

## 8 The CELOS Management System in relation to Sustainable Forest Management and Certification

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In the previous chapters the CELOS Management System (CMS) is discussed without a clear reference towards the present day's perception of sustainable forest management (SFM). Although the CMS aims at good forest stewardship, it might be questioned whether it reaches the sustainability as proposed by most environmental certification standards. This chapter aims to clarify the extent to which the CMS covers the different components of SFM, and its relevance for forest certification. First, an explanation of sustainability and certification is given (section 8.1). Certification standards make use of principles, criteria and indicators to verify sustainability, while a stepwise approach, such as developed by ProForest (Nussbaum et al. 2003) and explained in section 8.2, seems to be more suitable for the implementation of sustainable forest management. Here, this tool is used to analyze the level to which the CMS covers all present day components of SFM. Therefore a distinction is made between the CMS as a forest management system (section 8.3) and the additional conditions that concern the forest company management system as a whole (section 8.4). Final conclusions are given in section 8.5.

### 8.1 Sustainable forest management and certification

Early definitions of sustainable forestry concentrated on the timber resource, where forest management aimed at 'sustained yield' of a limited number of commercial tree species. This was in fact the reason to develop the CMS. In the meantime, researchers concluded that sustainable timber production should consider more than timber-trees only, and consequently, the approach changed to sustainable resource management, focusing on the forest as the producer of timber. Many researchers stressed the importance of the forest as an ecosystem in which tree growth profits from several functions delivered by the forest as a whole. It was recognized that the production of timber could only be sustained at an acceptable level (economically and ecologically) if all the forest functions are well respected and preserved, at least to a certain level. The CMS project tried to determine the levels of sustainable harvest and the application of

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adequate forest operations, both liberations and harvesting, to sustain these. Recently the importance of other products and services provided by forests has been recognized, particularly those of broader economic and social concern, such as the forest's role in local community livelihoods, rural development, and poverty alleviation. Concepts of sustainable forest management now encompass the continued flow of these products and services, such as protection of fresh water supply, soils and cultural sites, and sustained yield of non-timber forest products, as well as timber. Sustainable forest management has been described as forestry's contribution to sustainable development (Higman et al. 2005). Such development is environmentally sound, economically feasible and socially legitimate. The concept of sustainable development recognizes the fact that utilization of forests will change natural ecosystems, but that conservation is equally important. It also recognizes that utilization of forests is important for achieving national social goals, such as employment and poverty alleviation. A compromise between these goals should be reached (Higman et al. 2005). There are various definitions of sustainable forest management, but they all say essentially the same:

*Sustainable forest management is the process of managing forests to achieve one or more clearly specified objectives of management with regard to the production of a continuous flow of desired forest products and services, without undue reduction of its inherent values and future productivity and without undue undesirable effects on the physical and social environment (ITTO 1998).*

Certification is the process of independent (third party) verification of forest management to meet the norms of a pre-defined sustainable forest management standard. Certification assesses the compliance of a particular forest management system with this standard (Higman et al. 2005). The standard is based on a series of principles for sustainability, and is developed by an organization that administers the certification standard. This organization accredits third parties (certifying bodies, also known as certifiers) to assess the forest management. The organization that administers the certification standard also controls the trademark that tells consumers that products sold from these forests, including timber, are produced in accordance with the standard. Certification is in fact a *credible proof* of sustainable forest management. Certification standards urge forest managers to prove sustainable management practices by showing documents, figures, maps, etc. (the so-called verifiers) that provide information concerning their sustainable forest operations and management.



Photo 8.1. Certified timber in Suriname. (Photo Astra Singh)

To prove sustainable forest management by means of certification, a system is developed that describes sustainability in generally accepted terms and characteristics, which then can serve as a minimum norm for sustainability. Certification standards therefore describe SFM in terms of principles, criteria, indicators, and norms. During the

process of certification, the auditor assesses the forest management by these criteria and indicators, checking the verifiers that should indicate whether the norms are met. If forest management meets these norms, a certificate is awarded. Only through third party certification and the accompanying trademark, forest management can be recognized internationally as sustainable.

The main question is whether the CMS reaches the level of sustainability as proposed by forest certification standards. Does it provide the norm as required by certification standards, and may it thus serve as a reference for sustainable forest management certification?

## 8.2 Implementing sustainable forest management

To answer that question, the CMS might be assessed in terms of principles, criteria and indicators for sustainability. Such an assessment clarifies the CMS' level of sustainability, and consequently identifies those aspects (gaps) that still need to be addressed to meet the norms of sustainable forest management. However, it might be questioned whether or not the approach of principles, criteria and indicators is suitable to identify the discrepancy between the CMS and SFM, particularly as regards its practical application.

Although the use of criteria and indicators may be effective in *verifying* sustainable forest management, it turned out to be less useful to *implement* it. Especially the extended list of criteria and indicators discourages forest managers to seek certification. Moreover, they are confronted with a list that is ordered primarily for auditors to assess the forest management. Therefore the arrangement and order of subjects appears less suitable for forest managers to implement sustainable forest management or to transform conventional forest management towards the sustainability standard. The same challenge is encountered when assessing the CMS' level of sustainability. As we focus on the level of compliance when the CMS is *implemented*, it might be better to search for an alternative to compare the management system with current perceptions on SFM.

A good alternative is given by ProForest (Nussbaum et al. 2003). In response to the forest managers' problem, ProForest developed a Modular Implementation and Verification (MIV) toolkit for a phased introduction and application of sustainable forest management standards in order to reach a level of SFM ready for certification. It is a model that helps forest managers to implement SFM by means of a step-wise approach. All elements of sustainable management are subdivided into smaller entities, which are concise, transparent, and can be addressed in an order that suits the forest manager best. It covers the norms of several certification standards and organizations that defined SFM principles and guidelines (e.g. FSC, ITTO, WWF). As such, the MIV is not a certification standard by itself, but provides a toolkit to reach a level of sustainable forest management to be certified. Focusing on the practical application of SFM, it distinguishes the following elements: legal component, technical component, environmental component, social component, and the chain of custody. Each of these components exists of several modules (see Figure 8.1).

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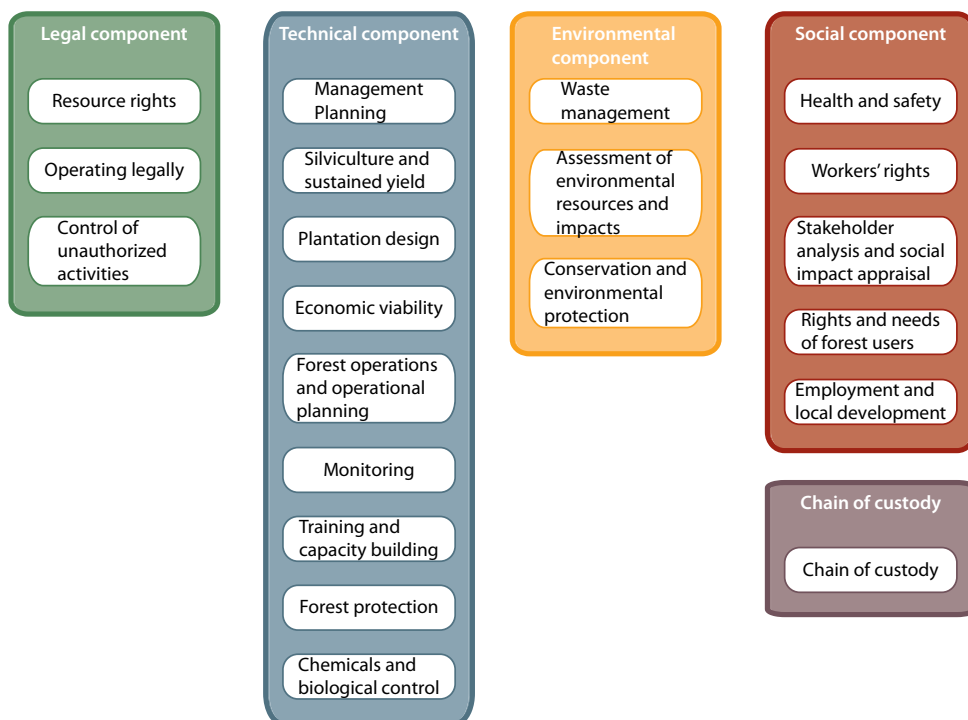


Figure 8.1. The modules of the Modular Implementation and Verification (MIV) approach, shown schematically (after Nussbaum et al. 2003).

Through this approach, it is relatively easy to analyze one's level of compliance with the standard and to see what still has to be done to meet all requirements. Similarly, the CMS can be compared with the MIV to see to which extent it covers current perceptions on sustainable forestry. This gives a clear picture of the CMS in relation to sustainable forest management and certification standards. Furthermore, those aspects that still need to be addressed are identified as well.

### 8.3 The CMS as a forest management system

When comparing the CMS with current components of SFM, first the question needs to be answered what beholds the CMS. Many authors have written about the CMS, but what comprises the CMS and what is additional (i.e. relevant for the CMS, but not part of it)? As already explained in section 8.1, over the past decades the focus in sustainable forestry has moved away from trees to the whole forest ecosystem and additional environmental and social aspects. In the meantime such aspects were to varying extent incorporated in the CMS, but in principle the management system is still a purely silvicultural and harvesting system, describing methods to implement silvicultural treatments and harvesting operations in a sustainable way, in which especially ecological and economic sustainability is concerned. Therefore, the CMS is a forest management system and not a forestry industry system. Principally, the CMS excludes all typical company related issues. However, since it was first proposed, many additional comments, recommendations,

instructions and conditions were added in the scope of total forest industry. These practical applications are therefore not part of the forest management system itself and have hardly or not at all been investigated, but do form a valuable addition and are helpful in the implementation of the forest management system.

The CMS research especially focused on the technical aspects of management and its impact on the forest (both biotic and non-biotic) and has led to the development and elaboration of an extensive silvicultural and harvesting system. Consequently, the CMS possibly can cover all certification criteria and indicators. Certification concerns the whole forest industry (the company), while the silvicultural and harvesting system are just part of this. From this point of view, the CMS covers only (parts of) several modules in the technical and environmental components. Although the CMS can only be implemented successfully if at least several legal issues are in place (e.g. tenure and concession rights and length of lease), these conditions are not inherent to the system. Neither are the social component and the chain of custody.

All environmental impact research regarding the CMS is meant to provide insight into the effects of forest operations. Consequently, the CMS covers parts of the environmental component, providing relevant information for the assessment of environmental resources and impacts and for conservation and environmental protection. On the other hand, the CMS does not give a clearly outlined operational concept to assess and implement these environmental aspects. Therefore, the CMS does cover the environmental component concerning scientific support though it gives hardly any direction towards implementation.

Regarding the technical component, however, much more is covered. Most obvious are the modules *silviculture and sustained yield*, and *forest operations and operational planning*, which are almost entirely covered by the CMS. The CELOS Silvicultural System (CSS) does provide a clear forest resource assessment to collect information on the volumes of forest products available, including growth and yield data. Moreover, it provides an appropriate silvicultural system that maintains recovery and growth of forest products and prescribes a system to set and control harvesting levels. The CELOS Harvesting System (CHS) does provide good practices for forest operations, disturbing the forest as little as possible. Concerning the other modules in this component, hardly anything is covered by the forest management system. Only a few elements of *management planning*, and *chemicals and biological control* are included.

## 8.4 The CMS as part of a forest company management system

Although the CMS is principally a forest management system, many researchers made additional comments and recommendations that are related to the company management system. These are most clearly found in the provisional manual to the CMS, edited by Van Bodegom & De Graaf (1991). Based on the provisional manual, these additional comments and recommendations are compared with the components of SFM. The results are presented in Table 8.1, which gives an overview to what extent the CMS covers the MIV modules. Two remarks should be made. Firstly, this table is just an

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indication, not based on in-depth study, as that would have exceeded the purpose of this chapter. Secondly, the highest given value (+++) indicates that the CMS covers the concerned module *almost* entirely. None of the modules are completely covered by the CMS and/or added comments. In many cases the CMS covers most of the MIV module (or even more than is required by the standard), but does also miss several issues, especially those that are needed to deliver verifiers for auditors.

Table 8.1. Extent to which the CMS covers the modules of MIV.

Component	Module	Value
Legal	Resource rights	0
	Operating legally	-
	Control of unauthorized activities	-
Technical	Management planning	++
	Silviculture and sustained yield	+++
	Plantation design	Not relevant *1
	Economic viability	+ *2
	Forest operations and operational planning	+++
	Monitoring	++
	Training and capacity building	++
	Forest protection	+
Chemicals and biological control	++	
Environmental	Waste management	-
	Assessment of environmental resources and impacts	++
	Conservation and environmental protection	++
Social	Health and safety	+
	Workers' rights	-
	Stakeholder analysis and social impact appraisal	- *3
	Rights and needs of forest users	- *3
	Employment and local development	- *3
Chain of custody	Chain of custody	+++

\*1 The CMS was designed for natural forests, promoting the increment of a naturally developed forest. For plantations other silvicultural systems are more appropriate.

\*2 See also De Graaf et al. (2003)

\*3 The CMS was developed in a situation of low population pressure on the forest. Almost no pressure to convert forest into agricultural land or to use the forest for extensive cattle-breeding was present. Therefore no special measures for the conservation of local forest values were necessary.

Explanation of used values:

- nothing mentioned concerning this module
- 0 only mentioned as a precondition, or information
- + covers little
- ++ covers several parts
- +++ covers the module almost entirely



Photo 8.2. Exploitation road. (Photo K.E. Neering)

Legal issues mentioned in the provisional manual are only prerequisites to implement the CMS, and as such do say something about *resource rights*, but nothing about *operating legally* and control of *unauthorized activities*. Moreover, legal issues hardly receive any attention and therefore the legal component is hardly covered. The provisional manual gives much more comments and recommendations concerning the technical component. All modules (except *plantation design*) are addressed to a certain extent. This is quite evident as the technical modules contain aspects that are closely linked to the silvicultural and harvesting systems. The silvicultural and harvesting systems, for instance, also take into account the risk of wind, which is part of the *forest protection* module. Concerning the environmental component some additional comments are made, especially regarding forest-for-zero-management, which is not just a point of reference for future assessments, but is also necessary for the conservation of biodiversity of the forest ecosystem. Because the CMS was developed in an area with a low population density, hardly any attention was given to social issues. For the internal organization, however, several recommendations are made concerning the use of safety clothing,

importance of safety rules and job rotation. A rather broad elaboration is given concerning record-keeping and log tracking and tracing, which all has to do with the chain of custody. The fact that this component is almost entirely covered in the provisional manual is probably caused by the scientific background of the CMS, stressing the importance of reliable data sets for monitoring. This results in clear recording formats, stressing the importance of good record-keeping.

Although each module is different, as well as the extent to which the CMS covers it, there are several issues that are repeatedly missing, whatever module is concerned:

- In almost every module the MIV mentions that first an assessment needs to be carried out to identify all relevant issues that should be addressed by the concerned module. For example, the *health and safety* module starts with the need to “identify all operations and activities which involve a safety risk or where safety hazards already exist” (Nussbaum et al. 2003: 66). Though the CMS does provide safety prescriptions, in practice other risky operations and activities can easily be overlooked.

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- Next, such identification should be followed by the development of plans and/or procedures to anticipate on or decrease risks, dangers, damage, loss, etc. The need to develop such plans or procedures is rarely mentioned in the provisional manual, and if mentioned it says more about operational plans. Moreover, such plans are not preceded by problem identification (to be implemented by the company), but are just mentioned as a requisite to implement the CMS.
- In line with the above mentioned issues, the CMS does say something about monitoring and/or recording, but with a different scope: monitoring and/or recording is principally focused on the harvesting or silvicultural activities to be carried out, while the MIV describes monitoring and/or recording with a focus on checking compliance of implementation, utilization and application of developed plans, procedures, etc.

These issues show that the CMS is based on a different philosophy and starts from a different point of view. Whereas the CMS aims at optimizing harvestable volumes and treating the forest in a sustainable way, SFM standards are focused on sustainable development of the whole industry (at company level), which is elaborated on the basis of a philosophy of good corporate practice as expressed by the Deming cycle (Deming 1982). The Deming cycle expresses a continuous quality improvement model consisting of a logical sequence of repetitive steps for ongoing improvement and learning: identify, plan, do, study (or check), and act. The MIV approach clearly shows the way to implement SFM using the Deming cycle: forest management needs to start with an identification of the problem, followed by the development of a plan to address the problem. Next the plan has to be carried out, after which the application as well as the problem have to be monitored and, if needed, the plan has to be adjusted.

### 8.5 Experiences with sustainable forest management in the tropics

The previous section might give the impression of the CMS being of limited value regarding sustainable forest management. However, it might be questioned if this does justice to the system, the more if we look at the situation and experiences in the tropics in general.

Initially forest and timber certification was introduced to stop deforestation and forest degradation and to stimulate the conservation of the forest's biodiversity. This in particular regards the tropics and developing countries, where most of the (large-scale) deforestation and forest degradation is taking place. Despite considerable improvements in forest management in many tropical timber producer countries, most forests in these countries still do not meet certification standards because forest management practices are well below the norms as set by international standards (Higman et al. 2005; Nussbaum & Simula 2005; Eba'a et al. 2002). Besides, deforestation and forest degradation is still going on in many countries. A study from 2007 shows that less than 10 % of the world's certified forest area is found in tropical countries (ITTO 2008). It becomes clear that the initial intentions to save particularly tropical forest biodiversity have largely failed.



There are many reasons for the limited progress of forest certification in the tropics. Often the enabling conditions are absent or inadequate, making the process a long and difficult, but challenging one. Countless barriers relate to governance, regulations and the institutional arena, which are difficult for individual forest managers or concessionaires to address. However, there are also constraints at the level of the forest management unit (Nussbaum & Simula 2005):

- In many countries, the implementation of forest management systems is still in development or just recently introduced and their key elements are not yet in place or are inadequate;
- Considerable resources are required to implement the requirements of a certification standard; but developing countries face many institutional, social, human resource and financial constraints, which means that such resources are often scarce;
- The process of implementing the standard can be very lengthy, often taking several years; many factors slow down the development, and it easily stalls for external reasons;
- Another serious constraint is the uncertainty about the benefits of certification; the long and costly process of standard implementation until a certificate is obtained may seem difficult to justify;
- Forest managers are often overwhelmed by a large number of activities to be undertaken in order to meet the standard's requirements. It is difficult for forest managers or external parties to assess clearly the progress made during this period of implementation since so many different activities are being undertaken.

Many of these obstacles also apply to the CMS, which practice is far beyond most current forest management practices. In contrast to most practices in the tropics, the CMS is a forest management system that keeps the production capacity of the forest intact, meaning that forest damage is well below the regenerating capacities of the forest. In this system a long term beneficial forest is promoted, reducing logging damage and nutrient export by means of restricting timber extraction, and stimulating the growth of future crop trees by means of silvicultural treatments. Correct application of this system would give a sustainability level of forest exploitation that currently hardly any tropical company is able to achieve. Companies applying the CMS correctly therefore do reach a very high level of sustainability concerning exploitation and regeneration of the forest. For this reason the introduction of the CMS would be a large step towards sustainable forest management.

## 8.6 Conclusions

Certification standards require the implementation of appropriate silvicultural systems and harvesting practices that sustain the ecological, economic and social functions for both forests and people. In this sense the CMS is sustainable for the purpose it is meant for (silvicultural and harvesting system). Application of the CMS is however not a guarantee that all norms of SFM are met: almost all legal and social aspects are missing and, concerning the environmental and technical aspects, much more needs to be added or changed before forest management meets the criteria of SFM and could be certified.

The most important conclusion that might be drawn from the comparison is the difference in historical perspective. The CMS was developed in the 1980s when sustainable forestry focused on sound resource-use with no more damage and losses than strictly necessary (reduced impact logging) and economic feasibility by means of silvicultural treatments securing and optimizing future harvests. In the past decades sustainable forestry moved its attention towards additional aspects of the forest industry, in particular to social and conservation concerns. In the meantime the purpose of several processes or activities changed. Log-tracking, for instance, was developed for tree-specific and efficient logging of selected harvestable trees and an appropriate administration of harvested volumes. In certification standards, however, log-tracking is in the first place meant to trace all logs from its origin in the forest to the point of selling through a chain of custody. Focus changed and therefore the norms and concerns changed. Consequently, it is not surprising that the CMS does cover parts of current perspectives of SFM, but that other aspects of the forest industry operations are not (yet) in place or differ from former perspectives. Despite of these changes in perspectives and differences between SFM and the CMS, this silvicultural and harvesting system must still be considered as an appropriate sustainable system.

It might be questioned if all missing issues need to be addressed in the CMS, as principally it is meant as a sustainable silvicultural and harvesting system. The CMS must be seen as an appropriate and valuable system that serves SFM and as such gives a solid base for future forest certification.

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