

3 Regional assessments

OVERVIEW

The following brief description of the forests and forest management situation in the Amazon Basin, the Congo Basin, and Southeast Asia is based on FAO (2010a). The total forest area in these regions is more than 1.3 billion hectares (Table 1), which is one-third of the global forest area. Forests cover 57 percent of the total land area, compared with the world average of 31 percent. The three most forest-rich countries (Brazil, the Democratic Republic of the Congo and Indonesia) account for more than half (57 percent) of the total forest area in the three regions. Table 2 presents data on the forest areas of the surveyed countries.

TABLE 1

Forest area, by country, Amazon Basin, Congo Basin and Southeast Asia

Amazon Basin	Congo Basin	Southeast Asia
Bolivia (Plurinational State of)	Angola	Brunei Darussalam
Brazil	Burundi	Cambodia
Colombia	Cameroon	Indonesia
Ecuador	Central African Republic	Lao People's Democratic Republic
French Guiana	Republic of the Congo	Malaysia
Guyana	Democratic Republic of the Congo	Myanmar
Peru	Equatorial Guinea	Papua New Guinea
Suriname	Gabon	Philippines
Venezuela (Bolivarian Republic of)	Rwanda	Singapore
	Sao Tome and Principe	Thailand
		Viet Nam
Forest area ('000 ha) and percent of land area (in brackets)		
799 394 (60)	301 807 (57)	242 048 (51)
Area of forest primarily designated for the production of wood and non-wood forest products ('000 ha) and percent of land area (in brackets)		
108 258 (14)	58 884 (20)	111 411 (46)
Area of forest with a management plan ('000 ha) and percent of land area (in brackets)		
75 496 (9)	30 820 (10)	59 666 (28)
Area of certified forest ('000 ha) and percent of land area (in brackets)		
5 416 (0.7)	4 483 (1.9)	6 367 (3.0)

Note: Countries with MFM initiatives included in the regional assessments are shown in bold.

Source: FAO (2010a)

TABLE 2
Forest parameters in countries with MFM initiatives identified in the regional assessments

Country	Forest area ('000 ha)	% of land area	Annual change rate 2000–2010 ('000 ha/yr)	Publicly owned (%)	PFE (%)	Area with FMP (%)	Certified forest area (%)	Area under SFM (%)
Amazon Basin								
Bolivia (Plurinational state of)	57 196	53	-290	100	67	23	3	8
Brazil	519 522	62	-2 642	81	60	4	1	1
Peru	67 992	53	-122	62	56	28	1	5
Congo Basin								
Cameroon	19 916	42	-220	100	64	36	4	13
Democratic Republic of the Congo	154 135	68	-311	100	31	5	0	0
Gabon	22 000	85	0	100	61	21	9	17
Southeast Asia								
Cambodia	10 094	57	-145	100	82	16	0	0
Indonesia	94 432	52	-498	91	70	19	1	5
Lao People's Democratic Republic	15 751	68	-78	100	-	-	-	-
Malaysia	20 456	62	-114	98	68	69	26	47
Papua New Guinea	28 726	63	-141	3	36	3	n.s.	1
Philippines	7 665	26	55	85	79	28	0	1
Viet Nam	13 797	44	207	72	-	-	-	-

Note: ns = not significant.
Source: FAO (2011)

Forest characteristics

Two-thirds of forests in the three regions are classified as dense humid forests. The three regions also contain important areas of flooded forests (including mangroves) and some tropical dry forests.⁴ Around one-fifth of all forests are classified as mosaics – mixtures of forest and other land, where forest patches are fragmented and difficult to classify separately.⁵ Primary forests and other naturally regenerated forests predominate, constituting 98 percent of all forests. The average volume of carbon stored in forests in the three regions (202 tonnes per hectare) is higher than the global forest average (162 tonnes per hectare).

Ownership and management rights

Despite changes in forest ownership and tenure in some countries, the vast majority of forests in the three regions remain under state ownership, although the situation varies between regions and countries. In the Congo Basin, 99 percent of all forests are publicly owned, while close to 20 percent is privately owned in the Amazon Basin and Southeast Asia. In some countries there is a trend towards involving communities and private companies in the management of publicly owned forests. Brazil and the Philippines report that a large proportion of publicly owned forests is managed by communities (37 percent and 47 percent, respectively), while more than 40 percent of publicly owned forests are managed by private corporations and institutions in Cameroon, the Democratic Republic of the Congo and Indonesia (FAO, 2011). In the Amazon Basin, private corporations and institutions do not manage much public forest, although this is expected to change in Brazil as a result of the 2006 forest concession law (e.g. Banerjee and Alavalapati, 2008).

Socio-economic aspects

In total, forestry activities and the wood and pulp and paper industries contributed 2 percent of gross domestic product (GDP) in the three regions in 2006, but the contribution was significantly higher in some countries (notably 11.1 percent in the Central African Republic, 6.7 percent in Papua New Guinea and 4.1 percent in Guyana). In general, the size of the forest sector is decreasing as a percentage of GDP because other sectors are growing faster. Given the lack of data on the subsistence use of forests and on the informal economy, however, the total contribution of the forest sector to economies is undoubtedly higher than the official figure in many countries.

In the Congo Basin in 2006, forestry and logging contributed more than 80 percent of value-added in the forest sector and the pulp and paper industry only 1 percent. In Southeast Asia in 2006, forestry and logging contributed less

⁴ Dense dry tropical forests are particularly important in the Congo Basin, where they represent 23 percent of the total forest area (compared with 5 percent in the Amazon Basin and 6 percent in Southeast Asia).

⁵ Southeast Asia has the largest percentage (33 percent) of mosaic forests, compared with 18 percent and 15 percent in the Amazon Basin and the Congo Basin, respectively.

than 40 percent of value-added; 34 percent of value-added derived from the wood products industry and 27 percent derived from the pulp and paper industry (FAO 2011). The situation in the Amazon Basin is somewhere in between. In 2011, an estimated 2.3 million people were formally employed in the forest sector in all three regions combined – almost 1.2 million in the Amazon Basin, around 1 million in Asia and only 57 000 in the Congo Basin.

Status of forest management

The forests of the three regions are increasingly being conserved and managed for multiple uses and values, often in combination. Close to 279 million hectares (21 percent of forests) are managed primarily for the production of timber and NTFPs in the three regions (Table 2). Around 135 million hectares, or 10 percent of all forests, are designated for multiple-use, defined as forest “managed for any combination of goods production, soil and water protection, biodiversity conservation and social services provision, with none of these alone considered predominant”. Eleven percent of the total forest area is designated for multiple-use in the Amazon Basin, 10 percent in the Congo Basin and 6 percent in Southeast Asia (FAO, 2010a).

Southeast Asia reported the largest proportion of forests designated for productive purposes, reflecting the high population density in the region and the long history of forest management and timber harvesting; that region had a low proportion of primary forest compared with the other two regions. However, Southeast Asia also recorded the highest proportion of forests designated for the protection of soil and water resources and for biodiversity conservation. The Amazon Basin had the highest proportion of forests managed for social services (largely in the form of areas allocated to indigenous people in Brazil) and aimed at helping to conserve cultural values (FAO, 2010a).

The area of forest covered by management plans is increasing, although data are unavailable for several countries in the three regions. Based on the most recent available information, close to 166 million hectares, or 13 percent of the forest area in the reporting countries, are under some kind of management plan. Countries in the Amazon and Congo basins reported that an average of 10 percent or less of their forests were covered by management plans, while 28 percent of all forests in the reporting countries in Southeast Asia had management plans (FAO, 2010a).

As of 2010, some 16 million hectares of forest in the three rainforest regions had been certified, amounting to 1.3 percent of the total forest area, ranging from 0.7 percent of the forest area in the Amazon Basin to 3 percent in Southeast Asia. However, information is missing for some countries, so the total certified area may be larger. FAO (2010a) reported that only 3.5 percent (or 44 million hectares) of the total forest area was considered to be under sustainable management.⁶

⁶ Based on information received from 23 of the 30 countries that applied fairly strict assessment criteria of SFM.

AMAZON BASIN

The Amazon Basin is a region of great contrasts – topographically, environmentally, socioculturally, economically, politically and institutionally.⁷ The region covers 650 million hectares, of which about 550 million hectares are forested. The forested part of the Amazon Basin spans nine countries: Bolivia (Plurinational State of), Brazil, Colombia, Ecuador, French Guiana, Guyana, Peru, Suriname and Venezuela (Bolivarian Republic of) (UNEP, 2009). The population of the “greater Amazon”⁸ is estimated at 33.5 million inhabitants, of whom 21 million live in cities (UNEP, 2009). The Amazon forests hold a huge store of carbon, and their destruction produces large amounts of greenhouse gas emissions. The Amazon forests also constitute a repository of biodiversity of global significance, as well as other important above-ground and below-ground natural resources, such as minerals and fossil fuels.

The diverse ecosystem services provided by Amazonian forests are of high regional and global importance (e.g. WWF Netherlands, 2009; Porro, Börner and Jarvis, 2008; UNEP, 2009).

The Amazon Basin contains the world’s largest contiguous area of tropical forest, but it has also lost the largest area of forest of the three tropical regions. FAO (2005a) reported that about 3.5 million hectares of land per year was deforested in the Amazon countries in the decade 1990–2000, increasing to 4 million hectares per year in 2000–2005. Skole and Chomentowski (1994) reported that 30 percent of the deforested area in the Amazon was regenerating into secondary forest.

Forest policy and institutions

Governments have significantly improved the legal and institutional frameworks that deal with land and forest use in Amazonia since the 1990s (UNEP, 2009). These reforms, however, continue to give priority to the timber sector and to favour logging entrepreneurs. Only in the last decade have land and forest policies begun to consider the needs of small-scale farmers; communities, for example, have been encouraged to participate in logging activities. However, the policies and laws that regulate community forests tend to overlie models implemented by commercial enterprises without considering the specific characteristics of rural communities.

While law enforcement is often minimal, law compliance also tends to be low because the costs of complying render many forest enterprises unprofitable. This is especially the case for indigenous and community groups, who rarely benefit from opportunities under existing legal and policy provisions (Pokorny *et al.*, 2010). As a result, informal approaches tend to be more efficient in regulating social and economic interactions among forest users (Ruiz, 2005).

Commercial and communal forestry are both affected by macro-economic factors and policies. For example, exchange-rate policies have a direct effect on the competitiveness of timber exports; monetary policies influence the national

⁷ This section is adapted from De Jong *et al.* (2011).

⁸ The greater Amazon is the maximum extent of the Amazonian area based on at least one hydrographic, ecological or political/administrative criterion (UNEP, 2009).

consumption of forest products (which is important in Brazil, for example, with its high domestic timber consumption); and tax policies have a direct influence on community forestry because they affect product prices and profit margins (Pokorny *et al.*, 2008).

In the last two decades, nearly all Amazonian countries have profoundly revised their legal frameworks for the protection and sustainable use of natural resources, particularly forests. Initially, reforms focused on defining norms for the development, implementation and auditing of the FMPs of commercial timber enterprises, for the first time providing a clear and transparent basis for management and control. Later, governments also started to consider simplified regulations and norms for forest use by communities and individual families, although still focused primarily on timber harvesting. Local forest management schemes and the collection of NTFPs remain widely ignored in most legal frameworks. Most countries have chosen timber concession schemes as their governance approach and have set up detailed operational frameworks for authorization, auditing and control (De Jong *et al.*, 2010b).

Overview of the forest situation in target countries⁹

Bolivia (Plurinational State of)

- The permanent forest estate (PFE)¹⁰ of Bolivia (Plurinational State of) is estimated at 38.3 million hectares, comprising 25.1 million hectares of natural production forest, 13.1 million hectares of protection forest and 73 000 hectares of planted forest.
- Logging is performed by various types of users (forest concessionaires, indigenous and peasant communities and private landowners) through FMPs approved by the forest authority (*Autoridad de Fiscalización y Control Social de Bosques y Tierras*). Most harvesting operations are performed by a variety of local community-based and indigenous institutions, which lack sufficient resources and capacity.
- A portion of forests is publicly owned and other forests are on lands that have been granted as private individual landholdings or as collective rights to indigenous people and agro-extractive communities. The area of forest in the hands of communities, mainly indigenous people, has grown because of the formalization of indigenous community lands (*tierras comunitarias de origen*). It is estimated that 8.7 million hectares of forest (about 30 percent of the PFE) is controlled by indigenous people.
- In 2005, Bolivia (Plurinational State of) had the largest area of certified natural tropical forest in Latin America. As of September 2010, there were 20 certified FMUs covering a total area of 1.72 million hectares. This is also

⁹ This section is based mainly on Blaser *et al.* (2011).

¹⁰ "Land, whether public or private, secured by law and kept under permanent forest cover. This includes land for the production of timber and other forest products, for the protection of soil and water, and for the conservation of biological diversity, as well as land intended to fulfil a combination of these functions" (ITTO, 2005).

- the area recognized as being under SFM.
- Brazil nut (*Bertholletia excelsa*, locally called *castaña*) is by far the most important NTFP exported. Palm hearts (*Euterpe precatoria*, locally called *palmito*) are harvested mostly in private forests and are subject to management plans, but there is concern about the impact of harvesting on the species.
 - The once well-established wood-processing industry, which had a strong body of professional knowledge and significant areas of certified forests, is confronted by a number of difficulties, including invasions of concessions by squatters, and high operating costs.
 - In many areas, illegal logging and illegal crops are major constraints to the full adoption of SFM and the effective conservation of protected areas.
 - In coming years, the recently approved National Plan for the Integrated Management of Forests is expected to introduce a series of modifications to forest management systems deployed in FMUs. It will broaden the focus of FMPs to improve control over resources, including timber and NTFPs, increase community-based production forestry, and encompass the management and conservation of forest services.

Brazil

- Brazil has a tropical-forest PFE of 310 million hectares, the largest in the tropics.
- A wide range of policies, strategies, laws and regulations have been developed to facilitate forest administration, improve timber legality and achieve SFM. Law enforcement has been strengthened, but the vastness of the resource and the spread of colonization make it difficult to control forest illegality.
- The main instruments used by the Brazilian Forest Service for the sustainable production and management of federal public forests are forest concessions and allocation to local communities.
- Communities have management rights in 160 million hectares of publicly owned forest (including indigenous lands outside the Amazon region).
- A national policy to support community forest management has been implemented with the aim of encouraging and organizing the country's forest management activities, and it also establishes minimum prices for NTFPs.
- There has been a significant increase in the area of certified natural forest in the Amazon. At least 2.70 million hectares of natural tropical forest for production (all certified) are considered to be under SFM.
- Control and law enforcement in the Amazon are extremely difficult because of the vastness of the area, poor infrastructure, a lack of capacity and the large number of actors contributing to deforestation and illegal logging. Other problems facing forestry in Brazil are the remoteness of many forests from centres of commerce and control; the weak economic competitiveness of SFM as a land use; the lack of competitiveness of the tropical timber industry; extensive degraded forests; the lack of full-cost pricing and abundant availability of low-cost timber; and a serious shortage of management skills.

Peru

- Peru has the second-largest forest area in the Amazon Basin, with an estimated PFE of 38.9 million hectares comprising 18.7 million hectares of natural production forest, 19.4 million hectares of protection forest and 820 000 hectares of planted forest.
- After a broad consultation process, a new forest law was approved in 2011 that creates new institutions and foresees the provision of stronger support to community forest management initiatives. The preparation of secondary legislation is under way.
- The rate of deforestation has declined and the country has put in place specific programmes with ambitious plans to reduce deforestation to zero by 2020.
- The average area per concession is quite small (12 900 hectares), so the financial viability of concessions will depend in large measure on the capacity to obtain good prices for products. In addition to forest concessions, two other concession types allow some timber harvesting: Brazil nut concessions (covering an area of about 900 000 hectares), and reforestation concessions.
- An estimated 1.60 million hectares of the production PFE is under SFM. In 2010, a total area of 713 380 hectares was certified, including 15 forest concessions and 16 community forest areas.
- Despite the difficult macro-economic situation for the timber trade, Peru has increased its exports of hardwood timber and further developed its domestic timber industry. Nevertheless, most exports are in the form of sawnwood, and there has been only limited development of further-processing in the country.
- There is considerable potential for REDD+ in Peru. However, many local and indigenous people see REDD+ as a threat, and considerable efforts are needed to clarify it and related forest issues with local stakeholders.

Perceptions of MFM

From consultations with more than 100 individuals in the three target countries, it appears that the concept of MFM is understood in a range of ways. Differences arise on the following aspects:

- **Theoretical concept.** MFM is characterized in various ways, such as: integrated management; a sustainable production system; and a strategy to add value or use certain techniques. Conceptual elements such as environmental or ecosystem principles, ecological integrity, economic and financial feasibility, and the social environment are also considered part of MFM.
- **Spatial scale.** For some people, the MFM concept should be applied only at the scale of the FMU, while others think it goes beyond the FMU to the landscape (or “anthropogenic forest unit”) scale.
- **Type of forest cover.** The scope of MFM can include a variety of woody areas or other environments, specifically: primary forest (on uplands or in

flooded zones); secondary forests; degraded forests; forest plantations; and even agroforestry systems.

- **Use over time.** According to some, MFM involves the simultaneous use of products or ecosystem services in the same area, but others suggest that various uses may be applied over time within the same FMU.
- **Management objectives.** The purpose of using various products and ecosystem services may be commercial or for subsistence. For those who conceive MFM at the landscape scale, management is not only about forest products and services but also aquatic resources (e.g. management for sustainable fishing ponds).

Complementing the above on the question “what characterizes MFM”, respondents noted that MFM:

- is defined, controlled and regulated locally, so it does not correspond with the formal management concept (i.e. it implies an adaptive management approach);
- varies in the intensity of resource use over time and space;
- operates over a wide range of forest types;
- integrates various systems of land use and landscapes;
- considers varying degrees of market linkages.

Another aspect relates to the perception of the importance of MFM and the opportunities that MFM may generate for managers and other stakeholders. MFM is seen as a system that:

- more closely corresponds with the traditional systems practised by families and communities for using and managing their forests;
- generates economic alternatives and employment opportunities for a wider group of people, at different times of the year and over longer periods;
- reduces extraction costs where favourable market conditions exist to harvest various products;
- increases economic security by diversifying production;
- opens the possibility of developing several businesses in the same forest area, reducing fixed costs at the administrative and management levels;
- enables the use of restricted areas (e.g. legal reserves in Brazil, which should cover 80 percent of the total area of rural properties in the Amazon);
- contributes to reducing rates of land invasion.

There was a general perception among respondents that a main challenge is integrating and applying MFM in the various conditions and meeting the many expectations.

The potential opportunities arising from the adoption of MFM can be summarized as follows:

- **Emerging alternative markets for products coming from MFM.** Areas under MFM can offer a diversity of products that until recently did not have a market value. The development and marketing of new forest products (e.g. for food, art and medicinal use) and services (ecosystem, social and cultural), particularly in niche markets, creates opportunities for rural communities

to be recognized and financially rewarded for the sustainable management of their forests. Large companies and small-scale producer organizations alike may consider MFM a marketing strategy to link their companies with good forest management practices and the participation of indigenous communities.

- **Compensation for ecosystem services.** The remuneration for the services provided by forests, called payments for ecosystem services (PES), is a promising way to increase the value of managed forests. A number of successful experiences exist in Latin America involving agreements and alliances between rural producer organizations, government institutions, companies and NGOs.
- **Readjustment of existing forestry projects.** The diversification of forest use increases the potential for interactions between timber harvesting and other forest products and services, for both economic (e.g. cost reductions, and entry into new markets) and social (e.g. community involvement and employment) reasons. This is an opportunity for existing public and private initiatives to look beyond the traditional focus on timber.
- **Environmental legislation.** In most countries, NTFPs do not have a favourable legal framework for their extraction and marketing, but good examples exist of standards that promote NTFP use. With MFM there is an expectation that laws will be reformulated to encourage the use of NTFPs and their marketing in “green” markets.

Overview of identified MFM initiatives

About 30 initiatives, mostly in Brazil and Peru, were identified in the three target countries, mainly through the consultation process but complemented by a literature review and a Web-based search. Not all these initiatives corresponded with the concept of MFM used in this study, and some were at initial stages of implementation; the number reviewed here, therefore, was cut from 28 to 15 (Figure 2). See Annex 4 for a summary of the selected cases, and complete descriptions can be downloaded at www.fao.org/forestry/sfm/83861/en/.

Bolivia (Plurinational State of)

Relatively few MFM experiences were identified in this country due to the low number of respondents, although a literature search was also conducted. Respondents mentioned generic cases, mainly in the department of Pando (adjacent to the department of Madre de Dios in Peru and the state of Acre in Brazil), where the two main pillars of the extractive economy are *castaña* and timber. The two products are complementary in terms of the division of labour, since timber is harvested in the dry season and *castaña* in the wet season. There were two identified cases, both involving logging companies.

FIGURE 2
Location of selected MFM initiatives, Amazon Basin



Brazil

In the Brazilian Amazon, MFM experiences are found mainly in the context of areas created by the government for forest conservation and use and to serve as models for the environmental sustainability of productive activities. Such areas comprise extractive reserves (*reservas extrativistas*, RESEXs)¹¹ and reserves for sustainable development (*reservas de desenvolvimento sustentável*, RDSs), which are under the responsibility of the Chico Mendes Institute for Biodiversity Conservation and the National Institute of Colonization and Agrarian Reform (INCRA), respectively. The state of Acre stands out for its experiences of MFM in RESEXs, such as in the Porto Dias Extractive Reserve, which was created in 1996. Some settlement projects under the responsibility of INCRA are also generating MFM-relevant experiences, particularly agro-extractive settlement

¹¹ An extractive reserve is an area used by people whose livelihoods are based on the extraction of natural products and, complementarily, on subsistence agriculture and small livestock. The primary goal of extractive reserves is to protect the livelihoods and cultures of the communities and to ensure the sustainable use of the natural resources in the reserves.

projects (*projetos de assentamento agro-extrativista*, PAEs); the Chico Mendes PAE is the best known of these and is also located in Acre.

In the RESEXs, RDSs and PAEs, traditional communities¹² – including extractive communities, river-dwellers and *quilombolas* (an ethno-racial group descended from African slaves) – set individual areas, including specific areas of production, and areas for communal use (Carvalho, Sabogal and Amaral, 2008). Communities practise an extractive system based on household production and characterized by the manual harvesting of forest products – predominantly latex from rubber trees (*Hevea brasiliensis*) and Brazil nuts from *Bertholletia excelsa* – and, more recently, commercial logging following FMPs. There have been community forestry projects in these units since the 1990s, although almost always they have relied on external (financial, technical and governmental and non-governmental) support. In the past, the main proponent was the Project to Support Sustainable Forest Management in Amazonia (Promanejo), which was implemented by the Brazilian Institute of Environment and Renewable Natural Resources with funding mainly from the World Bank and Germany's KfW through the Pilot Programme to Conserve the Brazilian Rainforest. In many cases, projects supported by Promanejo enabled forest management to be certified by the Forest Stewardship Council (FSC).

In the states of Pará and, to a lesser extent, Amazonas and Rondônia, experiences are still incipient. They include initiatives developed in the Tapajós National Forest and on the TransAmazonian Highway, which reconcile the diversified production of non-timber products (such as oils, organic leather, honey, and perennial crops in subsistence agriculture) and timber.

Some of the experiences are based on agreements between companies and communities, mostly focusing on logging as the only product. Experiences are being gained in the area of influence of the BR 163 (another highway in the Amazon), notably through the Maflops Project, where a cooperative and a company are collaborating to support initial forest management activities (Cruz *et al.*, 2011). Forest companies such as ORSA Florestal and CIKEL – the two largest companies in the Brazilian Amazon whose forest management for timber production has been certified – are also promoting pilot-scale initiatives.

Companies such as Natura, Agropalma, Sambazon, Bolt House and Fruta Fruta are enabling communities to commercialize forest products for medicinal use. Usually, however, a common denominator in agreements between companies and communities is suspicion about how the agreements are made. Given the considerable experience that has been gained, the lessons learned about the process of developing company–community partnerships should be taken into account and applied to improve the agreements and their implementation (e.g. CTA, 2006; ITTO, 2007; Amaral Neto *et al.*, 2011).

Because of legal restrictions, indigenous peoples in Brazil cannot harvest timber on their lands for commercial purposes, and their experiences with timber management are therefore only at an experimental scale. On the other hand,

12 Conceptualized in the Law of Public Forests (Law No. 11 284, of 2 March 2006, Clause 3, item X) as “traditional populations and other human groups, organized by successive generations, with lifestyle relevant to the conservation and the sustainable use of biodiversity”.

indigenous communities have had some success in marketing various non-timber products, such as oils, processed natural fibres, and handicrafts made from seeds.

Although there are interesting experiences in the marketing of ecosystem services (e.g. in the REDD+ project in the Juma RDS in Amazonas), they do not include commercial timber harvesting. It is possible that PES schemes may impose restrictions on timber harvesting, and there may also be constraints related to a lack of clear guidance on how such schemes should operate.

Peru

MFM initiatives in Peru mainly comprise the management of community forests by indigenous peoples and small-scale producers in the departments of Loreto, Madre de Dios and Ucayali.

There are diverse development projects, mostly funded by international cooperation, that support community forest management in the Amazon and which usually promote multiple uses. Several of these are in Loreto, a vast region inhabited predominantly by *mestizos*, river-dwellers and indigenous peoples generically called *bosquesinos*.¹³ The Focal Bosques project, for example, was implemented in 2003–2009 by the Peruvian Amazon Research Institute (*Instituto de Investigaciones de la Amazonia Peruana*), with funding from the European Union, with the aim of strengthening the capacity of local actors to generate and implement proposals for SFM in the Loreto region. Another example is the Nanay project, where timber and NTFPs are used by individuals and families.

A growing practice is agreements between private companies and native communities for timber harvesting, but there are also agreements that focus on production chains based on the harvesting of NTFPs, such as the case of the yarina palm (*Phytelephas macrocarpa*) for the production of buttons and handicrafts. As in Brazil, there are still many problems to overcome to ensure that such agreements are fair and that they encourage harmonious relationships in the use of forest resources (CEDIA, 2009).

Forests in Madre de Dios are rich in *castaña* and rubber trees, the traditional use of which is widespread. In many forest concessions, *castaña* and the timber of various species (primarily high-value species such as mahogany, *Swietenia macrophylla*; cedar, *Cedrela odorata*; and shiuahuaco, *Dipteryx odorata*) are harvested simultaneously. REDD+ projects are emerging in the region (e.g. the Maderija–Maderacre and Espinoza Group concessions), which may provide interesting lessons for MFM. Known as the ecotourism capital of Peru, Madre de Dios is also developing experience in combining ecotourism activities with the production of NTFPs, as is the case of the *El Infierno* indigenous community and several initiatives that include reforestation and agroforestry systems.

¹³ The term *bosquesinos* refers to people whose livelihoods come from extracting and transforming forest resources. The *bosquesino* lifestyle typically combines collection activities, hunting, fishing and horticulture (Gasché, 2002).

Main constraints on MFM

The difficulties of implementing MFM are numerous, covering economic, technical, environmental, social and institutional aspects. Respondents were fairly consistent in their opinions on some of these aspects, emphasizing various limiting factors according to their training and experience.

In essence, the limitations on MFM are similar to those affecting SFM focused on timber production. In MFM, however, the limitations increase in magnitude because there are more variables, depending on the number of products and services to be incorporated in management. Limiting factors were grouped as economic, technical, sociocultural or political–institutional, as follows:

Economic factors

- The low value obtained for forest functions and ecosystem services
- Unattractive and inaccessible markets
- The high costs of diversified management
- Lack of (knowledge of) profitability

Technical factors

- Lack of technical information on forest resources and their integrated management
- Few (adequately) trained personnel
- Lack of good examples and poor disclosure of what is known

Sociocultural factors

- Weak organizational skills and business management of producers
- Conflicts related to the multiple-use or integrated approach to development projects

Political–institutional factors

- Lack of policy support for MFM
- Lack of financial incentives for MFM
- Inadequate legal framework for MFM
- Insecurity of tenure and use rights
- Lack of adequate technical assistance.

Many respondents identified the **limited market for products derived from MFM** as the most practical limitation. The low level of production of many products, mainly NTFPs, hinders their commercialization at a sufficiently large scale, although there is a wide variety of species with different uses. To this is added the lack of market consolidation – NTFPs are of secondary importance and produce marginal revenues compared with timber harvested in the same area. The low supply of products results in a lack of interest in the market place. Along with this, there is little legal clarity on the marketing of many NTFPs, with the result that they are often sold illegally and at very low prices, mainly through middlemen.

Many products produced through MFM are sold with **minimal or no processing**, which substantially reduces profits and hinders the competitiveness of MFM with alternative land uses. On the other hand, producers have very little knowledge of or access to attractive and accessible markets for products produced in MFM areas, due largely to a lack of infrastructure for the storage, processing and transportation of such products. Although interest in and expectations of markets capable of remunerating farmers for ecosystem services are growing, there are still very few consolidated agreements between local communities and businesses and, to date, PES has had a minimal effect on improving the profitability of MFM in the surveyed initiatives.

There are significant **gaps in information** on applying a more integrated approach to forest management, especially when the objective is to work with non-timber forest species and combine their use with commercial logging. Few, if any, technical personnel are equipped to support the varied demands of MFM in terms of knowledge and practical experience, management techniques, the development of supply chains, business management and commercialization.

The **organizational weaknesses of rural producers** heavily restrict their ability to adopt new practices in resource use and to enter new markets. Low management capacity is one of the most critical constraints on MFM initiatives and on turning them into profitable businesses.

There is still **no specific and appropriate policy** to support rural development based on MFM. In many cases, current laws on forest products, especially NTFPs, are inadequate. Legal obstacles exist that prevent the marketing of products derived from community management, a fact that encourages the illegal sale of these products.

An institutional problem is the **fragmentation of government actions** because policies are designed and implemented in isolation, without coordination between sectors, restricting and even generating conflict at the level of the rural producer. In the Brazilian Amazon, for example, significant efforts are made to train young people to use community forest resources sustainably, but little attention is paid to the creation of small-scale community-based agribusinesses in which the knowledge acquired by these young people could be put into practice. On the other hand, while programmes exist that provide incentives for forest production at the community or family level, the requirements are cumbersome (for example, organizations have to be totally free of any legal dependence) and there are significant bureaucratic hurdles to overcome to access such incentives.

The role of **government institutions** is weak due to a **shortage of human and financial resources** and a lack of interinstitutional coordination. One of the biggest shortcomings is in the capacity of government institutions to provide technical assistance and extension to rural producers. There is a marked shortage of agricultural and forestry technicians with sufficient training to support producers and communities in developing forest-based production systems and MFM in particular.

Some of the gaps identified point to a **lack of technical knowledge** on the

preparation and execution of MFM plans. The traditional technical approach at the community level is based largely on academic concepts that do not work or are not adapted to local conditions and realities. Projects operating in forested areas are often unprepared to cover the full suite of potential uses; the models used by these projects are adaptations of silvicultural business models that have little to do with the realities of local producers.

Enabling factors for implementing MFM systems

Respondents noted a number of factors and opportunities that are encouraging the implementation of MFM.

- **New market niches.** This is perhaps the key new opportunity because of the growing demand for natural products and the potential of PES. These niches are related directly to the changing preferences of consumers, and also to the concern at various levels (from local to global) for environmental degradation and the recognition of the varied roles of forests, including their important contributions to local livelihoods.
- **International pressure to conserve forests.** International and national debates on tropical forests, particularly concerning deforestation in the Amazon driven by agricultural expansion for export cash-crops and energy, are leading to demands for stricter conservation measures and the more efficient use of remaining forests.
- **Technological advances.** Related to the above factors, technological advances are opening up new possibilities for the use of resources previously undiscovered or extracted extra-locally for various purposes (e.g. phytotherapy and nutrition) and for the production of high-value-added forest goods (e.g. more compact and efficient processing equipment).
- **Appeal to forest-dependent people.** Given the strong correlation between communities and MFM, another factor perceived as an opportunity is the increasing ethical and commercial interest in the traditional knowledge on resource use held by indigenous peoples and communities living in, or dependent on, forests. Indigenous and other local communities are seen as the best custodians of forests and are closely associated with the important values and benefits of forests.
- **New legislation with explicit emphasis on multiple use.** In Bolivia (Plurinational State of), for example, there are efforts to ensure the explicit inclusion of both timber and non-timber uses and guidelines in formal management plans.

Conditions for MFM implementation

In what context could MFM be possible? What are the necessary conditions for it to work? The answer to these questions is related to the limitations on and opportunities for MFM. The following framework conditions or factors are considered important, if not key, for MFM implementation:

- **Organization and management capacity** for harvesting, processing and marketing forest resources. It takes a strong business base (including good

business plans and strategic plans) to gradually incorporate new goods and services from forests in the production process. There is a need, therefore, to strengthen local technical capacities for organizing, managing and administering forest-based enterprises. Well-designed and implemented agreements or alliances between producer organizations and government institutions and NGOs can speed up the adoption process, mainly in relation to commercialization. Training courses on the various components of the production chain, such as harvesting methods, business management and the formation of cooperatives, are a high priority for communities committed to improving their forest-based activities and generating added value in a sustainable way.

- **Links with the market** based on a diversified offering of sustainably harvested forest products. Access to niche markets often requires some sort of product certification.
- **Access to technological and market information** to add value to products and take advantage of market opportunities. Access to biological, ecological and silvicultural information is also a key to ensuring the sustainable production of the various products.
- **Adequate technical basis for management planning, implementation and monitoring.** Adequate techniques and practices are needed on, for example, forest zoning within the management unit to differentiate areas for logging, NTFP harvesting, etc.; estimating the value of forest resources for multiple goods and services when carrying out inventories; guidelines to maintain forest diversity and reconcile the various forms of extraction; defining cutting size classes; and harvesting regimes.
- **Appropriate legal framework** for enabling MFM design and implementation. In the case of ecosystem services, there is a need for laws regulating PES options as well as indicators and standards for measuring ecosystem services.
- **Clear and secure rights to land tenure and resource use.**
- **Promotional policies**, especially to support communities. A step in this direction would be to set minimum prices for certain products derived from MFM. There is a need for specific incentives, such as PES or compensation for conservation measures, and for support in meeting legality or sustainability requirements. Moreover, government agencies need to better coordinate their actions.
- **Quality technical assistance** with long-term support. This requires an adjustment in the way technical assistance and rural extension services are designed and delivered, heavily influenced as they are currently by an academic vision of treating technical activities in a piecemeal fashion rather than holistically.
- **Easier access to capital and financing** for viable businesses based on SFM practices. This requires favourable credit lines for investments in processing and marketing.
- **Dissemination of experiences**, in varying contexts, that can serve as demonstrations of the practical application of MFM.

- **Awareness-raising and education** for rural families and communities, officials in agencies involved in the sector, and consumers in general. The exchange of experiences among producers is a strategy with considerable potential. Consumers could be made more aware of the virtues of purchasing products from sustainable sources.

SOUTHEAST ASIA

Southeast Asia's forests¹⁴ covered 214 million hectares in 2010, which was 49 percent of the region's land area. National forest cover ranged from 26 percent in the Philippines to 68 percent in the Lao People's Democratic Republic. Several countries in the region also have significant areas of other wooded land.

The forests of Southeast Asia are among the world's most species' rich and most threatened. Four of the 25 global biodiversity hotspots – in which a significant proportion of the world's species are under threat – are found in the region. Forest clearance shows little sign of abating. Forest area declined by 0.5 percent per year in 2005–2010, compared with 0.3 percent per year in 2000–2005 and 1.0 percent per year in 1990–2000. The greatest rates of reduction in forest area were in Cambodia, Indonesia and Myanmar. On the other hand, forest area increased in the Philippines, Thailand and Viet Nam.

With the passing of Southeast Asia's era of “peak timber” and given increasing demands for food, fuel and fibre, a lack of financial and institutional support for SFM is jeopardizing the future of the region's natural forests and biodiversity. The legacy of high-impact logging has also undermined the future of SFM by reducing the value of forest resources, while reductions in the harvest of natural forests may increasingly turn attention towards plantation-grown wood and wood-product imports. Despite increasing demand for forest products, the conservation and protection of forests have become primary objectives of forest management in several countries. Implementing a switch towards forest protection has, however, often been associated with problems at the field level, including a proliferation of illegal logging.

Forest policy and institutions

Natural forests in Southeast Asia are predominantly state-owned or administered (Katsigiris *et al.*, 2004; FAO, 2006), although most of Papua New Guinea's forests are under clan ownership. In several countries in the region, forest and forestland allocation processes have changed in the last decade as economic frontiers have advanced and societal demands have shifted (Edmunds and Wollenberg, 2003; FAO, 2006). The area of forests on which secure tenure rights have been devolved to local stakeholders remains extremely small, however, and unclear forest tenure constrains SFM in many countries (FAO, 2006). Only in Viet Nam have rights over significant areas of forest been devolved to individuals and families, communities, the private sector and other economic entities.

The forest sector in Southeast Asia has undergone substantial changes in the past decades. Major shifts have occurred in response to broader developments

¹⁴ This section is adapted largely from FAO (2010c) and Yasmi *et al.* (2010).

such as economic, population and infrastructure growth, globalization and policy shifts. In some cases, forest-related policy has been a major driver of change, while, in others, forest policy has been implemented only weakly and other factors have driven change. Among the target countries in the survey, complete or partial logging bans in natural forests have been imposed in the last two decades in Cambodia, the Philippines and Viet Nam. With such changes in forestry objectives, many countries are moving away from state forest management (Edmunds and Wollenberg, 2004). At the same time, devolution, decentralization and multi-stakeholder forest management schemes have grown, although challenges in maintaining the transition remain.

In several Southeast Asian countries, the socio-economic contribution of forestry remains poorly realized and underestimated due to benefit capture by unaccountable interests. The lack of collection of royalties and taxes has also undercut markets for products from sustainably managed sources. In addition, corruption constitutes a significant threat to forestry and national economies, particularly where revenues from logging are substantial. Within countries, direct efforts to improve forest law enforcement and governance have varied in their effectiveness, and many challenges are yet to be overcome.

Overview of the forest situation in target countries¹⁵

Cambodia

- Cambodia has an estimated 8.31 million hectares of PFE, comprising 3.71 million hectares of natural production forest, 4.53 million hectares of protection forest and 69 000 hectares of industrial timber plantations.
- All forest is state-owned, and conflicts over land tenure are a significant problem.
- Failures in the (production) forest management system resulted in the suspension of concession licences in 2001. Following a moratorium between 2004 and 2007 there have been moves to reintroduce commercial logging in natural forests, but to date the area of forest in which harvesting is permitted is small. Currently no part of the production PFE is considered to be under sustainable management.
- Even though an estimated 85 percent of the country's people live in rural areas, only a small area of forest is under community forest management. The 2006 Guidelines on Community Forestry and its relevant policies (*prakas*) define operational steps to secure forest management agreements. The government is looking to increase the area under community management to 2 million hectares and a community forestry office has been established within the forest administration.
- The rates of both legal and illegal deforestation are significant. A “forestry stamp” has been created to assist with log-tracking and the prosecution of illegal logging.

¹⁵ This section is based largely on Blaser *et al.* (2011).

- Forest-sector reforms have been developed but are yet to be implemented effectively; the enforcement of existing policies, laws and regulations remains weak.
- The government has been an active participant in the development of REDD+, and two pilot projects are under way in the country.

Indonesia

- Indonesia has an estimated PFE of 68.4 million hectares, comprising 38.6 million hectares of natural production forest, 27.3 million hectares of protection forest and 2.5 million hectares of planted forest.
- Indonesia's forests have been degraded progressively since the 1960s through timber exploitation and pulp and paper production in the 1970s and 1980s, followed by oil-palm plantation establishment beginning in the 1990s. The 1999 forestry law introduced principles of good governance while promoting social objectives by recognizing forestland tenure and user rights and allowing the involvement of individuals and cooperatives in forest-based business (Wadojo and Masripatin, 2002).
- Threats facing the country's forests include illegal logging, fire, encroachment, poor logging practices, inefficient timber-processing, unsettled land claims and regulatory inconsistency and confusion.
- A process to decentralize forestry administration has been partially reversed, and greater coordination between the levels of government is needed to overcome problems in, for example, land-use allocation, forest conversion, illegal logging, illegal timber trade and industrial inefficiency. Efforts are under way at the national level to combat illegal logging, and it appears that some progress has been made.
- An estimated 3.16 million hectares of the production PFE are under SFM, and an area of 1.36 million hectares of protection PFE is also considered to be under SFM. The area of independently certified natural production forest is 1.125 million hectares, up from 275 000 hectares in 2005.
- The timber sector has been undergoing massive change; for example, the volume of tropical hardwood plywood produced in 2009 was one-third the volume produced in 1995.
- A programme to restore degraded forests and especially to establish new planted forests has been announced, with the aim of covering more than 21 million hectares.
- Climate-change concerns are integrated into Indonesia's forest-related institutions and a national strategy for REDD+ is being implemented in stages, including through the large-scale funding of REDD+ pilot projects.

Lao People's Democratic Republic¹⁶

- The forest area in the Lao People's Democratic Republic in 2010 was estimated at 15.75 million hectares, of which 9 percent was primary forest

¹⁶ No PFE has been defined.

and 89 percent was “other naturally regenerated” forest (FAO, 2010a).

- The granting of forest concessions was suspended in 2008, and mechanisms were prepared to encourage the greater involvement of local people in forest management to support the maintenance of forest resources and the reduction of poverty.
- The Forestry Strategy 2020 represents a step forward in guiding the forest sector towards multiple objectives and community involvement, with poverty reduction at the forefront, although people-centred forestry remains largely unimplemented (Hodgdon, 2008).

Malaysia

- Malaysia has an estimated PFE of 14.4 million hectares, comprising 10.3 million hectares of natural production forest, 3.58 million hectares of protection forest and 539 000 hectares of planted forest.
- The Forestry Department Headquarters, Peninsular Malaysia, is responsible for forest management in Peninsular Malaysia and the forestry departments of Sabah and Sarawak have responsibility in those respective states. Sabah’s forest policy emphasizes production and trade, with less focus on biodiversity and no provision for community participation.¹⁷ Sarawak’s 1954 forest policy emphasizes production and revenue generation within the limits of sustainability, and does not include social or environmental aims (Sarawak Forestry Department, 2009).¹⁸
- The forest sector plays an important role in the Malaysian economy and is a significant employer.
- Malaysia’s forests are generally well managed, and there is a well-defined and demarcated PFE. An estimated 5.95 million hectares of the production PFE is under SFM, with 5.23 million hectares of the natural production PFE being certified.
- The harvest in natural forests is declining and will continue to decline until at least 2020. The shortfall in production from natural forests is expected to be met by planted forests, especially in Sarawak.
- There remains a need to better address the concerns and land claims of indigenous communities, especially the Penan in Sarawak.

¹⁷ The effects of poorly defined tenure and low interest in long-term investment in the sustainable management of natural forests have been addressed through sustainable forest management licence agreements, launched in 1997, which provide 100-year tenure over large areas of logged-over forests. Reserves for communities and community forestry projects are set aside within these areas. So far, the results of the initiative have been mixed, and several licences have been revoked due to non-compliance. The high opportunity cost of the land suggests that, in addition to stable tenure, external funding will be required to protect the forests (Sabah Forestry Department, 2009).

¹⁸ In 2004, the Sarawak Forest Department devolved powers to the Sarawak Forestry Corporation, a private company owned by the government and responsible for the management of forest resources and timber administration. The Forest Department’s role is limited to policy development and regulation (Chan, 2008).

Papua New Guinea

- Papua New Guinea does not have a formal PFE and almost the entire forest estate is under customary land ownership. About 10.5 million hectares of forest might be considered permanent, comprising 8.7 million hectares of forest over which timber rights have been acquired, 1.7 million hectares allocated for protection and about 58 000 hectares of planted forests.
- A national forest policy (in place since 1990) promotes forest conservation in particular, but it is not strongly supported by the Forestry Act and no forests have been set aside for conservation since then (Hurahura, 2008). The lack of a national land-use plan is one reason for poor management in areas designated for commercial forestry.
- The Papua New Guinea Forestry Authority has well-qualified staff but is seriously under-resourced and is unable to conduct significant field monitoring. Provincial forest management committees established to facilitate consultation with landowners also lack resources.
- As of 2010, the Papua New Guinea government had acquired timber rights from customary landowners involving about 12 million hectares of forest. These rights are normally allocated to foreign developers with the necessary financial capabilities. Of the acquired area, an estimated 4.9 million hectares of forest were under active timber extraction licences in 2007.
- An estimated 193 000 hectares of the production PFE are under SFM, 2 700 hectares of which are certified.
- Re-entry to “closed” logging areas and the “creaming” of premium species are undermining SFM.
- Papua New Guinea’s forests are thought to be vulnerable to climate change, but the country also has potential for forest-based carbon capture and storage.

The Philippines

- The Philippines has an estimated PFE of 6.35 million hectares, comprising 4.70 million hectares of natural production forest, 1.34 million hectares of protection forest and 314 000 hectares of planted forest.
- The Philippines has lost a substantial part of its natural forest, and timber production has declined dramatically in the last three decades.
- An executive order issued in 1995 established community-based forest management (CbFM) as the national strategy to ensure the sustainable development of the nation’s forests. In recent decades, property rights over public forest land have been granted to local communities and the private sector in an effort to address deforestation and forest degradation while increasing social justice and reducing poverty. However, land-tenure issues continue to constrain forestry development.
- More than 5 000 communities have CbFM agreements with the government over nearly 6 million hectares, and there is now also a mechanism for individuals to engage in forest stewardship under property rights agreements,

although to date few such agreements have been issued.

- At least 79 000 hectares of the production PFE are under SFM, but there are no certified forests.
- Resources within the Department of Environment and Natural Resources have been reconfigured to focus on the restoration of ecosystem services and the creation of economic opportunities in upland areas.
- The government is strongly engaged in international REDD+ processes. The Philippines has considerable potential for carbon capture and storage through forest restoration and afforestation, if forest governance can be improved.

*Viet Nam*¹⁹

- Viet Nam had an estimated forest area of 13.8 million hectares in 2010, predominantly naturally regenerated (74 percent) and planted (25 percent) (FAO, 2010a).
- Since the national introduction of free market principles in 1986, and particularly in the last decade, substantial changes have taken place in the forest sector, including the re-organization of state forest enterprises, changes in forest ownership, and growth in wood product exports and forest protection (the latter funded partly by PES).
- Laws have been enacted in the past two decades to allocate land to households and individuals for sustainable forest production, the conservation of flora and fauna, and forest protection.
- Forest degradation is a serious, widespread problem. The commercial value of natural forests has declined considerably, and most timber-rich forests are in remote and inaccessible areas.
- The allocation of benefits to local groups has often been insufficient. Regulatory constraints favouring forest protection over use, and inequitable benefit-sharing arrangements, have variously been implicated (Nguyen, 2006; Nguyen *et al.*, 2008).

Overview of identified MFM initiatives

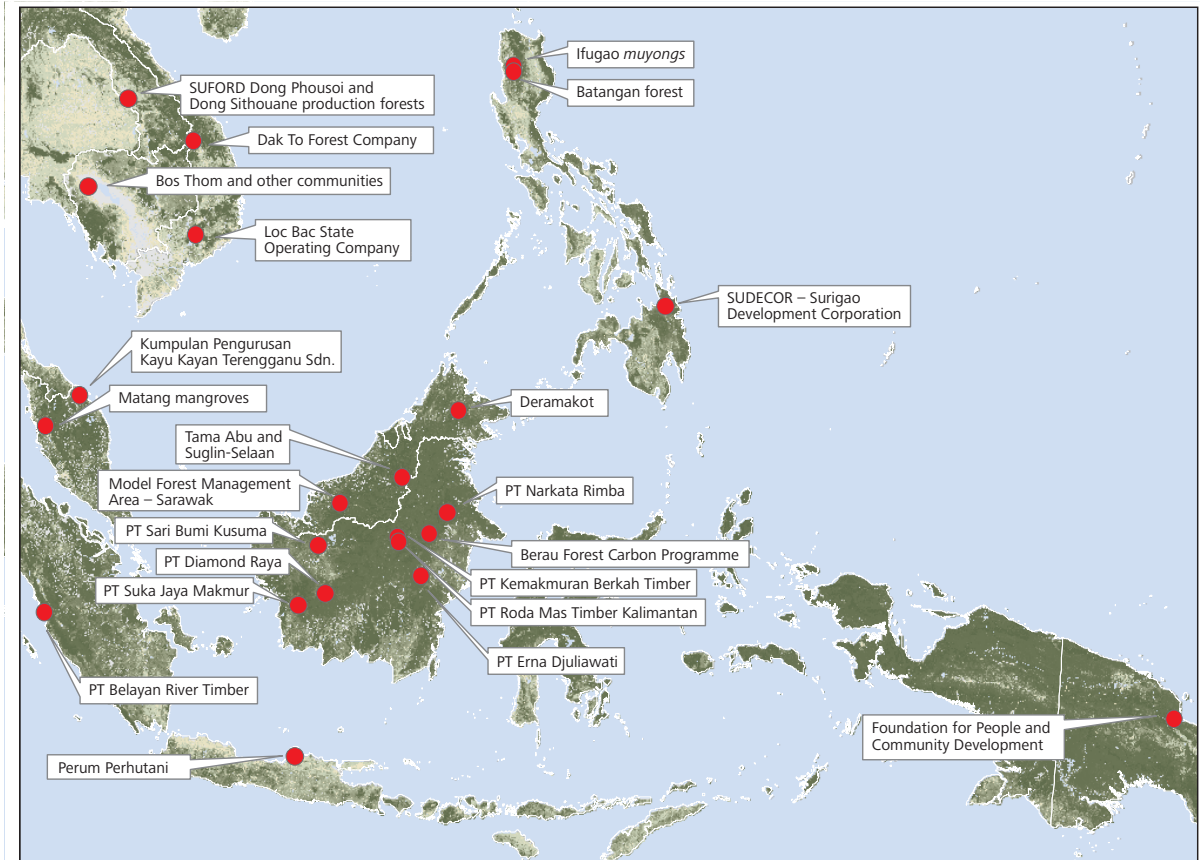
MFM is taking place in isolated areas in the region with a high degree of success. The downside is that only a small proportion of the total forest estate appears to be well managed, and in some countries there are very few examples of MFM.

Overall, 23 examples of MFM were identified, comprising 18 at an industrial scale and six at a small or medium scale (Figure 3). Twenty examples involve contiguous areas of forest that are tens of thousands of hectares in size, and the remaining four involve relatively small forest areas. See Annex 4 for a summary of the selected cases, and complete descriptions can be downloaded at www.fao.org/forestry/sfm/83861/en/.

In 20 cases the forest is state-owned and in four cases – in Papua New Guinea and the Philippines – the forest is owned by clans or communities. In 14 of the state-owned areas, forest management is carried out under concession agreements

¹⁹ No PFE has been defined.

FIGURE 3
Location of selected MFM initiatives, Southeast Asia



with private companies, while in two cases – in Cambodia and the Lao People’s Democratic Republic – forests are managed by communities in partnership with the state. In the remaining four cases where there is state ownership, management is carried out either directly by the state or by state-owned enterprises.

All examples include an implicit and, in almost all cases, an explicit focus on social and environmental forest management objectives in addition to timber extraction and, as such, the outputs are multiple. Common reference is made to the collection of NTFPs by local communities, and soil, water and biodiversity conservation are also mentioned frequently as management objectives. Carbon sequestration is mentioned in two cases.

Few of the initiatives include efforts to add value to forest products through processing and marketing. It was evident during the information-gathering phase that many more examples of MFM exist in the surveyed countries, particularly Indonesia and Malaysia and possibly also Viet Nam. In the Philippines, there may have been more examples in the past but these are now winding down or have ceased due to the latest in a long line of logging bans in the country. The logging ban in Cambodia has also prevented the wider implementation of MFM that includes timber production. In the Lao People’s Democratic Republic, it

appears that there is very little in the way of SFM outside the areas supported by the Sustainable Forestry and Rural Development (SUFORD) project, although the model developed by the project is due to be implemented throughout the country's production forests.

Cambodia

The only example of MFM found in Cambodia involves the harvesting of poles by communities in previously heavily logged areas in Siem Reap Province. The poles are generally sold, with no further processing, for fish-trap manufacture and construction. NTFPs are also collected in designated forest areas. Several communities are involved, and although the initiative began in 1998, pole harvesting began only in 2003. Renewable 15-year community forestry agreements were signed between the communities and the Forestry Administration in 2007. The initiative has been supported by FAO, the Government of Belgium, the Government of New Zealand, the Spanish Agency for International Development Cooperation, the Danish International Development Agency and Cambodia's Forestry Administration.

Forest management has been hampered in the past by permit requirements for harvesting and by excessive tax demands by the Forestry Administration that have, however, subsequently been waived. Pole harvesting has now ceased while FMPs are being prepared. Once these are cleared, communities will no longer require permits to commence harvesting.

A criticism of the pole-harvesting initiative is that the total revenue generated by the sale of poles by participating communities was dwarfed by donor expenditure to support the project. Additionally, the value of poles is low when spread across entire communities, and pole harvesting is only possible during a relatively short phase of the forest regeneration process.

The small number of MFM examples in Cambodia is due largely to the 2001 logging moratorium, which curtailed logging nationwide. Forest concession licences were either revoked or suspended, resulting in a reduction in legal logging. However, the moratorium apparently led to an increase in illegal logging and a shift in focus from commercial to small-scale operators; from few players to many; and from export to domestic markets.

Land-tenure issues and weak rights in forest areas reduce the potential for long-term investment in forest management. Although there are more than 420 community forestry sites covering around 400 000 hectares, only 94 sites, covering 113 544 hectares, are recognized legally and the approval process is very lengthy (Forestry Administration, 2009).

With recent moves towards decentralization, the role of local councils and governments is being considered more seriously in supporting community-based natural resource management and SFM and in monitoring forest management (Rotha, 2009). The government, as well as donors, appears to be putting greater emphasis on transferring natural resource management rights and responsibilities directly to communities rather than local councils.

Indonesia

Ten examples of MFM were identified in Indonesia. Nine of these are FSC-certified timber concessions²⁰ – seven in the lowland dipterocarp forests of Kalimantan, one (PT Diamond Raya) in swamp forest in Riau Province in Sumatra and one managed by *Perum Perhutani* in Java and Madura. In accordance with FSC certification criteria, the forests are managed sustainably for multiple outputs including timber, NTFPs, ecosystem services and social benefits.

The uncertified example of MFM comprises forests included in the Berau Forest Carbon Programme in Berau District, East Kalimantan, where eight of the district's 13 timber concessions, including Sumalindo Lestari Jaya, are working with The Nature Conservancy to improve forest management. *Perum Perhutani* manages 2.4 million hectares of plantation and natural forest in Java and Madura for the production of timber and NTFPs and for watershed protection and ecotourism. Four of its FMUs – around 60 percent of its teak production area, which constitutes around half the total area managed – are certified by the FSC.

To expand SFM in Indonesia, the government has promulgated the Forest Management Concept (FMC; Ministry of Forestry, 2011), which aims to provide a field-focused structure for the sustainable management of protection, production and conservation forests. An FMC may have more than one function and plays the role of forest management organizer in the field, ensuring that forest management is undertaken sustainably. The main problems and challenges encountered to date with the development of FMCs are a lack of financing; limited understanding about the function of the FMC and its benefits for forest development; and the limited understanding of the concept among forestry personnel and therefore in their capacity to implement it.

Other problems include the poor definition of the roles of various government levels and an associated lack of coordination; a lack of forest management technical knowhow; legislative confusion; the need for greater administrative competency; differing views of FMUs in relation to economic benefits and the marketability of ecosystem services; and a lack of infrastructure.

Lao People's Democratic Republic

The single example of MFM identified in the Lao People's Democratic Republic is provided by areas covered by the SUFORD project, in particular Dong Sithouane and Dong Phousoi in Savannekhet and Khammouane provinces and the six sub-forest management areas within those forests, totalling 82 760 hectares, that are certified by the FSC. These areas had previously received support through the Forest Management and Conservation Programme before being taken over by the SUFORD project, which in its first phase (2004–2008) worked in eight production forests in four provinces.

The extension phase of the SUFORD project has expanded to cover five more provinces and four more production forest areas. In total, the project is operating

²⁰ Sumalindo Lestari Jaya in Berau District, East Kalimantan, also holds an FSC forest management certificate, but information is not included on the FSC website. See www.responsibleasia.org/?p=244

in 16 of 51 production forests and 36 districts in nine of the 17 provinces. The efforts support work in more than 1.2 million hectares, or on approximately one-third of the total national production forest area.

The project applies a participatory approach to SFM in which village forestry organizations work in partnership with the Forestry Department to undertake forest management activities. Benefits from timber sales are shared between villages and various levels of government. The area covered by the initiative includes lowland semi-evergreen, mixed deciduous and dry dipterocarp forests, much of which has previously been logged and is poorly stocked.

Malaysia

The five examples of MFM identified in Malaysia comprise two in Peninsula Malaysia (the Matang mangroves in Perak and Kumpulan Pengurusan Kayu Kayan Terengganu Sdn. Bhd. – KPKKT – in Terengganu); two in Sabah (Deramakot and KTS Plantation Sdn. Bhd. in the Segaliud Lokan Forest Reserve); and one in Sarawak (the Model Forest Management Area). It could be argued that all production forest in Malaysia could be considered examples of MFM, especially those areas certified by the Malaysian Timber Certification Scheme (which has been endorsed by the Programme for the Endorsement of Forest Certification).²¹

The Matang mangroves cover 40 151 hectares and have been managed by the Forest Department of Peninsula Malaysia as a production forest reserve since 1902. Although originally a natural forest, the area has gradually been converted to a planted forest as successive blocks have been clearfelled and replanted. Harvesting takes place on a 30-year rotation, and replanting is carried out two years after felling. Outputs include fuelwood and poles, and the main income-earner is charcoal, which is mostly exported to Japan. Local communities and private entities use the area for fishing (e.g. mud crabs, cockles and sea bass cage culture); ecotourism has mostly been conducted in the area on an ad hoc basis, but walkways have been constructed and are used for educational and ecotourism purposes. The government provides funding to cover all operational costs except extraction, which is undertaken by private companies under licence. The royalties are minimal compared with the management costs, and the state does not receive income from charcoal manufacture and sale.

The KPKKT timber concession in the south of Terengganu state has been in operation since 1983 and comprises 108 900 hectares of lowland dipterocarp, hill dipterocarp and lower montane forest. Management follows the principles of SFM and is based on the Malaysian Selective Management System; harvesting is on a cycle of 25–30 years. Local communities have access to NTFPs and employment opportunities and reduced impact logging (RIL) techniques are employed, although there is a need for improvement.

Deramakot in Sandakan District in Sabah covers 55 139 hectares of lowland mixed dipterocarp forest. The area has been administered and managed by the

²¹ In response to a request for information for this work, the Sabah Forest Department sent letters to 18 forest concessions and, although only one (KTS Plantation) forwarded information to FAO, it is likely that management in many would qualify as MFM.

Sabah Forest Department as a forest reserve since 1961. High standards of forest management have been achieved and the area is certified by the FSC. The forest is harvested on a 40-year cycle using RIL techniques. Because the forest had previously been logged heavily, the annual allowable cut is strictly adhered to, and enrichment planting is used to help boost future production. To improve prices, logs are sold at auction, but Deramakot has not achieved financial sustainability; on the other hand, the environmental costs associated with uncontrolled logging have been greatly reduced. The production of NTFPs and fuelwood, and ecotourism, are included as management objectives.

The Sarawak Model Forest Management Area is located between Bintulu and Sibu and was supported by a series of ITTO projects between 1996 and 2007. The area comprises 162 500 hectares of hill forest managed by the Sarawak Forest Department as part of the PFE. The FMP for the area was developed by the Sarawak Forestry Department and the ITTO project and included consultation with 6 000 local people inhabiting 49 longhouses. Efforts were made to support local communities through, for example, road development, the piping of water and the provision of timber for longhouses. RIL techniques and helicopter logging are used, but the implementation of SFM reduced the annual harvest by 15–20 percent due to the expansion of protected forests and a reduction in the harvest to sustainable levels. RIL and enrichment planting are, however, aimed at increasing the future harvest.

Papua New Guinea

The only example of MFM identified in Papua New Guinea is a group initiative in which a number of actors are engaged, through a coordination mechanism, to support forest management. The Foundation for People and Community Development (FPCD) is an NGO based in Madang Province, and its work encompasses six clans scattered across the province's six districts. The FPCD was awarded an FSC group certificate in June 2007, and the six clans are managing their areas of lowland tropical rainforest, totalling 10 810 hectares, under the group certificate through the FPCD's Certified Community Forestry (CCF) programme. Other clans, such as the Tingari near Brahman, are also being assisted by the CCF programme to join the group certificate. The forests are used for the extraction of timber as well as NTFPs for food, medicines, construction and "customs work" (ceremonies, etc.), and the forests provide ecosystem services such as water and soil conservation.

The Philippines

Three examples of MFM were identified in the Philippines: the Ifugao *muyongs* in Ifugao Province; the Surigao Development Corporation (SUDECOR) in northern Mindanao; and the Batangan forest in Mountain Province. Timber from the Ifugao *muyongs* and Batangan forest is not sold commercially, although manufactured products from the latter are produced and sold.

The Ifugao *muyongs* are areas of mixed deciduous and pine forest managed

by local communities according to traditional methods. Individual areas cover only 0.5–3 hectares but the total area is 12 542 hectares. Households have had permanent tenure over the *muyongs* since enactment of the Indigenous People's Rights Act, 1997. The forests have been used for the production of timber and NTFPs for many years and also play an important role in watershed management. There are no FMPs, and forest practices are governed by customary rules and regulations.

The SUDECOR initiative covers 75 745 hectares and has been producing timber since 1959. Forest management in the area has been supported by various projects over the years funded by the Government of Germany and ITTO. SFM is practised with the involvement of local communities and the general objective of the current medium-term FMP is to sustainably manage the natural forests for the production of high-quality dipterocarp timber without jeopardizing the rights of indigenous cultural communities or impairing the non-timber benefits obtained from the forests. Activities under the initiative were suspended in 2011, however, when the government imposed a national logging ban through Executive Order 23, which bans logging “in all natural and residual forests” due to the alleged causal association with landslides. The expectation is that the SUDECOR initiative will close (R. Umali, personal communication, 2013). The Society of Filipino Foresters published an open letter in reaction to the logging ban proposal and the damage to forestry that it would cause.²²

The Batangan forest covers 43 618 hectares and is owned by indigenous communities. *Pinus kesiya* comprises up to 60 percent of forest cover and is harvested by individuals according to local ordinances and customary law for local consumption and the manufacture of furniture and souvenirs. According to FAO (2005b):

“The indigenous communities within the Cordillera Mountain Range, in the northern part of Luzon, have a rich cultural heritage. Through experience and learning, the different tribal groups have developed management strategies to sustain their resources in a rugged mountainous environment. Common property ownership and management by families, clans and villages militates against land conversion, while community-initiated management practices have led to the establishment of pine plantations and the natural regeneration of pine and mossy vegetation. Strong indigenous socio-political institutions at the village level facilitate decision making and conflict resolution”.

Viet Nam

Two examples of MFM were identified in Viet Nam: the Loc Bac state operating company (SOC) in Lam Dong Province; and the Dak To Forestry Company in Dak To and Tu Mo Rong districts. However, the operations of most SOCs could be considered to be MFM if passively managed ecosystem services and minor forest products are considered as multiple outputs in addition to timber.²³

²² SFFI on logging ban. *The Philippine Star* (4.02.2011). Available at: <http://www.philstar.com/letters-editor/653890/sffi-logging-ban> (www.philstar.com/Article.aspx?articleId=654218&publicationSubCategoryId=135).

²³ As of 2010, the total forest area under management by SOCs is 3 213 936 hectares, and the total area of forest in Viet Nam is 13 390 000 hectares (sources cited in Gibbon *et al.*, 2011).

Of the 34 851 hectares managed by the Loc Bac SOC, only 4 704 hectares are subject to harvesting (using RIL techniques), while the rest is protected for soil and water conservation. The 35-year plan identifies the following five management objectives: natural timber exploitation (harvesting); *Acacia* and *Melia* forest exploitation (conversion of bamboo and mixed forest and young, poor-quality forest to *Acacia*, *Melia* and rubber plantations); bamboo exploitation; the processing of forest products; and the tending of planted forests. There is pressure to convert the area to a protected forest, although there is some doubt over the effectiveness of contracting local people to protect and manage the forest.

The Dak To Forestry Company, another SOC, manages 14 040 hectares in Dac To, of which 6 663 hectares is production forest (of which only 2 725 hectares is well stocked). The management objectives for the area are divided into economic, social and environmental themes according to the principles of SFM. Rattan and bamboo are the main NTFPs collected in the area and the forest is also used by local communities for subsistence. Management of the area was supported by funds provided under Programme 661 (the Five Million Hectare Reforestation Programme). There was some concern that sufficient funding would not be available to continue operations when Programme 661 terminated.

Main constraints on MFM

Commonly identified constraints to MFM in the target countries were:

- low forest growth and productivity, often related to past uncontrolled logging;
- low timber prices and a low premium for certified timber;
- a lack of accessible financing;
- the costs associated with social and environmental management;
- NGO and local resistance to logging operations, and social conflict;
- illegal logging and encroachment;
- the entrenched mindsets of existing forestry stakeholders;
- government interference, including logging bans and burdensome approval processes;
- human resource limitations;
- poor infrastructure;
- pressures to fully protect forests.

The main constraints faced by MFM initiatives are set out below, by country.

Cambodia

- The low productivity and degraded condition of the logged-over forests to which the communities have access, and the need to spend time and money on forest protection.
- Over-extraction associated with illegal logging.
- Obtaining finance for the preparation of FMPs.
- The fact that pole harvesting can be applied during only a relatively short phase of forest regeneration.

- The low value of poles compared with the size of the involved community.
- High taxation levels and burdensome bureaucratic requirements for requesting waivers.
- Government interference, including multiple lengthy approval processes – community members are unable to take action without approval from the central level, and under the Community Forestry Subdecree (2003) it is necessary to obtain permission from the Ministry of Agriculture, Forestry and Fisheries for all commercial harvesting on any community forestry site.

Indonesia

- The low price premium for certified timber, mainly because high-paying markets accept illegal timber.
- Illegal logging, which threatens MFM in many areas.²⁴ The clearing of forest for oil-palm and timber plantations and mining are also increasing issues as global and local demand for land increases.

In PT Sari Bumi Kusuma, the viability of MFM is threatened by claims for compensation from local people excluded after the granting of the concession and by the overestimation of forest growth rates and underestimation of costs associated with environmental, social and health and safety issues. In other FSC-certified concessions, constraints on the implementation of SFM and MFM are relatively minor, including social claims and consultation requirements; health and safety; and environmental issues such as road construction and erosion control, the implementation of harvesting guidelines, the management of high-conservation-value forest, and the monitoring and control of illegal logging.

Lao People's Democratic Republic

- The legacy of unsustainable logging in less commercially productive forests.
- The small amount of timber available for harvesting, which reduces the surplus available for benefit-sharing to a level that is insufficient to act as an incentive for villagers to engage in forest management.
- The threat of revision of benefit-sharing arrangements (villages with more and better-quality forest and better market access receive greater benefits).
- The difficulty in replicating village forestry without external financial and technical assistance.
- The lack of sufficient human resources to carry out forest inventory and forest management planning in a timely manner.
- Delays in the distribution of shares from previous years' logging.
- The lack of a viable financing mechanism to cover operational costs and provide villagers with incentives.
- The lack of adequate legislative and policy support and the tendency for provinces to interpret and implement national policies in differing ways.
- Poor forest governance.

²⁴ E.g. the Berau Forest Carbon Programme, where more than 75 percent of all emissions associated with land-use change is estimated to have come from forest degradation rather than deforestation.

Malaysia

The five examples of MFM identified in Malaysia were affected by a range of constraints, in particular those resulting from past and sometimes current logging excesses. In Deramakot, past unsustainable logging has resulted in a shortage of commercial species and the proliferation of bamboo and lianas. Past practices also left their mark on the mentality of foresters: adjusting their approach to management was a major challenge in the early stages and required substantial training and cuts in bureaucratic processes. Additionally, illegal logging has been a problem, and Deramakot is working with local communities to help eradicate it.

The Model Forest Management Area in Sarawak also suffered from excessive extraction in the past. The control of forest management operations and the supervision of logging were poor, and there was a lack of enrichment planting. Logging and skid trails caused large losses in stock, and regeneration was lacking in some areas and needed to be remedied. Also, there was a lack of capacity to implement SFM (due to inappropriate work skills) and poor local participation.

In the case of KPKKT, the application of the Malaysian Selective Management System resulted in excessive offtake and logging damage. At the same time, logging contractors have been unwilling to accept the additional initial costs of RIL.

The situation in the Matang mangroves differs significantly from the above because this forest has been managed sustainably with government support for more than 100 years. The area is not financially self-sufficient, but the government continues to subsidize its management because it is considered traditional.

Papua New Guinea

- A lack of infrastructure and financing.
- The scarcity of start-up capital to finance operations.
- A lack of capacity and technical know-how.
- The remoteness of many forest areas and associated inaccessibility, making it difficult to link communities to the markets and services necessary to support MFM.
- The comparatively low income derived from MFM and the related temptation to “make a quick buck” from intensive logging undertaken by outside companies.
- In the FPCD initiative, the comparatively low income generated by MFM, the distance to markets, and the lack of local (clan) capacity.

Philippines

The three examples of MFM identified in the Philippines represent three quite different forest management scenarios and the range of constraints they face differs accordingly.

The main constraint faced by the SUDECOR initiative is the 2011 logging ban, but there are also social issues. Through various policy pronouncements, and Executive Order No. 263 in particular, the Philippine government has upheld the primacy of community-based against corporate-based approaches to resource

management. Existing timber licence agreements, under which corporate-based approaches (including SUDECOR's) operate, face expiration in the next 15 years, and operators in the corporate mode will have to articulate a socially acceptable agenda. As it is now, all holders of timber licence agreements are required to undergo an environmental impact assessment process, which requires substantive community-based consultations. Another issue for SUDECOR is the demand of some tribe members for the return of their ancestral land occupied by the company.

In the Ifugao *muyongs*, key constraints include the prohibition on commercial production, and economic pressures to convert the *muyongs* to agricultural and residential areas. The need to apply to government for a formal title to own and manage traditionally owned *muyongs* is another constraint. Applications to cut trees are also considered burdensome.

In the Batangan forest, the only reported constraint is an expansion in the number of owners due to population growth.

Viet Nam

There is doubt about the effectiveness of contracting local people to protect and manage the forest. Other constraints include: a lack of staff (on average there is only one staff member per 1 000 hectares); and the threat of infrastructure development (the increased access afforded by new roads or hydropower plants leads to deforestation and forest degradation).

In the area managed by the Dak To Forestry Company, the efficacy of forest protection and management, forest fire management and technical extension services is limited due to insufficient personnel. The company has forest protection contracts with local people and implements planting and road maintenance in partnership with local residents, but the company receives only limited support from local people. The forest is overmature and contains large amounts of dead wood: as a consequence, forest fire and associated management constitute a major expense and risk, and illegal logging and encroachment also pose problems, while the hilly and mountainous terrain limits the area available for timber harvesting. In initiating improved forest management in the area, difficulties were encountered in changing the ideas of staff to apply new technologies and standards rather than conventional methods of timber extraction, and to consider environmentally and socially sound techniques. Obtaining the funds for road construction and equipment, for example, is also a challenge, and there is concern over how the company will finance its operation after the termination of the Five Million Hectare Reforestation Programme.

Enabling factors for implementing MFM systems

With the exception of Cambodia and the Philippines, where logging bans or moratoria are in place, framework conditions do not appear to directly restrict MFM, and timber-harvesting operations that provide additional outputs are able to function according to their own principles without excessive hindrance. The

main constraint on MFM, which was highlighted in relation to certification efforts in Indonesia, is competition from operators whose sole objective is to extract timber with little or no concern for multiple uses such as NTFP production, social welfare or the provision of ecosystem services.

In this sense, continuing efforts are needed to stamp out the illegal and unsustainable production of forest products and to provide incentives for the provision of social and ecosystem services. Currently, international efforts are supporting these goals, particularly through moves to prevent trade in illegal forest products (e.g. the Lacey Act in the United States of America and the European Union's timber regulation) and through REDD+. At present, however, the extent to which these measures will support MFM is unclear, given that many tropical timber producers and manufacturers are concerned that illegal timber regulations will form trade barriers that will close down the tropical timber trade.

Similarly, the complexities of implementing REDD+ activities that include timber harvesting could mean that activities become focused on forest protection. There already seems to be a tendency towards community forestry, which may result in considerable expenses without yielding the most efficient means for timber production. For example, the cost associated with establishing a community forestry project in Cambodia has been estimated at US\$54 900, and implementing community forestry across the current national forest estate in that country would cost close to US\$200 million (Broadhead and Izquierdo, 2010). As such, there is a critical need to find low-cost methods of implementing MFM that can be mainstreamed, rather than consigning the concept to donor-supported pilots.

Another problem is the threat of encroachment and forest conversion arising from population growth and increased investment in land development. This is particularly pertinent in higher-rainfall areas, where population densities remain relatively low and land is available for conversion to agriculture (Broadhead *et al.*, 2012). The lack of demarcation of PFEs and national land-use plans in most countries further limit interest in investment in long-term forest management (FAO, 2010b). In Cambodia and the Philippines, in addition to the logging bans and moratoria, requirements for permits and clearances limit MFM; this does not seem to be so critical in other countries.

CONGO BASIN

Central Africa contains the world's second-largest area of contiguous humid tropical forest, covering about 200 million hectares (Mayaux *et al.*, 1998).²⁵ The forests of the Congo Basin are home to a huge variety of flora and fauna, and approximately 3 000 species are endemic. For local residents, this biodiversity constitutes a pool of resources, services and raw materials; the Congo Basin forests are also a globally significant store of carbon.

The overall level of deforestation in the region is relatively low. The gross annual rate of deforestation in the period 1990–2000 was 0.13 percent, although

25 Most text in this section has been taken from Ernst *et al.* (2012).

this rate doubled in the period 2000–2005. At the country level, this increase in gross deforestation was significant in the Democratic Republic of the Congo, Cameroon and the Republic of the Congo and less so in Gabon and the Central African Republic. The primary direct threats to forest cover are fuelwood collection; agriculture (shifting cultivation); mining and oil extraction; the production of agrofuels; and logging (industrial as well as informal).

The formal forest sector plays an important role in the economy of Central Africa in terms of its contribution to GDP and also because of the advantages presented by two of its key characteristics: it is based on a renewable raw material and, as such, guarantees revenue for as long as the resource is adequately managed; and it is largely integrated into a rural economy that has limited other means of generating income. The forest sector is often the main sector providing direct and indirect employment and is important in generating income for local people and funding for infrastructure in rural areas.

The coming years will be critical for forests in the Congo Basin. Population growth, immigration and economic development in the region, plus increasing demand at the global level, will inevitably increase pressure on natural resources. This could lead to considerable degradation and increased poverty for the very large number of people who are still heavily dependent on readily available forest resources.

Forest policies and institutions

While forest regimes in Central African countries²⁶ date from the colonial period, all countries in the region adopted new forest codes in the period 1990–2000 that outlined the requirements for forest management. Despite being the legal owners of their forests, Central African states are ill-equipped to manage them on a day-to-day basis, especially given the forests' vast size, their inaccessibility and the fact that administrations lack adequate human and financial resources. Forest laws have therefore tended to allocate long-term forest concessions or other forest logging titles to private companies.

The gradual establishment of sustainable production-forest management has been one of the major developments in the forest sector in the Congo Basin in the last 15 years; little by little, SFM approaches have replaced extractive approaches involving intensive logging and inadequate planning. While the SFM process is well under way in Cameroon, the Central African Republic, the Republic of the Congo and, to a lesser extent, Gabon, it has only just begun in the Democratic Republic of the Congo, which is the biggest forest country in the region. There has been a significant increase in certified area in Central Africa in recent years: in the first quarter of 2010, forest concessions with FSC certificates amounted to about 4.5 million hectares.

There are signs of increasing political will in the countries of the region to sustainably manage their forest resources, but this will has not yet been accompanied by an appropriate integration of forestry, rural development, governance and economic and social development policies.

²⁶ Most text in this section has been taken from Bayol *et al.* (2012).

Overview of the forest situation in target countries²⁷

Cameroon

- Cameroon possesses significant forest resources and has confirmed in the past five years its considerable potential for SFM. The PFE is estimated at 12.8 million hectares, comprising 7.60 million hectares of natural production forest, 5.20 million hectares of protection forest and 19 000 hectares of industrial timber plantations.
- The policy environment is good. However, the capacity of the Ministry of Forests and Fauna (responsible for forests) and the Ministry for Environment and Protection of Nature (responsible for climate change adaptation and mitigation and REDD+) to fully enforce the forest law and implement forest and environmental policies is low.
- The country is progressing well towards SFM. In 2011 (Mertens *et al.*, 2013), FMPs were being implemented in 5.3 million hectares of the production PFE (compared with 1.76 million hectares in 2005). In addition to FMPs, 3 million hectares had received private certificates of legality and around 1 million hectares were FSC-certified.

Democratic Republic of the Congo

- The Democratic Republic of the Congo has more than 112 million hectares of closed tropical forests and a relatively low level of conversion of forest to other uses. The PFE is estimated at 48.3 million hectares, comprising 22.5 million hectares of natural production forest and 25.8 million hectares of protection forest.
- Although notable progress has been made in recent years, civil conflicts make it difficult to realize the country's forest potential. The institutional reform process is in its early stages and the legal framework – including the decentralization process – needs to be further developed and harmonized.
- SFM has not yet been achieved on the ground, although some progress has been made in the establishment of FMPs for the natural-forest production PFE. Of the 9.1 million hectares of allocated forest concessions in 2010, about 6.59 million hectares were subject to detailed forest management planning.
- The volume of timber harvested is only a tiny fraction of the potential sustainable yield, even accounting for likely significant levels of illegal logging.
- The country has become engaged in the development of a national REDD+ mechanism.

Gabon

- Gabon has a large forest resource with a relatively low risk of conversion to other uses. The PFE extends over an estimated 13.5 million hectares, comprising 10.6 million hectares of natural production forest, 2.90 million hectares of protection forest and 25 000 hectares of planted forest.

²⁷ This section is based largely on Blaser *et al.* (2011).

- Undeniable progress has been made towards SFM. The government continues to improve its legal and institutional framework to regulate and monitor production forests and to effectively manage protected areas.
- Forestry will remain one of the pillars of Gabon's economic and social development. Based on clear policy measures by the government, the private sector is a major driver of industrial forest development and the export of semi-finished forest products.
- An estimated 2.42 million hectares of the natural production PFE is under SFM, including 1.87 million hectares of certified forest (the largest in Africa). FMPs are fully developed in 3.45 million hectares of forest in concessions and in 2010 were under preparation for another 6 million hectares of forest in concessions.
- High standards for concession management have been developed on paper, but still need to be fully introduced on the ground.
- Community forests may be created in the *domain rural*, but their development has been insignificant. Management for bushmeat and other NTFPs is still largely uncontrolled, even though these issues must be addressed in FMPs.

Perceptions of MFM

On the basis of responses to questions on the uses valued in MFM, existing experiences and the harvesting modalities compatible with MFM, three concepts of MFM emerge: an industrial timber operation open to other uses and other stakeholders; forest use for multiple purposes; and organized management of all forest uses and functions.

In **Cameroon**, perceptions vary between three groups of actors: forest concessionaires, who focus on industrial timber exploitation but are open to other actors and uses; community foresters, who emphasize the desirability that (multiple) use reflects the ways in which communities have always used the forest; and civil society and researchers, who take a more management-oriented view in which multiple-use objectives are regulated on legal grounds or use clearly established techniques to plan, cater to stakeholder interests and ensure the sustainability of practices. These differences in perception can be explained by the distinct vision the three groups of actors have of the forest, as well as by their interests in it. For local and indigenous communities, the forest has always been seen as the main source of food, health products, materials for housing construction and trade, and connection with the spiritual world. Forests are therefore the subject of multiple uses, for which communities need neither permits nor a management plan. The objective of forest management for logging companies is the realization of profits from industrial timber production, while NGOs and research centres have another vision of the forest that is similar in some ways to that of community foresters. However, given the threats to forests, this third group believes that forest use must be organized and regulated, which explains its emphasis on management.

Perceptions identified in the **Democratic Republic of the Congo** were similar to those in Cameroon. Although differentiation of perceptions was not possible

by actor group, the association of indigenous people contacted had an identical perception of MFM to that of community foresters in Cameroon.

In **Gabon**, perceptions of MFM varied between two groups of actors: loggers and managers of the forest administration on the one hand, and NGOs and research institutes on the other.

Overview of MFM identified initiatives

MFM has become a priority objective of SFM, and its adoption is seen as a tool to balance the shortcomings of economic and social forestry models (García-Fernández, Ruiz-Perez and Wunder, 2008; Guariguata *et al.*, 2010). The MFM concept has been introduced into laws and regulations governing forest management in Cameroon, the Democratic Republic of the Congo and Gabon through the concepts of multi-actor management and multi-resource management, which promote the recognition of the use rights of local and indigenous communities and the participation of all stakeholders in forest management.

Every logging concession in Cameroon, the Democratic Republic of the Congo and Gabon is required by law to consider and implement MFM, especially for wildlife, NTFPs and cultural sites. These uses are to be mentioned in the FMP and their interactions with industrial logging activities must be explained. The design of a simple management plan for community forests follows the same rationale. In 2010, 180 logging concessions were managed according to FMPs in the three countries, and around 139 community forests were operating legally in Cameroon. Due to time and funding constraints, only 15 MFM initiatives were selected in these three countries on the basis of the availability of information and with a view to covering the range of SFM options, from FSC-certified concessions to concessions without a validated FMP. Two community forestry experiences were added, one in Cameroon and one in the Democratic Republic of the Congo (Figure 4).

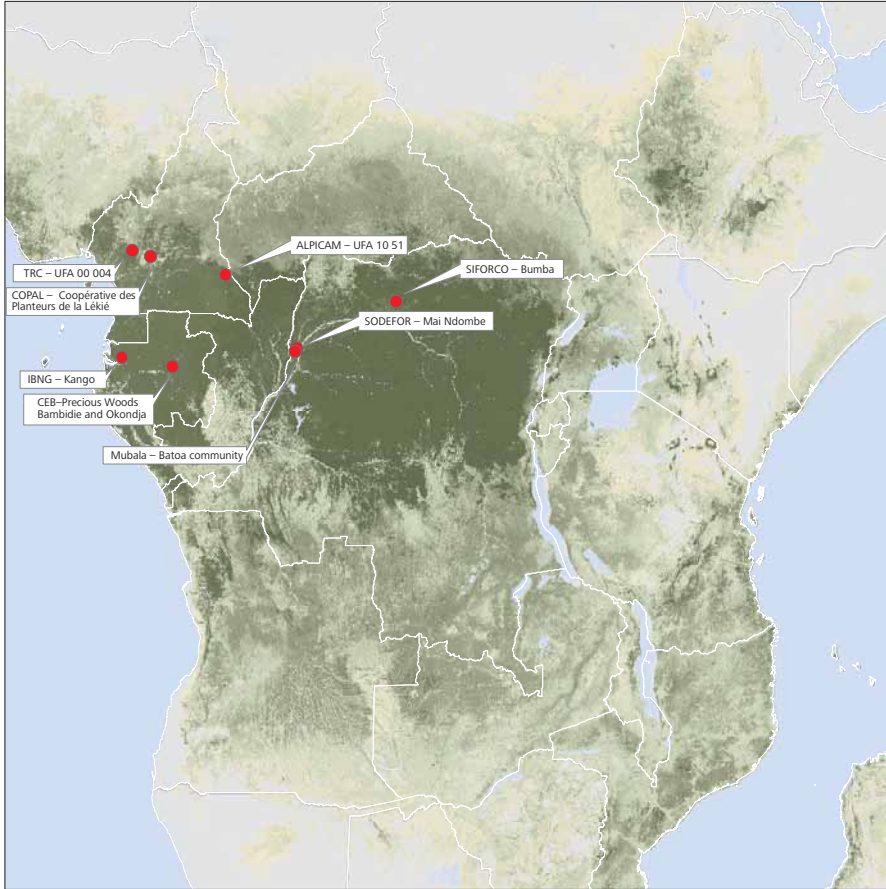
Eight case studies were identified for in-depth analysis and individual interviews with forest managers. For these case studies, the survey focused on the constraints and factors promoting MFM and the potential role of REDD+ in MFM. The selection criteria took into account:

- the type of forest in which MFM is implemented;
- the type of organization in charge of the initiative;
- the type of actors involved in the initiative;
- the scale and type of forest certification pursued by the initiative;
- the willingness of forest managers to collaborate.

See Annex 4 for a summary of the selected cases, and complete descriptions can be downloaded at www.fao.org/forestry/sfm/83861/en/.

Analysis of the initiatives revealed that the understanding and implementation of MFM depend mainly on three variables: the types of uses integrated; the costs of MFM; and the modality of MFM according to the harvesting title, the recipients of the MFM and the types of uses.

FIGURE 4
Location of selected MFM initiatives, Congo Basin



Uses generally integrated into MFM

Timber production, biodiversity conservation, the protection of sensitive areas and the extraction of NTFPs are the main uses implemented by the identified MFM initiatives. Carbon sequestration is a new concept and its implementation is still limited, especially since no forest code in the target countries even mentions it, although a pilot project is under way in a community forest identified as an MFM initiative in Cameroon. In Cameroon, agriculture is not permitted in forest concessions, which are part of the PFE and therefore permanently allocated to forest or wildlife habitat, but the FMPs of some forest concessions earmark land for agroforestry. The situation is similar in the Democratic Republic of the Congo; however, forest concessions there include agriculture because of the presence of riverine communities. In Gabon, the inclusion of agriculture in forest concessions is justified by the fact that the law gives this right to local people. Unlike the harvesting of NTFPs, hunting is not included in the majority of MFM initiatives.

Costs of MFM

CEB–Precious Woods reported investing over 1 billion CFA francs (€15 million) to develop its concession of 581 490 hectares, while Transformation Reef Cameroon (TRC) spent more than 100 million CFA francs (€1.5 million) for an area of 94 917 hectares. Without accurately quantifying the costs of MFM, these operators claimed that management costs with no direct bearing on the timber resource (e.g. the delineation of high-conservation-value forest, the management of NTFPs and the delimitation of community hunting zones) are additional costs for logging companies (and therefore proxy costs of MFM), which they would not be interested in supporting if they were not engaged in forest certification.

In community forests, forest use is limited mostly to the exploitation of timber and to domestic consumption (e.g. food, housing construction and medicinal products) (Essoungou, 2009). This was the case in four of the five community forests visited in Cameroon. The implementation of uses such as ecotourism and NTFP extraction requires substantial financial resources (e.g. for the construction of reception facilities for tourists, and preparing applications for certificates of operation or harvesting permits) that usually cannot be found within the communities themselves. Because of the lack of funding, local communities generally use an operating partner to finance forestry operations in advance and include the financing costs in the purchase price of timber at the expense of local communities. Under these conditions, at the end of the logging operation local communities are rarely able to raise enough money to oversee future operations (Essoungou, 2009).

Benefits and beneficiaries of MFM

The state, logging companies and local people are the main beneficiaries of MFM. The benefits for the state come in two forms: taxes and levies; and environmental benefits (e.g. biodiversity conservation, the protection of sensitive areas, and landscape restoration following felling). Logging companies also receive two forms of benefit: income from industrial wood production; and the prestige acquired through the implementation of measures for environmental protection.

Unlike timber companies, timber harvesting constitutes only a small portion of revenues received by local communities, especially when compared with the revenue generated by their agricultural activities and even the sale of NTFPs (e.g. the case of the community forests of COPAL). Unlike agriculture and the extraction of NTFPs, the products of which are mostly sold through informal channels, timber production requires significant financial and marketing resources that are usually out of reach of local people. There are also secondary beneficiaries of MFM: the global community benefits, for example, from the provision of globally important ecosystem services, and economic operators in the forest-product marketing chain are also beneficiaries.

Main constraints on MFM

Three main constraints on MFM were identified: inadequate legislation; the lack of rights to forest resources; and the lack of profitability in implementing MFM.

Inadequate legislation

In the countries of the Congo Basin, legal frameworks for forests recognize the use of forests for various purposes (e.g. production, protection, conservation and recreation) and the participation of stakeholders in forest management to meet their needs. However, the modalities of implementing MFM appear to be left to formal (official) or informal forest managers. Such is the case for use rights, the practical modalities of which are not specified clearly in regulations. Therefore, in the management of forest concessions, forest managers often seem to define use rights at will, which can cause a lack of coordination between the traditional uses of local people and the FMP. In the field, there are quite often “arrangements” between logging companies and local people to tolerate certain practices such as agriculture and the collection of NTFPs for commercial purposes. Thus, the regulation of MFM in forest concessions is often set on the basis of arrangements between logging companies and local people.

Lack of rights to forest resources for indigenous and local communities

In Africa, 98 percent of the land belongs to the state, which weakens the rights of communities over land and forest resources (Rights and Resources Initiative, 2009).

The lack of rights for local people to forest resources remains a major concern for SFM and has been identified as one of the causes of environmental degradation in developing countries because it does not encourage long-term investment in forest management (Kaimowitz *et al.*, 2005; Cabbage, Harou and Sills, 2007). Processes of democratic decentralization, in which many African countries are engaged, have made possible a greater understanding and recognition of traditional rights and practices in managing local resources (Larson *et al.*, 2010). However, the rights of local people to forest resources are contradictory to customary rights because they limit the traditional practices of local people (e.g. by restricting the collection of certain resources in the area; the requirement for authorization for home consumption; and the requirement of special permits for marketing). On the ground, arrangements sometimes exist to overcome these restrictions, but generally such arrangements are only made by certified logging companies.

Nevertheless, there are moves at the state level to implement the recognition of customary use rights. In Cameroon in the context of community forestry, for example, local communities benefit from a transfer of power that allows them to exploit forest resources on their land. This does not fully solve the problem, however, because the implementation of community forestry remains a luxury for many communities given the complexity and high cost of bureaucratic procedures. The sustainable exercise of customary and other rights to commercial use would be encouraged by simple rules of use applicable in time (e.g. by identifying a non-hunting season), space (e.g. to protect a high-conservation-value site), the

techniques employed (e.g. no gun hunting) and the status of users (e.g. must have been a village resident for the last two years).

Lack of economic profitability of implementing MFM

According to forest laws in the Congo Basin countries, logging companies only have access to the timber resources of a concession, while communities are permitted to exploit community forests for timber, NTFPs, ecotourism and agriculture. The harvesting and use of these resources is conditioned by the implementation of an FMP or a “simple management plan”, depending on the forest title. However, communities struggle to find the funds to meet management requirements. In Cameroon and Gabon, the management of forest concessions requires 2000–3000 CFA francs per hectare (€3–5) (Buttoud *et al.*, 2005). This cost corresponds mainly to the development of the timber resources; in the context of MFM, however, operators are supposed to manage not only for timber but for all uses and functions of the forest (Cassagne, Bayol and Rougier, 2004). The costs involved to do this reduce the profits of operators and therefore their motivation to implement MFM. Such operators may seek incentives from the state for the implementation of MFM, such as tax relief, but this is unlikely in most countries in the Congo Basin. In community-managed forests, communities have the right to exploit timber and NTFPs and implement tourism activities; however, very few community forests are profitable, even through the combined exploitation of timber and NTFPs (Akoa Akoa, 2007; Rossi, 2008).

Enabling factors for implementing MFM systems

The development of MFM systems in the Congo Basin can be promoted through the effective application of customary use rights in forest concessions and by forest certification.

The effective application of customary use rights in forest concessions

In all three countries studied, local and indigenous people know their customary use rights to forest resources. Logging companies usually include these rights in the FMPs of forest concessions, most often with the aim of clarifying or limiting their scope and practice. To be effective, however, a meaningful dialogue on customary use rights is necessary between the logging company and local people, as required by law. As shown by Lescuyer (2007), Order No. 0222/A of the Ministry of Environment and Forests of Cameroon, for example, sets out the role of local people in management procedures for production forests. The order gives the management plan a tripartite structure featuring the relevant authority, the concessionaire and the people concerned. This structure is specified particularly for the purpose of supervising the various phases of forest management, including the internal zoning of uses, social infrastructure, mechanisms for dispute resolution and the participation of local people in management activities. This regulation is rarely enforced, however. Discussions with villagers suggest that forest zoning and socio-economic surveys may be listed in FMPs but not implemented.

Thus, the regulatory requirements have limited usefulness for improving forest management. For most logging companies, admitting the full exercise of use rights runs the risk that their concessions will become overrun by poachers, illegal sawyers and shifting cultivators.

An apparently simple measure to promote greater collaboration between local people and logging companies would be to apply the spirit of the law, which promotes participatory forest management. Unfortunately, however, the forest administrations that are supposed to implement the social advances contained in forest laws are also reluctant to believe in the virtues of involving local actors in the management of a space and a resource that, they think, rightfully belong to the state. Convincing the forest administration and logging companies of the benefits of social forestry, and increasing the awareness of local people about their rights and duties in forestry, could greatly extend the range of uses and products actually integrated into forest management.

Forest certification

By insisting on the conservation of biodiversity and respect for the use rights of local and indigenous people, forest certification can be a main driver of MFM. Indeed, principles 2, 5, 6, 7 and 9 of the FSC clearly take into account the management of various forest functions and the different actors involved in the use of these functions. In addition, forest certification pushes for the implementation of on-the-ground MFM initiatives, as shown by the Support Office for the Environment Villagers created by CEB–Precious Woods and the protocol for the protection of NTFPs developed by TRC. Similarly, in the context of certification, Société de Développement Forestier (SODEFOR) has signed a contract for the extraction of NTFPs (*mubala*, *Pentaclethra macrophylla*) with the indigenous community of Batoa Inongo, which can be combined with timber harvesting. These initiatives show that in the implementation of MFM there is a significant difference between FMPs and forest certification. In developing FMPs, managers usually define measures for MFM but, in practice, those measures are implemented only for timber resources. However, if they want to obtain forest certification, managers must implement all measures for MFM.

This difference can be explained by the fact that the management of forest concessions is not subject to a system that checks the implementation of the approved FMP, unlike forest certification that incorporates regular oversight. The mismatch between FMPs and the implementation of management is an indicator of the unwillingness of managers to invest in activities that favour the state and local people.

It should be noted that although FSC certification takes into account the conservation and protection of biodiversity and the rights of local and indigenous people, it does not cover aspects of MFM such as aesthetic benefits or carbon sequestration. In addition, the FSC principles and criteria are not explicit when it comes to implementing MFM measures. Principle 5 on forest benefits, for example, requires that forest management operations encourage the efficient use

of the multiple goods and services of the forest to ensure the economic viability and a wide variety of environmental and social benefits. However, these goods and services are not defined, leaving some freedom for the operator and the certifying office to do so.

Role of NTFPs

The marketing of NTFPs could be a valuable activity in the Congo Basin, despite a still-inadequate legal framework (FAO, 2009). Most MFM initiatives give special place to the extraction of NTFPs: some logging companies, such as TRC and SODEFOR, implement formal procedures that allow local people to collect these products. Outside certified firms, tolerance for these arrangements is widespread, but not organized by forest managers. Two factors probably prevent greater consideration of these products in MFM initiatives in Central Africa: on the one hand, forest managers are rarely the beneficiaries of such use; and, on the other, in most cases the marketing of NTFPs does not represent a substantial source of income for rural households because of the remoteness of the collecting areas and the irregularity of production, among other reasons (Lescuyer, 2010). From a strictly financial point of view, it makes more sense to better integrate agroforestry or agricultural practices in forest management because those activities can have a greater impact on the living standards of rural people.