

## PROCESS TO UPDATE THE PAN-EUROPEAN SET OF INDICATORS FOR SUSTAINABLE FOREST MANAGEMENT

# RELEVANT TERMS AND DEFINITIONS USED FOR THE UPDATED PAN-EUROPEAN INDICATORS FOR SUSTAINABLE FOREST MANAGEMENT

3 June 2015

**NOTE:**

This is a “clean version” of the document RELEVANT TERMS AND DEFINITIONS USED FOR THE IMPROVED PAN-EUROPEAN INDICATORS FOR SUSTAINABLE FOREST MANAGEMENT.

A document showing all changes in relation to the original formulation (Vienna 2003) is available on the following link

[https://www.dropbox.com/sh/2vjwmz82yc236k2/AAD\\_JdDfDdH2pZk6v8YA6cY6a?dl=0](https://www.dropbox.com/sh/2vjwmz82yc236k2/AAD_JdDfDdH2pZk6v8YA6cY6a?dl=0)

Folder: FOREST\_EUROPE\_UPI / 4\_UPI\_Final\_Report

File: *3AG\_UPI\_Updated\_Terms\_Definitions\_Changes.docx*



# Content

INTRODUCTION .....	1
TERMS AND DEFINITIONS.....	2
<i>Abiotic</i> .....	2
<i>Access for recreation</i> .....	2
<i>Afforestation (sub-category in “Forest expansion”)</i> .....	2
<i>Age class</i> .....	2
<i>Age class distribution</i> .....	2
<i>Alien or Alien species</i> .....	2
<i>AOT40</i> .....	2
<i>(Apparent) consumption per head</i> .....	2
<i>Area managed for ex situ genetic conservation</i> .....	3
<i>Area managed for in situ gene conservation</i> .....	3
<i>Area managed for seed production</i> .....	3
<i>Area primarily designated or managed for public recreation</i> .....	3
<i>Biological diversity</i> .....	3
<i>Biospheric services (sub-category in “Marketed forest services”)</i> .....	3
<i>Black liquor</i> .....	3
<i>Briquettes</i> .....	3
<i>Broadleaved</i> .....	4
<i>Carbon in above-ground biomass</i> .....	4
<i>Carbon in below-ground biomass</i> .....	4
<i>Carbon in deadwood</i> .....	4
<i>Carbon in litter</i> .....	4
<i>Carbon stock</i> .....	4
<i>Charcoal</i> .....	4
<i>Chips and particles (sub-category of “Wood resources”)</i> .....	5
<i>Combating desertification</i> .....	5
<i>Coniferous</i> .....	5
<i>Conservation of biodiversity</i> .....	5
<i>Coppice sprouting (subcategory in “Regeneration”)</i> .....	5
<i>Critical level</i> .....	5
<i>Critical load</i> .....	5
<i>Critically endangered</i> .....	5
<i>Cultural and spiritual values</i> .....	5
<i>Cultural heritage</i> .....	5
<i>Damage to forest</i> .....	6
<i>Deadwood</i> .....	6
<i>Defoliation</i> .....	6
<i>Defoliation classes</i> .....	6
<i>Desertification</i> .....	6
<i>Development phase – intermediate phase</i> .....	6
<i>Development phase – mature phase</i> .....	7
<i>Development phase – regeneration phase</i> .....	7
<i>Development phase – unspecified</i> .....	7
<i>Diameter class</i> .....	7
<i>Diameter distribution</i> .....	7
<i>Direct wood fibre sources</i> .....	7
<i>Ecological services (subcategory in “Marketed forest services”)</i> .....	7
<i>Education</i> .....	7
<i>Employment in forestry and logging</i> .....	7
<i>Endangered</i> .....	8
<i>Energy from processed wood-based fuels</i> .....	8
<i>Equivalent Connected Area (ECA)</i> .....	8
<i>Equivalent of forest management plan (subcategory in “Management plan or equivalent”)</i> .....	8
<i>Even-aged stand</i> .....	8
<i>Exports</i> .....	8
<i>Extinct in the wild</i> .....	9

<i>Ex-situ conservation</i> .....	9
<i>Factor income</i> .....	9
<i>Fellings (annual)</i> .....	9
<i>For dynamic soil models</i> .....	9
<i>Forest</i> .....	9
<i>Forest available for wood supply</i> .....	10
<i>Forest expansion</i> .....	10
<i>Afforestation (sub-category)</i> .....	10
<i>Natural expansion of forest (sub-category)</i> .....	10
<i>Forest fragmentation</i> .....	10
<i>Forest genetic resources</i> .....	10
<i>Forest governance</i> .....	11
<i>Forest holding</i> .....	11
<i>Forest institutional framework</i> .....	11
<i>Forest land degradation (see land degradation)</i> .....	11
<i>Forest management</i> .....	12
<i>Forest management plan (subcategory in “Management plan or equivalent”)</i> .....	12
<i>Forest ownership</i> .....	12
<i>Forest policy</i> .....	12
<i>Forest sector</i> .....	12
<i>Forest services</i> .....	12
<i>Forest species</i> .....	12
<i>Forest types</i> .....	12
<i>Forested landscapes with cultural &amp; spiritual values</i> .....	12
<i>Forestry and logging (ISIC/NACE 02)</i> .....	13
<i>FSC certification</i> .....	13
<i>Genetic resources</i> .....	13
<i>Government expenditures</i> .....	13
<i>Government revenues</i> .....	13
<i>Gross (annual) increment</i> .....	14
<i>Gross Domestic product</i> .....	14
<i>Gross Value Added</i> .....	14
<i>Growing stock</i> .....	14
<i>Harvested Wood Products</i> .....	14
<i>Imports</i> .....	15
<i>Industrial roundwood removals (sub-category)</i> .....	15
<i>In-situ conservation</i> .....	15
<i>Institutional framework</i> .....	16
<i>International forest management certification</i> .....	16
<i>Introduced species</i> .....	16
<i>Invasive introduced tree species</i> .....	16
<i>ISIC/NACE</i> .....	16
<i>Job characteristics</i> .....	16
<i>Labour Force Survey</i> .....	16
<i>Land</i> .....	17
<i>Land degradation (see Forest land degradation)</i> .....	17
<i>Law (or Act or Code) on forest</i> .....	17
<i>Management plan or equivalent</i> .....	17
<i>Forest management plan</i> .....	17
<i>Equivalent of forest management plan</i> .....	17
<i>Manufacture of paper and paper products (ISIC/NACE 17)</i> .....	17
<i>Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials (ISIC/NACE 16)</i> .....	18
<i>Marketed forest services</i> .....	18
<i>Marketed non-wood goods</i> .....	18
<i>Marketed roundwood</i> .....	19
<i>MCPFE Class as defined by the MCPFE Assessment Guidelines for Protected and Protective Forest and Other Wooded Land in Europe (MCPFE 2002)</i> .....	19
<i>MCPFE Class 1.1: Main Management Objective Biodiversity “No Active Intervention”</i> .....	19
<i>MCPFE Class 1.2: Main Management Objective Biodiversity “Minimum Intervention”</i> .....	19
<i>MCPFE Class 1.3: Main Management Objective Biodiversity “Conservation Through Active Management”</i> .....	19
<i>MCPFE Class 2: Main Management Objective “Protection of Landscapes and Specific Natural</i>	

<i>Elements</i> .....	19
MCPFE Class 3: Main Management Objective “Protective Functions”.....	19
MCPFE Class 1.1 (sub-category in “MCPFE Class”).....	20
MCPFE Class 1.2 (sub-category in “MCPFE Class”).....	20
MCPFE Class 1.3 (sub-category in “MCPFE Class”).....	20
MCPFE Class 2 (sub-category in “MCPFE Class”).....	20
MCPFE Class 3 (sub-category in “MCPFE Class”).....	20
Mean defoliation.....	20
Mixed forest (sub-category in “Forest types” as “Mixed broadleaved and coniferous woodland”).....	20
National forest policy/strategy document or statement.....	20
National forest programme (NFP).....	20
Natural (annual) losses.....	21
Natural expansion of forest (sub-category in “Forest expansion”).....	21
Natural regeneration (sub-category in “Regeneration”).....	21
Naturalness.....	21
Undisturbed by man (forest/other wooded land).....	21
Semi-natural forest/other wooded land.....	21
Plantation.....	21
Net (annual) increment.....	21
Net entrepreneurial income.....	21
Net revenue.....	21
Non-wood goods (NWG).....	21
Occupational accident.....	22
Occupational disease.....	22
Operational expenditure.....	22
Other land.....	22
Other land with tree cover (sub-category).....	22
Other marketed services (sub-category in “Marketed forest services”).....	23
Other sites with cultural & spiritual values.....	23
Other wooded land.....	23
Payment for Ecosystem Services (PES).....	23
PEFC certification.....	23
Plantation (sub-category in “Naturalness”).....	23
Planted Forest (sub-category in “Regeneration”).....	23
Policies supporting sustainable forest management.....	23
Post consumer recovered wood.....	23
Predominantly broadleaved forest (sub-category in “Forest types” as “Predominantly broadleaved woodland”).....	24
Predominantly coniferous forest (sub-category in “Forest types” as “Predominantly coniferous woodland”).....	24
Primarily damaged by fire.....	24
Primarily damaged by insects and disease.....	24
Primarily damaged by storm, wind, snow or other identifiable abiotic factors.....	24
Primarily damaged by wildlife and grazing.....	24
Primarily human induced.....	24
Private ownership.....	24
Protected forest.....	24
Protection.....	24
Protective forest.....	24
Public expenditure.....	25
Public ownership.....	25
Publicly owned forest.....	25
Recovered paper.....	25
Recreation.....	25
Recreational forest.....	25
Reference period.....	25
Reforestation.....	25
Regeneration.....	26
Natural regeneration.....	26
Regeneration by planting and/or seeding.....	26
Coppice sprouting.....	26
Planted forest.....	26
Regeneration by planting and/or seeding (sub-category in “Regeneration”).....	26

<i>Renewable energy</i> .....	26
<i>Roundwood</i> .....	26
<i>Seed collection stand</i> .....	27
<i>Semi-natural forest/other wooded land (sub-category in "Naturalness")</i> .....	27
<i>Social services (sub-category in "Marketed forest services")</i> .....	27
<i>Soil carbon</i> .....	27
<i>Soil nitrification and acidity</i> .....	27
<i>Stand</i> .....	27
<i>Subnational forest policy/strategy documents or statements</i> .....	27
<i>Total atmospheric deposition on to the forest</i> .....	27
<i>Total (national) Primary Energy Supply</i> .....	27
<i>Total wood removals</i> .....	27
<i>Transfer payments</i> .....	27
<i>Tree</i> .....	28
<i>Trees with cultural &amp; spiritual values</i> .....	28
<i>Undisturbed by man (forest/other wooded land) (sub-category in "Naturalness")</i> .....	28
<i>Uneven-aged stand</i> .....	28
<i>Unknown ownership</i> .....	28
<i>Unspecified / Mixed damage</i> .....	28
<i>Visit</i> .....	28
<i>Vulnerable</i> .....	29
<i>Wood consumption</i> .....	29
<i>Wood pellets</i> .....	29
<i>Wood residues (sub-category in "Wood resources")</i> .....	29
<i>Wood resources</i> .....	29
<i>Wood fuel (including wood for charcoal)</i> .....	29
<i>Chips and particles</i> .....	29
<i>Wood residues</i> .....	29
<i>Woodfuel removals (sub-category)</i> .....	29

REFERENCES .....	31
------------------	----

## INTRODUCTION

This document presents the relevant terms and definitions used for the updated pan-European indicators for Sustainable Forest Management.

This document includes the **updated text** of the document “RELEVANT DEFINITIONS USED FOR THE IMPROVED PAN-EUROPEAN INDICATORS FOR SUSTAINABLE FOREST MANAGEMENT (Vienna 2003)”.

It is built with the new and modified terms and definitions included in the Annexes of Terms and definitions of the two questionnaires for SoEF 2015:

- Joint FOREST EUROPE/UNECE/FAO Questionnaire on Pan-European Indicators for Sustainable Forest Management
- Reporting on the pan-European Qualitative Indicators for Sustainable Forest Management and National Implementation of Commitments of the Ministerial Conference on the Protection of Forests in Europe

And it **also includes new** terms and definitions related with the recommendations on modifications of the Advisory Group as they are gathered on the document “BACKGROUND INFORMATION FOR THE UPDATED PAN-EUROPEAN INDICATORS FOR SUSTAINABLE FOREST MANAGEMENT”.

## TERMS AND DEFINITIONS

### **Abiotic**

- 1) Not biotic.
- 2) Nonliving, e.g.: **abiotic damage** = damage caused by non-living agents (snow, storms, etc.) (EFI Forest Glossary, 2001).

### **Access for recreation**

The area in category “Area with access available to the public for recreational purposes” comprises area with a legal right of access, as well as areas with no formal legal right, but with customary rights or other de-facto forms of access available to the public. Areas to be excluded are those where access is legally forbidden, and areas with no formal legal right that are also not accessible in practice.

### **Afforestation (sub-category in “Forest expansion”)**

### **Age class**

Any interval into which the age range of trees, forests, stands, or forest types is divided for classification, e.g. 1, 5, 10 or 20 year age classes, as used in inventory or management (IUFRO 2000).

### **Age class distribution**

The area and/or proportionate representation of different age classes in a forest (IUFRO 2000).

### **Alien or Alien species**

Alien or alien species refers to a species, subspecies or lower taxon, introduced outside its normal past or present normal distribution; includes any part, gametes, seeds, eggs, or propagules of such species that might survive and subsequently reproduce. (UNEP/CBD/COP/6/18/Add.1/Rev.1 26 March 2002).

### **AOT40**

The accumulated amount of ozone over the threshold value of concentration 40 ppb. It is calculated over time, namely the relevant growing season for the vegetation concerned, and for daytime only. The corresponding unit are ppb·hours (abbreviated to ppb·h).

### **(Apparent) consumption per head**

(Apparent) consumption is calculated by adding imports to a country’s production and subtracting exports. (Apparent) consumption volumes are not adjusted for levels of stocks. It is a proxy for “demand” and “use”. Primary processed products (i.e. sawnwood, wood based panels, pulp, paper and board) as well as wood used in the rough and energy wood should be included. Secondary process products (e.g. furniture, paper products, joinery) should not be included to avoid double counting and because of problems with conversion factors.

(Apparent) consumption per head of wood and products derived from wood is calculated according to the formula:

$$\text{AC per head} = [\text{AC}(\text{SW}) * \text{RWEc} + \text{AC}(\text{WBP}) * \text{RWEc} + \text{AC}(\text{Paper and board}) * \text{RWEc} + \text{AC}(\text{Fuelwood}) + \text{R} (\text{Other Industrial Roundwood})] / \text{Total population (in corresponding year)}$$

Where:

AC (Apparent consumption) = production + imports – exports

R = Removal

SW = Sawnwood

WBP = Wood-based Panels

RWEc = roundwood equivalent coefficient

The default values of the RWEc are for: SW = 1.89 RWE / m<sup>3</sup>, WBP = 1.64 RWE / m<sup>3</sup>, Paper and board = 3.60 RWE / mt

The (apparent) consumption is expressed in m<sup>3</sup> roundwood equivalent. A m<sup>3</sup> roundwood equivalent

expresses the amount of roundwood needed to produce a m<sup>3</sup> of a certain wood product. By expressing consumption in m<sup>3</sup> roundwood equivalents, volumes of products with different properties such as sawnwood and panels or different measurement units such as m<sup>3</sup> (sawnwood) and (metric) tonne (mt) (paper and board) can be summed together. In addition, by expressing the (apparent) consumption in m<sup>3</sup> roundwood equivalents the relationship between the volume of roundwood consumed and the removals from the forest can be expressed.

#### ***Area managed for ex situ genetic conservation***

Dynamic conservation units of forest trees (*ex situ*) that meet the pan-European minimum requirements for these units. Furthermore, static *ex situ* collections and long-term provenance trials can be reported to this component (short-term trials that will be harvested for biomass studies, for example, should be excluded). The data on the *ex situ* conservation units is available from the EUFGIS database (<http://portal.eufgis.org>). The data on *ex situ* collections and provenance trials is typically obtained from national databases.

#### ***Area managed for in situ gene conservation***

Dynamic conservation units of forest trees (*in situ*) that meet the pan-European minimum requirements for these units. The data for this component is obtained from the EUFGIS database (<http://portal.eufgis.org>).

#### ***Area managed for seed production***

Seed orchards and seed stands that produce selected, qualified or tested forest reproductive material. Stands producing source identified material should not be reported as these stands are not specifically managed for seed production. The data for this component is typically obtained from a national register of basic material.

#### ***Area primarily designated or managed for public recreation***

Forest area designated or managed for public recreation.

##### *Explanatory notes:*

1. Includes forest areas where recreational hunting or collection of (edible) non-timber forest products are allowed, but specifically excludes areas where these are collected for sale or subsistence.
2. Includes forest areas designated in management plans, or be provided for in national legislation that allows free access of the public to land for recreation, on public, private or communal lands.

(Source: FRA 2015, Public recreation, Working paper 180, page 14)

#### ***Biological diversity.***

The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complex of which they are part; this includes diversity within species, among species and ecosystems.

(Source: FRA 2015, Working paper 180, pag 26)

#### ***Biospheric services (sub-category in “Marketed forest services”)***

##### ***Black liquor***

Alkaline spent liquor obtained from digesters in the production of sulphate or soda pulp during the process of paper production, in which the energy content is mainly originating from the content of lignin removed from the wood in the pulping process.

(Source: UNECE/FAO Joint Wood Energy Enquiry 2011, Taken from FAO Unified Bioenergy Terminology. [http://www.unece.org/fileadmin/DAM/timber/wood\\_energy/jwee-2011-eng.xlsx](http://www.unece.org/fileadmin/DAM/timber/wood_energy/jwee-2011-eng.xlsx) and [http://www.unece.org/fileadmin/DAM/timber/wood\\_energy/JWEE2011manual.pdf](http://www.unece.org/fileadmin/DAM/timber/wood_energy/JWEE2011manual.pdf)).

##### ***Briquettes***

Densified biofuel made with or without pressing aids in the form of cubiform or cylindrical units, produced by compressing pulverized biomass. The raw material for briquettes can be woody biomass (...) are usually manufactured in a piston press. The total moisture of the biofuel briquette is usually less than 15 % of mass. (The JWEE 2011 assumes water content of 8 %).

(Source: UNECE/FAO Joint Wood Energy Enquiry 2011, Taken from FAO Unified Bioenergy Terminology. [http://www.unece.org/fileadmin/DAM/timber/wood\\_energy/jwee-2011-eng.xlsx](http://www.unece.org/fileadmin/DAM/timber/wood_energy/jwee-2011-eng.xlsx) and [http://www.unece.org/fileadmin/DAM/timber/wood\\_energy/JWEE2011manual.pdf](http://www.unece.org/fileadmin/DAM/timber/wood_energy/JWEE2011manual.pdf))

### **Broadleaved**

All trees classified botanically as Angiospermae. They are sometimes referred to as “non-coniferous” or “hardwoods”.

(Source: TBFRA 2000)

### **Carbon in above-ground biomass**

Carbon in all living biomass above the soil, including stem, stump, branches, bark, seeds, and foliage.

#### *Explanatory note*

1. In cases where forest understory is a relatively small component of the aboveground biomass carbon pool, it is acceptable to exclude it, provided this is done in a consistent manner throughout the time series.

(Source: FRA 2015, Working paper 180, page 9)

### **Carbon in below-ground biomass**

Carbon in all biomass of live roots. Fine roots of less than 2 mm diameter are excluded, because these often cannot be distinguished empirically from soil organic matter or litter.

#### *Explanatory notes:*

1. Includes the below-ground part of the stump.
2. The country may use another threshold value than 2 mm for fine roots, but in such a case the threshold value used must be documented.

(Source: FRA 2015, Working paper 180, page 10)

### **Carbon in deadwood**

Carbon in all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.

#### *Explanatory note:*

1. The country may use another threshold value than 10 cm, but in such a case the threshold value used must be documented.

(Source: FRA 2015, Working paper 180, page 10)

### **Carbon in litter**

Carbon in all non-living biomass with a diameter less than the minimum diameter for dead wood (e.g. 10 cm), lying dead in various states of decomposition above the mineral or organic soil. Includes foliage litter.

#### *Explanatory note:*

1. Fine roots of less than 2 mm (or other value chosen by the country as diameter limit for below-ground biomass) above the mineral or organic soil are included in the litter where they cannot be distinguished from it empirically.

(Source: FRA 2015, Working paper 180, page 10)

### **Carbon stock**

The absolute quantity of carbon held within a pool at a specific time (IPCC 2001).

### **Charcoal**

Wood carbonized by partial combustion or the application of heat from external sources. It includes charcoal used as a fuel or for other uses, e.g. as a reduction agent in metallurgy or as an absorption or filtration medium. It is reported in metric tonnes.”

(Source: UNECE/FAO/EUROSTAT/ITTO Joint Forest Sector Questionnaire. <http://timber.unece.org/fileadmin/DAM/other/definitions-e-2008a.doc>)

### ***Chips and particles (sub-category of “Wood resources”)***

#### ***Combating desertification***

For the purposes of the UNCCD "combating desertification" includes activities which are part of the integrated development of land in arid, semi-arid and dry sub-humid areas for sustainable development which are aimed at:

- (i) prevention and/or reduction of land degradation;
- (ii) rehabilitation of partly degraded land; and
- (iii) reclamation of desertified land;

(Source: Article 1.b of the Final text of the United Nations Convention to Combat Desertification – UNCCD-)

#### ***Coniferous***

All trees classified botanically as Gymnospermae. They are sometimes referred to as “softwoods”.

(Source: TBFRA 2000)

#### ***Conservation of biodiversity.***

Forest area designed primarily for conservation of biological diversity. Includes but is not limited to areas designated for biodiversity conservation within the protected areas.

(Source: FRA 2015, Working paper 180, pag 15)

### ***Coppice sprouting (subcategory in “Regeneration”)***

#### ***Critical level***

Concentrations of pollutants in the atmosphere above which direct adverse effects on receptors, such as human beings, plants, ecosystems or materials, may occur according to present knowledge. (<http://www.unece.org/env/lrtap/WorkingGroups/wge/definitions.html>).

#### ***Critical load***

The quantitative estimate of an exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge.

(Nilsson and Grennfelt, 1988; <http://www.unece.org/env/lrtap/WorkingGroups/wge/definitions.html>).

Note: Simple Mass Balance (SMB) model as the standard model for calculating critical loads for terrestrial ecosystems under the LRTAP Convention (Sverdrup et al. 1990, Sverdrup and De Vries 1994). The SMB model is a single-layer model (ICP Modelling and Mapping part V “Mapping Critical Loads”; [www.icpmapping.org](http://www.icpmapping.org)).

#### ***Critically endangered***

A taxon is critically endangered when it is facing an extremely high risk of extinction in the wild in the immediate future, as defined by any of the criteria A to E of IUCN (1998) on page I and li (IUCN 1998).

#### ***Cultural and spiritual values***

This category includes “cultural heritage”, “forested landscapes”, “trees” and “other sites” with recognized cultural and spiritual values. Cultural heritage sites can be either “of the forest”, and hence historically associated with its management, or “in the forest”, with no significant historical connection to the surrounding forest. Forested landscapes with cultural & spiritual values may also be termed ‘cultural landscapes’ where forest or other wooded land is the primary component. Trees with cultural and spiritual values include veteran and heritage trees. Other sites include contemporary artistic features, woodland burial sites, and sites of ceremonies and performances.

(Source: SoEF 2011)

#### ***Cultural heritage***

This category includes all recognized archaeological and historical sites and features. Archaeological sites and features may include those associated with human artefacts, usually as discovered by excavation, surveys, or through disturbance during forest operations. Historical sites and features may include the remains of old buildings and monuments, and also locations of historical importance (e.g. battle sites) even if no remains are present. There is no commonly agreed distinction between

'archaeological' and 'historical' and for this reason the two types of site are combined in the reporting form.

Cultural heritage sites can be considered in two categories: sites "of the forest" and sites "in the forest". Sites "of the forest" include monuments, buildings or other historic artefacts associated with the past management of the forest (or its constituents). In the reporting form they are referred to as sites "associated with historic forest management." Examples may include: boundary banks and dykes, charcoal-burning platforms, saw pits, some bloomery and blast furnace sites, tar production sites, kilns, water mills and lades, features associated with game management and for transporting forest products. The forest was an essential component in their use, and they would not have been created if the forest had not existed. The kinds of historic forest management that these sites were associated with may include ancient wood pastures, historic planted forests, and stands of old industrial or pre-industrial coppice, coppice with standards, pollards, shredded or other 'working trees' for the production of acorns, fodder, tar, resins and other products. Evidence of such management may be found in "organically evolved landscapes" (see definition of "Forested landscapes with cultural & spiritual values").

Sites "in the forest" include all other archaeological and historical sites, where the forest itself is not an important aspect of its heritage value. Often, such sites may predate the forest, which has subsequently grown up around it. Examples include: ancient settlements, fortifications, burial mounds, earthworks, field systems and other evidence of historic farming practices, standing stones, and military, funerary, industrial and domestic monuments, churchyards, crosses and memorials, battle sites, historic places of assembly or ceremony, castles, bridges, roads and transport structures.

(Source: SoEF 2011)

### **Damage to forest**

Disturbance to the forest which may be caused by biotic or abiotic agents, resulting in death, or a significant loss of vitality, productivity or value of trees and other components of the forest ecosystem (Source: MCPFE 2003, TBFRA 2000).

### **Deadwood**

Non-living woody biomass either standing or lying on the ground, exceeding specified thresholds.

*Explanatory note:*

1. Excludes woody biomass contained in the litter, stumps or dead roots.

### **Defoliation**

The crown condition is assessed in terms of defoliation. This parameter describes the lack of foliage for each sample tree (UNECE/EC, 2002) in comparison with a reference standard/tree. The extent of visually assessed defoliation of trees is estimated according to the method, as developed by the International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests (ICP Forests, 2010) of the Convention on Long-range Transboundary Air Pollution

### **Defoliation classes**

Class	Needle/Leaf loss	Degree of defoliation
0	up to and including 10%	none
1	10 to 25 %	slight (warning stage)
2	25 to 60%	moderate
3	>60 to <100%	severe
4	100%	dead

### **Desertification**

For the purposes of the UNCCD "desertification" means land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities.

(Source: Article 1.a of the Final text of the United Nations Convention to Combat Desertification – UNCCD-)

### **Development phase – intermediate phase**

Even-aged stand that is beyond the "regeneration phase" and has not reached the "mature phase" yet.

### ***Development phase – mature phase***

Even-aged stand with a growing stock mature enough for immediate final felling and of an age that is at least 90% of the recommended rotation length on the site.

*Explanatory notes:*

1. Includes stands classified as over-mature.
2. Underproductive forests (i.e. commercial forest lands not meeting minimum stocking standards) where the recommended operation is immediate regeneration should be classified as mature only if the growing stock is mature for final felling with respect to age and/or mean diameter. Otherwise underproductive forests should be classified as regeneration or intermediate phase.

### ***Development phase – regeneration phase***

Even-aged stand where the mean diameter of the growing stock is below industrial roundwood size and the age of which lower than 20% of the recommended rotation length on the site.

*Explanatory note:*

1. Includes temporarily unstocked forest areas

### ***Development phase – unspecified***

Stands, that are classified as even-aged, for which the concept of development classes is irrelevant, e.g. energy or Christmas tree plantations.

### ***Diameter class***

Any of the intervals into which the range of stem diameters of trees or logs is divided for classification and use. Also the trees or logs falling into such an interval (IUFRO 2000).

### ***Diameter distribution***

The manner in which the trees in a stand are distributed over diameter classes (IUFRO 2000).

### ***Direct wood fibre sources***

(...) any wood fibre that enters the energy production without any further treatment or conversion. It comprises removals from forests and outside. This comprises also any wood (...) from "Other Wooded Land" (OWL) and "Trees Outside Forests" (...). It comprises any woody biomass from any land use and covers amongst others infrastructure maintenance (roads, railway, power transmission lines, pipelines, etc.), hedgerows, agricultural residues from fruit tree orchards, wood from gardens and parks, etc. It comprises any form of woody biomass, such as green chips, roundwood or split, stacked or loose from any part of the trees such as roots, stemwood and branches, fruits and shells.

(Source: [http://www.unece.org/fileadmin/DAM/timber/wood\\_energy/jwee-2011-eng.xlsx](http://www.unece.org/fileadmin/DAM/timber/wood_energy/jwee-2011-eng.xlsx) and [http://www.unece.org/fileadmin/DAM/timber/wood\\_energy/JWEE2011manual.pdf](http://www.unece.org/fileadmin/DAM/timber/wood_energy/JWEE2011manual.pdf) )

### ***Ecological services (subcategory in "Marketed forest services")***

#### ***Education***

The main levels of the International Standard Classification of Education (Source: ISCED 1997), applied from 1998 data onwards, are:

- ISCED 0 – pre-primary education
- ISCED 1 – primary education or first stage of basic education
- ISCED 2 – lower secondary education or second stage of basic education
- ISCED 3 - (upper) secondary education
- ISCED 4 – post-secondary non tertiary education
- ISCED 5 – first stage of tertiary education (not leading directly to an advanced research qualification)
- ISCED 6 – second stage of tertiary education (leading to an advanced research qualification)

For further information visit [http://www.unescobkk.org/fileadmin/user\\_upload/aims/ISCED\\_A.pdf](http://www.unescobkk.org/fileadmin/user_upload/aims/ISCED_A.pdf)

#### ***Employment in forestry and logging***

Employment activities related to production of goods derived from forests. This category corresponds to the ISIC/NACE Rev.4 activity A02 (Forestry and logging)

(Source FRA2015).

### **Endangered**

A taxon is endangered when it is not critically endangered but is facing a very high risk of extinction in the wild in the near future, as defined by any of the criteria A to E of IUCN (1998) on page II

(Source: MCPFE 2003, from IUCN 1998).

### **Energy from processed wood-based fuels**

Secondary (processed) biofuels in the form of solids (e. g. charcoal), liquids (e. g. alcohol, vegetable oil), or gases (e. g. biogas as a mixture of methane and carbon dioxide), can be used for a wider range of applications with higher efficiency rates on average, including transport and high-temperature industrial processes.

(Source: UNECE/FAO Joint Wood Energy Enquiry 2011, Taken from FAO Unified Bioenergy Terminology. [http://www.unece.org/fileadmin/DAM/timber/wood\\_energy/jwee-2011-eng.xlsx](http://www.unece.org/fileadmin/DAM/timber/wood_energy/jwee-2011-eng.xlsx) and [http://www.unece.org/fileadmin/DAM/timber/wood\\_energy/JWEE2011manual.pdf](http://www.unece.org/fileadmin/DAM/timber/wood_energy/JWEE2011manual.pdf))

### **Equivalent Connected Area (ECA)**

ECA is defined as the size of a single patch (maximally connected) that would provide the same value of the Probability of Connectivity index based on intra and inter-patch connectivity, than the actual habitat pattern. ECA is calculated per 50 km fixed area cell.

*Data input to calculate ECA:*

- The multi-temporal raster layers of the Pan-European harmonized forest maps (FMap 1990, FMap2000, FMap2006) automatically derived from Landsat ETM+ (30m re-sampled to 25m), scene by scene processing and mosaicking. Geometric accuracy (RMS 95% error less than 25m). Thematic definition and accuracy: forest areas are occupied by forest and woodlands with a vegetation pattern composed of native or exotic coniferous and/or broadleaved trees. Forest is defined as in the CLC nomenclature (Pekkarinen et al, 2009 doi:10.1016/j.isprsjprs.2008.09.004); it is a forest cover class rather than a forest use class. Forest excludes woodlands with trees smaller than 5m height, forest nurseries and regeneration with canopy closure less than 30%, burnt areas and forest roads. Transitional woodlands may be included due to high tree density. Forest layers were validated against the FAO definition using NFIs plot data.
- Analysis unit: 50 km grid (INSPIRE standards)
- NUTS 2/3 vector layer for overlay.

**NOTE:**

Method: The method uses a network-based habitat availability index which combines landscape graph theory, a probabilistic connection model and the habitat availability concept. It is based on topology (inter patch distances) and patch attributes (area) for forest dwelling species with a specific dispersal ability.

Each link between every two patches is characterized by a probability of dispersal, obtained as a function of distance (a decreasing exponential function of the Euclidean (straight-line) edge-to-edge distance, matching to a probability of 0.5 for the average dispersal distance at focus. Dispersal distances are 1, 5, 10 and 25 km. The matrix (non-forest landscape) is first treated as homogeneous. Precisely, the method used the Equivalent Connected Area (ECA) index, which is a modification of the Probability of Connectivity index (Saura, Estreguil et al, 2010 (accepted) based on an adapted version of the software Conefor Sensinode (Saura and Torne, 2009 at <http://www.conefor.udl.es>).

In addition to the state in connectivity at one point in time, changes in connectivity are also quantified and directly compared with the temporal changes in forest habitat area. The method was already applied at broader scale (25ha MMU) for European forests in the period 1990-2000 (Saura, Estreguil et al., 2010). More information on the methodology can be found at [www.forest.jrc.ec.europa.eu/select\\_forest\\_pattern](http://www.forest.jrc.ec.europa.eu/select_forest_pattern) (see EUR23841, Estreguil and Mouton, 2009)

### **Equivalent of forest management plan (subcategory in “Management plan or equivalent”)**

#### **Even-aged stand**

A stand, in which no or relatively small age differences exist among individual trees within it (usually less than 20% of rotation length), and defining average stand age is meaningful.

(Source: IUFRO 2000, modified)

#### **Exports**

Exports of wood and products derived from wood are calculated according to the following formula:

$X = X(RW) + X(SW) * RWEc + X(WBP) * RWEc + X(Pulp) * RWEc + X(Paper) * RWEc$

Where:

- X = Exports
- RW = Roundwood (industrial and fuel)
- SW = Sawnwood
- WBP = Wood-based Panels
- RWEc = roundwood equivalent coefficient

The default values of the RWEc are for: SW = 1.89 RWE / m<sup>3</sup>, WBP = 1.64 RWE / m<sup>3</sup>, Pulp = 3.86 RWE / mt, Paper = 3.60 RWE / mt

### ***Extinct in the wild***

A taxon is extinct in the wild when it is known only to survive in cultivation, in captivity or as a naturalised population (or populations) well outside the past range. A taxon is presumed extinct in the wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form (Source: MCPFE 2003, from IUCN 1998).

### ***Ex-situ conservation***

The conservation of components of biological diversity outside their natural habitats (CBD 1992).

### ***Factor income***

Factor income measures the remuneration of all factors of production (land, capital, labour) and represents all the value generated by a unit engaged in a production activity. It can be derived from Gross Value Added (GVA) by deducting fixed capital consumption (depreciation) to get net value added, and then adjusting from basic prices to factor cost by subtracting any taxes on production and adding any subsidies on production

### ***Fellings (annual)***

Average standing volume of all trees, living or dead, measured overbark to minimum diameters as defined for "Growing stock" that are felled during the given reference period, including the volume of trees or parts of trees that are not removed from the forest, other wooded land or other felling site. Includes: silvicultural and pre-commercial thinnings and cleanings left in the forest; and natural losses that are recovered (harvested).

(Source: MCPFE 2003, from TBFRA 2000, modified)

### ***For dynamic soil models***

Critical loads (see indicator 2.1) do not provide any information on time scales. Dynamic models are needed to assess time delays of recovery in regions where critical loads cease being exceeded and time delays of damage in regions where critical loads continue to be exceeded. The VSD and the SAFE Model are defined in the ICP Modelling and Mapping Manual ([www.icpmapping.org](http://www.icpmapping.org)). Either of these to be calculated for ICP Forests Level II plots.

### ***Forest***

Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use.

*Explanatory notes:*

1. Forest is determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 meters.
2. Includes areas with young trees that have not yet reached but which are expected to reach a canopy cover of at least 10 percent and tree height of 5 meters or more. It also includes areas that are temporarily unstocked due to clear-cutting as part of a forest management practice or natural disasters, and which are expected to be regenerated within 5 years. Local conditions may, in exceptional cases, justify that a longer time frame is used.
3. Includes forest roads, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific environmental, scientific, historical, cultural or spiritual interest.
4. Includes windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 hectares and width of more than 20 meters.
5. Includes abandoned shifting cultivation land with a regeneration of trees that have, or are expected to reach, a canopy cover of at least 10 percent and tree height of at least 5 meters.

6. Includes areas with mangroves in tidal zones, regardless whether this area is classified as land area or not.
  7. Includes rubberwood, cork oak and Christmas tree plantations.
  8. Includes areas with bamboo and palms provided that land use, height and canopy cover criteria are met.
  9. Excludes tree stands in agricultural production systems, such as fruit tree plantations, oil palm plantations, olive orchards and agroforestry systems when crops are grown under tree cover. Note: Some agroforestry systems such as the “Taungya” system where crops are grown only during the first years of the forest rotation should be classified as forest.
- (Source: FRA 2015, Working paper 180, page 3)

### ***Forest available for wood supply***

Forests where any environmental, social or economic restrictions do not have a significant impact on the current or potential supply of wood. These restrictions can be established by legal rules, managerial/owner’s decisions or because of other reasons.

#### *Explanatory notes*

- Environmental restrictions should consider: protected areas, protected habitats or species, and also those protective forests meeting the above requirements. Age or diameter class restriction should not be taken into account (except in the case of protected ancient forest).
- Social restrictions include restrictions to protect aesthetic, historical, cultural, spiritual, or recreational values as well as areas where the owner has made the decision to cease wood harvesting in order to focus on other goods and services (e.g leisure, landscape, aesthetic value).
- The economic restrictions are considered as those affecting the economic value of wood utilization (profitability). These includes: accessibility (such as distance to nearest road), slope and soil condition. Short-term market fluctuations should not be considered.

(Source: COST FP1001)

[Note: With regard to the international definitions and the results obtained in a European context, a reference definition of FAWS including details on restriction classes as well as a number of recommendations for their assessment was proposed within the COST FP1001 framework]

### ***Forest expansion***

Expansion of forest on land that, until then, was not defined as forest.

(Source: FRA 2015, Working paper 180, page 5).

#### ***Afforestation (sub-category)***

Establishment of forest through planting and/or deliberate seeding on land that, until then, was not classified as forest.

#### *Explanatory note:*

1. Implies a transformation of land use from non-forest to forest.

(Source: FRA 2015, Working paper 180, page 5)

#### ***Natural expansion of forest (sub-category)***

Expansion of forest through natural succession on land that, until then, was under another land use (e.g. forest succession on land previously used for agriculture).

#### *Explanatory note:*

1. Implies a transformation of land use from non-forest to forest.

(Source: FRA 2015, Working paper 180, page 5)

### ***Forest fragmentation***

Forest fragmentation refers to any process that results in the conversion of formerly continuous forest into patches of forest separated by non-forested lands.

(Source: Convention on Biological Diversity. <https://www.cbd.int/forest/definitions.shtml>)

### ***Forest genetic resources***

Forest genetic resources (FGR) refers to the heritable materials maintained within and among tree and other woody plant species that are of actual or potential economic, environmental, scientific or societal value (The State of the World’s Forest Genetic Resources, FAO 2014).

### **Forest governance**

Comprises processes, and institutions (formal and informal) through which government agencies, citizens and other groups articulate their interests, exercise their legal rights, meet their obligations, and mediate their differences. It is geared to the management of the resources of the sector to sustain and improve the welfare and quality of life for those whose livelihood depends on the sector. (IUFRO?)

The term is widely associated with principles such transparency, participation and accountability. In the context of international development, the notion of good governance is commonly seen as critical foundation for achieving positive social, environmental and economic outcomes (Davis et al. 2013).

Forest governance can be described as the *modus operandi* by which officials and institutions acquire and exercise authority in the management of forest resources. Good forest governance is characterized by predictable, open and informed policymaking based on transparent processes; a bureaucracy imbued with a professional ethos; an executive arm of government accountable for its actions; and a strong civil society participating in decision related to the sector (FAO and ITTO 2009, Forest governance and climate-change mitigation).

Forest governance encompasses decision-making processes and institutions at local, national, regional and global levels, such as:

- Who decides what about forests
- How they make decisions
- How they implement and enforce policies, laws and rules
- How they are held accountable

Forest governance is important to local communities because it directly affects their livelihoods. Forest governance is important to regional and international communities because of the role of forests in carbon and water cycles. However, many countries manage forests mainly as state resources, granting rights to exploit them to private entities (European Forest Institute 's EU FLEGT Facility 2014)

Van der Zouwen et al. (in Kuindersma et al., 2006) defined governance as follows:

Governance is a way of execution of policies which is focused on cooperation, whereby the representatives of the government, market and civil society participate in mixed public and private networks. Apart from referring to a new form of steering the government, the term also indicates an increasing interaction between government, market and civil society.

Governance is the whole of public as well as private interactions that are initiated to solve societal problems and to create societal opportunities. It includes the formulation and application of principles guiding those interactions and care for institutions that enable them". This description of governance is given by Kooiman in Bavinck et al. (2005)

### **Forest holding**

One or more parcels of forest and other wooded land which constitute a single unit from the point of view of management or utilization. For State-owned forest and other wooded land a holding may be defined as the area forming a major management unit administered by a senior official, e.g. a Regional Forestry Officer. For forest and other wooded land that is owned publicly, other than by the State, or owned by large-scale forest owners, e.g. forest industries, a holding may constitute a number of separated properties which are, however, managed according to one corporate strategy. Under any category of ownership, other than State-owned, one holding may be the property of one or several owners.

(Source: TBFRA 2000, definition as published in SoEF 2007).

### **Forest institutional framework**

It refers mainly to the organizational set-up of forest policy in the country. It further comprises formal coordinating mechanisms between these (including e.g. national forest programme process)

### **Forest land degradation (see land degradation)**

In accordance with the definition of land degradation as established in the text (article 1) of the UNCCD, "forest land degradation" can be understood as reduction or loss of the biological or economic productivity and complexity of forest and other wooded lands resulting from land use or from a process or combination of processes, including processes arising from human activities and habitation patterns such as:

- (1) soil erosion caused by wind and/or water;
- (2) deterioration of the physical, chemical and biological or economic properties of soil and
- (3) long term loss of natural vegetation.

### **Forest management**

The processes of planning and implementing practices for the stewardship and use of forests and other wooded land aimed at achieving specific environmental, economic, social and /or cultural objectives. It includes management at all scales such as normative, strategic, tactical and operational level management.

### **Forest management plan (subcategory in “Management plan or equivalent”)**

### **Forest ownership**

Generally refers to the legal right to freely and exclusively use, control, transfer, or otherwise benefit from a forest. Ownership can be acquired through transfers such as sales, donations, and inheritance.

*Explanatory note:*

1. For this reporting table, forest ownership refers to the ownership of the trees growing on land classified as forest, regardless of whether or not the ownership of these trees coincides with the ownership of the land itself.

(Source: FRA 2015, Working paper 180, page 22)

### **Forest policy**

A set of orientations and principles of actions adopted by public authorities in harmony with national socio-economic and environmental policies in a given country to guide future decisions in relation to the management, use and conservation of forest and tree resources for the benefit of the society

(Source: FRA 2015).

### **Forest sector**

Includes the following ISIC NACE categories (02, 16, 17)

- ISIC/NACE 02.0 (Forestry, logging and related services)
- ISIC/NACE 16 ff (Manufacture of wood and articles in wood)
- ISIC/NACE 17 ff (Manufacture of paper and paper products)

### **Forest services**

Forest services comprise:

- Protection (against soil erosion by air or water, avalanches, mud and rocks slides, flooding, air pollution, noise, etc.)
- Social and economic values (e.g. hunting and fishing, other leisure activities, including recreation, sport and tourism)
- Aesthetic, cultural, historical, spiritual and scientific values (including landscape and amenity)

(FRA 2000)

### **Forest species**

A forest species is a species that is dependent on a forest for part or all of its day to day living requirements, or for its reproductive requirements. Therefore, an animal species may be considered a forest species even if it does not live most of its life in a forest (Source: MCPFE 2003, from AD HOC Technical Expert Group on Forest Biological Diversity, convened by the Secretariat of the CBD to prepare a report for SBSTTA-7, 2001).

### **Forest types**

Forest types are classified as follows, based on EUNIS Top Level and TBFA 2000:

- Predominantly broadleaved woodland: Forest on which more than 75 percent of the tree crown cover consists of broadleaved species
- Predominantly coniferous woodland: Forest on which more than 75 percent of the tree crown cover consists of coniferous species
- Mixed broadleaved and coniferous woodland: Forest on which neither coniferous, nor broadleaved species account for more than 75 percent of the tree crown cover.

(Source: SoEF 2003, modified)

### **Forested landscapes with cultural & spiritual values**

Forested landscapes with cultural and spiritual values may also be termed ‘cultural landscapes’ where forest or other wooded land is the primary component. The term ‘cultural landscape’ embraces a

diversity of manifestations of the interaction between humankind and its natural environment. Such landscapes fall into three main types:

a) Landscape designed and created intentionally by humans, often for aesthetic reasons, including historic and contemporary designed forested landscapes;

b) Organically evolved landscape, either 'relict' (or fossil), in which an evolutionary process came to an end at some point in the past, or 'continuing', which retains an active social role in contemporary society closely associated with the traditional way of life, and in which the evolutionary process is still in progress;

c) Associative cultural landscape, which is recognized primarily for its religious, artistic or cultural associations with the natural element rather than any material cultural evidence (Source: UNESCO 2008. Operational Guidelines for the Implementation of the World Heritage Convention, Annex 3).

All three types may be recognized for their contemporary aesthetic, amenity or recreational values. This category includes sites with geological and other non-biological natural elements such as mountains or waterfalls of recognized cultural and spiritual value. All the area reported under MCPFE Protected Forest Area Class 2 (Protection of Landscapes and Specific Natural Elements) should be recorded here as number of sites, as well as other sites recognized for similar values to those in Class 2 that are not protected.

(Source: SoEF 2011).

### **Forestry and logging (ISIC/NACE 02)**

This division includes the production of roundwood for the forest-based manufacturing industries (ISIC divisions 16 and 17) as well as the extraction and gathering of wild growing non-wood forest products. Besides the production of timber, forestry activities result in products that undergo little processing, such as fire wood, charcoal, wood chips and roundwood used in an unprocessed form (e.g. pit-props, pulpwood etc.). These activities can be carried out in natural or planted forests.

The major categories covered by this class are:

- 021 Silviculture and other forestry activities
- 022 Logging
- 023 Gathering of non-wood forest products
- 024 Support services to forestry

(Source: International Standard Industrial Classification of All Economic Activities (ISIC), Revision 4, Department of Economic and Social Affairs, Statistical Division, United Nations, New York, 2008, page 75)

### **FSC certification**

Forest area certified under the Forest Stewardship Council certification scheme

(Source: FRA 2015)

### **Genetic resources**

Genetic resources means genetic material of actual or potential value (CBD 1992)

### **Government expenditures**

All government expenditure on forest related activities.

*Explanatory notes:*

1. Correspond to the total budget allocated and spent by all concerned institutions.
2. Include expenditures for administrative functions, reforestation funds, direct support to forest sector (e.g. grants and subsidies) and support to other institutions (e.g. training and research centres).
3. Exclude expenditures in publicly owned business entities.

(Source: FRA 2015, Working paper 180, page 21)

### **Government revenues**

All government revenue collected from the domestic production and trade of forest products and services. For this purpose revenue include:

- Goods: roundwood; sawnwood; biomass; wood-based panels; pulp and paper; and non-wood forest products.

- Services: including concession fees and royalties, stumpage payments, public timber sales revenue, taxes and charges based on forest area or yield, taxes on domestic trade and export of forest products, special levies on forestry activities and payments into forest-related funds, other miscellaneous inspection, licence and administrative fees levied by forest administrations, permit and licence fees for recreation and other forest related activities.

*Explanatory note:*

1. It excludes: taxes and charges generally collected from all individuals and enterprises (e.g. corporate taxes, payroll taxes, income taxes, land and property taxes, sales or value-added taxes); import taxes or duties levied on forest products; repayments of government loans

(Source: FRA 2015, Public expenditure on forestry, Working paper 180, page 21)

**Gross (annual) increment**

Average annual volume of increment over the reference period of all trees measured to minimum diameters as defined for “Growing stock”.

*Explanatory note:*

1. Includes the increment on trees which have been felled or die during the reference period.

(Source: TBFRA 2000, modified)

**Gross Domestic product**

Gross Domestic Product (GDP) is the total market value of all final goods and services produced in a country in a given year. It is equal to total consumer, investment and government spending, plus the value of exports, minus the value of imports. For the estimation of an industry’s contribution to GDP, data on Gross Value Added (GVA) should be used. The link between GVA and GDP can be defined as:  $GVA + \text{taxes on products} - \text{subsidies on products} = GDP$ .

**Gross Value Added**

Gross Value Added (GVA) measures the contribution to the economy of each individual producer, industry or sector in the country, measured at basic prices. Data on GVA for each industrial sector should be available from the National Accounts prepared by the country’s national statistical authority.

**Growing stock**

Volume over bark of all living trees with a minimum diameter of 10 cm at breast height (or above buttress if these are higher). Includes the stem from ground level up to a top diameter of 0 cm, excluding branches.

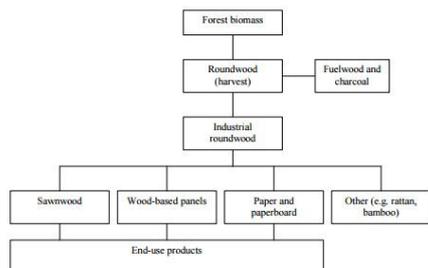
*Explanatory notes:*

1. Diameter breast height refers to diameter over bark measured at a height of 1.3 m above ground level, or above buttresses, if these are higher.
2. Includes living trees that are lying on the ground.
3. Excludes smaller branches, twigs, foliage, flowers, seeds, and roots.

(Source: FRA 2015, Working paper 180, page 8)

**Harvested Wood Products**

Wood products are wood-based materials harvested from forests, which are used for the production of commodities such a furniture, plywood, and paper and paper-like products, or for energy. In principle, other fibre products from non-timber sources, such as rattan or bamboo, could also be considered wood products (Source: UNFCCC FCCC/TP/2003/7 October 2003, Estimation, reporting and accounting of harvested wood products, Technical paper, Concepts and definition, pag.5). The classification of wood products is summarizes in the following figure:



Source: Based on FAO (2000).

The FAO defines roundwood as “wood in the rough”, which includes all wood in its natural state, as

felled or harvested. It may or may not have bark and may come in any shape (round, split, roughly squared and others). Roundwood may be used as raw material for wood products or for energy production.

The proportion of roundwood used for the production of wood commodities, known as industrial roundwood, is further converted into sawnwood, wood-based panels or paper and paperboard:

- (a) Sawnwood is roundwood that is sawed lengthways or by profile chipping, to produce planks, beams, joists, sleepers and lumber.
- (b) Wood-based panels include veneer sheets, plywood, particle board and fibreboard.
- (c) Paper and paperboard include newsprint, printing and writing paper, and other products, which are usually manufactured in strips and rolls more than 15 cm wide. Paper and paperboard are produced from pulp, a fibrous material prepared from pulpwood, wood chips, wood residues and/or recovered paper.

Other materials harvested from forests or other wooded lands that accumulate carbon in their biomass, include natural cork, bamboo and rattan. Bamboo and rattan are often used for furniture and construction.

*Another definition of HWP is:* HPW referred all wood material harvested and transported from forest and utilised either for energy or as other material commodity. HWP also include wood fibre products like paper. It does not include carbon in harvested trees that are left at harvest (Pingoud et al. 2003, Greenhouse gas impacts of harvested wood products. Evaluation and development of methods, Chapter 2. 'Carbon balance in wood-based products and its impacts on the atmosphere. pag. 16)

### **Imports**

Imports of wood and products derived from wood are calculated according to the following formula:  
 $M = M(RW) + M(SW) * RWEc + M(WBP) * RWEc + M(Pulp) * RWEc + M(Paper \text{ and board}) * RWEc$

Where:

- M = Imports
- RW = Roundwood (industrial and fuel)
- SW = Sawnwood
- WBP = Wood-based Panels
- RWEc = roundwood equivalent coefficient

The default values of the RWEc are for: SW = 1.89 RWE / m<sup>3</sup>, WBP = 1.64 RWE / m<sup>3</sup>, Pulp = 3.86 RWE / mt, Paper and board = 3.60 RWE / mt

The imports and exports are expressed in m<sup>3</sup> roundwood equivalent and value. A m<sup>3</sup> roundwood equivalent expresses the amount of roundwood needed to produce a m<sup>3</sup> of a certain wood product. By expressing the trade in m<sup>3</sup> roundwood equivalents, volumes of products with different properties such as sawnwood and panels or different measurement units such as m<sup>3</sup> (sawnwood) and mt (paper and board) can be summed together. In addition, by expressing trade in m<sup>3</sup> roundwood equivalents, the relationship between the volume of roundwood traded and the removals from the forest can be expressed

### **Industrial roundwood removals (sub-category)**

The wood removed for production of goods and services other than energy production (woodfuel).

*Explanatory notes:*

1. The term "removal" differs from "felling" as it excludes harvesting losses (stemwood) and trees that were felled but not removed.
2. It includes removals from fellings in earlier period and from trees dead due to or damaged by natural causes.

(Source: FRA 2015, Working paper 180, page 12, modified)

### **In-situ conservation**

In-situ conservation means the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties (CBD 1992).

### ***Institutional framework.***

Institutional framework is understood to refer mainly to the organizational set-up of forest policy in the country. It further comprises formal coordinating mechanisms between these (including e.g. national forest programme process)

### ***International forest management certification***

Forest area certified under an international forest management certification scheme with published standards and is independently verified by a third-party.

(Source: FRA2015).

### ***Introduced species***

A species, subspecies or lower taxon, occurring outside its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could occupy without direct or indirect introduction or care by humans).

Synonyms: non-indigenous species, exotic species, alien species, non-European species.

(Source: FRA 2015, Working paper 180, page 6, modified)

### ***Invasive introduced tree species***

Invasive introduced tree refers to an alien tree species whose introduction and spread threaten ecosystems, habitats or species with socio-cultural, economic and/or environmental harm, and/or harm to human health

(Source: MCPFE 2003, definition of invasive alien species from UNEP/CBD/COP/6/18/Add.1/Rev.1; 2002. The word "tree" was added).

### ***ISIC/NACE***

ISIC is the International Standard Industrial Classification of All Economic Activities. NACE is the equivalent Statistical Classification of Economic Activities in the European Community.

In ISIC Rev 4 (2008) and NACE Rev 2 (2008), the following categories cover forest industries:

02: Forestry and logging.

16: Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials.

17: Manufacture of paper and paper products.

In the previously used ISIC Rev 3.1 (2004) and NACE Rev 1.1 (2002), the corresponding categories were: 02, 20 and 21 (with some minor additions / subtractions). For the reporting years 1990, 2000 and 2005 the corresponding former NACE/ISIC categories 02, 20, 21 can be used. Adjustments from the old to the new NACE/ISIC are not needed.

### ***Job characteristics***

Those who own and operate their own business or professional practice, sometimes in conjunction with a partner, are considered as self-employed. The Labour Force Survey (LFS) asks a number of questions to establish a person's employment status; this is based on a respondent's own opinion of whether they are an employee or self-employed. If a different source is used, a relevant distinction is that employees work for wage or salary (in cash or kind) while the self-employed work for profit or family gain (in cash or kind). Family workers are persons doing unpaid work for a business they own or for a business that a relative owns.

*Explanatory note:*

1. For the purpose of this reporting unpaid family workers should be included in self-employed.

### ***Labour Force Survey***

The Labour Force Survey (LFS) is a sample survey carried out in many European countries by interviewing individuals about their personal circumstances and work. Because the LFS is a sample survey, results are subject to sampling error, i.e. the actual proportion of the population in private households with a particular characteristic may differ from the proportion of the LFS sample with that characteristic.

The LFS provides information about people in unemployment and employment. The LFS defines employment as those people aged 16 and over who did at least one hour's paid work in the reference week (either as an employee or self-employed); those who had a job which they were temporarily

away from (on holiday for example); those participating in government training and employment programmes; and those doing unpaid family work

### **Land**

For the purposes of the UNCCD "land" means the terrestrial bio-productive system that comprises soil, vegetation, other biota, and the ecological and hydrological processes that operate within the system.

(Source: Article 1.e of the Final text of the United Nations Convention to Combat Desertification – UNCCD-)

### **Land degradation (see Forest land degradation)**

For the purposes of the UNCCD "land degradation" means reduction or loss, in arid, semi-arid and dry sub-humid areas, of the biological or economic productivity and complexity of rainfed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns, such as:

- (i) soil erosion caused by wind and/or water;
- (ii) deterioration of the physical, chemical and biological or economic properties of soil; and
- (iii) long-term loss of natural vegetation.

(Source: Article 1.f of the Final text of the United Nations Convention to Combat Desertification – UNCCD-)

### **Law (or Act or Code) on forest**

Set of rules enacted by the legislative authority of a country regulating the access, management, conservation and use of forest resources.

### **Management plan or equivalent**

A written scheme of forest management, aiming at defined management goals, which is periodically revised. These include:

#### **Forest management plan**

Information (in the form of text, maps, tables and graphs) collected during (periodic) forest inventories at operational forest units level (stands, compartments), and operations planned for individual stands or compartments to reach the management goals

... of which for production (sub-category)

Forest management plan mainly focused on production.

... of which for conservation (sub-category)

Forest management plan mainly focused on conservation.

#### **Equivalent of forest management plan**

Information collected on forest area, at forest management or aggregated forest management unit level (forest blocks, farms, enterprises, watersheds, municipalities, or wider units), and strategies/management activities planned to reach the management or development goals

(Source: SoEF 2007, FRA 2015 Working paper 180, page 19)

### **Manufacture of paper and paper products (ISIC/NACE 17)**

This division includes the manufacture of pulp, paper and converted paper products. The manufacture of these products is grouped together because they constitute a series of vertically connected processes. More than one activity is often carried out in a single unit. There are essentially three activities: The manufacture of pulp involves separating the cellulose fibers from other impurities in wood or used paper. The manufacture of paper involves matting these fibers into a sheet. Converted paper products are made from paper and other materials by various cutting and shaping techniques, including coating and laminating activities. The paper articles may be printed (e.g. wallpaper, gift wrap etc.), as long as the printing of information is not the main purpose.

The production of pulp, paper and paperboard in bulk is included in class 1701, while the remaining classes include the production of further-processed paper and paper products.

(Source: International Standard Industrial Classification of All Economic Activities (ISIC), Revision 4, Department of Economic and Social Affairs, Statistical Division, United Nations, New York, 2008, page

**Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials (ISIC/NACE 16)**

This division includes the manufacture of wood products, such as lumber, plywood, veneers, wood containers, wood flooring, wood trusses, and prefabricated wood buildings. The production processes include sawing, planing, shaping, laminating, and assembling of wood products starting from logs that are cut into bolts, or lumber that may then be cut further, or shaped by lathes or other shaping tools. The lumber or other transformed wood shapes may also be subsequently planed or smoothed, and assembled into finished products, such as wood containers.

With the exception of sawmilling, this division is subdivided mainly based on the specific products manufactured.

This division does not include the manufacture of furniture (3100), or the installation of wooden fittings and the like (4330). The major categories covered by this class are:

- 161 Sawmilling and planing of wood,
- 162 Manufacture of products of wood, cork, straw and plaiting materials.

(Source: International Standard Industrial Classification of All Economic Activities (ISIC), Revision 4, Department of Economic and Social Affairs, Statistical Division, United Nations, New York, 2008, page 102)

**Marketed forest services**

Marketed forest services comprise recreational, environmental and protective services that are forest-dependent or mainly forest-related, but are not necessarily marketed by forest owners.

<b>Ecological services</b>	Marketed ecological services include those related to indicators 5.1 and 5.2 (soil, water and other environmental functions as well as infrastructure and managed natural resources) on a voluntary contractual basis with compensation or other payments from private or public bodies.	Water protection Soil protection Health protection Infrastructure protection
<b>Biospheric services</b>	Marketed biospheric services include services related to indicator 4.6 ( <i>in-situ</i> or <i>ex-situ</i> gene conservation of genetic resources) as well as indicator 4.9 (protected forest area) e.g. nature protection on a voluntary contractual basis with compensation or other payments from private or public bodies (this includes Natura 2000). This class also includes carbon-sequestration related afforestation projects in the context of the Kyoto Protocol – should such projects be included, please specify the amount under “country comments”.	Biodiversity protection Climate regulation
<b>Social services</b>	Marketed social services include e.g. hunting or fishing licences, renting of huts and houses as well as forest-based leisure, sport and outdoor adventure activities and educational services that are not free of cost to consumers (the public, schools, ...).	Tourism Recreation Sport activities
<b>Amenity services</b>	Amenity services include those related to spiritual, cultural and historical functions, e.g. sacred, religious, or other forms of spiritual inspiration, sites of worship, landscape features (mountains and waterfalls), “memories” in the landscape from past cultural ties, aesthetic enjoyment and inspiration, historic artefacts.	Spiritual services Cultural services Historical services
<b>Other marketed services</b>	Other marketed services include e.g. payments to woodland owners for licences for gravel extraction, telecommunication masts, wind farms and electricity distribution.	

*Note:* the above terms & definitions were formulated in the process of the elaboration of the MCPFE 2007 Enquiry on the basis of existing definitions in different processes.

(Source: Study on the Development and Marketing of Non-Market Forest Products and Services, European Commission 2008)

**Marketed non-wood goods**

“Marketed” goods comprise all non-wood goods sold on markets. It excludes goods harvested for self-consumption (subsistence) and other forms of uses without market transaction (based on SoEF2007). For the purpose of reporting on this variable, value is defined as the commercial market value at the forest (or OWL) gate.

*Explanatory note:*

1. If values are obtained from a point further down the production chain, transport costs and possible handling and/or processing costs should be subtracted whenever possible.

(Source: FRA 2015, Non-wood forest product, Working paper 180, page 12)

### **Marketed roundwood**

“Marketed” roundwood comprises all roundwood sold on markets. It excludes round wood harvested for self-consumption (subsistence) and other forms of uses without market transaction.

(Source: SoEF2007)

### **MCPFE Class as defined by the MCPFE Assessment Guidelines for Protected and Protective Forest and Other Wooded Land in Europe (MCPFE 2002)**

#### ***MCPFE Class 1.1: Main Management Objective Biodiversity “No Active Intervention”***

- The main management objective is biodiversity
- No active, direct human intervention is taking place
- Activities other than limited public access and non-destructive research not detrimental to the management objective are prevented in the protected area

#### ***MCPFE Class 1.2: Main Management Objective Biodiversity “Minimum Intervention”***

- The main management objective is biodiversity
- Human intervention is limited to a minimum
- Activities other than listed below are prevented in the protected area:
  - Ungulate/game control
  - Control of diseases/insect outbreaks (NOTE: in case of expected large diseases/insect outbreaks control measures using biological methods are allowed provided that no other adequate control possibilities in buffer zones are feasible)
  - Public access
  - Fire intervention
  - Non-destructive research not detrimental to the management objective
  - Subsistence resource use (NOTE: Subsistence resource use to cover the needs of indigenous people and local communities, in so far as it will not adversely affect the objectives of management).

#### ***MCPFE Class 1.3: Main Management Objective Biodiversity “Conservation Through Active Management”***

- The main management objective is biodiversity
- A management with active interventions directed to achieve the specific conservation goal of the protected area is taking place
- Any resource extraction, harvesting, silvicultural measures detrimental to the management objective as well as other activities negatively affecting the conservation goal are prevented in the protected area

#### ***MCPFE Class 2: Main Management Objective “Protection of Landscapes and Specific Natural Elements”***

- Interventions are clearly directed to achieve the management goals landscape diversity, cultural, aesthetic, spiritual and historical values, recreation, specific natural elements
- The use of forest resources is restricted
- A clear long-term commitment and an explicit designation as specific protection regime defining a limited area is existing
- Activities negatively affecting characteristics of landscapes or/and specific natural elements mentioned are prevented in the protected area

#### ***MCPFE Class 3: Main Management Objective “Protective Functions”***

- The management is clearly directed to protect soil and its properties or water quality and quantity or other forest ecosystem functions, or to protect infrastructure and managed natural resources against natural hazards
- Forests and other wooded lands are explicitly designated to fulfil protective functions in management plans or other legally authorised equivalents
- Any operation negatively affecting soil or water or the ability to protect other ecosystem functions, or the ability to protect infrastructure and managed natural resources against natural hazards is prevented

(Source: MCPFE 2003)

**MCPFE Class 1.1 (sub-category in “MCPFE Class”)**

**MCPFE Class 1.2 (sub-category in “MCPFE Class”)**

**MCPFE Class 1.3 (sub-category in “MCPFE Class”)**

**MCPFE Class 2 (sub-category in “MCPFE Class”)**

**MCPFE Class 3 (sub-category in “MCPFE Class”)**

### **Mean defoliation**

The average defoliation calculated on the basis of defoliation values for individual trees, scored according to the following classification (ICP Forests, 2010).

Degree of defoliation	Needle/Leaf loss
0	0
5	> 0 to 5%
10	> 5% to 10%
15	> 10% to 15%
...	...
95	>90% to 95%
99	>95 to <100 %
100	100

**Mixed forest (sub-category in “Forest types” as “Mixed broadleaved and coniferous woodland”)**

### **National forest policy/strategy document or statement**

It describes the objectives, priorities and means for implementation of the forest policy.

### **National forest programme (NFP)**

According to the MCPFE approach (Vienna resolution 1), a national forest programme (Nfp) is a participatory, holistic, inter-sectoral and iterative process of policy planning, implementation, monitoring and evaluation at the national and/or subnational level in order to proceed towards the further improvement of sustainable forest management as defined in Helsinki Resolution H1, and to contribute to sustainable development.

The principles of Nfps in Europe are:

- Participation
- Holistic and inter-sectoral approach
- Iterative process with long-term commitment
- Capacity building
- Consistency with national legislation and policies
- Integration with national sustainable development strategies
- Consistency with international commitments recognising synergies between international forest related initiatives and conventions
- Institutional and policy reform
- Ecosystem approach
- Partnership for implementation
- Raising awareness

### ***Natural (annual) losses***

Average annual losses to the growing stock during the given reference period, measured to minimum diameters as defined for "Growing stock", due to mortality from causes other than cutting by man, e.g. natural mortality, diseases, insects attacks, fire, windthrow or other physical damage.

(Source: TBFRA 2000, modified)

### ***Natural expansion of forest (sub-category in "Forest expansion")***

### ***Natural regeneration (sub-category in "Regeneration")***

### ***Naturalness***

Naturalness is specified in the following classes:

#### ***Undisturbed by man (forest/other wooded land)***

Forest/other wooded land which shows natural forest dynamics, such as natural tree composition, occurrence of deadwood, natural age structure and natural regeneration processes, the area of which is large enough to maintain its natural characteristics and where there has been no known significant human intervention or where the last significant human intervention was long enough ago to have allowed the natural species composition and processes to have become re-established.

(Source: MCPFE 2003, from TBFRA 2000)

#### ***Semi-natural forest/other wooded land***

Forest/other wooded land which is neither "forest/other wooded land undisturbed by man" nor "plantation" as defined separately.

(Source: MCPFE 2003, from TBFRA 2000)

#### ***Plantation***

Forest stand established by planting or/and seeding in the process of afforestation or regeneration. They are either composed of introduced species (see the definition and indicator 4.4), or intensively managed stands of indigenous species which meet all the following criteria: one or two species at plantation, even age class, regular spacing.

#### ***Explanatory note:***

1. Excludes: Stands which were established as plantations but which have been without intensive management for a significant period of time (more than one rotation period). These should be considered semi-natural.

(Source: TBFRA 2000, modified)

### ***Net (annual) increment***

Average annual volume of gross increment over the given reference period less that of natural losses on all trees, measured to minimum diameters as defined for "Growing stock".

(Source: TBFRA 2000, modified, FRA 2015)

### ***Net entrepreneurial income***

Net entrepreneurial income measures the return to the forestry business owner, and consists of the compensation of unpaid labour, remuneration from land belonging to units and the yield arising from the use of capital. It can be derived from factor income by subtracting compensation of employees to get operating surplus, and then adding any interest received by forestry units organized as companies and deducting any rent and interest payments.

### ***Net revenue***

The net revenue of forest enterprises includes all sources of income of the forest owner directly related to forestry, including subsidies, excluding taxes (MCPFE, 2002).

### ***Non-wood goods (NWG)***

Goods derived from forests and other wooded land that are tangible and physical objects of biological origin other than wood.

*Explanatory notes:*

1. Generally includes non-wood plant and animal products collected from areas defined as forest (see definition of forest).
2. Specifically includes the following regardless of whether from natural forests or plantations:  
gum arabic, rubber/latex and resin;  
Christmas trees, cork, bamboo and rattan.
3. Generally excludes products collected in tree stands in agricultural production systems, such as fruit tree plantations, oil palm plantations and agroforestry systems when crops are grown under tree cover.
4. Specifically excludes the following:
  - woody raw materials and products, such as chips, charcoal, fuelwood and wood used for tools, household equipment and carvings;
  - grazing in the forest;
  - fish and shellfish.

(Source: FRA 2015, Non-wood forest product, Working paper 180, page 12, modified)

**Occupational accident**

An occurrence arising out of or in the course of work which results in:

- (a) fatal occupational injury;
- (b) non-fatal occupational injury.

(Source: ILO 1998)

**Occupational disease**

A disease contracted as a result of an exposure to risk factors arising from work activity.

(Source: ILO 1998)

**Operational expenditure**

Operational expenditure is all government expenditure on public institutions solely engaged in the forest sector. Where the forest administration is part of a larger public agency (e.g. department or ministry), this should only include the forest sector component of the agency's total expenditure. As far as possible, this should also include other institutions (e.g. in research, training and marketing) solely engaged in the forest sector, but it should exclude the expenditure of publicly owned business entities. Where it is impossible or inappropriate to separate the activities of publicly owned business entities from other public sector activities in forest sector, this should be noted and expenditure of the entities should be included in the table. In this case, please specify in the space left for comments which institutions you included (or not). Operational expenditure includes expenditure on: personnel; materials; operating costs; and capital investment (e.g. buildings, equipment, tools, vehicles and machinery), whether funded by domestic or external sources of finance. It includes expenditure on contract or outsourced activities. It also includes the operating costs associated with any forest sector incentive schemes. It excludes expenditure on: marketing; trade facilitation; general research, education, training; or development projects, where forest is not the main focus of activities.

(SOEF 2015)

**Other land**

All land that is not classified as forest or other wooded land.

*Explanatory notes:*

1. Includes agricultural land, meadows and pastures, built-up areas, barren land, land under permanent ice, etc.
2. Includes all areas classified under the sub-category "Other land with tree cover".

(Source: FRA 2015, Working paper 180, page 4)

**Other land with tree cover (sub-category)**

Land considered as "Other land", that is predominantly agricultural or urban lands use and has patches of tree cover that span more than 0.5 hectares with a canopy cover of more than 10 percent of trees able to reach a height of 5 meters at maturity. It includes both forest and non-forest tree species.

*Explanatory notes:*

1. The difference between Forest and Other land with tree cover is the land use criteria.
2. Includes groups of trees and scattered trees (eg trees outside forest) in agricultural landscapes, parks, gardens and around buildings, provided that area, height and canopy cover criteria are met.
3. Includes tree stands in agricultural production systems, for example in fruit tree plantations and agroforestry systems when crops are grown under tree cover. Also includes tree plantations established mainly for other purposes than wood, such as oil palm plantations.
4. Excludes scattered trees with a canopy cover less than 10 percent, small groups of trees covering less than 0.5 hectares and tree lines less than 20 meters wide.

(Source: FRA 2015, Working paper 180, page 4)

***Other marketed services (sub-category in “Marketed forest services”)***

***Other sites with cultural & spiritual values***

These include sites of contemporary cultural and spiritual importance, such as venues for cultural performances, ceremonies or gatherings, sites of sculptures and other installation art, and sites of recent woodland burial. Such sites may have historical associations, but they are recorded under this category rather than under “Cultural heritage” if their current use is recognized as more important than their historic use.

(Source: SoEF 2011).

***Other wooded land***

Land not defined as “Forest”, spanning more than 0.5 hectares; with trees higher than 5 meters and a canopy cover of 5-10 percent, or trees able to reach these thresholds; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.

*Explanatory notes:*

1. The definition above has two options:
  - a. The canopy cover of trees is between 5 and 10 percent; trees should be higher than 5 meters or able to reach 5 meters, or
  - b. The canopy cover of trees is less than 5 percent but the combined cover of shrubs, bushes and trees is more than 10 percent. Includes areas of shrubs and bushes where no trees are present.
2. Includes areas with trees that will not reach a height of at least 5 meters and with a canopy cover of 10 percent or more, e.g. some alpine tree vegetation types, arid zone mangroves, etc.
3. Includes areas with bamboo and palms provided that land use, height and canopy cover criteria are met.

(Source: FRA 2015, Working paper 180, page 4)

***Payment for Ecosystem Services (PES)***

PES can be defined as: a voluntary transaction where a well-defined environmental service (ES) (or a land-use likely to secure that service) is being ‘bought’ by a (minimum one) ES buyer from a (minimum one) ES provider if and only if the ES provider secures ES provision conditionally.

(Source: according to Wunder 2005)

***PEFC certification***

Forest area certified under the Programme for the Endorsement of Forest Certification scheme.  
(Source: FRA2015)

***Plantation (sub-category in “Naturalness”)***

***Planted Forest (sub-category in “Regeneration”)***

***Policies supporting sustainable forest management.***

Policies or strategies that explicitly encourage sustainable forest management.

(Source: FRA 2015, Working paper 180, pag 17)

***Post consumer recovered wood***

Used wood arising from construction of buildings or from civil engineering works.

Recovered wood from transport (pallets), private households, as well as used wood arising from

construction or demolition of buildings or from civil engineering works.

(Source: UNECE/FAO Joint Wood Energy Enquiry 2011, Taken from FAO Unified Bioenergy Terminology. [http://www.unece.org/fileadmin/DAM/timber/wood\\_energy/jwee-2011-eng.xlsx](http://www.unece.org/fileadmin/DAM/timber/wood_energy/jwee-2011-eng.xlsx) and [http://www.unece.org/fileadmin/DAM/timber/wood\\_energy/JWEE2011manual.pdf](http://www.unece.org/fileadmin/DAM/timber/wood_energy/JWEE2011manual.pdf)).

***Predominantly broadleaved forest (sub-category in “Forest types” as “Predominantly broadleaved woodland”)***

***Predominantly coniferous forest (sub-category in “Forest types” as “Predominantly coniferous woodland”)***

***Primarily damaged by fire***

Forest and other wooded land, the vegetation on which, including the trees, has been wholly or largely destroyed by fire.

(Source: MCPFE 2003, TBFRA 2000)

***Primarily damaged by insects and disease***

Forest and other wooded land where insect attack or disease has been identified as the primary cause of damage.

(Source: MCPFE 2003, TBFRA 2000)

***Primarily damaged by storm, wind, snow or other identifiable abiotic factors***

Forest and other wooded land on which the trees have been felled or damaged by storm, wind, snow or other abiotic factors such as avalanches, landslides or flooding.

(Source: MCPFE, 2003; TBFRA 2000)

***Primarily damaged by wildlife and grazing***

Forest and other wooded land where damage has been caused by wildlife or grazing by domestic animals. Includes: Grazing or browsing of young plants, preventing or delaying the establishment or regeneration of the stand.

(Source: MCPFE 2003, TBFRA 2000)

***Primarily human induced***

Forest operations: these include damages incurred in the process of the road building and landings setting, or harvesting damage, incl. through skidding tracks, hauling and transport.

Other: these include e.g. damages caused by pollution from known local sources, damage from visitors to forests; vandalism, etc. Note that human induced fire is not to be reported in this class.

(Source: MCPFE 2003, TBFRA 2000)

***Private ownership***

Forest owned by individuals, families, communities, private cooperatives, corporations and other business entities, private religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.

(Source: FRA 2015, Working paper 180, page 22)

***Protected forest***

See MCPFE Classes 1.1, 1.2, 1.3 and Class 2. (MCPFE Assessment Guidelines for Protected and Protective Forest and Other Wooded Land in Europe).

***Protection***

The function of forest and OWL in providing protection of soil against erosion by water or wind, prevention of desertification, the reduction of risk of avalanches and rock or mud slides; and in conserving, protecting and regulating the quantity and quality of water supply, including the prevention of flooding. Includes: Protection against air and noise pollution

(TBFRA 2000)

***Protective forest***

See MCPFE Class 3 (MCPFE Assessment Guidelines for Protected and Protective Forest and Other Wooded Land in Europe).

### **Public expenditure**

Public expenditure refers to all government expenditures on forest related activities. It corresponds to the total budget allocated and spent by all concerned institutions. It includes expenditures for administrative functions, reforestation funds, direct support to forest sector (e.g. grants and subsidies) and support to other institutions (e.g. training and research centres). It excludes expenditures in publicly owned business entities. Where it is impossible or inappropriate to separate the activities of publicly owned business entities from other public sector activities in forest sector, this should be noted and expenditure of the entities should be included in the table. In this case, please specify in the space left for comments which institutions you included (or not).

(SoEF2015).

### **Public ownership**

Forest owned by the State; or administrative units of the Public Administration; or by institutions or corporations owned by the Public Administration.

*Explanatory notes:*

1. Includes all the hierarchical levels of Public Administration within a country, e.g. State, Province and Municipality.
2. Shareholder corporations that are partially State-owned, are considered as under public ownership when the State holds a majority of the shares.
3. Public ownership may exclude the possibility to transfer.

(Source: FRA 2015, Working paper 180, page 22)

### **Publicly owned forest.**

Forest owned by the State; or administrative units of the Public Administration; or by institutions or corporations owned by the Public Administration.

*Explanatory notes:*

1. Includes all the hierarchical levels of Public Administration within a country, e.g. State, Province and Municipality.
2. Shareholder corporations that are partially State-owned, are considered as under public ownership when the State holds a majority of the shares.
3. Public ownership may exclude the possibility to transfer.

(SoEF 2015 inquiry)

### **Recovered paper**

Waste and scraps of paper or paperboard that have been collected for re-use as a raw material for the manufacture of paper and paperboard. It includes paper and paperboard that has been used for its original purpose and residues from paper and paperboard production. It is reported in metric tonnes (Joint UNECE/FAO/Eurostat/ITTO Forest Sector Questionnaire 2001).

### **Recreation**

Any physical or psychological revitalisation through the voluntary pursuit of leisure time. Forest recreation includes the use and enjoyment of a forest or wildland setting, including heritage landmarks, developed facilities, and other biophysical features (BC Forest Service 1997).

### **Recreational forest**

A forest managed primarily to provide recreational opportunities (IUFRO 2000).

### **Reference period**

The year or years during which the national forest inventory or other method of collection of the data reported in the forest resources assessment was carried out (TBFR 2000).

### **Reforestation**

Re-establishment of forest through planting and/or deliberate seeding on land classified as forest.

*Explanatory notes:*

1. Implies no change of land use.
2. Includes planting/seeding of temporarily unstocked forest areas as well as planting/ seeding of areas with forest cover.
3. Includes coppice from trees that were originally planted or seeded.

4. Excludes natural regeneration of forest.

(Source: FRA 2015)

### ***Regeneration***

Re-establishment of a forest stand by natural or artificial means on land classified as forest, following the removal of the previous stand by felling or as a result of natural causes (e.g. fire or storm).

*Explanatory notes:*

1. Implies no change of land use.

2. Includes planting/seeding of temporarily unstocked forest areas as well as planting/seeding of areas with forest cover.

3. Includes coppice from trees that were originally planted or seeded.

(Source: TBFRA 2000, FRA 2015, Reforestation, Working paper 180, page 5, modified).

### ***Natural regeneration***

Re-establishment of a forest stand by natural means, i.e. by natural seeding or vegetative regeneration. It may be assisted by human intervention, e.g. by preparatory cutting, scarification or fencing to protect against wildlife damage or domestic animal grazing.

(Source: TBFRA 2000, modified)

### ***Regeneration by planting and/or seeding***

The act of re-establishing a forest stand by artificial means, either by planting of seedlings or by scattering seed on land already in forest land use. The material used may be of indigenous or introduced origin.

(Source: TBFRA 2000, FRA 2015, Artificial reforestation, Working paper 180, page 6, modified)

### ***Coppice sprouting***

The re-growth from coppice stools after the previous stand has been cut.

(Source: TBFRA 2000)

### ***Planted forest***

Planted forests are composed of trees established through planting and/or through deliberate seeding of native or introduced species. Establishment is either through afforestation on land which has not carried forest within living memory or by reforestation of previously forested land.

Planted forests comprise the planted component within semi-natural forests and forest plantations for productive and protective purposes. The logic of the newly applied grouping is that the planted component of semi-natural forest, with similar establishment patterns and intensive silvicultural treatments, is not materially different from forest plantations. The scope of planted forests in the continuum of forest types is outlined in the table below (FAO, <http://www.fao.org/forestry/plantedforests/67504/en/>).

### ***Regeneration by planting and/or seeding (sub-category in "Regeneration")***

### ***Renewable energy***

energy that is derived from natural processes (e.g. sunlight and wind) that are replenished at a higher rate than they are consumed. Solar, wind, geothermal, hydro, and biomass are common sources of renewable energy.

Source: International Energy Agency [http://www.iea.org/glossary/glossary\\_R.asp](http://www.iea.org/glossary/glossary_R.asp)

### ***Roundwood***

All roundwood felled or otherwise harvested and removed. It comprises all wood obtained from removals, i.e. the quantities removed from forests and from trees outside the forest, including wood recovered from natural, felling and logging losses during the period, calendar year or forest year. It includes all wood removed with or without bark, including wood removed in its round form, or split, roughly squared or in other form (e.g. branches, roots, stumps and burls (where these are harvested) and wood that is roughly shaped or pointed. It is an aggregate comprising wood fuel, including wood for charcoal and industrial roundwood (wood in the rough). It is reported in cubic metres solid volume underbark (i.e. excluding bark).

*Explanatory notes:*

1. Includes roundwood directly chipped in the forest, but not industry by-products. (Source: Joint UNECE/FAO/Eurostat/ITTO Forest Sector Questionnaire, 2001, modified).

2. For the purpose of this table, value (of both marketed and non-marketed wood) is defined as the market value at the site of harvest, road side or forest border. If values are obtained from a point further down the production chain, transport costs and possible handling and/or processing costs should be subtracted whenever possible.

(Source: FRA 2010 - Non-wood forest products, Working paper 180, page 12, modified)

### ***Seed collection stand***

Selected seed source that fulfils certain requirements. As a rule the stand should be autochthonous or its origin must be known, and above all it should be superior to average stands. On occasion, non-indigenous stands showing excellent features are also chosen. Seed collection stands are accepted and registered by the national authority (EFI Forest Glossary, 2001).

### ***Semi-natural forest/other wooded land (sub-category in “Naturalness”)***

### ***Social services (sub-category in “Marketed forest services”)***

### ***Soil carbon***

Organic carbon in mineral and organic soils (including peat) to a soil depth of 30 cm.

*Explanatory note:*

1. Fine roots of less than 2 mm (or other value chosen by the country as diameter limit for below-ground biomass) are included with soil organic matter where they cannot be distinguished from it empirically.

(Source: FRA 2015, Working paper 180, page 10)

### ***Soil nitrification and acidity***

Changes in nutrient balance and acidity over the past 10 years (pH/CEC/C/N ratio) in humus and top soil (-20 cm) level using ICP Forests and its definitions (Vanmechelen et al. 1998).

### ***Stand***

A community of trees possessing sufficient uniformity in composition, age, arrangement or condition to be distinguishable from the forest or other growth on adjoining areas, thus forming a temporary silvicultural or management entity.

(Source: IUFRO 2000)

### ***Subnational forest policy/strategy documents or statements***

Forest policy document or statement which refers to subnational administrative units, e.g. States in a Federation or Autonomous Regions or Provinces.

### ***Total atmospheric deposition on to the forest***

Wet-only + dry deposition to the canopy excluding internal ion exchange process. Only for sodium and sulphur, throughfall + stemflow is considered to be equal to total deposition, in some cases also for nitrate (ICP Forests Manual part XIV: “Sampling and Analysis of Deposition”, <http://icp-forests.net/page/icp-forests-manual>).

### ***Total (national) Primary Energy Supply***

represents domestic demand only and is broken down into power generation, other energy sector and total final consumption. This represents inland demand only and (...) excludes international marine and aviation bunkers. Source: Adapted from International Energy Agency [http://www.iea.org/glossary/glossary\\_T.asp](http://www.iea.org/glossary/glossary_T.asp)

### ***Total wood removals***

The total of industrial round wood removals and woodfuel removals.

(Source: FRA 2015, Working paper 180, page 12)

### ***Transfer payments***

Transfer payments refer to all government expenditure on direct financial incentives paid to non-government and private-sector institutions, enterprises communities or individuals operating in the forest sector to implement forest related activities. It includes cash grants and subsidies. It excludes tax incentives; government loans; benefits in kind (free or subsidized materials and/or advice). It also

excludes direct financial incentives available to all individuals and enterprises or not specifically related to forest related activities (e.g. relocation grants, employment subsidies, general training grant schemes).

(SoEF 2015)

### ***Tree***

A woody perennial with a single main stem or, in the case of coppice, with several stems, having a more or less definite crown. Includes: Bamboos, palms and other woody plants meeting the above criterion.

(Source: TBFRA 2000)

### ***Trees with cultural & spiritual values***

This category includes individual veteran trees, heritage trees, champion trees and trees associated with religious and spiritual practices and beliefs. It also includes groups of trees that are too small to be classed as “forested landscapes” such as hedges, avenues and groves. Veteran (or ancient) trees can be defined as trees that are old relative to others of the same species, and are of interest biologically, aesthetically or culturally because of their age. For example, a birch tree may be considered to be a veteran at 200 years old, while a yew may have to survive for at least 1000 years before it can be considered ancient. Veteran ‘working trees’ include those that were coppiced, pollarded, shredded, etc, as part of historic management practices. Heritage trees can be defined as trees that are revered for their historical, cultural or botanical significance, for example because they are very old, have interesting historical associations such as ‘witness trees’ that were present at the scene of notable historic events, or are ‘champion trees’ of record dimensions (girth, height, amount of timber, etc).

(Source: SoEF 2011)

### ***Undisturbed by man (forest/other wooded land) (sub-category in “Naturalness”)***

#### ***Uneven-aged stand***

A stand or forest type, consisting of trees of a range of age classes, with age differences which are significant in relation to the stand structure management and rotation length. Defining average stand age is not meaningful. Practised or expected stand management, if any, is continuous forest cover management - selective cuttings, shelter tree cutting, regeneration with small openings etc.

*Explanatory notes:*

1. Includes:

- a. protected forests, recreation areas etc. undergoing a process of formation of uneven-aged structure, where forest management activities are abandoned or support this process,
- b. previously even-aged stands, in which active management was (intentionally or unintentionally) abandoned and as a result a process of formation of uneven aged structure has started, conditions of site and structure of stand allow for a continuation of that process, and the managerial goal is to continue this process or is not known.

2. Excludes even-aged stands under regeneration, with both mature and young trees present.

(Source: IUFRO 2000, modified)

#### ***Unknown ownership***

Forest area where ownership is unknown, includes areas where ownership is unclear or disputed.

(Source: FRA 2015, Working paper 180, page 23)

#### ***Unspecified / Mixed damage***

Forest or other wooded land damaged by more than one group of causing agents (e.g. both biotic and abiotic) and/or identification of primary cause not possible. Note: if the causing agent is unidentified but known to belong to insects or diseases, area should be reported in that category.

#### ***Visit***

A “Visit” is a visit for recreational purposes to any area of forest or other wooded land. There is no minimum duration and it is not necessary to undertake any specific activities. Visits for work purposes and travel through the forest for purposes other than recreation are excluded. Each individual participant, including children, counts as one visit. If several different forests are visited on one trip, then the trip only counts as one visit, but if an individual makes two or more separate trips to forests during one day, then each counts as a separate visit.

(Source: SoEF 2011)

### ***Vulnerable***

A taxon is vulnerable when it is not critically endangered or endangered but is facing a high risk of extinction in the wild in the medium-near future, as defined by any of the criteria A to E of IUCN (1998).

(Source: MCPFE 2003, from IUCN 1998)

### ***Wood consumption***

The use of timber and/or wood through utilisation and burning (IUFRO 2000).

### ***Wood pellets***

Cylindrical products which have been agglomerated either directly by compression or by the addition of a small quantity of binder, having a diameter not exceeding 25 mm and a length not exceeding 45 mm.

(Source: Combined Nomenclature 2009, subheading 4401 20 30; Commission regulation (EC) No 1031/2008 of 19 September 2008 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:291:0001:0894:EN:PDF>)

### ***Wood residues (sub-category in "Wood resources")***

#### ***Wood resources***

According to the Joint UNECE/FAO/Eurostat/ITTO Forest Sector Questionnaire (2001) "wood resources" are defined as the sum of the following items:

#### ***Wood fuel (including wood for charcoal)***

Roundwood that will be used as fuel for purposes such as cooking, heating or power production. It includes wood harvested from main stems, branches and other parts of trees (where these are harvested for fuel) and wood that will be used for charcoal production (e.g. in pit kilns and portable ovens). The volume of roundwood used in charcoal production is estimated by using a factor of 6.0 to convert from the weight (mt) of charcoal produced to the solid volume (m<sup>3</sup>) of roundwood used in production. It also includes wood chips to be used for fuel that are made directly (i.e. in the forest) from roundwood. It excludes wood charcoal. It is reported in cubic metres solid volume underbark (i.e. excluding bark) (Joint UNECE/FAO/Eurostat/ITTO Forest Sector Questionnaire, 2001).

#### ***Chips and particles***

Wood that has been reduced to small pieces and is suitable for pulping, for particle board and/or fibreboard production, for use as a fuel, or for other purposes. It excludes wood chips made directly in the forest from roundwood (i.e. already counted as pulpwood, round and split). It is reported in cubic metres solid volume excluding bark.

(Source: UNECE/FAO/EUROSTAT/ITTO Joint Forest Sector Questionnaire <http://timber.unece.org/fileadmin/DAM/other/definitions-e-2008a.doc>)

#### ***Wood residues***

The volume of roundwood that is left over after the production of forest products in the forest processing industry (i.e. forest processing residues) and that has not been reduced to chips or particles. It includes sawmill rejects, slabs, edgings and trimmings, veneer log cores, veneer rejects, sawdust, residues from carpentry and joinery production, etc. It excludes wood chips made either directly (i.e. in the forest) from roundwood or made from residues (i.e. already counted as pulpwood, round and split or wood chips and particles). It is reported in cubic metres solid volume excluding bark.

(Source: UNECE/FAO/EUROSTAT/ITTO Joint UNECE/FAO/Eurostat/ITTO Forest Sector Questionnaire 2001, <http://timber.unece.org/fileadmin/DAM/other/definitions-e-2008a.doc>).

### ***Woodfuel removals (sub-category)***

The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

*Explanatory notes:*

1. Includes all wood collected or removed for energy purposes, such as fuelwood, wood for charcoal production, harvesting residues, stumps, etc.
2. Includes removals from fellings in an earlier period and from trees killed or damaged by natural causes.
3. Excludes woodfuel which is produced as a by-product or residual matter from industrial processing of roundwood.

(Source: FRA 2015, Working paper 180, page 13)

## REFERENCES

AD HOC Technical Expert Group on Forest Biological Diversity (2001): Convened by the Secretariat of the CBD to prepare a report for SBSTTA-7.

Bavinck M., Chuenpagdee R., Diallo M., P. van der Heijden, Kooiman J., Mahon R., Williams S. (2005): Interactive fisheries governance, Delft: Eburon Publishers. 72 pp.

BC Forest Service (1997): Glossary of Forestry Terms. Available [www.for.gov.bc.ca/PAB/PUBLCTNS/GLOSSARY/glossary.htm](http://www.for.gov.bc.ca/PAB/PUBLCTNS/GLOSSARY/glossary.htm)

CBD (Convention on Biological Diversity) (1992): Convention on Biological Diversity.

Cherlet *et al* (2013). Land-Productivity Dynamics in Europe. Towards Valuation of Land Degradation in the EU.

Commission of the European Communities (2002).

Davis C., Williams L., Lupberger S., Daviet F. (2013): Assessing Forest Governance, The Governance of Forest Initiative Indicator Framework, World Resources Institute.

EFI Forest Glossary (2001): EFI Forest Glossary -Terms and Definitions. EFI Internal Report.

ESA (European System of National Accounts) (1995): ESA95 manual on government deficit and debt. Eurostat. Luxembourg.

Estreguil, Ch., Mouton, C., (2009): Measuring and reporting on forest landscape pattern, fragmentation and connectivity in Europe: methods and indicators. – JR C Scientific and Technical Reports. Office for Official Publications of the European Communities, Luxembourg, 68 pp.

FAO/ECE/ILO (1996 ): Professions, Skills and Training in Forestry. Joint FAO/ECE/ILO Committee on Forest Technology, Management and Training. Berne.

FOREST EUROPE/UNECE/FAO (2015). Joint FOREST EUROPE/UNECE/FAO Questionnaire on Pan-European Indicators for Sustainable Forest Management. Quantitative indicators.

FOREST EUROPE (2015): (Questionnaire for) Reporting on the pan-European Qualitative Indicators for Sustainable Forest Management.

FRA (2000): Global Forest Resources Assessment 2000. Main Report. FAO Forestry Paper 140. FAO, Rome.

FRA (2015): The Forest Resources Assessment Programme - Working paper (2015). Guide for country reporting for FRA 2015, pp. 180.

German Federal Environmental Agency (1996): Manual on Methodologies and Criteria for Mapping Critical Levels/Loads and geographical areas where they are exceeded. UBA-Texte 71/96

ILO, (1998): Freedom of association in practice: Lessons learned. Global Report under the follow-up to the ILO Declaration on Fundamental Principles and Rights at Work. Report of the Director-General.

ILO, (2000): World Labour Report 2000: Income security and social protection in a changing world. INTERNATIONAL LABOUR OFFICE. Geneva.

ISIC Rev.3.1 - International Standard Industrial Classification of All Economic Activities, Rev.3.1 (2004)

ISIC Rev.4. - United Nations Department of Economic and Social Affairs, Statistics Division (Hrsg.) (2008): International Standard Industrial Classification of All Economic Activities. Revision 4. 2008

IUCN (1998): 1997 IUCN Red List of Threatened Plants. IUCN.

IUFRO (2000): Terminology of Forest Management. Terms and Definitions in English.

ISCED 1997: [http://www.unescobkk.org/fileadmin/user\\_upload/aims/ISCED\\_A.pdf](http://www.unescobkk.org/fileadmin/user_upload/aims/ISCED_A.pdf)

International Standard Industrial Classification of All Economic Activities (ISIC) Revision 4 United Nations, New York, (2008). ST/ESA/STAT/SER.M/4/Rev.4. UNITED NATIONS PUBLICATION

Joint UNECE/FAO/Eurostat/ITTO Forest Sector Questionnaire (2001). Definitions. Timber Section. UNECE Trade Division. Geneva.

MCPFE (1993): Ministerial Conference on the Protection of Forests in Europe, 16-17 June 1993 in Helsinki, Documents.

MCPFE (1998a): Third Ministerial Conference on the Protection of Forests in Europe. Followup Reports on the Ministerial Conferences on the Protection of Forests in Europe. Volume II. Liaison Unit in Lisbon (Ed.).

MCPFE (1998b): Third Ministerial Conference on the Protection of Forests in Europe.

MCPFE (2002): MCPFE Assessment Guidelines for Protected and Protective Forest and Other Wooded Land in Europe as adopted by the MCPFE Expert Level Meeting, 10-11 June 2002, Vienna, Austria

MCPFE (2003): State of Europe's Forests 2003. The MCPFE Report on Sustainable Forest Management in Europe Jointly prepared by the MCPFE Liaison Unit Vienna and UNECE/FAO. G., 126 pp.

NACE Rev 1.1 (2002):  
[http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST\\_CLS\\_DLD&StrNom=NA CE\\_1\\_1](http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=NA CE_1_1)

NACE REV. 2, (2008):  
[http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST\\_NOM\\_DTL&StrNom=NA CE\\_REV2&StrLanguageCode=EN&IntPcKey=18494954&StrLayoutCode=](http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=NA CE_REV2&StrLanguageCode=EN&IntPcKey=18494954&StrLayoutCode=)

Pekkarinen, A., Reithmaier, L., Strobl, P. (2009): Pan-European forest/non-forest mapping with Landsat ETM+ and CORINE Land Cover 2000 data. ISPRS Journal of Photogrammetry and Remote Sensing, vol. 64, issue 2, pp. 171-183.

Saura, S., Torné, J. (2009): Conefor Sensinode 2.2: a software package for quantifying the importance of habitat patches for landscape connectivity. Environmental Modelling & Software 24: 135-139.

Saura, Estreguil et al, 2010

SoEF (2007): State of Europe's forests, 2007. The MCPFE report on sustainable forest management in Europe.

SoEF (2011): FOREST EUROPE, UNECE and FAO (2011) State of Europe's forests, 2011. Status & trends in sustainable forest management in Europe. Jointly prepared by FOREST EUROPE Liaison Unit Oslo, the United Nations Economic Commission for Europe (UNECE) and the Food and Agriculture Organization of the United Nations (FAO).

Sverdrup, H., de Vries, W., Henriksen, A., (1990): Mapping Critical Loads: A Guidance to the Criteria, Calculations, Data Collection and Mapping of the Critical Loads. Milforapport (Environmental Report) 1990: 14. Nordic Council of Ministers, Copenhagen, NORD: 1990: 98, 124 pp

Sverdrup, H., De Vries, W., (1994): Calculating critical loads for acidity with the simple mass balance equation. Water, Air, and Soil Pollution 72, 143 e 162.

TBFRA (Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand) (2000): Main Report. United Nations. New York and Geneva.

UBA 1995

UNCCD (United Nations Convention to Combat Desertification) (1994). Final text of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa.

UNEP/CBD/COP/6/18/Add.1/Rev.1 - Convention on Biological Diversity (CBD) (2002): Review and consideration of options for the implementation of article 8 (h) on alien species that threaten ecosystems, habitats or species. Conference of the parties to the Convention on Biological Diversity. Sixth meeting. The Hague, 7-19 April 2002, Item 22 of the provisional agenda  
UNEP/CBD/COP/6/18/Add.1/Rev.1 26 March 2002

UNECE/EC, 2002

UNECE/FAO Joint Wood Energy Enquiry 2011, Taken from FAO Unified Bioenergy Terminology ([http://www.unece.org/fileadmin/DAM/timber/wood\\_energy/jwee-2011-eng.xlsx](http://www.unece.org/fileadmin/DAM/timber/wood_energy/jwee-2011-eng.xlsx) and [http://www.unece.org/fileadmin/DAM/timber/wood\\_energy/JWEE2011manual.pdf](http://www.unece.org/fileadmin/DAM/timber/wood_energy/JWEE2011manual.pdf))

UNECE/FAO/EUROSTAT/ITTO Joint Forest Sector Questionnaire (<http://timber.unece.org/fileadmin/DAM/other/definitions-e-2008a.doc>)

UNESCO 2008

Vanmechelen, L., Groenemans, R., Van Ranst, E. (1997): Forest Soil Condition in Europe. Technical Report. Ministry of the Flemish Community, EC and UNECE, Brussels, Geneva.

Van der Zouwen et al. (2006) in Kuindersma, Boonstra, De Boer, Gerritsen, Pleijte en Selnes (2006): Evalueren in interactie. De mogelijkheden van lerende evaluaties voor het Milieu- en Natuurplanbureau. Rapport 19, Wettelijke Onderzoekstaken Natuur & Milieu. Wageningen mei 2006, 88 pp.

Wunder, S. (2005): Payments for environmental services: Some nuts and bolts. In CIFOR (Center for International Forestry Research). Occasional paper n. 42.