic eruptions, floods, landslides, fires and pest outbreaks.

Dawkins (1958) emphasized that “the first cutting cycle is nothing more than the introduction of organized management in natural forest. Even when this means the birth of a sustained yield, it is very unlikely to be, from the start, a sustained system”. Newly established forest management systems are on the way towards sustainability. After the first cutting cycle, the annual yields, silviculture and all other all elements of management must be adjusted. The selective harvests of the first years must be extended to approach closer to a sustainable system. As commented by Alder (1999), “almost any regime of harvesting the best and biggest trees of light-demanding species may be unsustainable without artificial regeneration. On the other hand, management practices involving the harvest of a wide mixture of species may normally be shown to be sustainable in terms of its silviculture” (unless, of course, only the biggest and best trees of each species is taken).

Managers may also decide to greatly increase or decrease the yields of some species in future harvesting cycles in natural or planted forests, in order to decrease the populations of less valued or less productive species, and to increase the proportions of better adapted or faster growing species. This should be quite consistent with SFM, so long as all native species maintain their long-term viability in the management unit.

It seems clear that sustainability is more a matter of the health of the system, with its many elements, actors and indicators, than with the relative size of the successive harvests. Some growth and yield studies and forecasts have shown how a first harvest may exceed the “sustainable” volume without prejudicing, while even increasing, the total long-term sustained production (Vanclay 1996). Other such studies have shown how yields may continue to decline during subsequent cycles, until they reach something approaching the level of the site’s productive capacity.

This first, large harvest of few species from an unlogged forest, taking trees of a greater age and size than will be harvested in future, is sometimes called “nature’s bounty”, having accumulated over many years before the start of a management system aiming at sustainable management.

One justification for harvesting part of this nature’s bounty (making allowances for conservation areas, HCVs etc.) can be to provide the funds for moving towards sustainable management, including the necessary roads, facilities and human resources. In the Maya Forest in Central America, was clearly recognized: “The current stocks of mahogany and cedar in the community concessions in the Petén should continue to be harvested to capitalize the industry and to guarantee forest management as an economically attractive activity for the future (Tschinkel & Nittler 2000). “Mahogany is the species that has functioned as a catalyst for the consolidation of these social groups and of community forest management” (Chan 2005).

3 Sustaining what?

SFM aims to sustain various distinct elements. Sustainability means different things for owners, for workers and for society. Any focus on sustainability must recognize that different stakeholders may have different objectives, not only for short-term benefits but also for long-term sustainability, including:

- Timber and non-timber products, with possible preferences for increasing certain categories (such as the more highly valued species) and for producing new products, bearing in mind that the market for some species and products may decline in future.
- Higher income, recognizing that future income may come from a mix of products and services different from those of the past.
- Productive employment, which often requires a diversification of activities.
- Maintaining a forest cover (e.g. for environmental protection or tourism), so long as it provides benefits which are more profitable than the alternatives.
- Diversity of flora and fauna, for a variety of values and benefits, including hunting.
- Water supplies, protection and other services.

All these elements play a part in the evolution of sustainability and sustainable management and production. And in each case, there will be opportunities for short-term increases or decreases, as well as long-term growth and decline. Good forest management (like any enterprise management) needs flexibility for responding to new situations. At any stage of the road to sustainability, good management will need the capability to make changes:

- Technical capability to adapt the harvesting and interventions to the changing or evolving characteristics of the forest stand,
- Management capacity to take advantage of emerging markets, to create new markets, and to take appropriate decisions in the face of declining markets for some products.
- The capacity of the authorities to recognize and support these changes and improvements, without suffocating them with rigid rules.

4 What is wrong with “creaming”?

Creaming is an extreme form of the selective removal of the best and/or biggest trees of selected species. Many harvesting operations are selective to some extent (including the respected Selection Systems), but creaming is a word applied when the selective processes are carried to extremes which damage the species, the forest and/or the sustainability of the forest management. This has often occurred in the first few harvests in newly accessible forests (typical of the first logging in unmanaged tropical forests), and in the continued harvesting of the very best individuals of certain species over centuries.

The negative effects of “creaming” include the following:

- **"Genetic erosion" of the species affected:** The phenotypic characters of good form and fast growth are linked to genotypic characters, as well as to environmental factors. This linkage is not absolute, and there is evidence that one or a few selective harvests have relatively little effect on the genetic characteristics of the species (Cornelius et al. 2005), but there are evident changes when the selective logging is continuous. The species may continue with fully viable populations, but the form and growth rates are evidently "inferior". This process of genetic erosion is well-documented after centuries of harvests in poorly managed oak forests in western Europe and in mahogany stands, Swietenia mahogani, in the Caribbean islands. This represents a failure to conserve "biological diversity … within species" (as defined), and may also affect the economic viability of forest management.
- **Local extinction of species:** Creaming puts the viability of the species at risk, whenever selective harvesting affects all sizes of a harvested species, or at least the sizes below which the species produce little or new seed. This process has been evident with some NTFP species, especially when whole plants are collected, as in many orchids; also in trees harvested to the smallest sizes, such as brazil wood and logwood, used for dyes; also in some timber species harvested down to, for example, 25-30 cm d, below which they produce relatively few seeds (e.g. Swietenia and Cedrela spp.). Effects may be stronger at the biogeographical limits of a species, where failures to produce fertile seed or to grow a sufficient crop of seedlings may be more frequent and severe.
- **Economic or financial failures in forest management:** When selective logging removes an excessive proportion of the best, biggest and most valuable trees, and when markets or techniques are not developed for the other trees and species, the economic viability of the second or subsequent harvests, and of the logging enterprise, is put at risk. This does not necessarily damage the viability of any species, but the failure of the enterprise may have serious social and economic implications, especially when the work force is laid off, and especially when there is inadequate alternative employment available locally. The effects of creaming, in this case, are similar to the effects of "over-logging" typical of some temperate forest operations, a problem caused by extracting excessive volumes. In addition, it is then much harder to initiate SFM in a forest with a greatly reduced standing volume of commercial timber or reduced stocking of mother trees.
- **Overall:** Selective harvests may be fully compatible with FSC requirements, especially when combined with appropriate silviculture. Creaming, as an excessively selective form of harvesting, is not compatible. The dividing line between the two is not clearly defined, and varies from case to case.

References:

Alder, D. (1999) Some issues in the yield regulation of moist tropical forests. Pp 14-27 in: Wright, H.L. & D. Alder (Eds.)(1999) Proceedings of a Workshop on Humid and

semi-humid tropical forest yield regulation with minimal data. Oxford, OFI Occasional Paper 52.

Chan Rivas, C.V. (2005) El manejo forestal y la caoba en la SPFEQR, Quintana Roo, México. Recursos Naturales y Ambiente 44:37-44. CATIE, Costa Rica.

Cornelius, J.P., C.M.Navarro, K.E.Wightman & .E.Ward (2005) Is mahogany dysgenetically selected? Environmental conservation 32(2): 129-139.

Dawkins, H.C. (1958) The management of natural tropical high forest with special reference to Uganda. Commonwealth Forestry institute Paper 34. Oxford.

Johnston, D.R., A.J. Grayson & R.T. Bradley (1967) Forest planning. Faber & Faber. 541 p.

Luckert, M.K. & T. Williamson (2005) Should sustained yield be part of sustainable forest management? Canadian Journal of Forest Research 35: 356-364.

Nittler, J. & H. Tschinkel (2005) Community Forest Management in the Maya Biosphere Reserve of Guatemala: Protection through profits. Report submitted to USAID and University of Georgia. 32 p.

ITTO/OIMT (1998) Criteria e Indicadores para el manejo sustentable de bosques tropicales naturales. Yokohama, Japón, Organización Internacional de Maderas Tropicales.

Osmaston, F.C (1968) The Management of Forests. Hafner Publishing Company 384p

Patiño Valera, F. & J.Marín Cávez (2003) Conservation and use of mahogany in forest ecosystems in Mexico. Case Study No. 6, Forest Resources Division, FAO. 17 p.

Pearce, D.F., F.E.Putz & J.K.Vanclay (2003) Sustainable forestry: panacea or pipedream? Forest Ecology and Management 172: 229-247.

SEMARNAT (2003) Ley General de Desarrollo Forestal Sustentable. México, Secretaría de Medio Ambiente y Recursos Naturales. 50 p.

Vanclay, J.K. (1996) Assessing the sustainability of timber harvests from natural forests: Limitations of indices based on successive harvests. Journal of Sustainable Forestry 3(4)47-58

WCED (1987) Our common future. World Commission on Environment and Development. Oxford University Press.