


System of
Environmental
Economic
Accounting

Introduction to SEEA Central Framework

United Nations Statistics Division
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Minsk, Belarus



United Nations

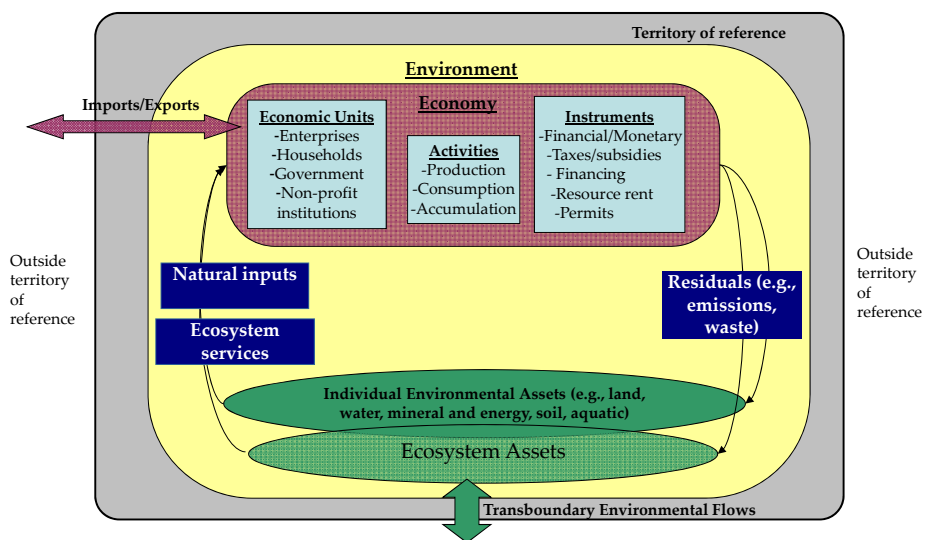
The slide features a dark blue background with a white geometric pattern. In the top left corner, there is a small version of the SEEA logo and its name. The main title "Introduction to SEEA Central Framework" is prominently displayed in white. Below the title, the event details are listed in white text. At the bottom center, the United Nations logo and name are visible.

Objectives of the Session

- Define the scope of measurement in the SEEA
 - > Defining the economy and the environment
 - > The production boundary
 - > Economic units – sectors and industries
- The accounting structure of the SEEA



SEEA Conceptual Framework



Defining the economy



Defining the “Economy”

- Economic activities
 - > Production, Consumption, Accumulation
- Economic products
 - > Goods and services
- Economic assets
 - > Produced, Non-produced, Financial assets
- Economic units
 - > Establishments, enterprises, households, governments
- Economic territory
 - > Residence, geographic coverage

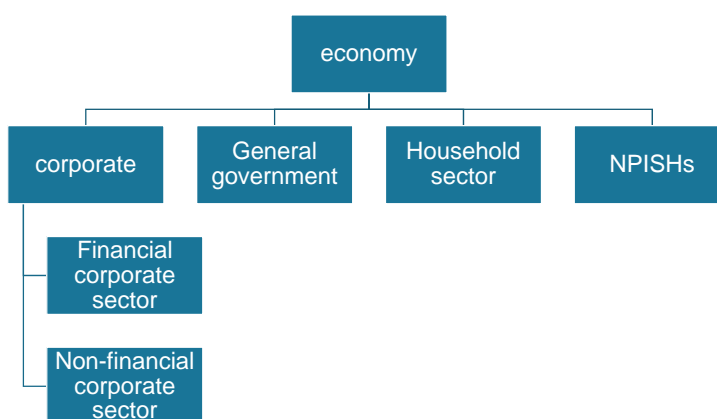


Constituents of an economy

- All institutional units residing in the economic territory of a country during the accounting period constitute its economy.
 - > ***Institutional unit***: an entity capable of owning assets, incurring liabilities, carrying out economic activities taking decisions on all aspects of economic life and engaging in transactions with other entities
 - > ***Residing***: The economic territory in which an institutional unit has its centre of predominant economic interest [2008 SNA] is the residence of the unit.
 - > ***Economic Territory***: The geographic territory administered by the government of the country within which persons, goods, and capital can circulate freely.



Institutional sectors



Enterprises, Establishments and Industries

- Enterprises
 - > Institutional units from the perspective of being producers of goods and services
- Establishments
 - > Enterprises in a single location performing a single or predominant type of productive activity
- Industries
 - > Groupings of establishments undertaking similar types of productive activity



The Production Boundary

- “Production is an activity carried out ... by an institutional unit that uses inputs of labour, capital and goods and services to produce outputs of goods and services” (2008 SNA, 6.24)
- In practice:
 - > Exclude things you do only for yourself
 - > Exclude household production of services for itself
 - Except rent of owner-occupiers & wages of domestic staff
 - > Include household production of goods for itself
 - Agricultural products, fishing, fuelwood, clothes, furniture, water, energy
 - > Include concealed and illegal activity



Types of Output and Production

- Market output
 - > Transactions between economic units at market prices
- Non-market output
 - > Not transacted at market prices (government education, health)
 - > Valued at cost of production
- Own-account production (within establishments)
 - > For own final consumption (e.g. subsistence agriculture) : INCLUDED
 - > For own final capital formation (e.g. building own house) : INCLUDED
 - > For own intermediate consumption : EXCLUDED (except ancillary activity)



Key Messages

- Many aspects to defining the economy
- Measurement boundaries are important to understand
 - > Production boundary key determinant of the size of GDP
- Own- account activity needs special consideration
- Economic (institutional) units can be seen from two key perspectives
 - > Institutional sector: Similar economic behaviours / legal basis
 - > Industry: Similar productive activities



The accounting structure of the SEEA



Some definitions

- 1. Environmental assets** are the naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity.
- 2. Ecosystems** are a dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit

SEEA Central Framework:

Individual environmental assets/ resources

Timber
Water
Soil
Fish



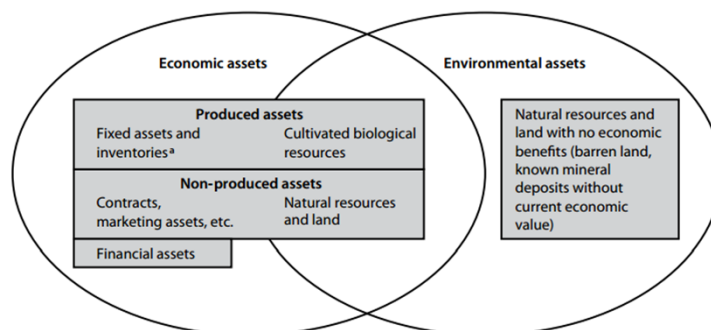
SEEA Experimental Ecosystem Accounts:

Ecosystem assets (spatially based)

Forests
Lakes
Agricultural areas



Environmental and economic assets



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Physical and Monetary Scope

- In principle, when accounting for environmental assets in physical terms all environmental assets whether or not they have a monetary value are included
 - > All land in a country is included in physical land accounts
 - > Also timber resources, other biological resources, soil, inland water resources
- Mineral and energy resources scope is known deposits
- Aquatic resources scope is all resources within EEZ plus rights on high seas
 - > In practice limit to commercial stocks and subsistence



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Key Points and Boundary Issues

- Distinct treatment of land
 - > Account for its provision of space / area not the resources that are within it
- Include natural and cultivated biological resources
- Oceans and atmosphere excluded
- Stocks of potential energy from renewable sources excluded
 - > E.g. solar, wind, tidal power
 - > Slight exception for hydropower



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The SEEA Central Framework Accounts

- 1. Stock accounts** for environmental assets: natural resources and land
 - physical (e.g. fish stocks and changes in stocks) and/or monetary values (e.g. value of natural capital, depletion)
- 2. Flow accounts:** supply and use tables for products, natural inputs and residuals (e.g. waste, wastewater) generated by economic activities.
 - physical (e.g. m³ of water) and/or monetary values (e.g. permits to access water, cost of wastewater treatment, etc.)
- 3. Activity / purpose accounts** that explicitly identify environmental transactions already existing in the SNA.
 - e.g. Environmental Protection Expenditure (EPE) accounts, environmental taxes and subsidies
- 4. Combined physical and monetary accounts** that bring together physical and monetary information for derivation indicators, including depletion adjusted aggregates



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Physical flows accounts

Physical flow accounts	Topics covered (detailed definition)
Full set of supply and use tables for materials	All resources and materials (energy, water, air emissions, water emissions, solid waste) (CF 3.2)
Economy-wide material flow accounts (MFA)	Supply and consumption of energy; air emissions, water emissions, and solid waste (CF 3.6.6)
Physical supply and use tables for water (PSUT water)	Supply (precipitation) and consumption of water (CF 3.5)
Physical supply and use tables for energy (PSUT energy)	Supply and consumption of energy (CF 3.4)
Air emissions accounts	Air emissions (CO ₂ , pollutants) (CF 3.6.3)
Water emissions accounts	Water emissions (CF 3.6.4)
Waste accounts	Solid wastes (CF 3.6.5)



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CF = SEEA Central Framework section number

Asset accounts

Asset accounts	Topics covered (detailed definition)
Mineral and energy resources	Physical and monetary accounts for minerals and energy stocks (oil, natural gas, coal and peat, non-metallic minerals and metallic minerals) (CF 5.3)
Land	Physical and monetary accounts for land, land cover, land use and forest (CF 5.6)
Soil resources	Area and volume of soil resources (CF 5.7)
Timber resources	Physical and monetary accounts for timber resources (CF 5.8)
Aquatic resources	Physical and monetary accounts for fish, crustaceans, molluscs, shellfish and other aquatic organisms such as sponges and seaweed as well as aquatic mammals such as whales. (CF 5.393) (CO ₂ , pollutants) (CF 3.9)
Other biological resources	Cultivated animals and plants including livestock, annual crops such as wheat and rice, and perennial crops such as rubber plantations, orchards and vineyards. (CF 5.10)
Water resources	Stock of water resources (CF 5.11)



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Monetary flows accounts

Monetary flow accounts	Topics covered (detailed definition)
Environmental protection expenditure accounts (EPEA)	Output of EP services in economy and expenditures on EP goods and services by resident units (CF 4.3.2)
Environmental goods and services sector (EGSS)	Characteristics of all producers of products intended for environmental protection and resource management (CF 4.3.3)
Environmentally related payments by government	Environmental subsidies, social benefits to households, investment grants and other current and capital expenditures (CF 4.4.2)
Environmentally related payments to government	Environmental taxes (taxes on products, production and income; other current taxes and capital taxes) and other payments to government (rent, sales of some goods and services, some fines and penalties) (CF 4.4.3)
Permits and licenses to use environmental assets	Permits to extract and harvest natural resources (CF 4.4.5)
Emissions permits	Permits for the use of the environment as a pollution sink (emissions permits) (CF 4.4.5)
Costs related to termination of fixed assets	Environmental consequences of disposing of fixed assets (nuclear power plants, oil rigs and other equipment, landfills, mines, etc.) (CF 4.4.6)



Basic form of monetary supply and use table

	Industries	Households	Government	Accumulation	Rest of the world	Total
Supply table						
Products	Output				Imports	Total supply
Use table						
Products	Intermediate consumption	Household final consumption expenditure	Government final consumption expenditure	Gross capital formation (including changes in inventories)	Exports	Total use
	Value added					



Basic form of physical supply and use table

	Industries	Households	Accumulation	Rest of the world	Environment	Total
Supply table						
Natural inputs					Flows from the environment	Total supply of natural inputs
Products	Output			Imports		Total supply of products
Residuals	Residuals generated by industry	Residuals generated by final household consumption	Residuals from scrapping and demolition of produced assets			Total supply of residuals
Use table						
Natural inputs	Extraction of natural inputs					Total use of natural inputs
Products	Intermediate consumption	Household final consumption	Gross capital formation	Exports		Total use of products
Residuals	Collection and treatment of waste and other residuals	Accumulation of waste in controlled landfill sites			Residual flows direct to environment	Total use of residuals



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Some observations on the physical and monetary supply and use tables

1. Differences in the rows
2. Differences in the columns
3. Classifications



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Supply and use identity

Total Supply of Products

= Output + ????

is identical to

Total Use of Productions

= Intermediate consumption

+ Household final consumption

+ Gross capital formation

+ ????



Input-output identity

Materials into the economy = Flows from the environment + imports + residuals received from the rest of the world + residuals recovered from the environment

is equal to

Materials out of the economy = Residual flows to the environment + exports + residuals sent to the rest of the world

plus

Net additions to stock in the economy = Gross capital formation + accumulation in controlled landfill sites - residuals from produced assets and controlled landfill sites



Basic form of asset accounts

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



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Other accounts

- Functional accounts
 - > Environmental protection expenditure accounts
 - > Environmental goods and services
 - > Environmental taxes
- Combined presentations



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