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Sustainable forest management: maintaining human creativity

by K. F. Wiersum

Sustainable forest management is usually defined as the process of managing permanent forest land to achieve one or more clearly specified productive and/or ecological management objectives without undue reduction of its inherent values and future productivity and without undesirable effects on the physical and social environment. Sustainable forest management should thus guarantee the continuity of all recognised principal functions of a particular forest, without undue effect to other (global) functions.

This definition illustrates that the current development of sustainable forest management pays specific attention to the maintenance of forest functions (products & environmental services). Although it is recognised that various types of forests may be present, the types of forests to be considered are not further specified. In developing criteria for sustainable forest management, two types of forest are normally considered, i.e. natural forests and timber plantations. This distinction reflects that forests can be conceived either as a basically natural ecosystem or as a man-made agroecosystem.

Recent research has demonstrated that in addition to man-made timber plantations, a large variety of other man-made forest types are present in tropical countries. These forests have gradually developed as a result of an evolutionary continuum in interactions between local communities and forests (Wiersum, 1997). During this evolution a process of co-domestication of forests and tree species took place (Table 1). Most of these human-created forest types have until now scarcely been acknowledged by forest science. As illustrated by a recent book on the nature of forests in the West African forest-savanna edge (Fairhead & Leach, 1996), the origin of such man-made forests is often not recognised and ecologists and foresters have often ignored positive human influences on forest composition. The usual perception is that local communities are either destroyers of forests (by necessity or ignorance) or conservers of ancestral forest lands. The option that they may also be active manipulators of forests is not usually considered. Little attention has been given to the possibility that local communities have enriched forests with tree species valued by them or even reconstructed forests to suit their needs for specific forest resources, while maintaining many of the characteristics of natural forests in respect to structure and biodiversity. In many cases, such manipulations are not directed at timber species, but rather at fruit species or species providing commercial non-timber forest products.

At present many of these indigenously-developed forest types have mainly local significance; some also play an important role in the commercial production of non-timber forest products (De Foresta & Michon, 1997). For instance, in Indonesia the majority of rubber is produced in "jungle rubber" gardens. It can be expected that in the future these
forest types will become increasingly important. As indicated by the example of rubber, many of the indigenously-developed forest types are eminently suited to the production of non-timber forest products and with the growing attention to such production, their role is likely to increase. Moreover, with the decreasing area of natural forests subject to timber logging, also the relevance of these forests for timber production will likely increase. Already now it can be observed in a country such as the Philippines that timber sales from tree species such as coconut, rubber and Jackfruit, which are often grown in forest gardens or mixed-species village plantations is rapidly increasing. In contrast to commercial tree estates these indigenously-developed domesticated forests are characterized by a mixed-species composition. They often play an important role in biodiversity conservation, eg with respect to the preservation of a wide variety of genotypes of locally-valued tree species. These forest gardens illustrate the local relevance of biodiversity.

It is generally agreed that one of the criteria for sustainable forest management should be that the forest-related needs of local communities are taken into account and that they can be actively involved in managing forests. As indicated by the presence of the various types of indigenously-developed forests, these criteria should be extended to include the notion that forest management by local communities may result in the development of various types of modified or reconstructed forests, which to an important degree ecologically resemble natural forests. These forests are not static, but gradually evolve in response to changes in production factors, institutional and marketing conditions, and changing relations between forests and other land-use systems. Although many of such smallholder forests are not located on officially designated permanent forest lands, they can still be considered as being sustainably managed.

In order to obtain a better scientific understanding of the relations between local communities and forest environment, and the various indigenous methods of forest management, the Forestry Department of Wageningen Agricultural University is carrying out a research programme on "Community forestry development and rural transformations in tropical countries". This research focuses on the identification of different types of indigenously-developed forests and of the various factors which influence both their dynamics and sustainability. The basic premise underlying the research is that to understand the full scope of human effects on forests, people should not be conceived as an unnatural external factor to forests, but rather as a highly specialized ecological agent acting within the forest. People may have either positive or negative influences on the forests; these influences are time and location dependent. It is expected that this research programme will provide fundamental information to raise awareness on the need to operationalize the term sustainable forest management not only with respect to timber production from professionally managed production forest estates but also with respect to the wide variety of indigenously-developed forest types. This means that the concept of sustainable forest management should incorporate the notion that not only the ecological integrity and social functions of forests should be maintained, but also the indigenous ingenuity and creativity in conserving, enriching or even reconstructing forests.

References

- Wiersum, K.F., 1997. Indigenous exploitation and management of tropical forest resources: an evolutionary continuum, in forest-people interactions. Agriculture,
CIFOR's research on secondary forests

by Cesar Sabogal, Joyotee Smith, Dean Current and Manuel Guariguata

One of the main focus areas for CIFOR is on issues which are critical for improving the perception and understanding of the sustainable use of tropical forests by society in general and by local communities at the forest margin in particular. Secondary forests which regenerate on land where primary forest has been cleared for agricultural purposes, are an increasingly important component in land-use dynamics of forested areas under agricultural pressure. They provide a wide range of traditional and potential roles for alleviating poverty and contributing to environmental conservation. Research on tropical secondary forests is timely in the context of current international concerns for sustainable development.

The management potential of secondary forests
Within the generally pessimistic scenarios about tropical deforestation, one optimistic development is that the areas in secondary forests appears to be increasing, particularly in Latin America. The importance of secondary forests in generating incomes for the small farmer and environmental benefits for society as a whole is growing. It has already been demonstrated that the productivity of secondary forests can be increased through management practices (e.g. Brown and Lugo; Finegan 1992). These findings have lead to the hypothesis that secondary forests may be able to partially compensate for some of the economic and ecological services originally provided by primary forests. Further policy and technological interventions may be able to increase the value of secondary forests to farmers and thus induce them to increase the area in secondary forests and/or delay its re-conversion to other uses (Smith et al. in press). A multi-disciplinary team in CIFOR is investigating this hypothesis together with the Tropical Agricultural Centre for Research and Higher Education (CATIE) and partners from national research systems in three Latin American countries (Peru, Brazil and Nicaragua). The research is partially funded by grants from the Inter American Development Bank and recently from the Spanish Agency for International Cooperation (AECI).

Main research objectives are:

1. to determine the management potential of secondary forests for production and conservation in biophysical and socioeconomic terms under distinct land-use intensification conditions;
2. to develop and validate techniques for the multiple-use management of secondary forests in each of the research sites with the collaboration and participation of farmers (Pucallpa in Peru; the Micro-Region Bragantina in Para State, Brazil; and the agricultural frontier of Rio San Juan, Nicaragua).

Specific objectives are:
(a) to provide baseline information on the current status of secondary forests;
(b) a better understanding of the dynamics of forest conversion;