

TOWARD SUSTAINABLE FOREST MANAGEMENT

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Summary

The perception that human development needed to be carried forward in a sustainable way crystallized during the 1980s and informed deliberations at UNCED as to what constituted sustainable forest management (SFM). It rapidly became clear that there was little general consensus, beyond the broadest concepts, as to what constituted SFM. Nevertheless, public opinion polls in European countries showed (and still show) a high level of concern in many countries that SFM does not exist.

During the 1990s there have been a number of processes, launched by different constituencies, to define SFM so that actuality can be judged against an objective framework and failures rectified. Four such approaches are discussed in this essay: the Helsinki Process (the agreements of European Governments); the Montreal Process (the agreement among other temperate latitude governments); the ITTO guidelines (the product of the International Tropical Timber Organization, representing producers and consumers); and the Forest Stewardship Council (FSC) (an NGO and EPVO perspective). Considerable procedural differences still exist among derivations of general standards, termed criteria and indicators (C&I), for SFM, which reflects not only the differing constituencies but also the approach to the implied logical hierarchy.

The schemes of C&I that have emerged are all long and complicated; in some cases they go outside what would generally be understood as the scope of SFM and in other cases deal with matters about which there is little public or political concern. Given that there is continuing public concern about the reality of SFM, regulation and monitoring are going to be a matter for continued scrutiny. Three approaches to regulation and monitoring—by Governments, by self-regulation, and by third-party regulation—are discussed. The issue of forest and forest products certification is entwined with regulation and monitoring.

1. Evolving Ideas and Definitions of Sustainable Forest Management (SFM)

Humankind's ideas about what constitutes acceptable management of forests have evolved and changed considerably. Ideas have changed at varying rates in different countries. Discordance in ideas among groups of countries crystallized in the late twentieth century and led to confrontation at UNCED. The discordance spawned considerable work on the definition of what constitutes the broader concept of sustainable forest management and progress (through various international processes) and on defining the details of such management.

1.1. Historical Attitudes toward Sustainable Forest Management

1.1.1. Earliest Attitudes

Although ideas relating to the need to conserve forests for the benefit of future generations are mentioned in ancient Chinese literature and in the Bible, the ideas were seldom put into active practice. The cedars of Lebanon are mentioned admiringly in the Bible, but where are they now? Through much of early human history the need for new farmland was pre-eminent. Dense forest was an obstacle that humans would have liked to clear but which was beyond their early technological skill to master. Thus, Bronze Age settlements tended to be located on poor sandy soils where forest growth was sparse and could be easily cleared and where rudimentary plows could work the sandy, friable fields. As tools improved and capability expanded, the dense, high forest came to be seen as the temporary tenant on the best agricultural land. The concept of sustainable management of such land as permanent forest would have seemed to the people of those days as an alien concept and an obstruction to economic development—as it is in some developing tropical countries today.

1.1.2. Medieval Attitudes

A change in attitudes occurred with the rise of feudalism in Europe in the late Dark Ages. The traditional tribal view of the Germanic tribes, which had populated much of Europe, favored free access to wooded land. However this view was replaced by one which saw the forest as a restricted-access hunting reserve claimed by noble families. Essentially a distinction arose between the older concepts of wooded land expressed in variants of the word *wald* or *weald* and the newer feudal concept expressed in the words such as *forêt* or *forest*. The boundaries of the new feudal forest were maintained by

associates of the feudal lord, who also controlled access to the forest. While local villagers were allowed to gather fruits, nuts, graze some stock (under rights of pannage), and gather dead wood, any hunting of game (reserved to the feudal lord and his guests) was severely punished. To a feudal lord, the concept of sustainable forest management would have meant a continued ready supply of game from a large intact estate. His vassal population, however, might well have secretly retained the earlier view as to the preferable fate of the forest. The value of timber production in perpetuity also began to be well appreciated. This is clear from the following quotation from the French Royal Ordinance on Forests of 1346: “The Masters of Forests shall survey and visit all forests and all woods which they include, and they shall effect the sales as needed, with a view to continuously maintaining the said forests and woods in good condition.”

1.1.3. Early Industrial Attitudes

A further change in thinking occurred in the early Industrial Revolution (before the discovery that coal could be used to smelt iron). The early Industrial Revolution led to a heavy assault on the remaining forest. Since transport possibilities were restricted, it became vitally important that sufficient wood remained within transportable distance of the (immovable) mineral resource. Thus concepts of sustained timber yield management emerged at several points in Europe—sustained yield being defined as the availability of sufficient wood in perpetuity and being effected through age-class management of the forest. Moreover, warfare, from 1700 onward, became a prodigious user of wood (for carts, gun carriages, ships), and many modern forest services had their origins as branches of the armed services. In times of warfare, the maintenance of adequate forest resources could become a national concern. In World War I, the UK suffered severe shortages of wood, which were at the time viewed almost as seriously as shortages of food. The UK Forestry Commission, with its plantation philosophy, was born directly out of this concern. Sustainability at this time encompassed the strategic national needs for adequate wood in time of war.

1.1.4. Twentieth Century Attitudes

Generally, as the twentieth century unfolded, sufficient timber was being offered for sale nationally and internationally for there to be little concern about the broader issue of timber sustainability. That is still broadly the case. The world annually consumes 3.5 billion m³ of timber from 3.5 billion ha of forested land. Thus a global average annual productivity of only 1 m³/ha/yr is required to satisfy global demand, although it is well known that many natural (and especially plantation) forest ecosystems are capable of producing 10 times that much. During the early twentieth century, the concept of sustained yield management evolved into a complicated science with ever-greater mathematical precision employed in quantifying the forest growing stock and mathematical models being used to predict future growth and yield. It is sometimes said that the forestry industry and profession during this period was obsessed only with timber production and that nontimber benefits existed only as an incidental side effect. That was never entirely true for the working forester who usually saw himself as a custodian of the countryside and part of its social fabric. Nevertheless, timber yield was the pre-eminent objective of forest management in much of the forested land.

However, in the latter half of the twentieth century, increasing public concerns were expressed about the rate of tropical deforestation and about *Waldsterben*, or forest decline, which appeared to be affecting much of the temperate latitude forest. These specific concerns coincided with a growing view that the emphasis on economic development (in whose domain sustainable yield management would surely lie) did not lead to sustainable development. Emphasis on sustained yield management ignored the nontimber and existence values of the forest or at best treated them as desirable but unmanaged side effects. Indeed, emphasis solely on economic development might be part of the problem and not part of the solution.

The various issues became elevated in some countries into a concept of crisis by the time of the UNCED Conference in June 1992. The countries that shared the view that a crisis existed tried to pass this view on to other countries, which viewed their own forest activities as part of normal economic development. There was no overall agreement and no consensus on what constitutes sustainable forest management. The participants did, however, make a detailed nonbinding agreement from which more concise principles could be derived.

1.2. Brief Definitions of Sustainable Forest Management

There are varying definitions of sustainable development and sustainable forest management. The Brundtland Commission described sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” There was no concise definition of SFM in the *Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests* which emerged from UNCED (see *The Development of International Agreements Covering the World’s Forests*). Some key clauses follow, from which a broad definition can be deduced.

- Forests are essential to economic development and the maintenance of all forms of life.
- Forestry issues and opportunities should be examined in a holistic and balanced manner within the overall context of environment and development, taking into consideration the multiple functions and uses of forests, including traditional uses, and the likely economic and social stress when these uses are constrained or restricted, as well as the potential for development that sustainable forest management can offer.
- Forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural, and spiritual human needs of present and future generations. These needs are for forest products and services, such as wood and wood products, water, food, fodder, medicine, fuel, shelter, employment, recreation, habitats for wildlife, landscape diversity, carbon sinks and reservoirs, and for other forest products.
- The vital role of all types of forests in maintaining the ecological processes and balance at the local, national, regional, and global levels through, *inter alia*, their role in protecting fragile ecosystems, watersheds, and freshwater resources and as rich storehouses of biodiversity and biological resources and sources of

genetic material for biotechnology products, and for photosynthesis, should be recognized.

- Governments should promote and provide opportunities for the participation of interested parties, including local communities and indigenous people, industries, labor, nongovernmental organizations and individuals, forest dwellers, and women, in the development, implementation, and planning of national forest policies. National forest policies should recognize and duly support the identity, culture, and the rights of indigenous people, their communities, and other communities and forest dwellers.

ITTO defined SFM as “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.”

The European Governments, in discussing the concept of sustainable forest management noted that in Europe “forest management takes place within clearly established ownership rights and with a long history of national and regional laws and regulations based on long-term planning. Thus, the concept of sustainability has a long tradition in forestry in Europe. However, the meaning of ‘sustainable forest management’ has developed over time according to the changing needs of society.” They provided their own brief definition of SFM: “The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfill, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems.” Thus the several definitions contain:

- varying emphases on the importance of retaining, in the practice of forest management, production of traditional timber products
- stronger emphasis on recognizing the other benefits that the forests can provide and on managing these sustainably
- stronger emphasis on maintaining the ecological role of forests
- agreement on the need to seek the input of relevant stakeholders in management choices

The current overall consensus thus seems to be that any definition of SFM needs to balance economic, ecological, and social goals.

2. Processes to Define SFM

The brief definitions given above would, however, be too broad to resolve disagreements about whether or not SFM had actually been achieved in any particular tract of forest. To improve that ability to discriminate, intensive work on the finer definition of SFM took place—through a mechanism described as the setting of Criteria and Indicators (C&I). Since UNCED, there have been several processes to define what constitutes SFM. Four of these processes are discussed below. All to some extent use a hierarchical approach in which a general principle is elaborated through a series of

criteria and sometimes quantified by an objectively verifiable indicator. The use of the approach varies considerably among the different processes, and the logic is rarely followed exactly. New work has set out to define a consistent hierarchical framework for the formulation of sustainable forest management. The basic concept is that of a standard, i.e. a set of principles, criteria and indicators, or a combination of these hierarchical levels. Inconsistencies exist in the current processes:

- There is poor comparability among the various standards. One process may put a certain issue or parameter at the level of a principle, while other standards first mention the same issue at the level of an indicator.
- There is inconsistent use of concepts and levels within any one standard.

It is necessary to try to improve the hierarchical logical framework to increase the chance of including all relevant aspects of SFM in the set of C&I, for a number of reasons, to decrease the chance of including redundant parameters in the set, and to establish a clear and transparent logical relationship between the parameter to be measured and the principle to which the parameter relates.

Some researchers feel that in the future it would be preferable if each standard would contain the following items in the given logical relationship one to another:

- Main objective, i.e. SFM
- Principles. A principle is an elementary rule or law, serving as a basis for further action and a way of thinking. The function is the elaboration of the idealistic main objective; principles have to be elaborated as an objective in relation to the forest functions, e.g., Function X shall be maintained. Principles typically are the result of negotiations between the various stakeholders.
- Criteria. A criterion is an elaboration of the principle into a state of the dynamic process of the forest ecosystem. From the criteria, it must be possible to make a judgment about compliance with the principles. Criteria function as parameters that make a translation—which must follow logically from the principles—from abstract principles to a real situation in the forest or social system. They must be formulated so as to make a judgment possible, e.g., a certain water quality is maintained.
- Indicators are qualitative or quantitative parameters that can be assessed in relation to a criterion. An indicator describes, in an objectively measurable way, the state/condition of the ecosystem or social system connected to it, or describes management and policy conditions that are indicative for the state of the ecosystem and social system. Indicators should be directly measurable; on the basis of these, the final assessment of the sustainability of forest management has to be made. Indicators can be formulated both in terms of outcome as in terms of (management) processes and input. They are not so much based on negotiations as on scientific information.
- A norm is a certain value or condition of an indicator to strive for. It is compared to the measured value/condition in the forest. Both qualitative and quantitative indicators exist. It is preferable to use quantitative indicators, as these are easier to measure in an objective way. But for this, accurate scientific knowledge is needed concerning relevant factors of the forest. This knowledge may not always be available.

Setting C&I in this type of context would make the process comparable with the various logical framework approaches, which are increasingly used for project management. In addition to the four processes discussed below, there has been substantial and valuable research activity by the Food and Agricultural Organization of the UN (FAO) and the Center for International Forestry Research (CIFOR) in designing and testing C&I. Additionally there have been various processes in the tropical world that have aimed to develop C&I for regional forests: the Tarapoto Process and the African Timber Trade Organization.

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Biographical Sketch

Dr. Ian Hunter is Director-General of the International Network for Bamboo and Rattan, Beijing, China. He was Director of the European Forest Institute, Joensuu, Finland. Dr. Hunter has extensive experience in forest research, and in the management of forest research, in various European countries and in New Zealand.