

Energy and air emission accounts: an introduction

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Content

- Why compile energy and air emission accounts ?
- What are the energy accounts ?
- What are the air emission accounts ?
- What can you do with these accounts ?



Why compile energy and air emission accounts ?

- SEEA consists of a coherent, consistent and integrated set of tables and accounts
- Accounting approach that records, as completely as possible, the stocks and flows of energy within the economy as well as energy-related aspects of environmental issues
- Supports analyses of the role of energy within the economy and of the relationship between energy-related activities and the environment
- Concepts and definitions that comprise SEEA-Energy are designed to be applicable across all countries, irrespective of how their energy is produced and used
- Legal base in Europe

What are the energy accounts ?



1) Physical flow accounts – PSUT

2) Monetary flow accounts – MSUT

3) Asset accounts – physical and monetary terms

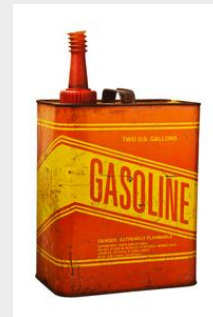
→ **Flexibility in implementation**

Energy physical flow accounts

- Physical flow accounts describe the physical flows between the economy and the environment and within the economy
- Structure based on monetary supply and use tables from SNA
- Physical units: Joule
- Energy flows consist of flows of (i) energy from natural inputs, (ii) flows of energy products, and (iii) energy residuals

Classifications of energy flows

- **Natural inputs:** *flows of energy from the removal and capture of energy from the environment by resident economic units.*
- **Energy products:** *products that are used (or might be used) as a source of energy*
- **Energy residuals:**
 - a) *Energy losses (transport, transformation, heat loss)*
 - b) *Energy embodied in products (non energetic use)*



Energy SUTs (simplified)

PHYSICAL SUPPLY TABLE FOR ENERGY:

	Mining (ISIC B)	Manufacturing (ISIC C)	Electricity (ISIC D)	Households	Flows from the environment	Total
Energy from natural inputs						
Coal						
Solar						
Energy products						
Coal						
Electricity						
Heat						
Energy residuals						
Extraction						
Transformation						
Other						
Total						

→ Supply equals use !

PHYSICAL USE TABLE FOR ENERGY:

	Mining (ISIC B)	Manufacturing (ISIC C)	Electricity (ISIC D)	Households	Flows to the environment	Total
Energy from natural inputs						
Coal						
Solar						
Energy products-- Transformation						
Coal						
Energy products--end use						
Coal						
Electricity						
Heat						
Energy residuals						
Extraction						
Transformation						
Other						
Total						

→ inputs equals output !

Energy statistics and balances

- Basic energy statistics should feed into the balances and accounts
- Basic energy statistics and energy balances provides the starting point in the compilation of physical flow energy accounts
- Some **differences between accounts and balances**
 - Differences in terminology and concepts
 - Conceptual differences territory principle / residence principle
 - Treatment of transport
 - Allocation to ISIC

Compilation of energy PSUTs

- 1) Find the right source data
 - Basic energy data
 - Energy balances
- 2) Put the data in the accounting format
- 3) Make corrections for the SNA/SEEA concepts
- 4) Allocate supply and use to ISIC

Air emission accounts



- ‘Supply’ of air emissions
- Close link to energy physical flow accounts
- Residence principle
- Allocation to industries (ISIC) and households

Table

Supply table for air emissions

Type of substance	Generation of emissions								Accumulation Emissions from landfill	Total supply of emissions
	Industries					Households				
	Agriculture	Mining	Manufacturing	Transport	Other	Transport	Heating	Other		
Carbon dioxide	10 610.3	2 602.2	41 434.4	27 957.0	82 402.4	18 920.5	17 542.2	1 949.1	701.6	204 119.6
Methane	492.0	34.1	15.8	0.8	21.9	2.4	15.5	1.7	222.0	806.3
Dinitrogen oxide	23.7		3.5	0.8	2.6	1.0	0.2	0.1	0.1	32.0
Nitrous oxides	69.4	6.0	37.9	259.5	89.0	38.0	12.1	1.3	0.3	513.6
Hydroflouorocarbons			0.3		0.4					0.7
Perflouorocarbons										
Sulphur hexaflouride										
Carbon monoxide	41.0	2.5	123.8	46.2	66.2	329.1	51.2	5.7	1.1	666.9
Non-methane volatile organic compounds	5.2	6.5	40.0	16.4	27.2	34.5	29.4	3.2	0.9	163.3
Sulphur dioxide	2.7	0.4	28.0	62.4	8.1	0.4	0.4	0.1	0.0	102.5
Ammonia	107.9		1.7	0.2	0.9	2.3	11.4	1.2	0.2	125.9
Heavy metals										
Persistent organic pollutants										
Particulates(incl PM10, dust)	7.0	0.1	8.5	9.3	4.4	6.0	2.8	0.5	0.0	38.5

Compilation challenges

- Data sources
 - Inventory approach versus energy first approach
- Many the same challenges as for energy flow accounts
 - Correcting for the residence principle
 - Allocation to ISIC
 - Transport

What can you do with these accounts ?

- Key indicators
 - Totals for the economy
 - Emission and energy intensities by industry
 - Decoupling
- 2030 Sustainable Development Agenda
 - Goal 7 on Energy
- Analysis
 - Decomposition analysis
 - Input for footprint analysis
- Modelling and scenario analysis

Guidelines and handbooks

- SEEA CF
- SEEA energy
- Eurostat guidelines
 - Physical Energy Flow Accounts Manual
 - Air emission accounts manual
- SEEA technical notes



Thank you for your attention!

