Systems of Environmental and Economic Accounting – Central Framework (SEEA-CF): SEEA concepts, definitions and what is needed to get started!

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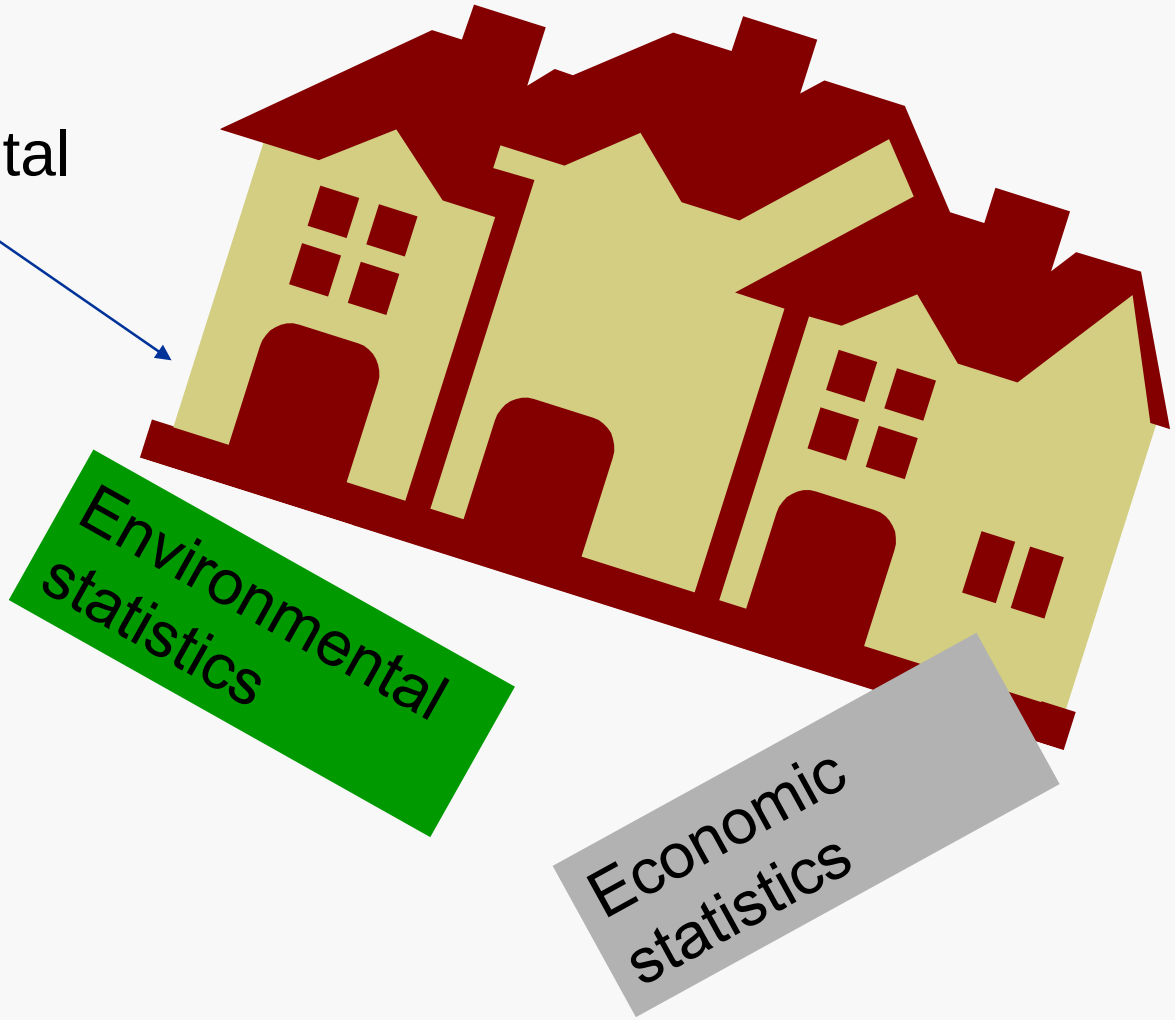
Get dirty with data – SEEA Physical Energy Flow Accounts
Statistics Norway, EFTA and UNECE
Minsk, Belarus

Environmental accounts are built using good statistics, both environmental and economic statistics

Environmental Accounts

Without good statistics, accounts can not be developed

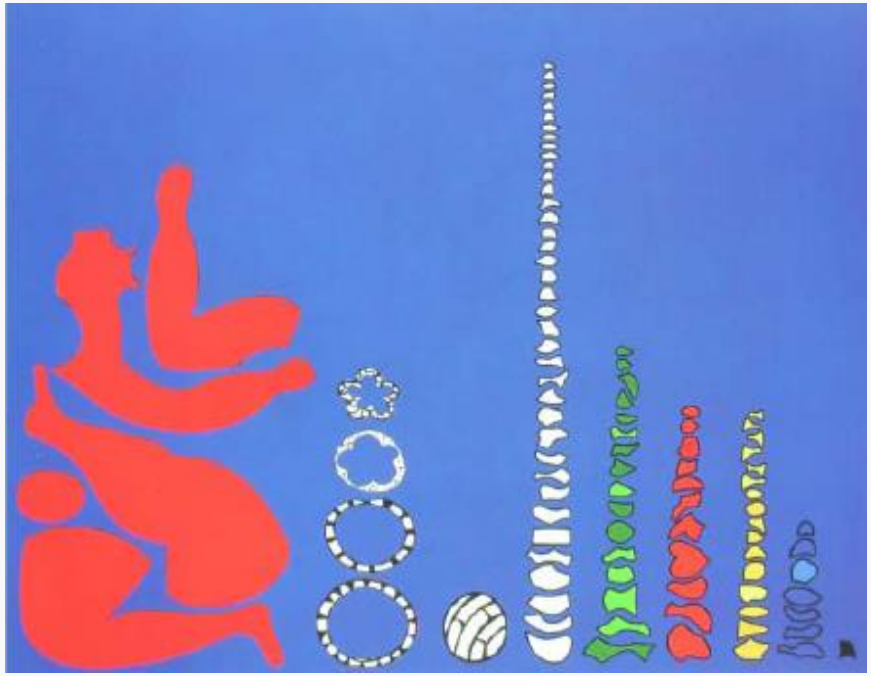
Environmental Accounts



Why make environmental accounts? Aren't environmental statistics enough?

Statistics

- Often developed to answer one particular question or problem.
- Difficult to figure out if all information is included.
- Not always easy to see the whole picture, or how it relates to other things.



Why make environmental accounts? Aren't environmental statistics enough?

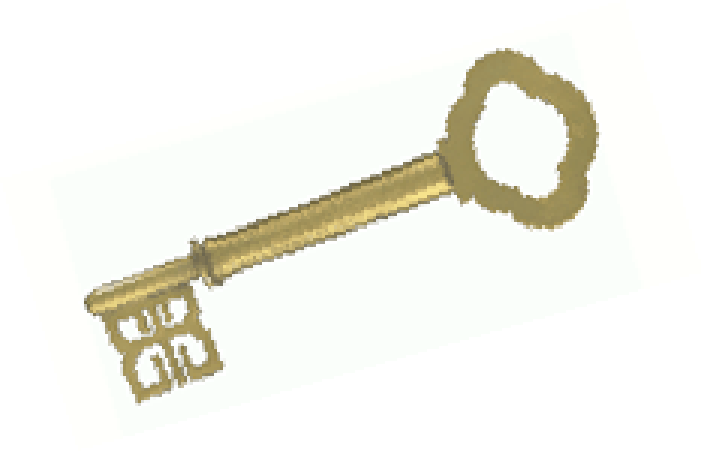
Environmental accounts

- Helps to make sense of the larger picture.
- Helps to identify pieces that are missing
- Can make connections to other statistics - especially economic statistics

Environmental accounts are satellite accounts to the System of National Accounts (SNA)

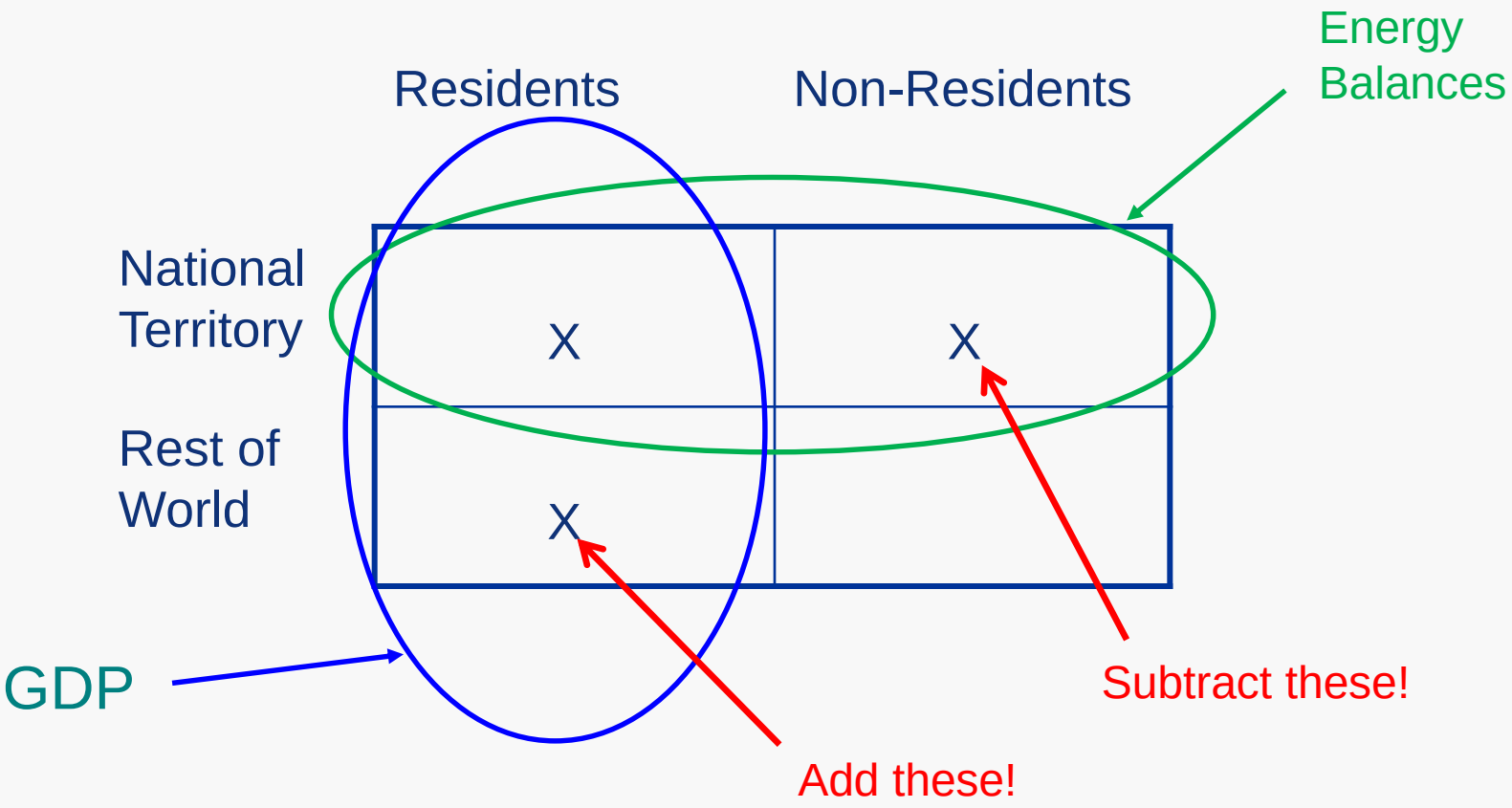
- What is “wrong” or missing from the SNA?
- Values of natural resources not included in the national accounts until they enter the economic system.
- In other words, in the SNA,
  - A tree has no value until it is cut down.
  - GDP increases with environmental accidents since economic activity is stimulated. No negatives are included for damage to the environment.

KEY: same classifications!
And same system boundaries



Environmental Accounts
⇔
National Accounts

Difference between SNA boundary and territory boundary (Main difference is usually international transport)



Need to make the environmental statistics/accounts correspond to the national accounts definitions

- What about imports and exports? Need to be included since part of national accounts.
- Double counting? Are units counted 2 times?
- Production boundary for national accounts different than for physical data?
- Territorial definition vs. economic definition (national accounts)

Guidelines & framework: SEEA System of Environmental Economic Accounting

SEEA Central Framework: (https://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf)

- Integration framework consisting of agreed concepts, definitions, classifications and accounting tables for environmental accounting
- Common concepts (e.g. residence) and classifications (ISIC, CPC) as in the National Accounts (SNA)
- Includes complementary elements (e.g. physical information, etc.)

SEEA extensions and applications: Country examples

SEEA-ecosystems: Enlarged asset boundaries

Systems of Environmental and Economic Accounting Central Framework (SEEA-CF, 2012)

1. Physical Flow Accounts
2. Environmental Activity Accounts and related flows (Economic accounts related to environment)
3. Asset accounts in physical and monetary terms
4. Integrated or combined accounts (hybrid, 'NAMEA')

SEEA-CF 2012 does NOT go as far as «Green GDP» - only as far as depletion

- SEEA-CF 2012 only goes as far as including depletion of natural resource assets to give depletion adjusted aggregates (see §2.63, Table 2.5, §6.26, Table 6.3, §6.94)

- To get to «Green GDP» one would have to include estimates of environmental damages – but there are no market prices so including things that are different from SNA

1. Physical Flow accounts

- Physical flow accounts (material flows)
  - Measured in physical units (for example: tonnes)
  - Natural resources and Products (for example, water, energy)
  - Residuals (pollution): emissions to air, water emissions/pollution, waste

- Physical Supply and Use Table (PSUT)
  - Nature is added into the monetary SUT format
  - Table 3.1 in SEEA-CF 2012

Start with SNA Supply and Use Table (SUT)

Table 2.1
Basic form of a 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 consump-tion expendi-ture	Gross capital formation (including changes in inventories)	Exports	Total use
	Value added					

Note: Dark grey cells are null by definition.

https://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf

SEEA-CF: Physical Supply and Use Table – extended to include the environment

Table 2.2
Basic form of a 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

Note: Dark grey cells are null by definition. Blank cells may contain relevant flows, which are explained in detail in chapter III.

https://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf

2. Economic accounts- flows: What are we spending now?

Environmental Protection Expenditure Accounts (demand)
Environmental Goods and Services (supply)
Policy instruments – taxes, subsidies, permits

- Information is already included in the SNA. Goal is to separate it from the standard accounts to show who is spending how much on environmental protection.
- Economic information about environmental protection activities
  - Supply: Environment industry – environmental goods & services
  - Demand: environmental protection expenditure by industries and government
- Environmentally related taxes, subsidies and permits

3. Asset accounts in physical and monetary terms – General structure

Table 2.3
Basic form of an asset account

Opening stock of environmental assets
Additions to stock
Growth in stock
Discoveries of new stock
Upward reappraisals
Reclassifications
Total additions of stock
Reductions of stock
Extractions
Normal loss of stock
Catastrophic losses
Downward reappraisals
Reclassifications
Total reductions in stock
Revaluation of the stock[a]
Closing stock of environmental assets

[a] Only applicable for asset accounts in monetary terms.

- Same format for both physical and monetary units
- Start with physical units – can be enough for policy needs
- Convert from physical units to monetary units – using NPV

- Types of natural resource assets:
  - Mineral and energy resources
    Oil, natural gas, coal
    Minerals – metallic and non-metallic
  - Timber resources
  - Aquatic resources

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Two major challenges in subsoil asset accounting:

1. How to measure the level of subsoil stocks in physical terms

2. How to place value on these

4. Integrated or combined accounts (Hybrid or 'NAMEA')

- Combined accounts (key: same industry classifications)
  - Linking physical and national accounts data together
  - Thereby showing the relationships between economic activity and environmental consequences
  - Can be used for analysing industries that are important contributors to pollution

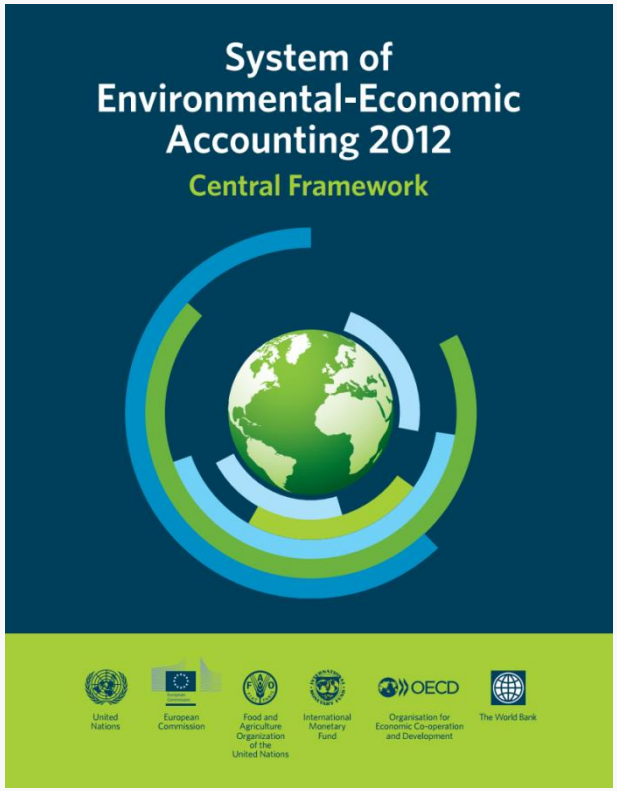
- Ratio indicators – often used in 'Green Economy' indicators
- Main data set for analysis purposes – ratio, profiles, decomposition, ee I-O…

NAMEA = *N*ational *A*ccounting *M*atrix including *E*nvironmental *A*ccounts

Course Focus:
Physical Flow Energy Accounts (PEFA)

International Energy Agency
Secure • Sustainable • Together

Physical Supply and Use Tables



Thank you for your attention!

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