DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS
STATISTICS DIVISION
UNITED NATIONS

SEEA Revision
Issue 21
Outcome Paper

Outcome Paper for Global Consultation

Issue #21: Forest accounts[1]

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[1] This outcome paper has been prepared by the SEEA Editor. It is based on papers presented to the London Group of Experts on Environmental Accounting and discussions among those experts. Investigation and research for this outcome paper was led by Jukka Mukkonnen of Statistics Finland

A. Introduction

1. In placing the issue of forest accounts on the list of issues for the revision of the System of Environmental and Economic Accounts (SEEA) it was recognised that the SEEA-2003 presented two primary classifications for forests which themselves were based on a range of underlying reports and classifications. Since then many of these underlying classifications have changed and, in addition, classifications relevant to forests have emerged as part of the global measurement of climate change issues. Given the importance of forests as not only a source of wood and wood products but also as part of the management of greenhouse gas emissions it is clear that developments in classifications and data requirements need to be reflected in the revised SEEA.

2. It was also recognized that carbon sequestration is becoming an important issue. While the SEEA-2003 briefly discusses accounts for carbon sequestration by forests the question was raised as to whether carbon sequestration and more broadly carbon accounts should be addressed in a more systematic way in the revised SEEA, building on the work of the UN Framework Convention on Climate Change (UNFCCC) and UN Food and Agriculture Organisation (FAO).

3. Work on classifications for forest accounts and related tables for the revised SEEA started in the London Group in 2007. The starting point for the work was the recommendations of the SEEA-2003, in which forests are shown to have links to the assets: timber resources, wooded land and forest ecosystems. From this starting point, the work was developed through London Group discussions, discussion with experts from FAO, some national statistical institutes and other organizations, reference to the 2008 System of National Accounts (SNA), and consideration of reports on the Global Forest Resource Assessment (FRA) that is undertaken by the FAO.

4. This paper is structured to present the basic approach used to incorporate the revised forest classifications into the revised SEEA and then to present proposed accounts for relevant groups. Various bridge tables showing the correspondences between the proposed changes and other classifications are included as appropriate. The last section presents the conclusions in relation to the inclusion of carbon accounts in the revised SEEA.

5. It is noted that the focus of this paper and the work of the London Group has been on the way in which forests are presented in the asset accounts of the SEEA. There is no explicit discussion on the treatment or presentation of the supply and use of timber and other forests resources although there are connections that can be made between the discussion in this paper and those issues.

B. Asset classes for forests

Background

6. The minimum requirement for asset accounts for forests is that they give clear information on physical changes in assets of forest ecosystems, wooded land and timber. These tables should show whether physical forest assets are increasing or decreasing, and what the main reasons of the changes are. Further, the physical information should be able to be connected with monetary information on forests recorded in the SNA via the same accounting structure.

7. The aim has not been to develop a stand alone classification of forests for the revised SEEA. Rather the aim has been to integrate the developments in forest classifications from a number of sources, particularly the FRA based classification, within the broader structure of the SEEA asset classification. Thus, this paper describes the proposed asset classes relating to forests that can be incorporated into the updated asset classification of the revised SEEA.

8. An important caveat to these proposals is that they are dependent on the outcome of the discussion on the classification of assets for the revised SEEA. The proposals here will need to be considered in the light of the new asset classification although it is thought that the finer level focus that is considered here should not need to change to any significant degree.

9. The proposed asset classes for forests and the associated forest accounts are largely based on the SEEA-2003 asset classification, the 2008 SNA definitions of cultivated and non-cultivated assets and the FAO FRA 2010 definitions and classifications. All definitions and terms in the standard tables are taken from these

three sources. The work also benefited from consideration of the manual of the European Framework for Integrated Environmental and Economic Accounting for Forests (IEEAF) and the associated experiences gained in the development of this framework.

10. It has been considered that the FRA is a particularly critical source, in large part because of its global coverage but also because, for a range of countries, the FRA statistics are used as a basis for calculation of national greenhouse gas inventories for land use and forestry according to the UNFCCC and the Kyoto Protocol.

11. At the same time the compilation of forestry statistics at a national level is the central focus of countries and this is the underlying source of data for both the FRA and, in many cases, for the Kyoto Protocol. As with the implementation of all classifications and definitions, country circumstances will need to be considered. Nonetheless it is felt that with the general aim of aligning data as much as possible the FRA represents a good starting point.

Proposed asset classes for forests

12. The SEEA-2003 asset classification includes a number of classes related to forests. There are three broad groups: (i) Timber resources (EA.141), (ii) Wooded land and associated surface water (EA. 23), and (iii) Forest ecosystems (EA.313). These groups are currently at differently levels of the hierarchy. The proposals in this paper maintain these three broad groups and clarify and define the relevant sub-categories.

13. Within these broad groups, the total area of forests should be disaggregated by the total volume of timber by cultivated and non-cultivated timber resources, the total area of forests and other wooded land by designation of forest and the natural characteristics of forests. Characteristics and designations of forests are adapted directly from the FRA.

14. Discussion in the London Group has proposed to largely retain the higher-level structures and terminology presented in the SEEA-2003 in relation to the classification of forests. The proposed asset classes are presented in Tables 1a, 1b and 1c. Most focus has been placed on clarifying the boundaries within the classification and in this regard the link to the FRA has been of greatest focus – the linkages are described in more detail later in the paper.

Asset classes for timber resources

15. While timber resources are measured in terms of the volume of timber it is also relevant to consider the scope of the forests within which these timber resources are found. It is possible for any tree to be considered a timber resource but in practice the scope of timber resources is limited to those trees considered to be of economic value. In some cases this economic value is demonstrated in the active management of forests – for example plantation forests; but in other cases it is demonstrated when certain forests which are not under active management are logged for their timber resources. Those forests in which the potential timber resources are not extracted – for example because the forest is a national park or the location of the forest is inaccessible – are not within the scope of timber resources in the SEEA.

16. To ensure alignment between the physical and the monetary accounts an important distinction must be made between cultivated and non-cultivated timber resources. This distinction is central to the recording of assets in the SNA and is maintained in the proposed asset classes. The relevant definitions of cultivated and non-cultivated resources are:

> Cultivated biological resources (2008 SNA paragraphs 10.88 – 10.95)
>
> 10.88 Cultivated biological resources cover... *tree*, crop and plant resources *yielding repeat products whose natural growth and regeneration are under the direct control, responsibility and management of institutional units.*
>
> 10.89 In general, *when the production of fixed assets takes a long time to complete*, *those assets whose production is not yet completed at the end of the accounting period are recorded as work-in-progress*. ...also apply to the production of *cultivated assets such as animals or trees that may take a long time to reach maturity*....

10.95 ...Tree, crop and plant resources yielding repeat products... include trees... cultivated for fruits and nuts, for sap and resin and for bark and leaf products. *Trees grown for timber that yield a finished product once only when they are ultimately felled are not fixed assets*...

Non-cultivated biological resources (2008 SNA paragraph 10.182)

10.182 Non-cultivated biological resources consist of animals, birds, fish and plants that yield both once-only and repeat products over which ownership rights are enforced *but for which natural growth or regeneration is not under the direct control, responsibility and management of institutional units*. *Examples are virgin forests* and fisheries within the territory of the country. Only those resources that are currently, or are likely soon to be, exploitable for economic purposes should be included.

17. With regard to the correspondence between the proposed cultivated and non-cultivated asset classes and the related SNA terms a practical choice has been made. Investigation has shown that there is no full and perfect correspondence between the FRA terms 'visible indications of human activities' and 'significantly disturbed ecological processes'; and the 2008 SNA terms 'direct control, responsibility and management of institutional unit', and 'effective control'. In the IEEAF, the definition of non-cultivated forests refers to the number of 'overmature trees' and 'no forestry intervention for the last e.g. 25 years'. Finally, it is also recognised that there needs to be a link made to the UNFCC term 'managed' in relation to forests and timber resources.

18. The proposal to follow the FRA definitions reflects that all of the different approaches are roughly aligned and as with the implementation of all classifications it will be the extent of practical advice that can be provided which will be of most relevance. It is noted that the investigation of the different definitions has concluded that the UNFCCC term "managed" equates to the term "cultivated" as proposed in this paper.

19. The proposed asset classes for timber resources are shown in Table 1a.

Table 1a: Proposed asset classes for timber resources

Timber resources
- **Cultivated**
  - Timber in Planted forests
  - Timber in Other naturally regenerated forests
- **Non-Cultivated**
  - Timber in Primary forests

Asset classes for forests and other wooded land

20. The measurement of forests and other wooded land is undertaken in terms of the area of forests. The scope of these forests will include the forests that provide the timber resources defined above but will also include all other forests in a country. This broader scope is consistent with the broad asset boundary within SEEA which include assets on the basis of their market as well as non-market values. In effect, this means that all forests within a country should be within scope of these asset classes in the SEEA. Since the basis for the measurement is area, this set of asset classes includes any associated surface water.

21. Table 1b outlines the proposed classes for forests and other wooded land. The logic of the proposed asset classes is aligned with the general notion of land use. It is noted that under SEEA-2003 this set of asset classes was labelled "Wooded land and associated surface water" but a change is proposed to align better with general usage of terms and the FRA.

Table 1b: Proposed asset classes for forests and other wooded land

Forests, other wooded land and associated surface water
- **Forests**
  - Primarily for production of forest products or multiple use
  - Primarily for protection, conservation and social services
- **Other wooded land**

Asset classes for forest ecosystems

22. As noted, the group of asset classes for forests and other wooded land is based largely on observed land use. The same area of forest can also be considered from the perspective of ecosystems that, in effect, requires an assessment of land cover. There is a broader body of work underway connected with the SEEA revision that is investigating both land cover classifications and accounting for ecosystems. The proposals in this paper for forests are one part of the picture and will need to be considered further once this broader picture emerges.

23. The key measurement point that is made in this paper is that the area under consideration for forest ecosystems should be the same as that considered under forests and other wooded land. It should also be noted that a clear link has been made between the asset classes within forest ecosystem and the asset classes for timber resources. Consideration has also been given to reflecting different levels of bio-diversity within the proposed ecosystem asset classes.

Table 1c: Proposed asset classes for forest ecosystems

Forest ecosystems
- Planted forest
- Other naturally regenerated forest
- Primary forest

Recommendation 21.1: That, subject to decisions made on the broader classification of assets in the revised SEEA, the asset classes for forests presented in Tables 1a, 1b and 1c should be adopted in the revised SEEA.

Recommendation 21.2: That, in the revised SEEA, the distinction between cultivated and non-cultivated forests should be based on the definitions in the FAO Global Forest Resource Assessment (FRA) where cultivated forests are comprised of timber in planted forests and timber in other naturally regenerated forests; and non-cultivated forests are equivalent to timber in primary forests.

Relationship between the SEEA forest asset classes and the FRA

24. It is recognized that data availability on forests according to the dimensions of characteristic, designation and cultivation will vary between countries, but usually most of the basic data needed for the compilation of forest accounts can be derived from the data reported in the FRA.

25. The FRA classifications T1: Extent of forest and other wooded land, T3: Forest designation and management, and T4: Forest characteristics' are primary to the SEEA forest accounts. Table 2 below gives a summary of these three classifications. The detail of these classifications is presented in Annex 1.

Table 2: FRA classifications primary to the SEEA asset accounts

FAO Global Forest Resources Assessment		
T1 'extent'	**T4 'characteristics'**	**T3 'designation'**
- Forest	- Primary Forest	- Production
- Other wooded land	- Other naturally regenerated forests	- Protection of soil and water
- Other land with tree cover	- Planted forest	- Conservation of biodiversity
		- Social services
		- Multiple use
		- Other or Unknown

26. Important information for forest accounts can also be derived from FRA tables T6: Growing stock, T11: Removals of products, T5: Forest establishment and reforestation, T9: Forest fires, T10: Other disturbances affecting forest health and vitality, T12: Non-wood forest products removals and value of removals, as well as from FAOSTAT production data for timber removals. (The Table numbers (T1etc.) refer to FAO

publication 'Global Forest Resources Assessment 2010. Specification of National Reporting Tables for FRA 2010'.)

27. The current SEEA asset classification item 'EA.23 Wooded land and associated surface water' includes FRA categories 'Forest' and 'Other wooded land'. SEEA asset categories 'Timber resources', 'Forested land' and 'Forest ecosystems' have connections to the FRA classifications 'Forest designation and management' and 'Forest characteristics'. 'Timber resources' in the SEEA is compatible with 'Growing stock' in the FRA.

28. The primary correspondences between the SEEA categories and FRA categories on timber resources, wooded land and forest ecosystems are shown in Table 3.

Table 3: Primary correspondences between the SEEA-2003 and the FRA

EA.141 Timber resources (FRA T6)
- **EA.1411 Cultivated**
  - Timber in Planted forest (FRA T4)
  - Timber in Other naturally regenerated forest (FRA T4)
- **EA.1422 Non-Cultivated**
  - Timber in Primary forests (FRA T4)

EA.23 Wooded land and associated surface water
- **EA.231 Forested land (FRA T1 Forests)**
  - EA.2311 Primarily for production of forest products or multiple use (FRA T3)
  - EA.2312 Primarily for protection, conservation and social services (FRA T3)
- **EA.232 Other wooded land (FRA T1 Other wooded land)**

EA.313 Forest ecosystems
- Planted forest (FRA T4)
- Other naturally regenerated forest (FRA T4)
- Primary forest (FRA T4)

29. An example of how FRA data can be used in compiling forest accounts is presented in Table 4.

Table 4: FRA as a data source for forest accounts

SEEA EA.231 Forested land	FRA as a data source
Opening stocks	T1 Forest area, T3 Forest designation and management
Additions to stock	
Afforestation	T5 Forest establishment and reforestation; Afforestation
Natural expansion	T5 Forest establishment…;Natural expansion of forests
Reclassifications / reappraisals	
Deductions from stock	
Deforestation	T1 Forest area
Natural regression	T9 Forest fires, T10 Other disturbances
Reclassifications / reappraisals	
Other changes in stock	
Catastrophic losses and uncompensated seizures	T9 Forest fires, T10 Other disturbances
Change in classifications and structure	T1 Forest area, T3 Forest designation and management
Closing stocks	T1 Forest area, T3 Forest designation and management

C. Proposed Forest accounts

30. As noted in the previous section, the focus of this paper is on the SEEA-2003 assets classes of timber resources, forests & other wooded land and ecosystems. Asset accounts in physical units are proposed for each of these classes. Asset accounts in monetary units are proposed only for timber resources. The proposed structures of these accounts are presented in this section.

> **Recommendation 21.3:** That the asset accounts for forests presented in this outcome paper (Tables 5, 6, 7 & 8) should be incorporated into the revised SEEA.

Table 5: SEEA Forest Account - Timber resources, Cubic metres over bark

	Cultivated			Non-Cultivated			Total		
	Forest	Other wooded land	Total	Forest	Other wooded land	Total	Forest	Other wooded land	Total
Opening stocks									
Coniferous									
Broadleaved									
Additions to stock									
Natural growth									
Coniferous									
Broadleaved									
Reclassifications / reappraisals									
Deductions from stock									
Extraction of natural resources									
Felling of timber									
Removals									
Industrial roundwood									
Coniferous									
Broadleaved									
Woodfuel									
Timber left in the forest									
Reclassifications / reappraisals									
Other changes in stock									
Catastrophic losses and uncompensated seizures									
Change in classifications and structure									
Closing stocks									
Coniferous									
Broadleaved									

Notes:

If no distinction can be made between “forest” and “other wooded land” then a total should be recorded

Removals are a flow from the environment to the economy. This is also the case for that part of felling residues that are removed from forests for woodfuel or other purposes.

Timber left in the forest as felling residues is a flow from growing stock of timber to dead biomass. Growing stock is a sink for carbon dioxide and felling residues are a source of carbon dioxide from the forest ecosystem. Felling residues (aside from those removed for woodfuel or other purposes) are a flow inside the environment, but they are important for timber balances and should be estimated and recorded in the asset accounts of timber.

Table 6: SEEA Forest Account - Timber resources, Monetary unit

	Cultivated			Non-Cultivated			Total		
	Forest	Other wooded land	Total	Forest	Other wooded land	Total	Forest	Other wooded land	Total
Opening stocks									
Coniferous									
Broadleaved									
Changes due to transactions									
Changes in inventories									
Acquisitions less disposals of non-produced assets									
Additions to stock									
Natural growth									
Coniferous									
Broadleaved									
Reclassifications / reappraisals									
Deductions from stock									
Extraction of natural resources									
Felling of timber									
Removals									
Industrial roundwood									
Coniferous									
Broadleaved									
Woodfuel									
Timber left in the forest									
Reclassifications / reappraisals									
Environmental degradation of non-produced assets									
Other changes in stock									
Catastrophic losses and uncompensated seizures									
Change in classifications and structure									
Closing stocks									
Coniferous									
Broadleaved									

Notes:

Reclassifications / reappraisals includes revaluation of assets due to change in prices of timber

Table 7: SEEA Forest Account – Forests and other wooded land, Hectares

	Production and multiple use	Protection, conservation and social services	Total
Opening stocks			
Additions to stock			
Afforestation			
Natural expansion			
Reclassifications / reappraisals			
Deductions from stock			
Deforestation			
Natural regression			
Reclassifications / reappraisals			
Other changes in stock			
Catastrophic losses and uncompensated seizures			
Change in classifications and structure			
Closing stocks			

Notes:

The category "Protection, conservation and social services" includes FRA T3 categories 'Other' and 'Unknown'

Table 8: SEEA Forest Account - Forest ecosystems, Hectares

	Primary forests	Other naturally regenerated forests	Planted forest	Total
Opening stocks				
Additions to stock				
Afforestation	-			
Natural expansion				
Reclassifications / reappraisals				
Deductions from stock				
Deforestation				
Natural regression				
Reclassifications / reappraisals				
Other changes in stock				
Catastrophic losses and uncompensated seizures				
Change in classifications and structure				
Closing stocks				

Notes:

The total area of Forest ecosystems should equal the total area of Forests and other wooded land.

31. Although not considered as forest asset classes for inclusion in Tables 1a, 1b or 1c it is recognised that there are other SEEA-2003 classes, specifically EA.142 – Crop and plant resources other than timber and EA.144 – Animal resources other than aquatic, which concern, in part, non-wood products from forests. Therefore, for a more complete presentation of information on forests a table is proposed containing information on the removals of non-wood forest products in quantity and value terms. This type of information helps to demonstrate the potential of forests to provide important commodities for markets other than wood, and the importance of forests for local and indigenous people dependent on them. While these data are not presented in account form the data are important in accounting for all of the flows within forests.

Recommendation 21.4: That in the revised SEEA a table (Table 9) should be incorporated that presents information on the supply and use of non-wood forest products.

Table 9: SEEA Table for non-wood products of forests

	Removals		
	Unit	Quantity	Value
Plant products / raw material			
1. Food			
2. Fodder			
3. Raw material for medicine and aromatic products			
4. Raw material for colorants and dyes			
5. Raw material for utensils, handicrafts & construction			
6. Ornamental plants			
7. Exudates			
8. Other plant products			
Animal products / raw material			
9. Living animals			
10. Hides, skins and trophies			
11. Wild honey and bee-wax			
12. Wild meat			
13. Raw material for medicine			
14. Raw material for colorants			
15. Other edible animal products			
16. Other non-edible animal products			
Total			

D. Carbon accounts

32. Regarding the measurement of carbon accounts, discussion in the London Group concluded that in practice carbon in timber resources can usually be derived by using conversion factors. Therefore an account has been proposed (see below) in which estimates of carbon in timber resources (both cultivated and non-cultivated) can be recorded. This account mirrors the account proposed above for the compilation of data on physical quantities of timber resources.

33. It is noted that greenhouse gas reporting according to the UN Climate Convention and the Kyoto Protocol on changes of carbon stocks covers "managed" forests. Investigation has concluded that the scope of managed forests is equivalent to the FRA categories 'Planted forest' and 'Other naturally regenerated forests' and hence the timber in those forests is equivalent to the timber included in the proposed forest asset class 'Cultivated timber resources'.

34. While the focus of the UN Climate Convention is on cultivated timber resources it is noted that for non-cultivated timber resources, the same conversion factors as used for cultivated timber can be used to convert from cubic metres of timber to tons of carbon of the whole biomass. Thus, provided data on the quantity of

non-cultivated timber resources can be compiled, then estimates of the change in the carbon stock for all timber resources can be calculated.

35. In addition, since the derivation of estimates of the carbon stock is based on given conversion factors, the same factors can be used to derive estimates of both the change in the carbon stock and the carbon stock at the beginning and end of an accounting period.

36. While a complete carbon account for timber resources can be derived for the revised SEEA Volume 1, the conclusion of the London Group is that a complete discussion of carbon accounting including all other carbon accounting issues, for example, carbon binding in soils, cannot be included in the first volume but should be considered as part of SEEA Volume 2. This is mainly because calculation methods are still developing and they may not be mature enough to provide sufficiently reliable information. Further, carbon accounting could be presented in a manner consistent with the description of ecosystem accounting which is intended as the basis for the structure of Volume 2.

Recommendation 21.5: That Volume 1 of the revised SEEA should discuss carbon accounting in timber resources and that a complete discussion of carbon accounting should be included in SEEA Volume 2.

Table 10: SEEA Forest Account – Carbon in Timber resources, Tons of carbon

	Cultivated			Non-Cultivated			Total		
	Forest	Other wooded land	Total	Forest	Other wooded land	Total	Forest	Other wooded land	Total
Opening stocks									
Coniferous									
Broadleaved									
Additions to stock									
Natural growth									
Coniferous									
Broadleaved									
Reclassifications / reappraisals									
Deductions f rom stock									
Extraction of natural resources									
Felling of timber									
Removals									
Industrial roundwood									
Coniferous									
Broadleaved									
Woodfuel									
Timber left in the forest									
Reclassifications / reappraisals									
Other changes in stock									
Catastrophic losses and uncompensated seizures									
Change in classifications and structure									
Closing stocks									
Coniferous									
Broadleaved									

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LG/11/19 Some Key Issues in Revising the SEEA Forest Accounts (J. Muukkonen, Statistics Finland)

LG/12/10 Carbon Binding and Forest Asset Accounts (J. Muukkonen, Statistics Finland)

LG/12/10.1 Global Forest Resources Assessment (Food and Agriculture Organization)

LG/13/5 Carbon binding of forests (Jukka Muukkonen, Statistics Finland)

LG/14/11 Classification of forests (Jukka Muukkonen, Statistics Finland)

LG/14/12 Carbon sequestration: Forest and soil (Jukka Muukkonen, Statistics Finland)

LG/15/9 Soil carbon accounting in the SEEA - a note on the robustness of soil carbon science (Kirsty Leslie, Jeff Baldock, Elizabeth Schmidt and Lynne Macdonald)

LG/15/13 Forest accounts standard tables (Jukka Muukkonen)

LG/15/25 A proposed set of standard accounts for the revised SEEA (Peter Comisari)

LG/15/25/Add4 SEEA standard tables - asset accounts

ANNEX 1.

Classifications and definitions in the FAO Global Forest Resource Assessment 2010

Forest statistics compiled at a national level for the FAO Global Forests Resources Assessment (FRA) are the most important data source for the SEEA forest accounts. These statistics are also used as a basis for national greenhouse gas inventories for land use, land use change and forestry according to the UN climate convention and the Kyoto protocol. Specification of national reporting tables for FRA 2010 including definitions and classifications has been published by the FAO in November 2007.

The FAO requests countries to submit their country report for FRA 2010 according to a format of 17 reporting tables. For most of the tables reporting years are 1990, 2000, 2005 and 2010. For the preparation of the SEEA forest accounts the main reporting tables are:

T 1 Extent of forest and other wooded land

T 3 Forest designation and management

T 4 Forest characteristics

T 6 Growing stock

T 11 Wood removals and value of removals

T 12 Non-wood forest products removals and value of removals

A summary on categories and definitions by these reporting tables is presented below:

T1 Extent of forest and other wooded land

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.
Other wooded land	Land not classified 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 in situ; 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.
Other land - Other land with tree cover (sub-category)	All land that is not classified as “Forest” or “Other wooded land”. Land classified as “Other land”, spanning 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.
Inland water bodies	Inland water bodies generally include major rivers, lakes and water reservoirs.

T3 Primary designated functions

Production	Forest area designated primarily for production of wood, fibre, bio-energy and/or non-wood forest products.
Protection of soil and water	Forest area designated primarily for protection of soil and water.
Conservation of biodiversity	Forest area designated primarily for conservation of biological diversity. Includes but is not limited to areas designated for biodiversity conservation within the protected areas.
Social services	Forest area designated primarily for social services.
Multiple use	Forest area designated primarily for more than one purpose and where none of these alone is considered as the predominant designated function.
Other	Forest areas designated primarily for a function other than production, protection, conservation, social services or multiple use.
No / unknown	No or unknown designation.

FRA T 4 Forest characteristics	
Term	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural regeneration. 1. In this context, predominantly means that the trees established through natural regeneration are expected to constitute more than 50% of the growing stock at maturity. 2. Includes coppice from trees established through natural regeneration. 3. Includes naturally regenerated trees of introduced species.
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).
Category	Definition
Primary forest	Naturally regenerated forest of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed. 1. Some key characteristics of primary forests are: -they show natural forest dynamics, such as natural tree species composition, occurrence of dead wood, natural age structure and natural regeneration processes; -the area is large enough to maintain its natural characteristics; -there has been no known significant human intervention or the last significant human intervention was long enough ago to have allowed the natural species composition and processes to have become re-established.
Other naturally regenerated forest	Naturally regenerated forest where there are clearly visible indications of human activities. 1. Includes selectively logged-over areas, areas regenerating following agricultural land use, areas recovering from human-induced fires, etc 2. Includes forests where it is not possible to distinguish whether planted or naturally regenerated. 3. Includes forests with a mix of naturally regenerated trees and planted/seeded trees, and where the naturally regenerated trees are expected to constitute more than 50% of the growing stock at stand maturity.
Other naturally regenerated forest of introduced species (sub-category)	Other naturally regenerated forest where the trees are predominantly of introduces species. 1. In this context, predominantly means that the trees of introduced species are expected to constitute more than 50% of the growing stock at maturity.
Planted forest	Forest predominantly composed of trees established through planting and/or deliberate seeding. 1. In this context, predominantly means that the planted/seeded trees are expected to constitute more than 50% of the growing stock at maturity. 2. Includes coppice from trees that were originally planted or seeded. 3. Excludes self-sown trees of introduced species.
Planted forest of introduced species (sub-category)	Planted forest, where the planted/seeded trees are predominantly of introduced species. 1. In this context, predominantly means that the planted/seeded trees of introduced species are expected to constitute more than 50% of the growing stock at maturity.

T 4 Forest characteristics	
Primary forest	Naturally regenerated forest of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.
Other naturally regenerated forest	Naturally regenerated forest where there are clearly visible indications of human activities.
- of introduced species (sub-category)	Other naturally regenerated forest where the trees are predominantly of introduces species.
Planted forest	Forest predominantly composed of trees established through planting and/or deliberate seeding.
- of introduced species	Planted/seeded trees are predominantly of introduced species.

For tables T1, T3 and T4 the unit of reporting is 1000 hectares.

T 6 Growing stock

Growing stock	Volume over bark of all living trees more than X cm in diameter at breast height (or above buttress if these are higher). Includes the stem from ground level or stump height up to a top diameter of Y cm, and may also include branches to a minimum diameter of W cm.
Growing stock of commercial species	Growing stock (see def. above) of commercial species.

Unit of reporting is million cubic meters over bark of roundwood.

T11 Wood removals and value of removals

Category	Definition
Industrial roundwood removals	The wood removed (volume of roundwood over bark) for production of goods and services other than energy production (woodfuel).
Woodfuel removals	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

Units of reporting are 1000 m3 of roundwood (measured over bark) and Unit value (average value in the local currency per cubic meter over bark of roundwood).

T 12 Non-wood forest products removals and value of removals

Non-wood forest product (NWFP)	Goods derived from forests that are tangible and physical objects of biological origin other than wood.
Value of NWFP removals	For the purpose of this table, value is defined as the market value at the site of collection or forest border.
NWFP categories	Plant products / raw material 1. Food 2. Fodder 3. Raw material for medicine and aromatic products 4. Raw material for colorants and dyes 5. Raw material for utensils, handicrafts & construction 6. Ornamental plants 7. Exudates 8. Other plant products
	Animal products / raw material 9. Living animals 10. Hides, skins and trophies 11. Wild honey and bee-wax 12. Wild meat 13. Raw material for medicine 14. Raw material for colorants 15. Other edible animal products 16. Other non-edible animal products

For quantity of removals the unit must be number, weight or volume. Value of removals is reported in ‘000s of local currency.