European Forest Accounts (EFA) QUESTIONNAIRE

Explanatory notes

Version of 21 July 2016

1. Introduction

These notes provide information to facilitate the compilation of the tables included in the questionnaire. Boxes are available below each table for your feedback on the basic data used, your comments on any difficulties encountered when estimating specific items, the techniques used, the quality of the estimates, any other problems and suggestions for improving the questionnaire. Questions and answers from the pilot study run in 2015 are annexed to the present document.

2. Set of tables in the questionnaire

The tables are the result of a pilot study run in 2015, the recommendations of the 2013-16 Task Force on the review of IEEAF (Integrated Environmental and Economic Accounting for Forests), and a comparison with the 2015 data collected by FAO Forest Resources Assessment and Forest Europe, as published on the UNECE database.

A set of ten integrated economic and environmental tables derived from six accounts of the system of forest accounts (see table below) is included in the questionnaire. A subset of five tables (with green labels) makes up the core tables required by Eurostat for national accounts, forest accounts and environmental accounts.

3. Overview of the tables

The tables are grouped based on the system of forest accounts as follows:

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4. Details of the tables and variables

**Table A1 – Wooded land**

The scope of Table A1 is all 'wooded' land, i.e. forest and other wooded land as defined in FAO FRA 2015 (FAO, 2012). Unless otherwise indicated, these terms and definitions apply. A table on land is also included in SEEA-CF 2012 (UN, 2014a).

In order to cover all of the land used for timber production – the characteristic product of the economic activity "Forestry and logging" – some types of "Other land with tree cover" (FAO FRA 2015) are added.
The sub-categories of land included in the table are:

- (Land with timber) available for wood supply
- (Land with timber) not-available for wood supply

Within the first category of land, areas with 'cultivated' and 'uncultivated' timber can be distinguished in theory. Cultivated biological resources (in this case timber on forest land) are defined according to ESA (Eurostat, 2013).

Since limited information is available on cultivated areas, land available for wood supply can be used as a proxy. If better information is available, please provide explanations in the box below the table.

Under "other land with tree cover" that is available for wood supply, land used for agro-forestry, short-rotation forestry and short-rotation coppices is covered. If other types of land are included under this category, please provide information in the box below the table.

Changes in land area are obtained from

- Increases of any kind, both human-induced and natural, such as afforestation and natural colonisation
- Decreases of any kind, both human-induced and natural, such as deforestation and natural regression
- Changes in classification, including all changes in use/status of wooded land, e.g. from available for wood supply to not available for wood supply.

The available area and the changes (stocks and flows) may be estimated with a lower periodicity in some countries and may come from inventory years for FRA (FAO, 2012) or national purposes. In this case, the calculation of the change cumulated over the period between the two inventories can be redistributed over the period to get the annual estimates. Annual estimates of afforestation and deforestation are normally available; data from administrative sources may be incomplete (only subsidised afforestation, only registered deforestation), but may provide useful indicators to which grossing-up factors can be applied. These data may need to be revised once a new forest inventory becomes available.

**Valuation:**

In general, different prices apply to different types of land. Land available for wood supply is normally valued on the basis of market transactions, either directly or based on known values of forest real estate.

The value of land reflects not only wood production possibilities, but also all other ESA values from this land, as available from market transactions. Wooded land not available for wood supply may thus receive a positive value.

Changes in value due to economic activities (afforestation, deforestation), other changes (natural colonisation or regression, other changes) and changes in use/status are recorded in the respective rows and columns.

Revaluation records changes in the value of land due to changes in prices between the beginning and the end of the period.

Data on land reported in Table A1 must be coherent with other data provided at European and international level (national accounts, Forest Europe, FAO and OECD).

Table A2 - Timber

Table A2 describes the changes in the volume of the stock of timber available for wood supply between the beginning (opening stock) and the end (closing stock) of the reference year. We use here the definition of timber resources of SEEA-CF 2012 (UN, 2014a): "timber resources are defined by the volume of trees, living or dead, and include all trees regardless of diameter, tops of stems, large branches and dead trees lying on the ground that can still be used for timber or fuel".

The main changes in the stock are due to the net natural increment and removals, as defined in FAO FRA 2015 (FAO, 2012). Removals of wood in the rough are defined in CPA Ver. 2.1 2015 (Eurostat, 2015) and the Joint Forest Sector Questionnaire (JFSQ). Changes in classification are to be reported.

A table on timber is also part of SEEA-CF 2012 (UN, 2014a).

The rows are the same as in Table A1: the volume of timber therefore corresponds to the categories of land of Table A1.

The volume of trees includes the stem and the larger branches that can be used for timber, measured at a minimum diameter at breast height of 0 cm. The unit of measurement is 1000 m³ over bark.

Changes in timber volume are obtained from:

- Net increment or net natural growth: the volume of gross biological growth during the period is generally calculated by modelling (based on opening stocks by age and species, biological parameters, etc.). Annual variations of natural growth may be high due to climatic variation – therefore averages over several years (e.g. 5 years) should be used. The average annual mortality of the growing stock is to be subtracted from the gross biological growth to obtain the net increment to be reported;
- Annual removals from logging activity. Removals are defined in the JFSQ as the timber of felled trees removed from wooded land or other felling sites during the period. Included are removals of trees felled during an earlier period, and removals of trees killed or damaged by natural causes (e.g. windthrow);
- Irretrievable losses include felling residues, all fellings from windthrow that cannot be removed from the forest, and timber lost through fires. Note that timber included in the irretrievable losses will not be removed and used as wood. If the irretrievability of timber becomes apparent in a later year, the losses will be recorded in that reference year;
- Changes in classification are changes in the volume of timber due to changes in use/status of the corresponding land area in Table A1. They are recorded twice: as a decrease in the row corresponding to the initial category and, as an increase in the row corresponding to the final category. They may also refer to the occasional removals of timber located on land 'not available for wood supply'. In this case a positive flow is recorded in the column "Statistical re-classification", which is the counterpart of the negative flow recorded under "Removals".

As the stocks of timber include growing stock, trees felled and still in the forest, and trees felled by windthrow that are retrievable, the physical table includes in the Notes two boxes to be filled with data on major losses of live trees that will be probably used (retrievable), both in the opening and in the closing stock of timber in forests available for wood supply. Knowing the retrievable and irretrievable annual losses, the growing stock of timber can be computed.

Data on timber reported in Table A2 must be coherent with the data on land reported in Table A1 and other data on timber provided at European and international level (Forest Europe, FAO, UNECE and OECD).
See FAO (2012) and UN (2014a).

**Valuation:**

The value of the net annual increment of timber, i.e. the output produced by live forest trees (CPA 2015 code 02.10.3), is reported in Tables A2b and B1 only for the part due to the forestry and logging industry. It is considered as an output in national accounts (ESA 2010).

According to the ESA definitions, in coherence with the UN standards, only the increment produced in cultivated forests (by the forestry and logging industry) is to be reported in Table B1, but the valuation methods used can be applied to uncultivated timber and timber growing on land not available for wood supply, so that Table A2b is completed. The value of timber growing on short-rotation coppices will be harder to approximate, since it is actually woody biomass and not trees with stem wood. Here, market prices for chipped woody biomass may be used to derive values of the standing woody biomass.

In national accounts, the product "growth of timber in cultivated forests" is considered an addition to work-in-progress and should be valued at the current 'basic' price of the finished product, that is the price receivable by the producers from the purchaser for a unit of a good produced as output (excluding taxes, transport cost, other costs, and including subsidies on the product; see ESA 2010 for the definition).

This valuation can be approximated by valuing the annual growth with stumpage prices, as suggested in the IEEAF manual; this is the price paid for timber as it stands – before being cut – in the forest, differentiated by different categories (types of trees, size class, standing or blown down and broken, quality of the wood, topography of the site, etc.).

If these market prices for standing timber are not available, they can be estimated from roadside pickup prices for wood ready to be transported to the user, minus all logging costs (felling, skidding to the roadside, stacking the wood, etc.).

The removed timber is valued at the current basic price, as indicated before.

More information on valuation can be found in the IEEAF manual (paragraph 'Valuation issues', 3.124-3.170, p. 33-38).

**Table B1 - Economic aggregates of the forestry and logging industry [former Table 3c]**

Table B1 is to be drawn up for the transactions of the forestry and logging industry, as recorded in national accounts and Eurostat’s European Forest Accounts (EFA). The national accounts transaction code is reported in square brackets after the transaction name, whenever it exists.

This table records the output related to the land reported in Table A1, i.e. output from all activities that take place on wooded land. Note that not all of the output is recorded: only the output from the forestry and logging industry following the classification NACE Rev. 2 (Eurostat 2008c) is recorded. It includes secondary activities in this industry (see below). It excludes the activities of other industries.

The output and intermediate consumption are broken down by product according to the statistical Classification of Products by Activity CPA Ver. 2.1 (Eurostat 2015). For the activities classified as characteristic of the forestry and logging industry, see NACE Rev. 2 (Eurostat 2008c).
Net natural increment of cultivated timber is to be added to the output of the forestry industry. The stumpage value of the timber removed by logging from the stock of standing volume is to be added to the intermediate consumption of the logging activity.

It should be noted that the output of other production activities may be reported in this table if it is produced by a local Kind-of-Activity Unit (KAU) that has forestry and logging as its principal activity, with other secondary connected non-forestry activities.

As far as possible, the table must be entirely filled in; some estimation may be necessary for products that are not regularly collected from economic statistics or national accounts. All 'other' items have to be explained in the box below the table.

**Some critical economic variables explained:**

**Products**
Products are goods and services created in the economy, within the production boundary, for intermediate or final uses. These products are supplied to the market or, in some cases, for own-final used (i.e. used in two different local Kind-of-Activity Units (local KAUs) belonging to the same institutional unit).

A set of products is the output of the principal and secondary activities of local KAUs in the economy (should secondary activities exist). The sub-set of products from the principal activity is characteristic of the forestry and logging industry.

Products are classified according to the Classification of Products by Activity (CPA Ver. 2.1). All the CPA categories for the products characteristic of the forestry and logging activity are reported in the questionnaire. Other possible products from inseparable secondary activities are also included.

The CPA code for each product is reported in rounded brackets after the product name, if it exists.

See Eurostat (2013).

**Output [P.1]**
All products are valued at basic prices (i.e. excluding invoiced VAT or any other tax on the product, plus subsides on the product).

See Eurostat (2013).

**Output for own final use [P.12]**
Consists of goods or services that are retained either for own final consumption or for capital formation by the same institutional unit.

See Eurostat (2013).

**Live forest tree plants (02.10.11)**
This is a new category of goods introduced by the CPA 2008, that is included in the corresponding CPC 2008 category "Live plants; bulbs, tubers and roots; cuttings and slips; mushroom spawn" (01961).

See Eurostat (2008a; 2008b).

**Fuel wood (02.20.14)**
Wood to be used for energy purposes either directly or indirectly, in logs, billets, twigs, faggots or similar forms.

**Services characteristic of the forestry and logging activity**
These are normally services related to planting, thinning, forest inventories, fire protection, and logging services, e.g. felling, debarking, skidding, that are supplied as products (see definition of products). On the other hand, the same services are recorded as inputs of the users of these services. Reminder: only supply from and use by a local KAU with a principal activity in the forestry and logging activity is recorded here.

**Forest trees nursery services (02.10.2)**
This subcategory includes the operation of forest tree nurseries.
See Eurostat (2008a).

**Support services to forestry (02.40.10)**
This subcategory includes:
- Forestry services:
  - Forest inventories
  - Forest management consulting services
  - Timber evaluation
  - Forest fire fighting and protection
  - Forest pest control
- Logging services:
  - Transport of logs within the forest
- Provision of forestry machinery with crew and operators;
This subcategory excludes:
- Operation of forest tree nurseries (see 02.10.20)
- Draining of forest land (see 43.12.11)
- Clearing of building sites (see 43.12.11)
See Eurostat (2008a).

**Nature reserve services including wildlife preservation services (96422)**
This subclass includes:
- Operation of national parks, nature parks and reserves, including supervision, access and visiting services
- Conservation and maintenance services of national parks, nature parks and reserves
See Eurostat (2008a).

**Intermediate consumption [P.2]**
Intermediate uses of products are recorded at purchasers’ prices (i.e. excluding deductible VAT).
See Eurostat (2013).

**Lubricating petroleum oils; heavy preparations not elsewhere classified (n.e.c.) (19.20.29)**
Lubricating petroleum oils and oils obtained from bituminous minerals, other heavy petroleum oils and heavy oils obtained from bituminous minerals (other than crude), and heavy preparations n.e.c. containing not less than 70% by weight of petroleum oils or oils obtained from bituminous minerals (other than crude), these oils being the basic constituents of the preparations (CPC code 33380).
Fertilisers and soil improvers
This subclass includes straight and compound fertilizers, and organic fertilisers. The following products are included:

- Fertilisers containing three nutrients: nitrogen, phosphorus and potassium (20.15.71)
- Diammonium hydrogen orthophosphate (diammonium phosphate) (20.15.72)
- Monoammonium phosphate (20.15.73)
- Fertilisers containing two nutrients: nitrogen and phosphorus (20.15.74)
- Fertilisers containing two nutrients: phosphorus and potassium (20.15.75)
- Potassium nitrates (20.15.76)
- Mineral or chemical fertilisers containing at least two nutrients (nitrogen, phosphate, potash) n.e.c. (20.15.79)
- Mineral or chemical fertilisers containing at least two nutrients (nitrogen, phosphate, potash) n.e.c. (20.15.79)
- Animal or vegetable fertilisers n.e.c. (20.15.80)
- Other fertilisers

Soil improvers include: e.g. lime, peat, sand, sludge, synthetic foams.

See Eurostat (2008a).

Plant protection products and pesticides
This subclass includes:

- Insecticides (20.20.11)
- Herbicides (20.20.12)
- Fungicides (20.20.15)

See Eurostat (2008a).

Services input
Further non-forestry and logging services are included in this input category.

See Eurostat (2013).

Regular maintenance and repair of equipment
This subclass includes the regular maintenance and repair services of fixed assets used in production, such as motor vehicles (45.20), forestry machinery (33.12.21), other vehicles, machinery and items of equipment. It includes:

- Spare parts (e.g. sparking-plugs, batteries, saw blades, tyres)
- Labour charges (e.g. for blacksmiths, mechanics, electricians)
- Total costs borne by forestry and logging units in respect of overall payments to other units (e.g. material, labour charges, management earnings and profits)

This subclass excludes major improvements of fixed assets used in production, which are recorded as gross fixed capital formation.

See Eurostat (2008a; 2013).

Maintenance of buildings
This subclass includes the regular maintenance and repair services of fixed assets used in production (non-residential buildings [AN.112] and structures):

- Material used (e.g. cement, sand, bricks, tiles, glass)
- Labour charges (e.g. for painters, builders' labourers, carpenters, joiners, plumbers, electricians)
- Total costs borne by forestry and logging units in respect of overall payments to other units (e.g. material, labour charges, management earnings and profits)

Include here the maintenance of forest roads and bridges, etc.

This subclass excludes major improvements and extensions of buildings and structures used in production, which are recorded as gross fixed capital formation.

See Eurostat (2008a; 2013).

**Financial services (FISIM) [P.119]**

Financial Intermediation Services Indirectly Measured (FISIM) is the way to measure the output of financial intermediation (banking) in national accounts. The estimation of FISIM is done by national accounts and reported in EFA accounts.

FISIM are measured as the difference between the 'reference rate' and the rate actually paid to depositors and charged to borrowers. The 'reference rate' of interest is the rate at which both lender and borrower would be happy to strike a deal and it lies between bank interest rates on deposits and on loans. It does not correspond to an arithmetic average of the rates on loans or deposits. The rate prevailing for inter-bank borrowing and lending is a suitable choice.

FISIM are imputed for all loans and deposits. These indirect charges apply only to loans and deposits provided by, or deposited with, financial institutions. The allocation of FISIM among user industries is done based on the stocks of loans and deposits of each industry and, if this information is not reliable, on the output of each industry.

See Eurostat (2013).

**Other goods and services used as inputs**

This includes materials, small tools and rental costs of fixed assets (e.g. the operational leasing of machines, cars, software).

It excludes payments for licences for using natural resources (e.g. land) that are treated and recorded later in the questionnaire as rents (i.e. as a payment of property income).

See Eurostat (2013).

**Property income (received) [D.4]**

All income received by forestry and logging producers as interest, distributed dividends and other income of corporations, reinvested earnings on foreign direct investment, other investment earnings and rent from land or subsoil assets (see below).

See Eurostat (2013).

**Property income (paid) [D.4]**

All income paid by forestry and logging producers as interest on loans (taken out in connection with their economic activity) and rent paid on land or subsoil assets (see below).

See Eurostat (2013).
Rent [D.45]
Rent is the income receivable by the owner of a natural resource for putting the natural resource at the
disposal of another institutional unit. Rent on land and on subsoil resources are considered.

Rent is a form of property income.

Rent does not include the rentals of buildings and of dwellings situated on the land; those rentals are
treated as the payment for a market service provided by the owner of the building or dwelling to the
tenant, and are recorded in the accounts as output of the owner and intermediate or final consumption of
the tenant.

If there is no objective basis on which to split the payment between rent on land and rental on the
buildings situated on it, the whole amount is treated as rent when the value of the land is estimated to
exceed the value of the buildings on it and as rental otherwise.

See Eurostat (2013).

Gross fixed capital formation (excluding VAT) [P.51g]
Gross fixed capital formation (GFCF) consists of resident producers’ acquisitions, less disposals, of fixed
assets during the year plus certain additions to the value of non-produced assets realised by the
productive activity of producer or institutional units.

Fixed assets are produced assets used in production for more than one year.

The following types of assets are included:
- Machinery and equipment (such as tractors, cars, chainsaws, computers, etc.)
- Other buildings and structures
- Improvements to existing fixed assets beyond ordinary maintenance and repairs. This includes major
land improvements: consolidation of fragmented holdings with costs borne by forestry, road construction,
dyke construction, clearing, drainage, other soil improvements, installation of irrigation, and other
construction or engineering work for soil improvement
- Cultivated biological resources (e.g. trees)
- Changes in trees cultivated year after year, such as rubber and cork trees
- Costs of acquisition of the asset and the costs of ownership transfer on non-produced assets (such as
land, contracts, leases and licences)
- R&D (including the production of freely available R&D)
- Forest exploration and evaluation
- Computer software and databases

Buying of land is not included (land is not produced) but the cost of land improvements are included.
Excluded are also trees grown for timber (they are work-in-progress).

A positive value of GFCF indicates, for instance, a new or existing fixed asset purchased; a negative value
indicates e.g. that an existing fixed asset is sold or scrapped.

GFCF is valued at purchasers’ prices, including installation charges and other costs of ownership transfer.
When produced on own-account it is valued at the basic prices of similar fixed assets, and if such prices
are not available, at the cost of production plus a mark-up (except for non-market producers) for net
operating surplus or mixed income.

See Eurostat (2013).
Afforestation
This is cultivation of land to create new woodland; re-afforestation or conversion of land for the repeat production of products characteristic of the forestry and logging activity (e.g. cork). It includes expenditure on land improvement.

Equipment and buildings
Machinery and other equipment:
- Rotovators and other two-wheeled equipment
- Machinery and equipment for soil preparation, sowing, planting, cultivation, fertilisation and protection of plants (e.g. motor-powered hoes and cultivators, clearing machines)
- Machinery and equipment for felling trees and transporting timber within the forest with the exception of transport equipment (e.g. motor-powered saws, bark-stripping, timber shredding and conveying machines, spraying installations for wood preservation)
- Machinery and installations on forestry premises for forestry plants (e.g. sorting, ventilation, storage of products), irrigation, etc.

Transport equipment:
- Forestry tractors
- Other vehicles (motor cars, estate cars, lorries)
- Trailers

Forestry buildings:
- New buildings
- Renovations (large-scale repairs) and improvements

Changes in inventories [P.52]
Inventories consist of the following categories:
- Materials and supplies (consist of all products held in stock with the intention of using them as intermediate inputs in production)
- Work-in-progress (consists of output produced that is not yet finished such as, maturing trees and uncompleted structures. This refers to production that is not finished at the end of the reference year)
- Finished goods (e.g. ready for sale)

Changes in inventories are measured by the value of the entries into inventories less the value of withdrawals and the value of any recurrent losses of goods held in inventories.

See Eurostat (2013).

Work-in-progress on cultivated biological assets (AN.1221)
Work-in-progress is output produced that is not yet finished. It occurs when production requires more than one year. Measurement requires that a production over several years is split into separate periods.

Work-in-progress includes trees and other vegetation yielding once-only products on destruction and immature cultivated assets yielding repeat products.

See Eurostat (2013).

Labour input [L]
Labour input used for production during the year (annual total). Full time equivalence in terms of AWU is the available proxy to estimate employment in the forestry and logging industry.

An Annual Work Unit (AWU) corresponds to the work performed by one person who is occupied in a forestry and logging local KAU on a full-time basis. Full-time means the minimum hours required by the relevant national provisions governing contracts of employment. If the national provisions do not indicate the number of hours, then 1,800 hours are taken to be the minimum annual working hours: equivalent to 225 working days of eight hours each.


Table B2 - Output of the forestry and logging industry by type

Table B2 supports table B1 by identifying the units producing the output of the forestry and logging industry and separating the "commercial" part of the output to facilitate the evaluation of products (different prices are applied; Eurostat, 2013).

The approach is twofold. In the left part of the table, the output, as recorded in Table B1, is distributed according to its type:

- 'Market output' covers in particular the total value of the changes in inventories of finished products and work-in-progress intended for sale at economically significant prices (including natural growth of vegetable products). By convention, as it would be impossible to separate that part of natural growth which relates to market output, natural growth is always classified as market output;
- 'Output for own final use' covers the total value of goods and services that are retained either for final consumption or for gross fixed capital formation by the same institutional unit. In the forest context, it applies, for example, to wood in the rough removed for own final use (e.g. fuel wood);
- 'Other non-market output': this type of output exclusively refers to services, in particular to forest inventories, protection of forest against fires and recreational services.

In the right part of the table, the output is distributed according to the institutional sector to which the producer unit belongs. Using the information on the left side the distribution is straightforward for one part of the output. For natural growth, the proposal is to distribute the output according to ownership. However, for public ownership, the output would often be recorded under 'public non-financial corporations', and not under 'general government', except if sales of timber are explicitly recorded as secondary market output for some units of the general government sector.

See Eurostat (2013).

Tables B3 – Monetary supply and use of wood in the rough

These two tables are meant to record all output and consumption of wood in the rough from any industry that may be producing or consuming the timber reported in Table A2. They are an extension of Table B1, which refers only to the forestry and logging industry.

Table B3 follows the format of the 'Supply and use' table of national accounts (Eurostat, 2013): output by product and by industry at basic prices.

See also explanatory notes for Table B1.

See Eurostat (2013).
Tables C1 - Physical supply and use of wood in the rough

These two tables are the standard supply and use tables from national accounts, but in physical units. They describe the flows of products by industries, imports and exports and final uses. For a given product total supply has to be equal to the total use.

These tables have a greater detail of wood in the rough than Tables B3 because this information can be useful for material flow balances.


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Abbreviations:

AWU Annual Work Unit
CPA Classification of Products by Activity
CPC Central Product Classification of the UN
FISIM Financial Intermediation Services Indirectly Measured
FRA Global Forest Resources Assessment of the FAO
JFSQ Joint Forest Sector Questionnaire (Eurostat, UNECE, FAO, ITTO)
KAU Kind-of-Activity Unit
n.e.c. not elsewhere classified
R&D Research and Development
SEEA-CF UN System of Environmental-Economic Accounting 2012 – Central Framework
UNFCCC UN Framework Convention on Climate Change
VAT Value-added tax
References:


ANNEX: Questions and answers from the pilot study on forest accounts run in 2015

1) Increment of timber

The value of the net annual increment of (standing) timber, i.e. the output produced by forest trees (CPA 2015 code 02.10.3), is reported in Tables A2b and B1. It is considered as an output in national accounts (ESA 2010).

According to the ESA definitions adopted in EU national accounts, in coherence with UN standards, only the increment produced in cultivated forests by the forestry and logging industry is to be reported in Table B1.

If local Kind of Activity Units (KAUs) with a principal activity in other industries (agriculture, paper and pulp industry, etc.) carry out this production, the increment is reported in Table B3 (supply).

The total growth of timber, including also timber in wild forests (i.e. uncultivated forest land), is reported in quantity and value in Table A2a and A2b.

The distribution of this aggregate among the different categories depends on how production is organised in a country.

If all forests are uncultivated, this value is nil in Tables B1 and B3.

In national accounts, this product is considered an addition to work-in-progress and should be valued at the current 'basic' price of the finished product, that is the price receivable by the producers from the purchaser for a unit of a good produced as output (excluding taxes, transport cost, other costs, and including subsidies on the product; see ESA 2010 for the definition). In practice, this value of (trees for) timber can be approximated by using stumpage prices, as suggested in the IEEAF manual.

2) How to record timber

Timber is recorded in physical and monetary terms in the asset, economic and material flow tables A2, B1, B3 and C1. While Tables A2a and A2b record all timber and its value, the economic tables (B) follow the rules of ESA 2010: we record the timber available in the national economy or imported, to be sold on the market for several intermediate and final uses (the "timber available for wood supply" of Table A2).

Timber in the economic tables is the main product of the forestry and logging activity (NACE Rev. 2, Division A02), mainly produced by the forestry and logging industry, that means by local Kind of Activity Units (local KAUs) with a principal activity in A02 (for a definition of industry see Eurostat, ESA, 1.58, p. 12 and 2.150, p. 50). Timber is recorded as Forest trees (code 02.10.3 in the CPA 2015 Ver. 2.1 classification).

It is then included in several economic aggregates as a result of transactions of products (P): Output (P.1), Intermediate consumption (P.2), Changes in inventories of work-in-progress and Finished products (P.52).

In Output we record the net growth of cultivated standing timber on wooded land (indicated in the tables as Increment of timber). The area of wooded land to be considered is included in Table A1 – Wooded land, while the total volume of timber is recorded in Table A2. Note that the net growth of uncultivated timber (wild growth) is excluded from Table B1 because it is not produced in economic terms.

Timber is also recorded in the Output when it is removed from uncultivated forests. In Table B1, such timber is also to be recorded under Forest trees (code 02.10.3).
In Intermediate consumption, on the other hand, we record the overall timber (cultivated or not) removed by the logging activity (if it is not exported to other countries), to be used in the production and supply of wood in the rough (CPA code 02.20.1). Logging activity performs the first transformation of standing timber.

In Changes in inventories of work-in-progress, we record the net growth in cultivated timber: that is the entries (increment of standing timber) minus withdrawals (removals) and recurrent losses (not extraordinary ones). Note that there could be an increase (positive figure) or a reduction (negative figure) in work-in-progress and inventories in certain years.

Finally, to simplify, there is no separate accounting for ready-to-use cultivated timber (finished products) in the inventories as it is assumed that the trees always grow even when they are mature.

3) Felling and transport of timber

Felling and transport of timber from the forest to the roadside or to timber storage, if it is a separate service provided by local Kind of Activity Units (KAUs) specialized in logging, it is part of the output of the forestry and logging industry and it is recorded in Support services to forestry. The work performed to produce wood in rough is not recorded separately and the value is part of the price of the wood.

4) Forest owner and recording of 'natural' growth of forest

The owner of the cultivated forest is not relevant for EFA.

It is relevant to know if the local Kind of Activity Unit (KAU) that cultivates the forest is doing forestry activity as the only or the principal activity. In these cases, the 'natural' growth of the cultivated forest is included in Table B1. Note that there could be other secondary activities in this unit: they are included in the same table in row 'Other products from connected secondary activities in the local KAU'.

If forestry activity is not the principal activity of the local KAU, it is not to be included in Table B1 but in Table B3 under column 51.1. Table A2 and B3 cover the total growth in all cultivated forests.

Note that we have secondary activities only when is not possible to separate the activities economically (and in the accountancy of the unit) into separate local KAUs.

Lastly, if the forest activity in the local KAU can be separated from the other activities, there will be two or more local KAUs. In this case the local KAU with the forestry activity is fully included in Table B1.

For more details and definitions, see ESA 2010.

5) Pulpwood

"Pulps of wood or other fibrous cellulosic material" (code 17.11.1 in the CPA 2015 Ver. 2.1 classification) are included under "Paper and paper products" (code 17). It is the same in the CPC Ver. 2.1. This product is outside of the scope of the characteristic products of the forestry and logging industry considered in Table B1.

It can be included in the output if it is part of the secondary activity of some local Kind of Activity Unit (KAU) with its principal activity in forestry and logging (02 in NACE Rev. 2). It can be included in "Other products from connected secondary activities in the local KAU" (with explanations in the box at the end of the table).
"Pulpwood" in the JFSQ is industrial roundwood that will be used for pulp production. This product is included in "Wood in rough" (code 02.20.1) under "Logs" and is approximated by the roundwood removed from the forest by the logging activity.

If a first transformation of wood in the forest, such as chipping, is relevant, their value can be included in "Other products" (always providing explanations). The same should be done for sliced wood or felling residues that have some value.

In IEEAF, Table 3c item "Pulpwood and other industrial roundwood" covered the wood removals for pulp and other industrial uses and approximated "Logs" in the CPC classification. In the JFSQ, the same terms cover roundwood that will be used for the production of pulp, particleboard or fibreboard, either as roundwood, split wood or as wood chips made directly in the forest from roundwood. In the JFSQ, "Wood in the rough" is the target variable as defined in CPA classification, but chips or slices made directly in the forest for the same purposes are also to be added to that wood in the rough, so the boundaries of the JFSQ products are not as clear as in EFA.

6) Wood in the rough

This is one of the characteristic products of the logging activity and it is defined by CPA 2015 Ver. 2. in line with CPC Ver. 2.1.

It is recorded as output in Table B1 when it is produced by local Kind of Activity Units (KAUs) with a principal activity in the forestry and logging industry.
If local KAUs with a principal activity in other industries (agriculture, pulp production, etc.) carry out this production, wood in the rough is reported in Table B3 (supply).

It is recorded as a use (intermediate or final consumption, capital formation or exports) in Table B3.

It is recorded in physical terms, as supply and use in Table C1.

7) Timing and valuation

In output, cultivated timber is recorded as being produced continuously over the entire period of production and not only when it is harvested (Eurostat, ESA 2010, 3.54, p. 61). On the other hand, non-cultivated timber is recorded when it is removed.

In intermediate consumption, timber is recorded when it is removed.

In the asset and economic tables (A and B) timber has to be valued and reported in national currency.

Timber, as any other product, should be valued at current basic prices of the ready product which is derived, in this case, from the price of standing timber ready to be removed.

The basic price is the price receivable by the producer (producer price) from the purchaser for a unit of good produced as output, minus any tax (i.e. taxes on products) payable on that unit as a consequence of its production or sale, plus any subsidy (i.e. subsidies on products) receivable on that unit as a consequence of its production or sale. It excludes any logging and transport charges invoiced separately by the producer (Eurostat, ESA 2010, 3.44, p. 60).
For the net growth of cultivated timber in output and work-in-progress, the basic price value can be approximated by valuing the annual growth with the ‘stumpage price’; this is the price paid for timber as it stands – before being cut – in the forest, differentiated by different categories (types of trees, size class, standing or blown down and broken, quality of the wood, topography of the site, etc.).

If these market prices for standing timber are not available, they can be estimated from roadside pickup prices for wood ready to be transported to the user, minus all logging costs (felling, skidding to the roadside, stacking the wood, etc.).

The removed timber is valued at the current basic price, as indicated before.

More information on valuation can be found in the IEEAF manual (paragraph ‘Valuation issues’, 3.124-3.170, p. 33-38).

Note that the EAA/EAF manual (for example, paragraph 2.06.14) that is still used to produce agricultural accounts must be used with caution because even though there are no changes with respect to timber between ESA 1995 and ESA 2010, some practical simplifications were eliminated after the IEEAF manual introduction (for example the exclusion of growing timber in EAF). Information in the ‘explanatory notes’ of the former Table 3c in IEEAF are also obsolete and should be used with caution.

8) Timber removed by logging and trees sales for timber

The value of trees bought for timber (i.e. to produce wood in the rough after felling and a primary transformation of the timber by the logging activity to be ready for removal) is reported in Table B1 under code 2.1.1. It is considered an intermediate consumption by national accounts (see ESA 2010). It is recorded only if the trees are bought by local Kind of Activity Units (KAUs) that belong to the forestry and logging industry.

The value of timber ‘removed’ from any forest land by the logging activity of the industry is used as a proxy of trees sales used (i.e. bought) for timber.

This value is not recorded if the timber is consumed in the same local KAU (i.e. the forestry and logging activities are not separate), as noted in ESA 2010. It is also not recorded in Table B1, but is recorded in Table B3, if it is consumed in local KAUs not belonging to the forestry and logging industry (e.g. in agriculture, exported, or consumed by households).

In national accounts, products used for intermediate consumption are recorded and valued at the time they enter the process of production. They are valued at the purchasers’ prices for similar goods or services at the time (see ESA 2010). The value of (trees for) timber can be approximated by using the stumpage price, as suggested in the IEEAF accounts.

Finally, in some cases trees sales for timber are recorded as output in Table B1 when trees are removed from uncultivated forests. Local KAUs that perform this production have to belong to the forestry and logging industry. If they belong to other industries, the sales are recorded in Table B3.

The total timber removed is recorded in monetary and physical terms in Table A2. It is also reported in physical terms, as supply and use of wood in the rough, in Table C1.