



Introduction to Core Accounting Principles on SEEA and SNA

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Objectives of the Session

- Introduce and recall some fundamentals of national accounting
- Define the scope of measurement
 - Defining the economy and the environment
 - The production boundary
 - Economic units – sectors and industries
- Demonstrate the breadth of national accounting and the recording of stocks and flows
 - SNA and SEEA as frameworks for organizing information



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

Domestic Economy

Constituents of an 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.

Economic Territory: The geographic territory administered by the government of the country within which persons, goods, and capital can circulate freely.

The economic territory in which an institutional unit has its centre of predominant economic interest [2008 SNA] is the residence of the unit.



Residence

Institutional units	Determined by
Individuals	Residence of the household of which they form part
Unincorporated enterprises	If not a quasi-corporate, same residence as their owners
Corporations and NPIs	Normally the country of registration or where legally constituted. Branch in a different country → quasi-corporate in the host economy
(i) Owners of land, buildings & immovable structures (ii) extractors of sub-soil resources.	Deemed always to have a centre of economic interest in the country where they are located. Thus, for all land & buildings are owned by non-residents → a notional resident unit (with non-financial asset and direct investment liability)

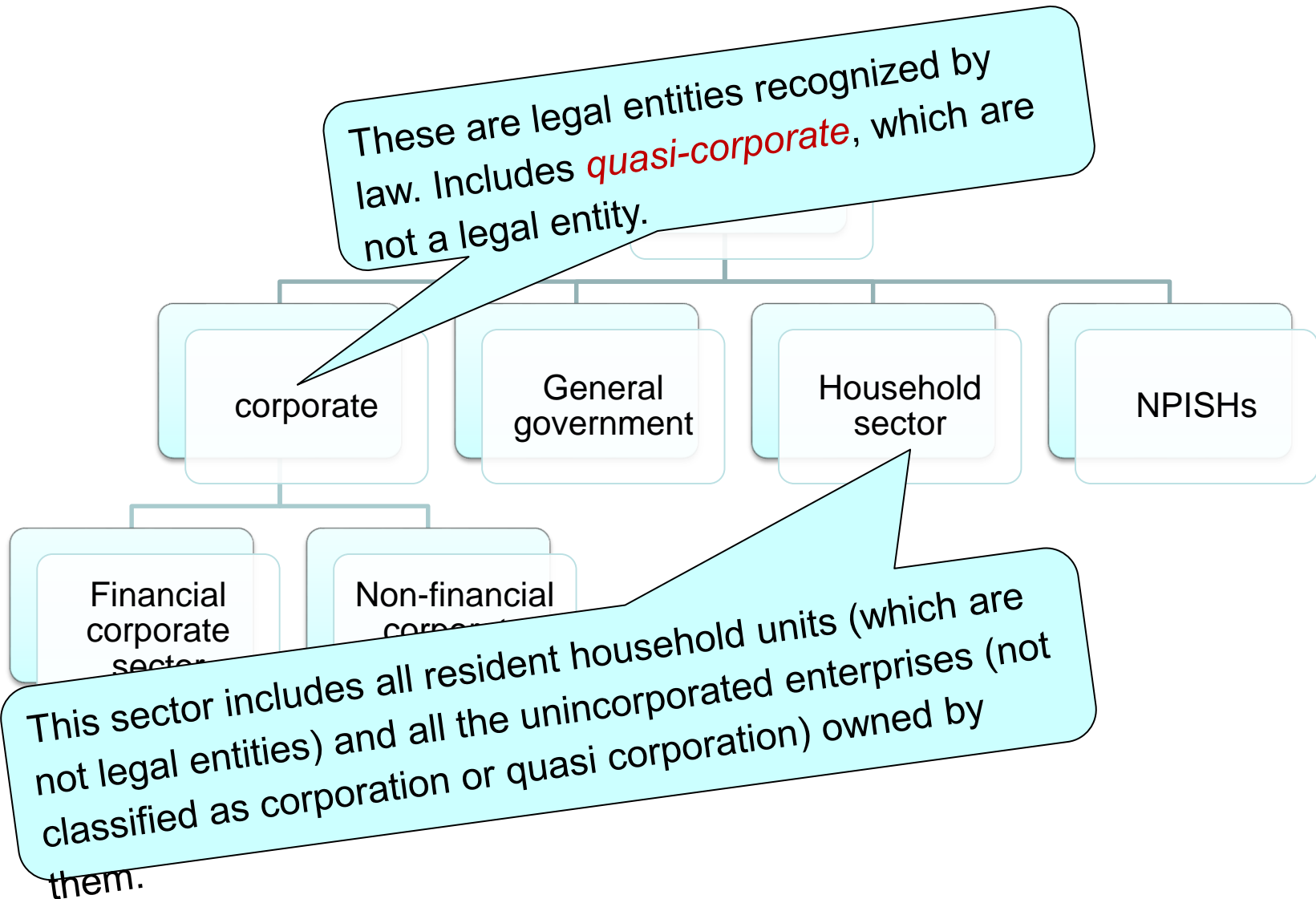
Some Questions – Domestic Economy

State whether TRUE or FALSE.

1. Foreign students staying for three years are considered residents of the host country. **Q 1. FALSE**
2. A branch of Citi Bank (an American bank) in Tokyo is a resident of Japan. **Q 2. TRUE**
3. Australian crew of a ship of a Japanese company are considered residents of Japan. **Q 3. FALSE**
4. Non-residents are not considered to be owners of immovable property in the host country. **Q 4. TRUE**
5. All unincorporated businesses without separate accounts (i.e. households run businesses whose accounts are mixed with household) belong to household sector. **Q 5. TRUE**
6. Branch of foreign NPI serving residents households is treated as a resident NPISH. **Q 6. TRUE**
7. Central Bank is part of the general government sector. **Q 7. FALSE**
8. A branch of a Japanese company in Thailand is resident of Thailand. **Q 8. TRUE**

Domestic Economy

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

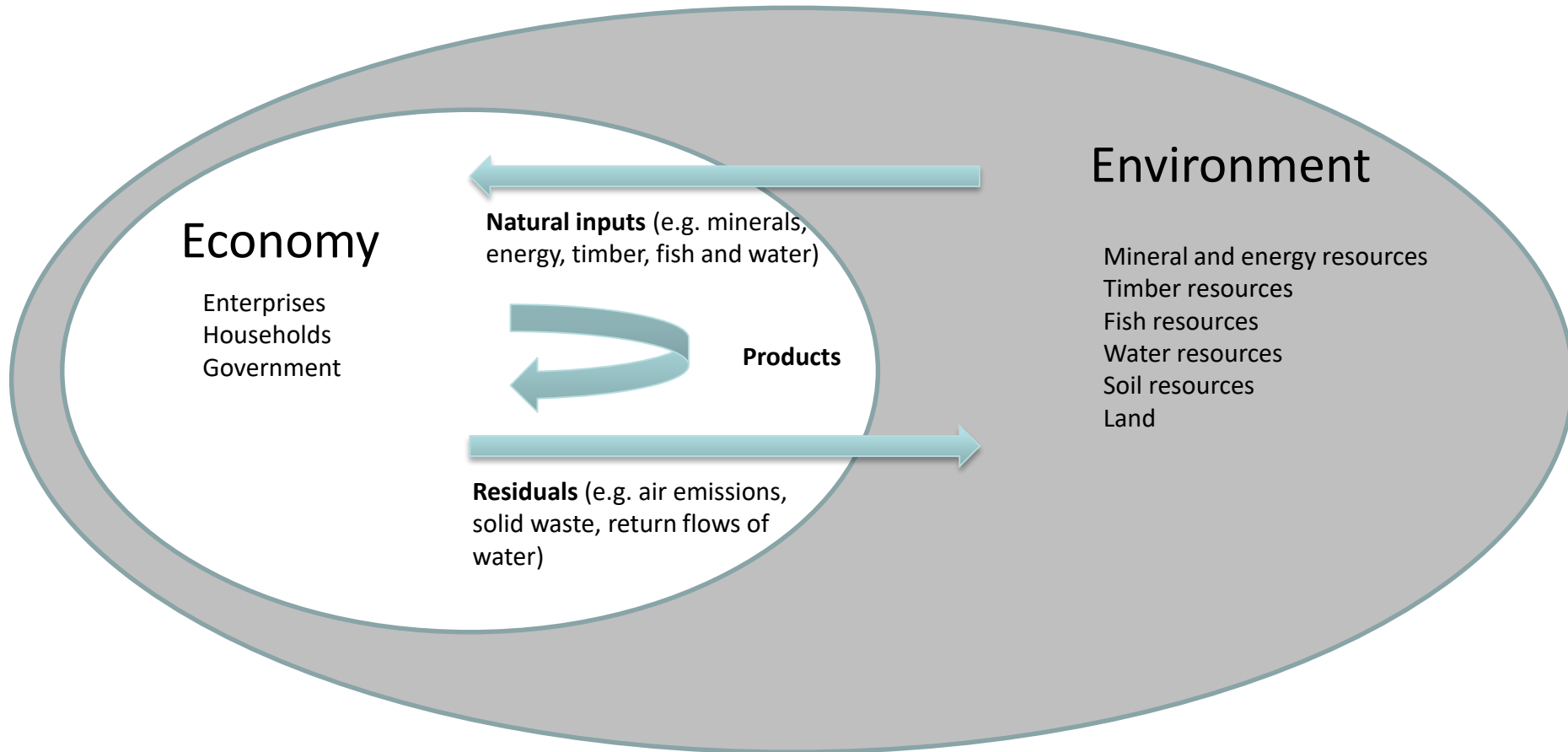


The Production Boundary

- “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



Product Flows in the SEEA





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 in SNA (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)



Own accounting production – recording in SNA and SEEA

- SNA
 - recording is limited to the production of goods for own use
 - i.e. exclude own intermediate consumption
- SEEA
 - Record all own account and intra-establishment production and use of goods and services
 - i.e. include own intermediate consumption
- Example
 - Production of energy through the incineration of waste by an establishment for own intermediate consumption is recorded in SEEA but not in SNA



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



Defining Environmental Assets



Discussion:

What “Things” Might be
Considered Environmental
Assets?



Definition of Environmental Assets

“Environmental assets are the naturally occurring living and non-living components of the Earth, together constituting the bio-physical environment, which may provide benefits to humanity”



One Environment : Two Perspectives

Individual
environmental
assets /
resources

Timber
Water
Soil
Fish



Ecosystems

Forests
Lakes
Agricultural
areas



Scope of Individual Resources

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



Physical and Monetary Scope

- In principle, when accounting for environmental assets in physical terms include all environmental assets whether or not they have a monetary value
 - 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



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

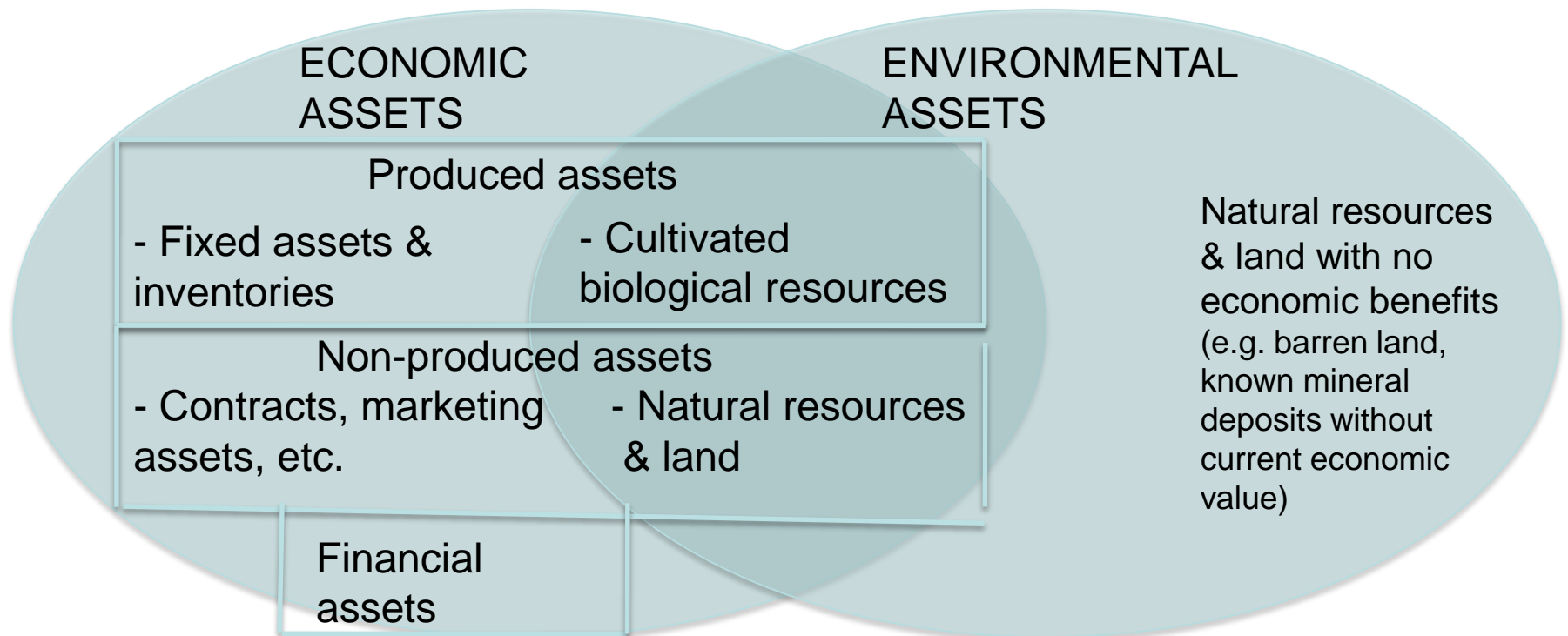


Ecosystem Assets

- Areas comprising combinations of individual resources (timber, soil, water, etc) but also having ecological processes and characteristics
- Aim to assess
 - Condition of the ecosystem within an area (i.e. how is it functioning, quality of processes)
 - Flow of ecosystem services to economic and human activity
- Ecosystem asset accounting measures environmental impact rather than environmental pressures



Economic and Environmental Assets





Key Messages

- Environmental assets can be seen from two perspectives: individual resources & ecosystems
- Both natural and cultivated resources are included in scope
- Scope is generally broader in physical terms than in monetary terms
- Land is accounted for in terms of area/space



Exercise:

Defining the scope of
measurement



The Structure of Accounts

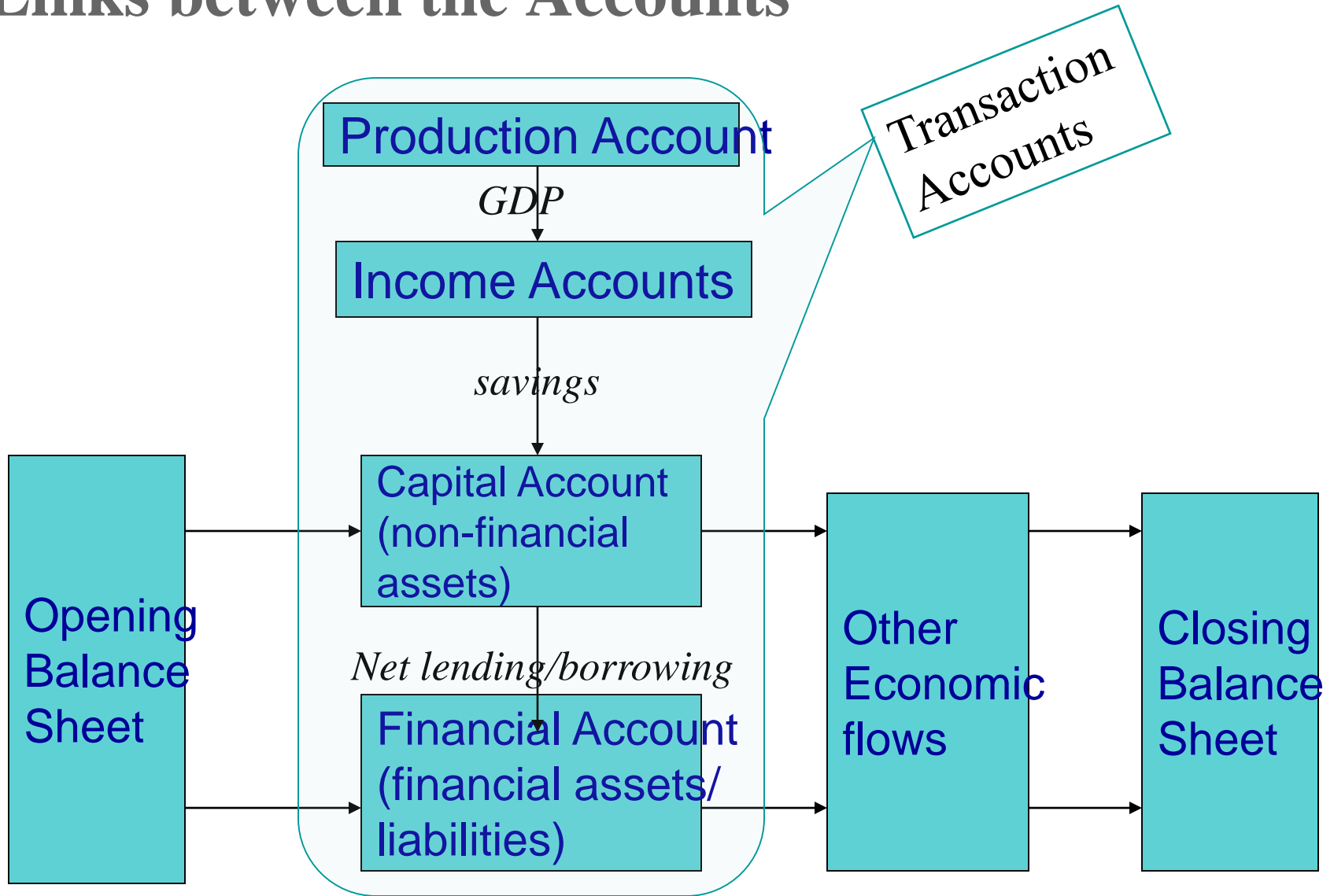


Sequence of Accounts

- Describes sequence of interconnected flow accounts linked to different types of economic activity taking place within a given period of time, together with balance sheets that record the values of the stocks of assets and liabilities held by institutional units or sectors at the beginning and end of the period
- Each flow relates to a particular kind of activity such as production, or the generation, distribution, redistribution or use of income

Sequence of Accounts

Links between the Accounts





Organization of Accounts

- Current accounts
 - Left hand side – Uses
 - Right hand side – Resources
- Accumulation accounts
 - Left hand side – Changes in assets
 - Right hand side – Changes in liabilities and net worth
- Balance sheets
 - Left hand side – Assets
 - Right hand side – Liabilities and net worth



Sequence of Accounts (cont.)

■ Production account

Resources	Uses	Balancing item
Output	Intermediate consumption	<i>Gross value added</i>
	Consumption of fixed capital	<i>Net value added</i>

■ Generation of income account

Resources	Uses	Balancing item
		<i>Gross value added</i>
	Compensation of employees	
	Taxes less subsidies	<i>Gross operating surplus</i>



Sequence of Accounts (cont.)

- Allocation, distribution and use of income

Resources	Uses	Balancing items
		<i>Gross operating surplus</i>
Compensation of employees		
Taxes less subsidies		
Property income receivable	Property income payable	<i>Balance of primary income</i>
Current transfers receivable	Current transfers payable	<i>Gross disposable income</i>
	Final consumption expenditure	<i>Gross saving</i>



Sequence of Accounts (cont.)

- Capital account

Resources	Uses	Balancing item
		<i>Gross saving</i>
	Gross fixed capital formation	
	Change in inventories	
Sales of non-produced assets (incl. natural resources)	Purchases of non-produced assets (incl. natural resources)	
Capital transfers receivable	Capital transfers payable	<i>Net lending</i>



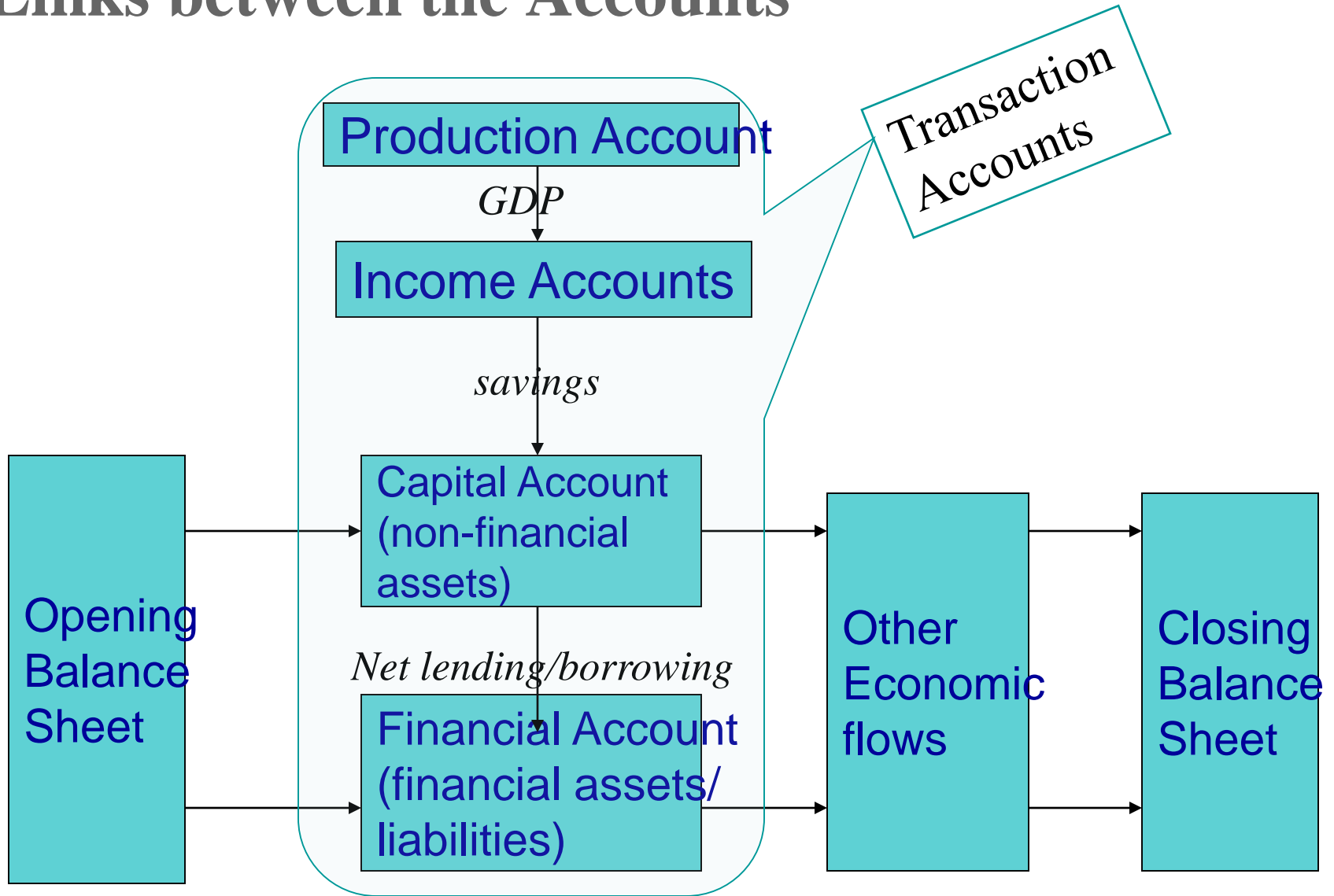
Sequence of Accounts (cont.)

- Asset account

Opening stock	Additions	Reductions	Closing stock
Produced assets	Gross Fixed Capital Formation	Consumption of fixed capital	
Non-produced assets	Natural growth	Natural losses	
		Extraction	
	Discoveries	Catastrophic losses	
	Purchases of non-produced assets	Sales of non-produced assets	
Financial assets and liabilities	Financial transactions	Financial transactions	

Sequence of Accounts

Links between the Accounts



System of Environmental-Economic Accounts (SEEA) view

	Industries	Final demand	Assets		
Sectors			Financial and produced assets, opening balance	Natural resource assets, opening balance	Natural resource assets, opening balance
Commodities	Industrial output of goods and services				
	Industrial intermediate demand Environmental protection expenditures	Final demand Environmental protection expenditures	Gross fixed capital formation Capital expenditures for environmental protection		
	Resource production by industries Resource use by industries	Resource production by households/gov't Resource use by households/gov't			
Wastes	Waste consumption by industries Waste output by industries	Waste consumption by households/gov't Waste output by households/gov't			
Sectors			Other changes in volume & holding gains/losses on financial & produced assets	Changes in and holding gains/losses on natural resource assets	Changes in natural resource assets
			Financial and produced assets, closing balance	Natural resource assets, closing balance	Natural resource assets, closing balance



Supply and Use Tables

- Matrices that record how supplies of different kinds of goods and services originate from domestic industries and imports and how those supplies are allocated between various intermediate or final uses, including exports
- Involve the compilation of a set of integrated production and generation of income accounts for industries by drawing upon detailed data from industrial censuses or surveys
- Provide an accounting framework within which the product flow method of compiling national accounts, whereby the total supplies and uses of individual types of goods and services have to be balanced with each other, can be systematically exploited



Accounting and balancing identities

- Supply and use identity
 - Within the economy, the amount of a product supplied must also be used with the economy, most likely by a range of different economic units, or exported
 - Total supply of natural inputs = Total use of natural inputs
 - Total supply of products = Total use of products
 - Total supply of residuals = Total use of residuals
- Input-output identity
 - Over an accounting period, flows of materials into an economy must equal the flows of materials out of an economy plus any net additions to stock in the economy



Basic Supply and Use Table

Industries	Households	Government	Accumulation	Rest of the world	Total
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Supply table

Products	Output		Imports	Total supply
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Use table

Products	Intermediate consumption	Household final consumption expenditure	Government final consumption expenditure	Gross capital formation (incl. changes in inventories)	Exports	Total use
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Value added

Supply table – show the flows relating to the production, generation, and supply of natural inputs, products and residuals by different economic units by different economic units or the environment

Supply table	Production; Generation of residuals		Accumulation	Flows from the rest of the world	Flows from the environment	Total
	Production; Generation of residuals by industries (incl. household production on own account) - classified by ISIC	Generation of residuals by households	Industries - classified by ISIC			
Natural inputs					A. Flows from the environment (incl. natural resource residuals)	Total Supply of Natural Inputs (TSNI)
Products	C. Output (incl. sale of recycled and reused products)			D. Imports of products		Total Supply of Products (TSP)
Residuals	I1. Residuals generated by industry (incl. natural resource residuals) I2. Residuals generated following treatment	J. Residuals generated by household final consumption	K1. Residuals from scrapping and demolition of produced K2. Emissions from controlled landfill sites	L. Residuals received from rest of the world	M. Residuals recovered from the environment	Total Supply of Residuals (TSR)
Total supply						

Use table	Intermediate consumption of products; Use of natural inputs; Collection of residuals	Final consumption*	Accumulation	Flows to the rest of the world	Flows to the environment	Total
	Industries - classified by ISIC	Households	Industries - classified by ISIC			
Natural inputs	B. Extraction of natural inputs B1. Extraction used in production B2. Natural resource residuals					Total Use of Natural Inputs (TUNI)
Products	E. Intermediate consumption (incl. purchase of recycled and reused products)	F. Household final consumption (incl. purchase of recycled and reused products)	G. Gross Capital Formation (incl. fixed assets and inventories)	H. Exports of products		Total Use of Products (TUP)
Residuals	N. Collection and treatment of residuals (excl accumulation in controlled landfill sites)		O. Accumulation of waste in controlled landfill sites	P. Residuals sent to the rest of the world	Q. Residual flows to the environment Q1. Direct from industry and households (incl. natural resource residuals & landfill emissions) Q2. Following treatment	Total Use of Residuals (TUR)
Total use						

Use table – show the flows relating to the consumption and use of nature inputs, products and residual by different economic units or the environment

Connections between SUT and asset accounts

						Asset accounts (Physical and monetary terms)		
						Produced assets	Environmental assets	
						Opening stock		
Monetary supply and use table	Product-supply	Output			Imports			
	Product-use	Intermediate consumption	Household final consumption expenditures	Government final consumption expenditures	Exports	Gross capital		
Physical supply and use table	Natural inputs-supply							Extracted natural resources
	Natural inputs-use	Imports of natural resources						
	Product-supply	Output			Imports			
	Product-use	Intermediate consumption	Household final consumption			Exports	Gross capital formation	
	Residual-supply	Residuals generated by industry	Residuals generated by household final consumption			Residuals received from the rest of the world	Residuals from scrapping and demolition of produced assets; Emissions from controlled landfills	
	Residuals-use	Collection & treatment of waste and other residuals			Residuals sent to the rest of the world	Accumulation of waste in controlled landfills	Residuals flowing to the environment*	
						Other changes in volume of assets (e.g. natural growth, discoveries, catastrophic losses)		
						Revaluations		
						Closing stock		



Key Messages

- All economic stocks and flows can be organized and placed in context
- National accounting is not only output and intermediate consumption
- One account is not sufficient – different questions require a focus on different accounts and balancing items
- The accounting system is complete and internally consistent



The SEEA Central Framework Accounts

- 1. Flow accounts:** supply and use tables for products, natural inputs and residuals (e.g. waste, wastewater) generated by economic activities.
 - physical (e.g. m² of water) and/or monetary values (e.g. permits to access water, cost of wastewater treatment, etc.)
- 2. 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)
- 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



Physical flows accounts

Physical flow accounts	<i>Topics covered (detailed definition)</i>
Full set of supply and use tables for materials	All resources and materials (energy, water, air emissions, water emissions, solid waste) (CF 3.45)
Economy-wide material flow accounts (MFA)	Supply and consumption of energy; air emissions, water emissions, and solid waste (CF 3.279)
Physical supply and use tables for water (PSUT water)	Supply (precipitation) and consumption of water (CF 3.186)
Physical supply and use tables for energy (PSUT energy)	Supply and consumption of energy (CF 3.140)
Air emissions accounts	Air emissions (CO ₂ , pollutants) (CF 3.233)
Water emissions accounts	Water emissions (CF 3.257)
Waste accounts	Solid wastes (CF 3.268)

- CF = Central Framework, white cover edition, refers to paragraph number



Asset accounts

Asset accounts	<i>Topics covered (detailed definition)</i>
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 5.172)
Land	Physical and monetary accounts for land, land cover, land use and forest (CF 5.235)
Soil resources	Area and volume of soil resources (CF 5.318)
Timber resources	Physical and monetary accounts for timber resources (CF 5.343)
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 3.233)
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 5.462)
Water resources	Stock of water resources (CF 5.471)



Monetary flows accounts

Monetary flow accounts	<i>Topics covered (detailed definition)</i>
Environmental protection expenditure accounts (EPEA)	Output of EP services in economy and expenditures on EP goods and services by resident units (CF 4.45)
Resource use and management accounts (RUMEA)	Production, supply and use, expenditures on and financing of resource management (CF 4.121)
Environmental goods and services sector (EGSS)	Characteristics of all producers of products intended for environmental protection and resource management (CF 4.95)
Environmentally related payments by government	Environmental subsidies, social benefits to households, investment grants and other current and capital expenditures (CF 4.138)
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 4.149, CF 4.159)
Permits and licenses to use environmental assets	Permits to extract and harvest natural resources (CF 4.174)
Emissions permits	Permits for the use of the environment as a pollution sink (emissions permits) (CF 4.182)
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 4.194)



THANK YOU