



Combined presentation, aggregates and indicators

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Module content

- A. Combined presentation of accounts and SEEA aggregates
- B. SEEA Applications and Extensions
 - Applications of the SEEA data - Environmental indicators and analysis
 - Analytical Techniques - Environmentally-extended Input-Output tables
 - Extensions of the SEEA



A. Combined presentations

- Comparison between monetary and physical information possible through use of
 - Common and aligned structures
 - Aligned measurement boundaries
 - Consistent classifications (especially industry)
- Many possibilities
 - Thematic approach for energy, water, emissions, forests
 - “Production function” approach for individual activities – e.g. agriculture
- Organisation of data in combined presentation allows simple derivation of indicators



Combining physical and monetary data

- **Greatest strength of the SEEA**
- **Environmental indicators**
 - Productivity and intensity indicators
 - Decoupling indicators
 - Polluter pays type indicators
 - Sets of indicators (e.g. sustainable development indicators)
- **Input-output type analysis**
 - Footprint indicators
 - Life-cycle analysis, Material flow analysis
 - Models of international trade



Example: Combined table for water data

	Industries (by ISIC categories)						Rest of the world	Taxes less subsidies on products, trade and transport margins	Actual final consumption
	ISIC 1-3	ISIC 5-33, 41-43	ISIC 35	ISIC 36	ISIC 37	ISIC 38,39,45-99			
1. Supply of water products (Currency units)									
Natural water		13	1	6 570	14	7	6 605	1	- 2
Sewerage services					5 022		5 022	2	14
2. Total supply of products	170 737	267 143	195 769	6 570	5 036	6 478 288	7 123 543		
3. Intermediate consumption and final use (Currency units)									
Natural water	406	643	88	1 004	100	1 229	3 470	4	3 074
Sewerage services	3	229	1	13	1	1 406	1 653	3	3 316
Other products	145 597	125 181	180 683	2 360	1 718	5 842 990	6 298 529		605 817
4. Gross value added (Currency units)	24 731	141 090	14 997	3 193	3 217	632 663	819 891		
5. Employment	371	2 211	61	41	43	8 204	10 931		
6. Supply of water (Millions m³)									
Supply of water to other economic units				378					
Total returns	65	29	400	47	484	1	1 026		5
7. Use of water (Millions m³)									
Total Abstraction	108	115	404	440	100	2	1 169		
of which: Abstraction for own use	108	115	404	50	100	2	780		11
Use of water received from other economic units	39	45	4			51	139		240
8. Gross fixed capital formation (Currency units)									
For water supply	582	16	819	2 872			4 289		
For water sanitation					2 874		2 874		
9. Closing Stocks of fixed assets for water supply (Currency units)	6 112	84	9 871	25 347		17	41 431		
10. Closing Stocks of fixed assets for water sanitation (Currency units)					37 457		37 457		
11. Water consumption (Millions m³)	76	43	3	2	1	4	128		10



Totals and aggregates

- Physical flows accounts
 - Total flows of water, energy, air emissions and solid waste for the economy as a whole or for individual industries and households
- Assets accounts
 - Total physical flows of natural resources including extractions and natural losses can be obtained as well as total values of natural resources and any associated depletion.
- Sequence of accounts
 - Depletion adjusted balancing items such as depletion adjusted net value added and depletion adjusted net saving.
- Functional accounts, EPEA, EGSS
 - national expenditure on environmental protection and total production, value added and employment of environmental goods and services may be obtained.



Structural statistics

- Structures of different physical and monetary flows
- Examples
 - Share of total emissions by households
 - Share of water use by agriculture
 - Share of total area being used for maintenance
 - Share of land owned by different industries



B. SEEA Applications and Extensions



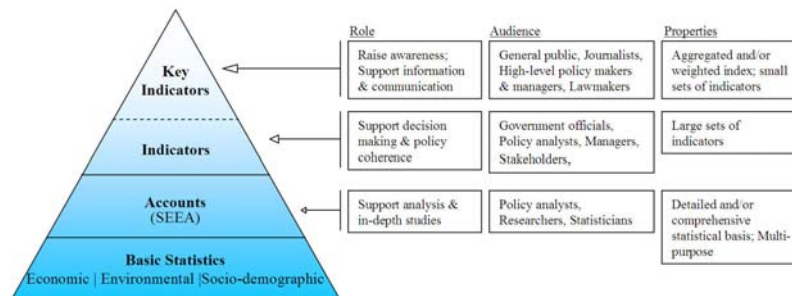
SEEA Applications and Extensions

- Companion document document of the SEEA Central Framework
- SEEA AE is a summary of the most common applications and extensions (not exhaustive in coverage)
- Provides compilers and users of SEEA based environmental-economic accounts with material to show how the information in the accounts can be used in decision-making, policy review and formulation, analysis and research



Indicators

- Key component of SEEA AE
- Can serve many purposes
- Allow for simplified communication





Resource use and environmental efficiency

- Efficiency indicators compare trends in economic activity
 - such as value-added, income or consumption with trends in specific environmental flows such as emissions, energy and water use, and flows of waste
- Intensity indicators -- ratio of the environmental flow to the measure of economic activity
- Productivity indicators -- inverse of intensity.



Resource use and environmental efficiency

- Efficiency indicators—two broad categories
- Environmental efficiency indicators characterise the environmental and economic efficiency with which pollutants and other residuals generated in production and consumption are mitigated, controlled and prevented. They are usually expressed as intensity or productivity ratios.
- Resource efficiency indicators characterise the efficiency with which natural resources, including water, energy and other materials are used in production and consumption. They are usually expressed as intensity or productivity ratios. They relate environmental variables such as the extraction, supply or consumption of natural resources and materials to economic variables such as output, income and value added.



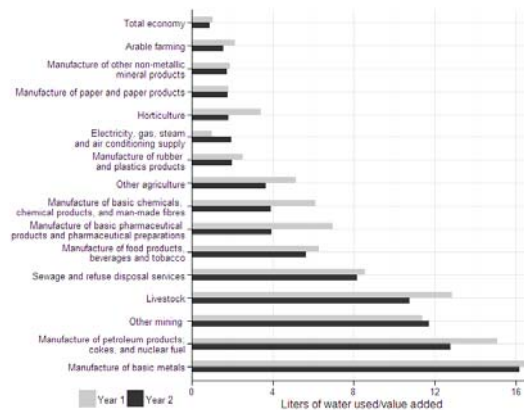
Resource use and environmental efficiency

- Environmental efficiency indicators
 - Greenhouse Gas (GHG) or CO₂ productivity
 - Air pollutant emission intensities
 - Water pollution intensities
- Resource efficiency indicators
 - Material productivity or intensity indicators
 - Energy productivity or intensity indicators
 - Water use productivity or intensity indicators



Resource use and environmental efficiency-example

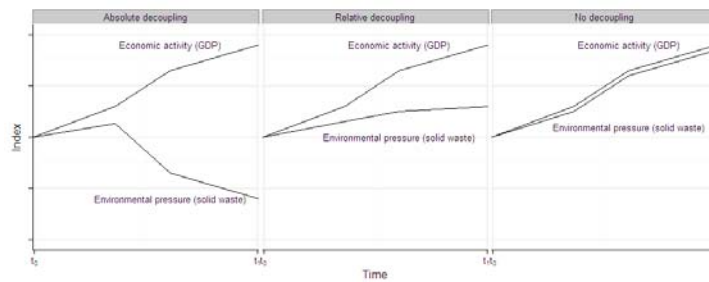
Industry level water use intensity indicators





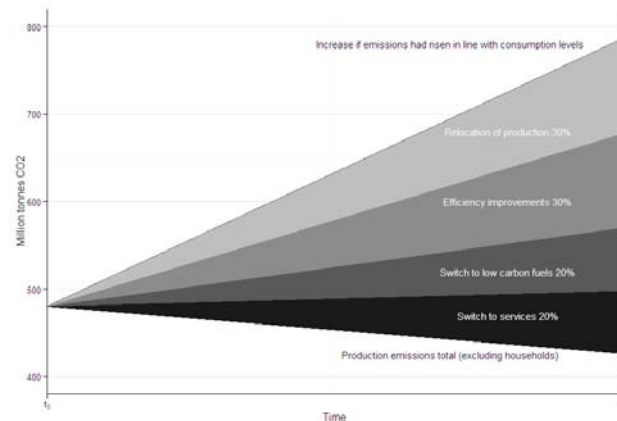
Resource use and environmental efficiency-decoupling

- Absolute: growth in the environmentally relevant variable is flat or decreasing while economic activity increasing
- Relative: growth rate of the environmentally relevant variable is positive but less than the growth rate of the economic variable



Resource use and environmental efficiency-decomposition

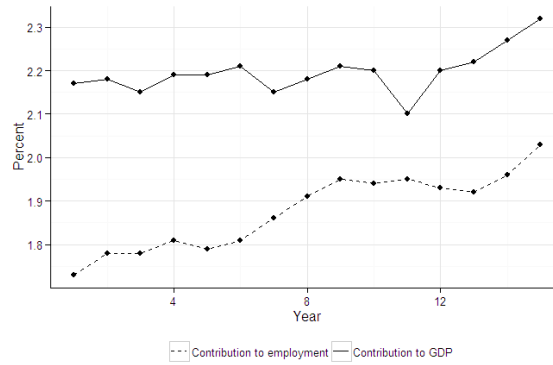
Decomposition of changes in CO2 emissions





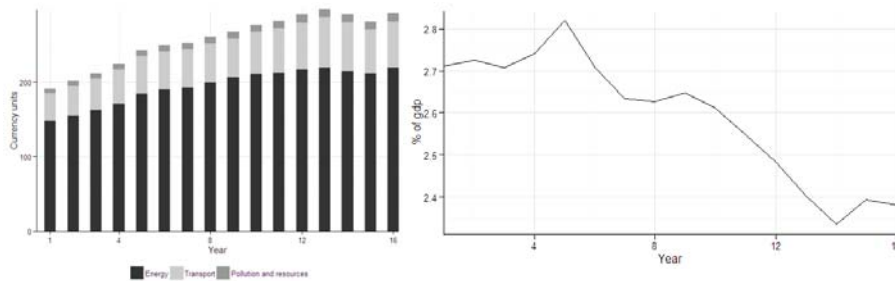
EGSS-example

EGSS contributions to GDP and employment



Taxes-example

Environmental tax revenue by type and as % of GDP





Analytical Techniques: Environmentally extended I-O tables



Environmentally Extended Input-Output tables (EE-IOT)

- Integrated datasets that combine information from standard economic input-output tables in monetary units and information on environmental flows, such as flows of natural inputs and residuals, that are measured in physical units
- Many types of EE-IOT (single region input-output, hybrid, multiregional input-output)
- Useful for multiplier and decomposition analysis



Environmentally Extended Input-Output tables (EE-IOT)

A single region input-output table (SRIO) with environmental data

<i>Data in monetary terms</i>							
	Industries			Final demand			Total output
	<i>l</i>	...	<i>j</i>	Final consumption	Gross capital formation	Exports	
Industries	<i>l</i>						
	...						
		<i>Z</i>		<i>c</i>	<i>f</i>	<i>e</i>	<i>q+m</i>
	<i>j</i>						
Value added			<i>v</i>				
Total inputs		<i>q</i>		<i>c_{tot}</i>	<i>f_{tot}</i>	<i>e_{tot}</i>	
<i>Data in physical (non-monetary) terms</i>							
Natural inputs / residuals		<i>r</i>					<i>r_{tot}</i>



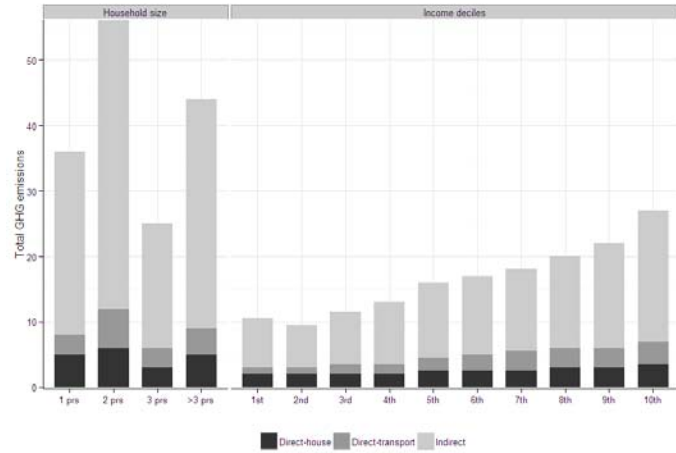
Extensions of the SEEA

- Spatial disaggregation (e.g. attribution of various data to spatial areas)
- Connections to households and household activities
- Thematic presentations (e.g. tourism)



Extensions-household activity example

GHG emissions by household characteristics of size (persons) and income (deciles)



Thank you