



4. Have forests been sustainably managed?

Sourcing and legality aspects



Origin

Where do the products come from?



Information accuracy

Is information about the products credible?



Legality

Have the products been legally produced?

Environmental aspects



Sustainability

Have forests been sustainably managed?



Unique forest values

Have unique forest values been protected?



Climate change

Have climate issues been addressed?



Environmental protection

Have appropriate environmental controls been applied?



Fresh and recycled fiber

Have fresh and recycled fibers been used appropriately?



Other resources

Have other resources been used appropriately?

Social aspects



Local communities, indigenous peoples, and workers

Have the needs of local communities, indigenous peoples, and workers been addressed?



4. Have forests been sustainably managed?

The movement for sustainable procurement of wood and paper-based products is driven to a large extent by the concern for how forests are affected by wood production. This concern has two major aspects:

- **Sustainability** – the balance of economic, social and environmental demands on the forest landscape. The maximization of wood production and minimization of cost should not upset the environmental and social balance of the landscape, either by removing trees at a quicker rate than they grow back, or by paying insufficient attention to environmental or social concerns.
- **Forest conversion and land-use change** – the forest can change drastically after logging. It may be redesigned for tree production in a way that is significantly different from the forests that would naturally occur, or the forest can be converted to some other purpose that prevents trees from growing back.

Sustainable forestry

Sustainable Forest Management (SFM) is a management regime that integrates and balances social, economic, ecological, cultural, and spiritual needs of present and future generations (United Nations, 1992). Essential aspects of SFM include the following:

- **Economic** – the capacity of the forests to attract investment and support economically viable forest uses in the present and the future is undiminished. The forest is not used beyond its long-term capacity for production of wood and non-wood forest products.

- **Social** – include a variety of aspects such as:
 - The rights of indigenous peoples and local communities are respected and protected.
 - Forest workers are healthy, safe, and their rights are protected (e.g., freedom of association, right to bargain, child labor, forced labor, equal remuneration and non-discrimination).
 - Local communities, including indigenous peoples, benefit economically from forest management.
 - Sites of religious, spiritual, archaeological, historic, as well as of aesthetic and recreational value are preserved.
- **Environmental** – forest use protects biodiversity (ecosystems, species, genes and ecological processes) and the capacity to maintain ecosystem processes and services such as watershed protection, pollination, protection against mudslides, aesthetic beauty, carbon storage, etc.

The result of different ways to balance these trade-offs is illustrated in Figure 6.



There are various approaches, positions, standards and definitions of what SFM means, and what specific management measures it requires. There are also various methods to measure progress towards SFM. Depending on the way their authors understand the concept and management objectives, SFM standards for the same forest can be different. Regional standards for SFM can legitimately be somewhat different from one another, reflecting differences in forest types, legal frameworks, social conditions, and other factors. Mainstream standards for SFM differ on the following issues:

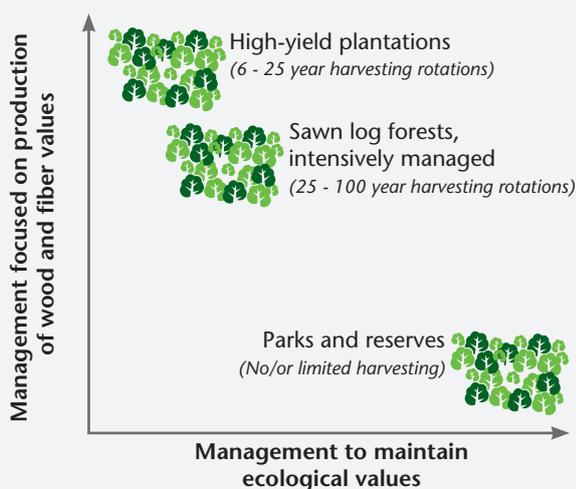
- **Clearcutting** – SFM standards, including CSA, FSC, PEFC and SFI, recognize clearcutting as consistent with SFM in the right forest ecosystems. Clearcutting can accomplish the following:
 - It mimics some of the natural disturbance dynamics of the forests (e.g., fire, wind blow downs, insects).
 - In some ecosystems, it allows regeneration and rapid growth of certain tree species.
 - It costs less, making forestry more economically viable.
 - It provides safer working conditions for loggers.

However, all SFM standards also recognize there is no single harvesting method suitable for all forest ecosystems.

- **Plantations** – plantations can focus production on smaller but more intensively managed areas. All SFM standards recognize plantations as being consistent with SFM under certain conditions; conditions may include considerations based on the ecological systems of the place, and the availability of land free from conflicts with other users.
- **Chemicals** – most standards allow controlled and appropriate use of chemicals (pesticides and fertilizers). Some standards prohibit the use of chemicals.
- **Genetically Modified Organisms (GMOs)** – some standards strictly prohibit the use of GMOs, while others will allow the use, if and when legally available. At least 24 tree species have been known to have been the subject of transgenic research (for a list of species see WWF, 1999). In North America, however, no GM trees have been deregulated for commercial use.

Forest certification schemes define SFM through their respective standards (Table 10). All types of forests can be sustainably managed, from primary or natural forests to intensively managed forest plantations (Box 9).

Figure 6. Conceptual trade-offs between economic and ecological values



Areas managed intensively and exclusively for wood or fiber production (y-axis) will generally have fewer ecological values; forest areas managed exclusively for their ecological values (x-axis) will provide less economic value. Graphic based on Dyck (2003).

Factors to consider about SFM

- Forest land can be sustainably managed without being certified by a forest certification system. Producers may not pursue forest certification if they perceive the costs of the process as outweighing the price premium offered for certified products.
 - “Legally harvested” does not necessarily mean “sustainably produced” or “sustainably managed” because laws are sometimes insufficient to guarantee SFM, or are inadequately enforced.
- Both major certification schemes are developing methods to assess the risk that wood from non-certified sources has been produced in an unacceptable way.

Table 9. How major international certification schemes address selected aspects of SFM

	Forest Stewardship Council (FSC)	Programme for the Endorsement of Forest Certification (PEFC)
Social impacts	Four principles of the FSC system include various social concerns: tenure and use rights and responsibilities, indigenous people's rights, community relations, and workers' rights. Principle related to high conservation value forests (HCVF) also addresses social aspects for areas of archaeological, historical or cultural value. Standard-setting processes at the national and sub-national level are conducted in a transparent way and involve all interested parties.	Criteria 1 and 6 cover various social concerns. Criteria 1 requires that forest management activities aim to maintain or increase cultural and social values among others. Criteria 6 (maintenance of socio-economic functions and conditions) covers the following among others: stimulation of rural development, property and ownership rights and land tenure, recognition of customary and traditional rights, access to the public for recreational purposes, recognition of areas with historical, cultural or spiritual significance, FPIC, workers' health, labor, and community consultation.
Unique forest values	Principle 9 addresses high conservation value forests (HCVF), which are areas to be managed in such a way that these values are maintained or enhanced. HCVF include: <ul style="list-style-type: none"> • Forests that contain globally, regionally, or nationally significant concentrations of biodiversity values • Globally, regionally, or nationally significant large landscape level forests • Rare, threatened or endangered ecosystems • Forest areas providing basic services of nature in critical situations • Forest areas fundamental to meeting basic needs of local communities • Forest areas critical to local communities' traditional cultural identity 	Forest management shall aim to maintain, conserve and enhance biodiversity on ecosystems, species and genetic levels and, where appropriate, diversity at the landscape level (Criterion 4). <p>Forest management shall identify, protect and/or conserve ecologically important areas containing significant concentrations of:</p> <ul style="list-style-type: none"> • Protected, rare, sensitive or representative forest ecosystems such as riparian areas and wetland biotopes • Areas containing endemic species and habitats of threatened species • Endangered or protected genetic in situ resources; and take into account • globally, regionally and nationally significant large landscape areas with natural distribution and abundance of naturally occurring species. <p>Criterion 5 require special care of forest areas that are on sensitive soils, erosion-prone areas, or forests that protect water resources.</p> <p>Criterion 6 requires special care for sites with recognized historical, cultural, or spiritual significance for the local communities.</p>
Forest plantations	Principles 6 and 10 of the FSC principles address forest plantations. Certified forest plantations should meet a set of requirements concerning: <p>(i) representation on landscape; (ii) time of establishment; and, (iii) design of the management blocks (i.e., blocks promote biodiversity).</p> <p>Forest conversion to plantations or non-forest land uses should not occur except in circumstances where conversion entails a very limited portion of the forest management unit, does not occur in high conservation value areas, and will deliver long-term conservation benefits.</p>	Various elements of Criterion 5 are relevant to forest plantations. Certified plantations should meet a set of requirements concerning, among others, the following aspects: <p>(i) time of establishment; (ii) impacts on unique forest values; and, (iii) impacts on soil and water.</p>
Chemicals	Principle 6 of FSC addresses chemicals. Chemicals should be minimized. Integrated Pest Management (IPM) is the preferred approach, i.e., to minimize chemical use through the use of alternative prevention and biological control techniques. <p>Documentation, monitoring, and control are required. Prohibits the use of pesticides type 1A and 1B, as defined by the World Health Organization, as well as chlorinated hydrocarbon pesticides; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain.</p>	Use of pesticides and herbicides should be minimized, used in controlled manner, and take into account appropriate silvicultural alternatives and other biological means. Prohibits the use of pesticides type 1A and 1B, as defined by the World Health Organization. Chlorinated hydrocarbons and other toxic pesticides whose derivatives remain biologically active and accumulate in the food chain are also prohibited unless there are no viable alternatives. (PEFC, 2010).

Table 9. How major international certification schemes address selected aspects of SFM (cont.)

	Forest Stewardship Council (FSC)	Programme for the Endorsement of Forest Certification Schemes (PEFC)
Clearcuts	Principle 6 of FSC addresses clearcuts. Restrictions on size and location vary among national/regional standards, as long as ecological functions and values are maintained intact, enhanced or restored.	Management plans – including clearcutting – should be based on legislation as well as existing land-use plans and adequately cover forest resources. Regeneration, tending, and harvesting should be carried out in time and manner that do not reduce the productive capacity of the site.
GMOs	Use of GMOs is prohibited; addressed in Principle 6 of FSC.	Use of GMOs is prohibited.
Exotic species	Addressed in Principle 6. Exotic species are permitted, but not promoted. Careful monitoring is required to avoid adverse environmental impacts.	Criterion 3 addresses exotic species. Native species and local provenances should be preferred in reforestation and afforestation. Introduced species can be used after potential impacts on the ecosystem and the genetic integrity of native species is evaluated and if negative impacts can be avoided or minimized.

Source for FSC information is FSC (1996). This table provides an overview of the general characteristics of these two systems. This table is NOT meant to be an exhaustive comparison. A list of references to more detailed comparisons can be found in the section on additional resources.



Box 9. Plantations

The increasing demand for wood and paper-based products will most likely be met, at least in part, through the establishment of new forest plantations. The area of forest plantations worldwide has been increasing to reach 140 million ha in 2005. Slightly less than half of the world's plantations are in Asia, while exceptionally fast increases were experienced in North America, Central America, Oceania and South America between 1990 and 2000 (FAO, 2006). This trend is expected to continue, especially in developing countries. Forest plantations currently make up 5% of the world's forest cover, but account for 35% of total global industrial wood production. There are advantages and disadvantages that need to be considered when sourcing from forest plantations.

Planted forests (plantations) may not provide the same ecosystem services natural forests provide, but they can play a positive role in other regards:

- By producing wood more efficiently, they may allow other natural forests to be managed for other forest values.
- When established on previously degraded sites they may recover some ecosystem functions and services. Increased recovery of degraded lands will play an important role in meeting future demand for wood and paper-based products and services, including carbon sequestration and/or crops for fuels.

However, when forest plantations reduce the production costs for timber, products from natural forests may be at a disadvantage. If natural forests become less economically viable, it could cause owners to convert their lands to other more financially attractive land uses.

Advantages and disadvantages of plantations

Advantages

Forest plantations can return degraded or worn out lands to productive use and protect soil from erosion.

The rapid growth of forest plantations can produce more wood, faster, requiring less land to produce a specified amount of wood.

Forest plantations enable landowners to take advantage of the newest forest technology and genetics. This results in greater yields and better prices, strong incentives for private landowners to continue to practice forestry on their lands.

Wood harvested from forest plantations is often very uniform in terms of species and size, thereby improving processing and manufacturing efficiency.

Focusing wood production in fast-growing forest plantations can allow other native/natural forests to be managed for other uses such as biodiversity, non-wood forest products, and aesthetics.

Greater economic value of plantations can keep forest land in forest use, where a natural forest may not be economically sustainable.

Disadvantages

There is often limited biodiversity if the forest is managed in single species plantations, resulting in reduced wildlife habitat and ecosystem value.

Diseases and pests which target a particular tree species can have devastating impacts in single species plantations.

Forest plantations often receive higher levels of inputs such as fertilizer and chemicals to control vegetative competition. Run-off, overspray and groundwater contamination can be issues if these practices are not carried out correctly.

Some forest plantations are established using non-native species. These plantations may not provide suitable habitat for local wildlife. Trees replacing grazing land may also adversely affect groundwater levels. If allowed to escape off-site, some non-native species may out-compete local tree species for available resources, and become a "weed" or invasive species.

Rights of local communities, indigenous peoples, and workers may be ignored. Forest plantations often take over large areas of land that become unavailable to other users (e.g., fuel-wood collection, non-wood forest products) and can distort income distribution in households and communities.

Clearance of natural forests to establish plantations.

The two principal concerns about forest plantations are:

1. They may replace natural forest areas or areas in the forest landscape with unique qualities.
2. They may not be established in compliance with local laws regarding land occupation, and with authorization of local and indigenous peoples.

Sources: Boyer, 2006; FAO, 2007B; Nair, 2001.

LAND-USE CHANGE AND FOREST CONVERSION

Forests are naturally dynamic ecosystems. Natural processes (e.g., fire, flood, wind, earthquakes, mortality caused by insects, outbreaks of diseases, and the simple aging of trees) affect the composition and structure of all forests. Anthropogenic influences also change forest ecosystems, often in more dramatic and permanent ways. It is important to distinguish two different types of significant forest change, which are sometimes confused:

- Land-use change.
- Forest conversion.

Land-use change, i.e., deforestation, reduces the area under forest. The United Nation's Food and Agriculture Organization (FAO) defines deforestation as "The conversion of forest to another land use or the long-term reduction of the tree canopy cover below the minimum 10 percent threshold" (FAO, 2001). Deforestation occurs when forest areas are transformed to other land uses such as:

- **Agriculture:** this includes shifting cultivation (traditional and colonist shifting cultivation), permanent cultivation (subsistence or commercial cultivation), and cattle ranching (small and large-scale cattle ranching). Agricultural expansion can replace native forests with pasturelands and crops. Palm oil, soy crops, and likely fuel crops in the near future, are considered the leading proximate cause for forest land use change in the tropics.
- **Human settlement:** urban development, colonization, transmigration and resettlement (spontaneous transmigration, estate settlement, industrial settlement, urban settlements).
- **Infrastructure:** transport infrastructure, market infrastructure (mills, food markets, storage, etc.), public services (water, sanitation), hydropower, energy and mining infrastructure.

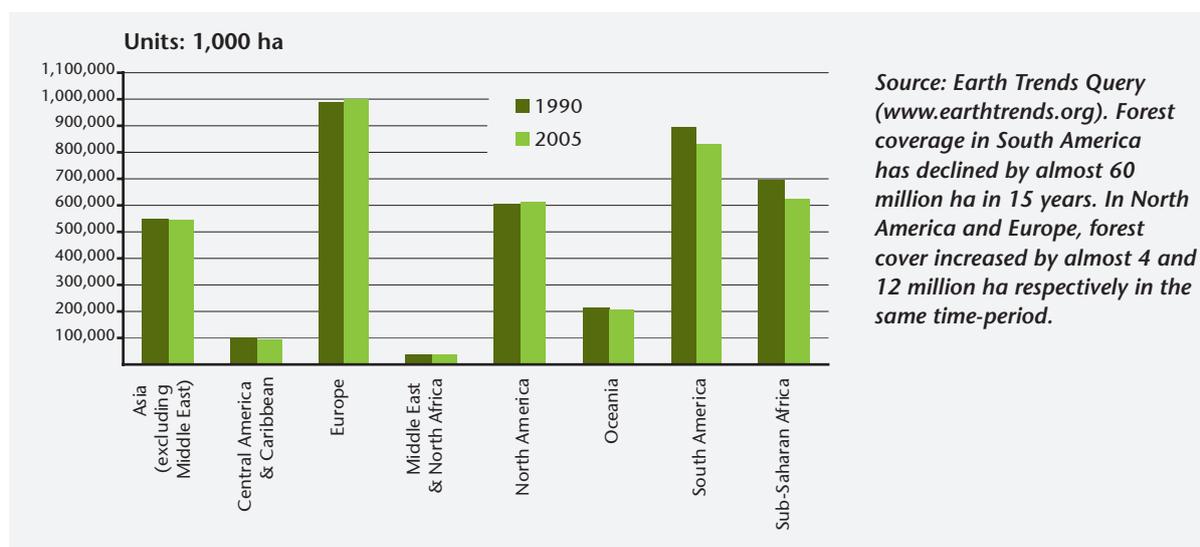
Forest conversion happens when a natural forest is transformed into a highly cultivated forest, often with introduced tree species and control of the hydrological and nutrient regime, with a focus on wood production.

FAO's definition of deforestation specifically excludes areas where the forest is expected to regenerate naturally or with the aid of forest management measures following harvesting.

Over time, a significant amount of the world's forest lands have been converted to other land uses. In the northern latitudes, most of this change in land use occurred in the past. In some cases, natural forests have reestablished themselves in these areas; in others, forests have been planted. The managed forests we see today are often influenced by historical land uses, such as grazing or agriculture.

In the tropics, a major concern is the high rate of continued conversion of forests to other uses (Figure 7).



Figure 7. Forest extent in 1990 and 2005

The causes of forest land use change vary by region, and even within a region. It is often a complex combination of intertwined factors and circumstances involving more than a single industry. Table 11 presents a general summary of some of the causes, drivers, and factors associated with forest land use change.

Commercial extraction of wood-based products, in combination with other factors and economic activities, has been linked to forest land use change. For instance:

- In Asia, logging concessions are often harvested and converted to plantations (mostly oil palm) because this change in use is usually less expensive than the selective logging needed to maintain the native forest. Under current economic and political incentives, there are faster and more profitable investment returns in palm oil plantations, and there is poor law enforcement and planning.
- In Central Africa and South America, logging companies open roads to extract/transport timber. These roads open the way for encroachment. An opening in the forest, combined with lack of enforcement and pressure from human populations, can result in change in use to subsistence farming or other agricultural operation.

Converting a forest into a forest plantation affects the balance of ecosystem services (e.g., it may eliminate species, affect erosion control and/or water supplies while increasing the production of wood), but converting forests to non-forest uses such as urban settlements completely eliminates the forest ecosystem. Forests deliver a variety of ecosystem services and benefits, but many of these are not recognized under the current economic and political situation, and do not generate any revenue to the forest owner. Often the value of an intact natural forest, a standing forest or a forest plantation can be greater to society than the value of a converted forest area.



Table 10. Factors underlying forest land-use change and conversion in the tropics

Factors	Underlying causes
Economic	<p>Market growth and commercialization: rapid market growth of the export-oriented sector, increased market accessibility, growth of industries, lucrative foreign exchange earnings, growth of demand for goods and services.</p> <p>Economic structures: large individual speculative gains, poverty and related factors, economic downturn, crisis conditions.</p> <p>Urbanization and industrialization: growth of urban markets, rapid build-up of new forest-based (or related) industries.</p> <p>Special economic parameters: comparative advantages due to cheap, abundant production, factors in resource extraction and use, as well as price.</p>
Policy and institutional	<p>Policies: taxation, credits, subsidies, licenses, concessions, economic development, population (migration), and land ownership policies.</p> <p>Institutional factors: corruption, poor performance, mismanagement, etc.</p> <p>Property rights regime: insecure ownership, rush to establish property rights, titling, consolidation, open access conditions, etc.</p>
Technological	<p>Agro-technological changes, technological applications in the wood sector, and other production factors in agriculture.</p>
Social and cultural	<p>Social unrest and disorder (war, civil war, etc.), health and economic conditions, government policy failures. Cultural factors include concern (or lack of) towards forest protection and sustainable use.</p>
Demographic	<p>Population growth and increasing demand for products, food, space, etc.</p>
Other	<p>Soil quality, water availability, slope, topography, and vegetation types.</p>

(Based on Geist and Lambin, 2001).



Factors to consider regarding land-use change and forest conversion

In procuring wood and paper-based products from forest areas that are being legally converted to another land use (e.g., as part of governmental land zoning policies), it is advisable to fully understand that circumstances such as the risk of corruption, illegalities, violations of indigenous people's rights, and other issues may be high.

It is advisable to ensure that those involved in such a change process do it in a way that is transparent, mindful of the needs and perspectives of different local stakeholders, well planned and informed, and with safeguards and measures to remedy negative impacts. Some of the aspects described under Questions 1 and 2, and the tools presented there, may be useful and applicable to these situations.

SELECTED RESOURCES: SFM, LAND-USE CHANGE AND FOREST CONVERSION

See “Guide to the Guides” chapter for more information on each resource.

Procurement requirements

Belgian Federal Government Procurement Policy	of Timber and Wood Products	New Zealand Timber and Wood Products Procurement Policy
Danish Government Procurement Policy for Tropical Forests (under review)	German Government Procurement Policy Green Globes	Public Procurement Policies for Forest Products and their Impacts SFI Procurement Objective
Dutch Government Procurement Criteria for Timber	Japanese Government Procurement Policy	UK Timber Trade Federation Responsible Purchasing Policy
European Community Green Purchasing Policy	LEED	
FLEGT & VPAs French Policy on Public Procurement	Mexican Federal Government Procurement Policy	

Resources to assess requirements

Buying Sustainable Timber – A Guide for Public Purchasers in Europe	Global Forest Registry	Sustainable Forest Finance Toolkit
CPET	Global Timber Tracking Network Good Wood. Good Business Guide	Timber Tracking Technologies Review Timber Retail Coalition
Consumer Goods Forum Guidelines for Pulp, Paper and Packaging	GPN	The Forest Trust
Environmental Paper Network	High Conservation Value Resource Network	Wood for Good
EPAT®	Illegal-logging.info	WWF Certification Assessment Tool (CAT)
FCAG	New Zealand Government Paper Buyers guidance	WWF GFTN
FICAT	Paper Profile	WWF Guide to Buying Paper
Carbon Disclosure Project	PREPS	WWF Paper Scorecard
Forest Governance Learning Group	SmartSource	WWF Tissue Scoring
FPAC: A Buyers’ Guide to Canada’s Sustainable Forest Products (the report)	Standard Practice for Categorizing Wood and Wood-based Products According to their Fiber Sources	