



DAY 02: **SESSION 04**

Asset Account for Timber Resources: Physical Terms

Regional Training Workshop on the System of Environmental-Economic Accounting

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Shanghai, China
17 November 2015



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Unit Outline

- how does SEEA define and record timber resources (or assets)?
- what are asset accounts?
- what are the differences between balance sheets and assets accounts?
- what are the differences between economic and environmental assets?

Acronyms

PNFC	=	Public Non-Financial Corporation
SEEA	=	System of Environmental-Economic Accounting
SEEA-CF	=	SEEA Central Framework
SNA	=	System of National Accounts
2008 SNA	=	SNA Manual (2008 Edition)

Asset Account for Timber Resources

This session is based on Section 5.8 *Asset accounts for timber resources* in Chapter 05 of the System of Environmental-Economic Accounting 2012 - Central Framework (pp.191-198).



What Are Timber Resources in SEEA-CF?

Timber resources are important environmental assets in many countries. Countries like Australia, China and Indonesia have large tracts of native and plantation standing timber. These resources are classified as assets because their life cycles take place over many years.

They nonetheless become inputs (or intermediate goods) for construction and the production of paper, furniture and other products, and are both a source of fuel and an important sink for carbon.

What Are Timber Resources in SEEA-CF?

Timber resources are found in the following areas:

- city parks
- plantations
- native forests
- wooded land
- orchards
- rubber plantations
- roadsides and train tracks
- national parks and conservation areas

What Are Timber Resources in SEEA-CF?

Timber resources in all of these areas are in scope of the SEEA Central Framework:

- **countries should therefore determine the scope of their timber resource accounts depending on circumstance**
- **depends on the relative importance of the types of areas providing timber resources**

The focus of the asset accounts presented in the SEEA, however, is on the timber resources found in areas of forest and other wooded land.





What Are Timber Resources in SEEA-CF?

SEEA-CF records timber resources as economic assets:

- an "asset life" of one year or more
- ownership rights enforceable by institutional units
- institutional units are entitled to claim the benefits associated with the use of the asset in question
- have an economic value

Estimates of extraction should include estimates of illegal extraction, either by residents or non-residents, as these amounts reduce the availability of the resource (SEEA-CF, 2012, *para. 5.189*).



Valuation of Timber Resources

In physical terms, the scope of timber resources (or assets) measured in the Central Framework may be greater than the scope of timber resources measured in monetary terms following the SNA definition of economic assets.

This is because there is no requirement in physical terms that timber resources (or assets) must deliver economic benefits to an economic owner.



Valuation of Timber Resources

The physical asset account for timber resources records:

- the volume of timber resources at the beginning and end of an accounting period
- the change in this stock over the accounting period
- natural growth compared with removals

The following table provides a basic structure for a physical asset account for timber resources:



Asset Account for Timber Resources: Physical Terms

Table 5.19 Physical asset account for timber resources (*thousands of cubic metres over bark*)

	Type of timber resource		
	Cultivated timber resources	Natural timber resources	
		Available for wood supply	Not available for wood supply
Opening stock of timber resources	8 400	8 000	1 600
Additions to stock			
Natural growth	1 200	1 100	20
Reclassifications	50	150	
<i>Total additions to stock</i>	1 250	1 250	20
Reductions in stock			
Removals	1 300	1 000	
Felling residues	170	120	
Natural losses	30	30	20
Catastrophic losses			
Reclassifications	150		150
<i>Total reductions in stock</i>	1 650	1 150	170
Closing stock of timber resources	8 000	8 100	1 450
Supplementary information			
<i>Fellings</i>	1 250	1 050	

SOURCE: Table 5.19 in UN (2014) *System of Environmental-Economic Accounting 2012 - Central Framework*, p.194.



Valuation of Timber Resources

The physical asset account should distinguish between:

- the types of timber resource, most importantly between cultivated and natural timber resources
- those timber resources available and unavailable for wood supply, so as to ensure that the different scopes of the asset accounts in physical and monetary terms can be reconciled

Accounts by species of tree may be compiled depending on the purpose of analysis and available data.

Additions to Stock

The stock of timber resources will increase due to *natural growth*:

- this is measured in terms of the gross annual increment i.e. the volume of increment over the reference period of all trees with no minimum diameter
- the calculation of natural growth should be based on the timber resources available at the beginning of the accounting period
- measured in '000 cubic metres (or '000 m³) over bark

Additions to Stock

Increases in the area of forest land, other wooded land and other areas of land that lead to increases in the volume of available timber resources should not be considered natural growth but should, instead, be recorded as *reclassifications*:

- reclassifications may also occur as a result of changes in management practice that shift timber resources from cultivated to natural or *vice versa*



Reductions in Stock

The stock of timber resources will decrease over an accounting period through the removal of timber resources and natural losses. *Removals:*

- are estimated as the volume removed from forest land, other wooded land and other land areas during the accounting period
- include trees felled in earlier periods and trees killed or damaged by natural causes
- may be recorded by type of product or by species of tree

Reductions in Stock

Removals constitute the relevant variable for measuring the extraction of timber resources because the definition of the stock of timber resources includes trees that have been felled and are on the ground but have not yet been removed.

Reductions in Stock

It is necessary to deduct *felling residues* to fully account for the change in the volume of timber resources over an accounting period:

- at the time of felling, a certain volume of timber resources is rotten, damaged or in excess in terms of the size requirements
- felling residues exclude small branches and other parts of the tree that are also excluded from the scope of timber resources
- estimates of felling residues may also provide important information on the nature of forestry practice.



Reductions in Stock

Natural losses are the losses to growing stock (i.e. living, standing trees) during an accounting period due to mortality from causes other than felling. Examples include:

- losses due to natural mortality, insect attack, fire, wind throw or other physical damages
- losses that can be reasonably expected when considering the timber resources as a whole

Natural losses should be recorded only when there is no possibility that the timber resource can be removed. All timber removed should be recorded as removals.

Reductions in Stock

Catastrophic losses should be recorded when there are exceptional and significant losses of timber resources due to natural causes:

- should be recorded only when there is no possibility that the timber resource can be removed
- all timber removed should be recorded as removals.

Reductions in Stock

Catastrophic losses include changes due to exceptional and unanticipated events:

e.g. loss of assets from earthquakes, tsunamis, war, fire

These losses would be recorded in the *Other changes in volume* account in an SNA balance sheet.



Depletion

Depletion, in physical terms, is the decrease in the quantity of the stock of a natural timber resource over an accounting period that is due to the extraction of the natural resource by economic units occurring at a level greater than that of regeneration.



Depletion

The depletion of natural timber resources is related to the sustainable yield of timber resources from the forest land, other wooded land and other land on which natural timber resources are found:

- the sustainable yield of timber resources is the quantity of timber that can be harvested at the same rate into the future while ensuring that the productive potential is maintained

Fellings

There may be specific interest in the volume of trees felled during the period relative to the volume of timber resources removed:

- felling include silvicultural and pre-commercial thinnings and cleanings
- estimates of the volume of felling may be added as supplementary information in the physical asset account

Silviculture is the practice of controlling the establishment, growth, composition, health, and quality of forests to meet diverse needs and values.

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Data Sources

It is important that data sources are available to populate physical asset accounts according to SEEA-CF:

- government agencies
- public non-financial corporations
- private non-financial corporations
e.g. timber or logging companies

Key Concepts

SNA and SEEA measure the same assets. SNA uses balance sheets and SEEA uses asset accounts:

- **balance sheets measure the value of stocks of assets and liabilities at the beginning and end of the accounting period**
- **all changes between the opening and closing balance sheet are recorded in the various accumulation accounts**