

Multiple-use forest management in the humid tropics

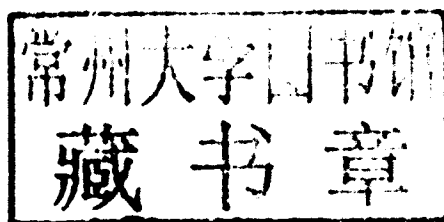
Opportunities and challenges for sustainable forest management



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Preferred citation: Sabogal, C., Guariguata, M.R., Broadhead, J., Lescuyer, G., Savilaakso, S., Essoungou, N. & Sist, P. 2013. *Multiple-use forest management in the humid tropics: opportunities and challenges for sustainable forest management*. FAO Forestry Paper No. 173. Rome, Food and Agriculture Organization of the United Nations, and Bogor, Indonesia, Center for International Forestry Research.

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ISBN 978-92-5-107823-5 (print)
E-ISBN 978-92-5-107824-2 (PDF)

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Cover photos:

Left: A woman and child collect fruits in the forest of the native community of Pueblo Nuevo del Caco, Ucayali, Peru (AIDER)

Top right: A team of chainsaw millers sit on a sawn log of ayous (*Triplochiton scleroxylon*) in a forest in Cameroon (G. Lescuyer)

Bottom right: Women make baskets using fibres harvested in a forest in the Lao People's Democratic Republic (J. Broadhead)

Foreword

Societal demands on tropical forests at the local, national and global scales are profound and varied: the regulation of the hydrological cycle; the mitigation of global climate change; the provision of timber and non-timber products; food security; recreation; biodiversity conservation; cultural and spiritual values; livelihoods and employment; and many others. The Statement of Principles on Forests, made at the Earth Summit in 1992, affirmed that forests should be managed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations. Yet we still seem far from implementing a truly holistic, multiple-use approach to forest management, or achieving the lasting conservation of tropical forests.

Managing forests for multiple uses is a potential way of increasing the monetary value that communities, managers and owners – who are sometimes the same people – obtain from the forest resource. But knowledge of the techniques for managing the various forest products and services, and the availability of market opportunities for them, can differ greatly, and the capacity to implement multiple-use forest management is often low. Local communities face challenges in adjusting their traditional practices to implement forestry regulations, which are often drafted with little consideration of the multiple goods and services of forests or of local social and ecological issues. In many tropical countries, management approaches that optimize trade-offs among the various forest goods and services have traditionally been neglected, or else are not well known by managers and practitioners. Laws are usually drafted with narrow objectives, and they tend to undermine societal inclusion because of limited cross-sectoral dialogue.

In 1985 FAO published the book *Intensive multiple-use forest management in the tropics: analysis of case studies from India, Africa, Latin America and the Caribbean*, which made the still-valid point that “the burgeoning demands and the often high density of population make it necessary to develop intensive multiple-use management systems. This, however, requires a good knowledge of existing practices and their deficiencies in fulfilling different objectives”.

After more than two decades, this paper, based on case studies in the Amazon Basin, the Congo Basin and Southeast Asia, and a Web-based survey, takes a fresh look at the reality of multiple-use forest management. It finds that some patterns are global but that there are also regional peculiarities. This review gives us new insights into how to improve multiple-use forest management plans and practices on the ground, and how to use the concept to promote stakeholder dialogue on a range of policy, institutional, technical and social issues.

While progress has been made since 1985, multiple-use forest management has not expanded as might have been hoped. This paper identifies opportunities to increase the uptake of multiple-use forest management, and some of the steps that can be taken. Governments have a key role to play in creating enabling

environments and by supporting forest managers to realize the benefits of adopting multiple-use management.

This paper is the product of a collaborative effort led by FAO and the Center for International Forestry Research. We hope it will help managers, researchers and policy-makers to overcome the challenges, and realize the opportunities, for implementing multiple-use forest management in the humid tropics.

A stylized, handwritten signature in black ink, consisting of a series of loops and a long, sweeping underline.

Eduardo Rojas-Briales
Assistant Director-General
FAO Forestry Department

A handwritten signature in black ink, featuring a large, circular initial 'P' followed by a series of loops and a horizontal stroke.

Peter Holmgren
Director-General
Center for International Forestry Research

Acknowledgements

The study reported in this publication was funded by FAO's Forest Assessment, Management and Conservation Division, the CGIAR's "Forests, Trees and Agroforestry: Livelihoods, Landscapes and Governance" Research Programme, and the United States Agency for International Development. The preliminary discussions that ultimately resulted in the present publication benefited from technical and financial contributions from the *Centre de coopération internationale en recherche agronomique pour le développement*. We thank Robert Nasi for facilitating the initial stages of this work.

Thanks to Everaldo Nascimento de Almeida (Brazil), Lincoln Quevedo and Rudy Guzman (Bolivia), and Alfredo Gaviria and Walter Nalvarte (Peru) for reviewing the Latin American country case studies and drafts of this publication, and to James T. Hunt, Simmathiri Appanah and Simmone Rose for their insights. Thanks to all those who responded to the Web-based survey. Thanks to Marco Boscolo, Claudia Romero, Maria Ruiz-Villar, Paul Vantomme and Emilio Vilanova in the FAO Forestry Department for their comments to improve the Web-based survey, Michelliny Bentes Gama, Imam Basuki, Michael Padmanaba and Melinda Wan for helping with the translation of responses to the survey, and Dina Satrio, Gusdiyanto, Herry Purnomo and Marion Karmann, who helped disseminate it.

Special thanks to Alastair Sarre for editing, Roberto Cenciarelli for layout, and Valentina Garavaglia and Remi d'Annunzio for preparing the maps.

Acronyms

CbFM	community-based forest management
CCF	Certified Community Forestry (Papua New Guinea)
COPAL	Coopérative des Planteurs de la Lékié (Cameroon)
FAO	Food and Agriculture Organization of the United Nations
FMC	Forest Management Concept (Indonesia)
FMP	forest management plan
FMU	forest management unit
FPCD	Foundation for People and Community Development (Papua New Guinea)
FSC	Forest Stewardship Council
GDP	gross domestic product
INCRA	National Institute of Colonization and Agrarian Reform (Brazil)
ITTO	International Tropical Timber Organization
KPKKT	Kumpulan Pengurusan Kayu Kayan Terengganu Sdn. Bhd. (Malaysia)
MFM	multiple-use forest management
NGO	non-governmental organization
NTFP	non-timber forest product
PAE	projeto de assentamento agro-extrativista (Brazil)
PES	payments for ecosystem services
PFE	permanent forest estate
RDS	reserva de desenvolvimento sustentável (Brazil)
REDD+	reducing emissions from deforestation and forest degradation, including the role of conservation, sustainable management of forests and enhancement of forest carbon stocks
RESEX	reserva extrativista (Brazil)
RIL	reduced impact logging
SFM	sustainable forest management
SIFORCO	Société Exploitation Forestière (Democratic Republic of the Congo)
SOC	state operating company (Viet Nam)
SODEFOR	Société de Développement Forestier (Democratic Republic of the Congo)
SUDECOR	Surigao Development Corporation (the Philippines)
SUFORD	Sustainable Forestry for Rural Development (Lao People's Democratic Republic)
TRC	Transformation Reef Cameroon

Executive summary

In this report, multiple-use forest management (MFM) is defined as the deliberate management of a particular forest area in a particular time period for various goods and services. Three regional assessments were carried out between 2009 and 2012 to identify and draw lessons from on-the-ground initiatives in MFM in the Amazon Basin, the Congo Basin and Southeast Asia. In all three regions, information was collected through interviews with country-based forestry experts, forest managers and technicians. A complementary, Web-based questionnaire was used to examine a range of variables in ongoing or completed MFM initiatives at the country level.

The regional assessments canvassed 46 MFM initiatives in 13 countries. This report provides an overview of forestry in those countries and the 46 initiatives, the constraints they face, and the opportunities for diversifying and integrating products and services in forest management units. The evidence, opinions and perceptions gathered through interviews and surveys indicate that the practical application of MFM is a complex and challenging task in the prevailing conditions.

There is wide variation in the forest area encompassed by the surveyed MFM initiatives, from 1 900 hectares to almost 1 million hectares in the Amazon Basin, from almost 11 000 hectares to more than 2.1 million hectares in Southeast Asia, and from 4 800 hectares to almost 200 000 hectares in the Congo Basin. The smaller areas are mostly forests managed by indigenous peoples or by associations of small-scale extractors.

Of the surveyed initiatives, timber production is the predominant primary objective, followed by the production of non-timber forest products. Other economic activities of importance in at least some of the surveyed MFM initiatives were fisheries, ecotourism, forest conservation, the production of fuelwood and charcoal, and ecosystem services.

In many of the countries analysed in this report and for certain categories of actor, MFM remains an interesting yet barely operational concept due to economic, technical and administrative constraints. Timber is still the only forest commodity with major lucrative markets, whose operation is based on a reliable body of technical knowledge, and which provides a significant contribution to national economies. The dominant model of timber harvesting is, however, being undermined in some regions by the arrival of investors interested in agro-industrial or mining projects, for which the financial benefits can be much higher than those associated with sustainable timber harvesting. In this new context, MFM could increase the economic benefits of SFM. Several initiatives, such as certification and legality schemes, could help support the implementation of MFM, although generally forest management certification has so far failed to yield significant increases in timber prices.

Forest managers should be supported in efforts to realize the potential of MFM. Greater effort is needed to eliminate unfair competition from operators whose sole

objective is to extract timber, with little or no concern for multiple uses. In most countries, the demarcation of a permanent forest estate and the development of national land-use plans would increase investment in long-term forest management and lend support to MFM. Improving the value of logged-over forest through silvicultural treatments would improve the chance of those forests being managed for multiple uses. Training and awareness-raising to change the entrenched mindsets of certain forestry stakeholders is also recommended.

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1 Introduction

Natural forests across the tropics provide a wide range of products, ecosystem services and social and economic opportunities and can potentially be managed to meet multiple objectives. The multiple-value nature of forests has long been appreciated and used by forest-dependent people in the tropics and the goal of multiple-use forest management (MFM) is stated in the laws of many countries, in much the same way as the guiding principles of sustainable forest management (SFM) became entrenched in laws following the Rio Earth Summit in 1992.

In the past, very low population densities and limited demand for products permitted the realization of multiple benefits from humid tropical forests (usually called tropical rainforests) without conscious effort (FAO, 1984). However, MFM is formally re-emerging in tropical rainforest policies because of the many demands being placed on those ecosystems. Tropical rainforests play important roles as globally significant reservoirs of carbon, sources of economically important products, and providers of essential ecosystem services and biodiversity. García-Fernández, Ruiz-Perez and Wunder (2008) considered MFM for timber, non-timber forest products (NTFPs) and the provision of ecosystem services to be:

“a more equitable strategy of satisfying the demands from multiple stakeholders, an ecologically more benign harvesting approach, and a way of adding more value to forests making them more robust to conversion. MFM represents a common and prime management objective under the sustainable forest management paradigm”.

As landowners and forest managers in the humid tropics begin to consider MFM as part of their regimes, an assessment of existing MFM initiatives would assist them to make informed decisions in formulating forest management plans (FMPs) for multiple uses.

DEFINING MFM

The conceptual and practical development of MFM started in North America and Europe. Nix (2012) referred to it as:

“the management of land or forest for more than one purpose, such as wood production, water quality, wildlife, recreation, aesthetics, or clean air”. It is “a concept of forest management that combines two or more objectives, such as production of wood or wood-derivative products, forage and browse for domestic livestock, proper environmental conditions for wildlife, landscape effects, protection against floods and erosion, recreation, and protection of water supplies”.

But MFM models can also be found as part of longstanding practices in the tropics, for example in India and the sacred forests described in the *aranyakas*. Likewise, the spatial separation of forest use was practised in British India and Malaya from the late 1890s (Rawat *et al.*, 2011). Yet there is little agreement among stakeholders on the scope and definition of MFM. The proliferation of

associated terms, such as multiple-use, multipurpose, multifunctional, diversified and integrated forest management, contributes to the differing ways in which MFM is defined and perceived.

According to some, the multiple demands on forests can best be met at the landscape level by spatially segregating production and conservation objectives, with forest units specialized in single dominant uses such as the production of timber and NTFPs, ecotourism and ecosystem services (Vincent and Binkley, 1993; Binkley, 1997; Boscolo, 2000; Zhang, 2005). Others argue that multiple goods and services can be produced efficiently within individual management units or at the “stand level” (Panayotou and Ashton, 1992; Campos, Finegan and Villalobos, 2001). Thus, MFM may be accomplished by one or a combination of the following (Ridd, 1965):

- the concurrent and continuous use of several forest resources obtainable in a forest management unit (FMU), requiring the concurrent provision of several goods and/or ecosystem services from the same area (e.g. combining the extraction of rattan with wildlife conservation);
- alternating or rotating the use of various resources or product combinations in a unit (e.g. through shifting cultivation);
- the geographic separation of uses or use combinations so that multiple use is accomplished across a mosaic of units, with each FMU being put to the single use to which it is most suited (e.g. zoning of a forest area).

However, the working definition of MFM used in this document is the deliberate management of a particular forest area in a particular time period for various goods and services. This definition implies the diversification of uses in spatial and temporal terms and emphasizes both diversification and integration at the stand level.

REASONS FOR THE POOR IMPLEMENTATION OF MFM AT THE STAND LEVEL

Although MFM is envisioned increasingly as a viable alternative to a singular focus on timber production in tropical forests, assessing the relative economic value of and level of demand for various forest products and services is difficult because many such services are non-market commodities or have undeveloped markets. Most forest products, including timber, fuelwood and a wide range of NTFPs, are either traded or are tradable in markets and are also used for subsistence. Markets for ecosystem services, such as ecotourism, water and soil protection, biodiversity conservation and carbon sequestration, on the other hand, are still in their infancy (de Jong *et al.*, 2010a).

According to García-Fernández, Ruiz-Perez and Wunder (2008), MFM “within the same tropical forest-stand unit may only be implementable under exceptional circumstances”. The key challenges range from:

“intricate technical trade-offs at the species level to the economies of scale in forestry planning, production and marketing, and further on to the structural conditions in capitalist societies favoring commodity specialization models ... MFM remains a valid management alternative under specifically favorable local context conditions, especially when practiced at the landscape scale”.

The reasons for the perceived inefficiency of MFM at the stand level in tropical countries include the high fixed cost of forest operations (infrastructure planning, inventories, mapping, etc.) and the technical complexities of MFM (e.g. there is a lack of silvicultural knowledge and expertise to integrate the management of multiple products). When the influence of these aspects is reduced (e.g. in logged-over forests with lower fixed costs associated with re-harvesting, and community forestry at smaller scales with less need for infrastructure), multiple uses within the same management unit may yield superior returns to land-use specialization. Nevertheless, there is still a lack of understanding of why MFM approaches are not widespread.

WHY IS MFM IMPORTANT?

Increased societal demands on forests for timber and non-timber products and ecosystem services and rising environmental and social awareness about tropical forests are globally important trends affecting tropical forest use. Under the right conditions, MFM could diversify forest use, broaden forest productivity and provide incentives for maintaining forest cover. It could also allow a greater number of stakeholders to receive forest benefits. In addition, developing workable MFM approaches could provide opportunities to reduce social conflict and exclusion in remaining forest areas, as well as help reduce forest resource degradation and assist in establishing REDD+ programmes.¹ Risk reduction is another important reason to pursue MFM, and this is becoming more significant as the risks associated with climate change increase.

OBJECTIVES

The objectives of this report are to:

- systematize relevant past and ongoing initiatives in MFM in the tropics;
- increase understanding of the barriers that hinder the implementation and viability of MFM initiatives;
- make strategic recommendations to increase the chances of success of MFM initiatives under various environmental and socio-economic scenarios.

Geographically, the focus of this report is on three regions in the humid tropics: the Amazon Basin in South America; the Congo Basin in Africa; and Southeast Asia. By identifying and surveying MFM initiatives in these regions (Figure 1), the report aims to provide information relevant to the following questions:

- Under what circumstances can MFM be implemented successfully at the FMU level?
- Under what conditions can MFM be financially attractive and competitive with other land uses?
- What policy, technological and capacity-building strategies and interventions are needed to help forest managers overcome barriers to the successful implementation of MFM?
- What policy, institutional and market-based incentives could be devised to promote MFM?

¹ REDD+ is a term used for efforts to reduce greenhouse gas emissions from deforestation and forest degradation, including the role of conservation, sustainable management of forests and enhancement of forest carbon stocks.

FIGURE 1
Location of identified MFM initiatives in the three tropical rainforest regions

