

SEEA-CF Mineral and Energy Asset Accounts

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**Training on application of UNFC
for sustainable resources
management**

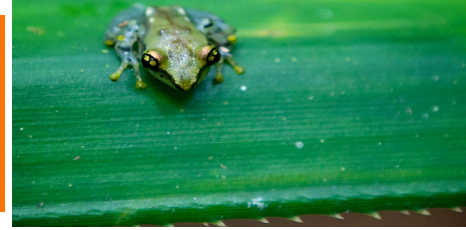
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Overview



- Asset accounts in the SEEA in general
- Mineral and energy asset accounts in more detail

Asset accounts in general



What is an asset account?

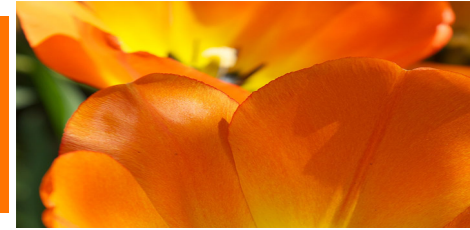
- The aim of asset accounting in the [SEEA Central Framework](#) is to measure the quantity and value of environmental assets and to record and explain changes in those assets over time
 - Environmental assets are the components of the environment that are of value because they are the source of inputs that are needed by society for production and consumption purposes
- Why measure environmental assets?
 - Concern that current patterns of economic activity are depleting and degrading environmental assets more quickly than they can regenerate
 - Current generations must be “stewards” of environmental assets on behalf of future generations

Scope of environmental assets in the SEEA Central Framework



- Environmental assets are those components of the environment that provide resources that may be harvested, extracted or otherwise moved for direct use in production and consumption
 1. Mineral and energy resources
 2. Land
 3. Soil resources
 4. Timber resources
 5. Aquatic resources
 6. Other biological resources
 7. Water resources

Measurement scope



- Measurement of environmental assets is limited to those contained within the economic territory over which a country has control, including waters and sea-beds within a country's Exclusive Economic Zone
 - Measurement is undertaken in physical and monetary terms
- In physical terms, all resources that may provide benefits to society are in scope
- In monetary terms, the scope is limited to those components that have an economic value based on the valuation principles of the SNA
 - This is to ensure coherence between the assets measured in the SNA and those in the SEEA Central Framework
- Subsistence and illegal activity are, in principle, within the measurement scope
 - These flows can be especially important in low-income countries

The SEEA Central Framework Asset Classification

1	Mineral and energy resources
1.1	Oil resources
1.2	Natural gas resources
1.3	Coal and peat resources
1.4	Non-metallic mineral resources (excluding coal and peat resources)
1.5	Metallic mineral resources
2	Land
3	Soil resources
4	Timber resources
4.1	Cultivated timber resources
4.2	Natural timber resources
5	Aquatic resources
5.1	Cultivated aquatic resources
5.2	Natural aquatic resources
6	Other biological resources (excluding timber resources and aquatic resources)
7	Water resources
7.1	Surface water
7.2	Groundwater
7.3	Soil water

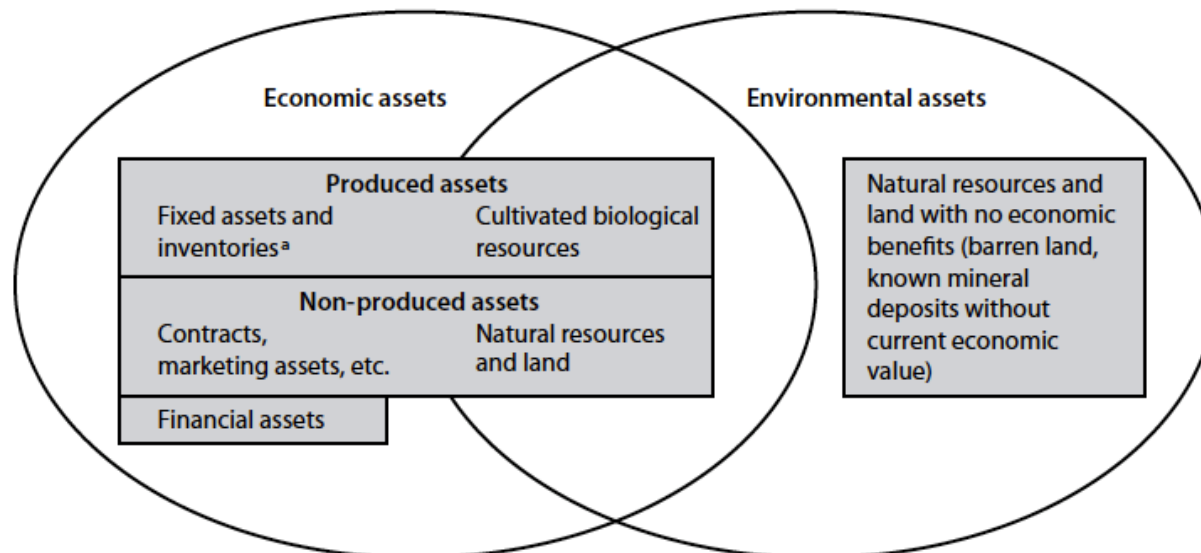
Conceptual form of physical asset accounts

	Mineral and energy resources	Land (including forest land)	Soil resources	Timber resources		Aquatic resources		Water resources
				Cultivated	Natural	Cultivated	Natural	
Opening stock of resources	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Additions to stock of resources								
Growth in stock	na	Yes*	Soil formation Soil deposition	Growth	Natural growth	Growth	Natural growth	Precipitation Return flows
Discoveries of new stock	Yes	na	na	na	na	na	Yes*	Yes*
Upward reappraisals	Yes	Yes	Yes*	Yes*	Yes*	Yes*	Yes	Yes*
Reclassifications	Yes	Yes	Yes	Yes	Yes	Yes	Yes	na
<i>Total additions to stock</i>								
Reductions in stock of resources								
Extractions	Extractions	na	Soil extraction	Removals	Removals	Harvest	Gross catch	Abstraction
Normal reductions in stock	na	na	Erosion	Natural losses	Natural losses	Normal losses	Normal losses	Evaporation Evapotranspiration
Catastrophic losses	Yes*	Yes*	Yes*	Yes	Yes	Yes	Yes	Yes*
Downward reappraisals	Yes	Yes	Yes*	Yes*	Yes*	Yes*	Yes	Yes*
Reclassifications	Yes	Yes	Yes	Yes	Yes	Yes	Yes	na
<i>Total reductions in stock</i>								
Closing stock of resources	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: SEEA-CF, Table 5.2, p. 142

Valuation of environmental assets

- In principle, all benefits delivered by environmental assets can be valued in monetary terms
- However, consistent with the SNA, the scope of valuation in the SEEA is limited to economic benefits that accrue to resource owners
 - ***owner is the institutional unit entitled to claim the economic benefits associated with the use of an asset in the course of an economic activity by virtue of accepting the associated risks***
- The benefits underlying the definition of economic assets must be economic benefits
 - ***Economic benefits reflect a gain or positive utility arising from economic production, consumption or accumulation***



Conceptual form of monetary asset accounts

Opening stock of resources
Additions to stock of resources
Growth in stock
Discoveries of new stock
Upward reappraisals
Reclassifications
<i>Total additions to stock</i>
Reductions in stock of resources
Extractions
Normal loss of stock
Catastrophic losses
Downward reappraisals
Reclassifications
<i>Total reductions in stock</i>
Revaluation of the stock of resources
Closing stock of resources

- The major difference between physical and monetary accounts is the inclusion of a “revaluation” entry in the monetary accounts to reflect changes in stock due exclusively to price changes

Mineral and energy asset accounts in more detail



Mineral and energy asset accounts

- Mineral and energy resources include:
 - oil, natural gas, coal, peat, metallic minerals and non-metallic minerals
- Since they are non-renewable, there is particular interest in understanding the rate at which these assets are extracted
- Since they are found underground, their quantities are often not known with a great deal of precision
 - Consequently, deposits are categorized into three classes using the UNFC
 - Class A: Commercially Recoverable Resources
 - Class B: Potentially Commercially Recoverable Resources
 - Class C: Non-Commercial and Other Known Deposits
 - Only Class A resources are accounted for in detail

SEEA mineral and energy asset accounts - framework

Opening stock (physical or monetary)



*Changes**

Additions: discoveries, reclassifications, reappraisals, revaluations

Reductions: Extractions, reclassifications, reappraisals, revaluations



Closing stock (physical or monetary)

¹³*Not all changes apply to all stocks

Mineral and energy asset accounts – Key concepts

- *Extraction* – reductions due to the extraction through a process of production
- *Discoveries* - additions from the arrival of new resources due to exploration and evaluation
- *Reappraisals* – changes (+/-) due to updated information
- *Reclassifications* – changes (+/-) because an asset is classified to a new use
- *Revaluations* - changes in the value of assets due to price changes (applicable only to monetary accounts)
- *Catastrophic losses* – losses due to natural forces such as weather and earthquakes

Structure of a Basic Sub-soil Asset Account

Type of mineral or energy resource	Class of known deposit		
	A: Commercially recoverable resources	B: Potentially commercially recoverable resources	C: Non-commercial and other known deposits
Oil resources (thousands of barrels)	800	600	400
Natural gas resources (cubic metres)	1 200	1 000	1 500
Coal and peat resources (thousands of tonnes)	600	50	50
Non-metallic mineral resources (tonnes)	150	200	100
Metallic mineral resources (thousands of tonnes)	60	40	60

Source: SEEA-CF, Table 5.7, p. 164

SEEA sub-soil asset accounts and the UNFC

SEEA classes	Corresponding UNFC-2009 project categories		
	E	F	G
	Economic and social viability	Field project status and feasibility	Geologic knowledge
Known deposits	A: Commercially recoverable resources ^a	E1. Extraction and sale have been confirmed to be economically viable	F1. Feasibility of extraction by a defined development project or mining operation has been confirmed
	B: Potentially commercially recoverable resources ^b	E2. Extraction and sale are expected to become economically viable in the foreseeable future ^c	F2.1 Project activities are ongoing to justify development in the foreseeable future Or F2.2 Project activities are on hold and/or where justification as a commercial development may be subject to significant delay
	C: Non-commercial and other known deposits ^d	E3. Extraction and sale are not expected to become economically viable in the foreseeable future or evaluation is at too early a stage to determine economic viability	F2.2 Project activities are on hold and/or where justification as a commercial development may be subject to significant delay Or F2.3 There are no current plans to develop or to acquire additional data at the time due to limited potential Or F4. No development project or mining operation has been identified

Quantities associated with a known deposit that can be estimated with a high (G1), moderate (G2) or low (G3) level of confidence

Source: SEEA-CF, Table 5.6, p. 163

Thank you

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