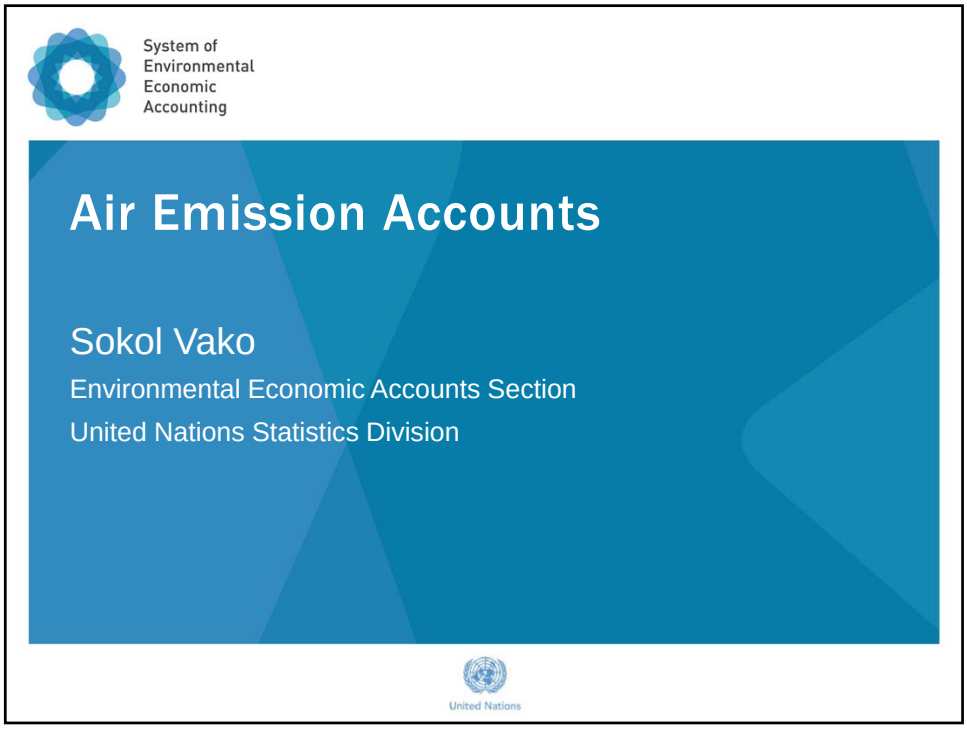

System of
Environmental
Economic
Accounting


System of
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Air Emission Accounts
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Environmental Economic Accounts Section
United Nations Statistics Division
United Nations

System of Environmental Economic Accounting

AIR EMISSION ACCOUNT

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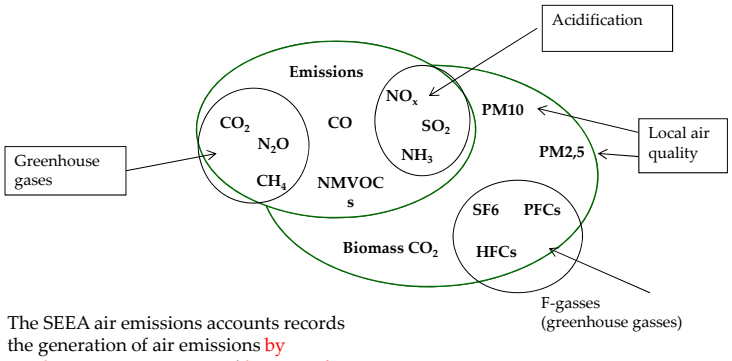
Air emission account

Scope of the accounts: Gaseous and particulate substances released to the atmosphere by establishments and households as a result of production, consumption and accumulation processes.



The SEEA air emissions accounts records the generation of air emissions by resident economic units and by type of substance.

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The air emission account

Supply table for air emissions

	Generation of emissions								Accumulation	Total supply of emissions
	Industries					Households			Emissions from landfill	
	Agriculture	Mining	Manufacturing	Transport	Other	Transport	Heating	Other		
Type of substance										
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
Hydroflourocarbons			0.3		0.4					0.7
Perflourocarbons										
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

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Things to note

- Residence principle
- Land use, land use change and forestry (**LULUCF**)
- Air emission accounts include:
  - Flaring and venting
  - Emissions from manure collected and spread on agricultural land are included (dissipative use)
  - Leakages from accumulations (durable goods like refrigerators, landfills, etc.) should be recorded as they occur
- Air emission accounts exclude:
  - Secondary emission (process that happen with the environment
  - Transboundary flows
  - Capture of gases by environment

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Air emission account

Energy accounts first approach

- Energy accounts—same classification as SNA (tool available to help get energy accounts from energy balances)
- Use emission factors
- Complete the picture by adding non-energy emission (e.g. industrial process)

Emission inventories first approach

- Adjust for residency principle
- Adjust for industry classification
- Adjust transport data

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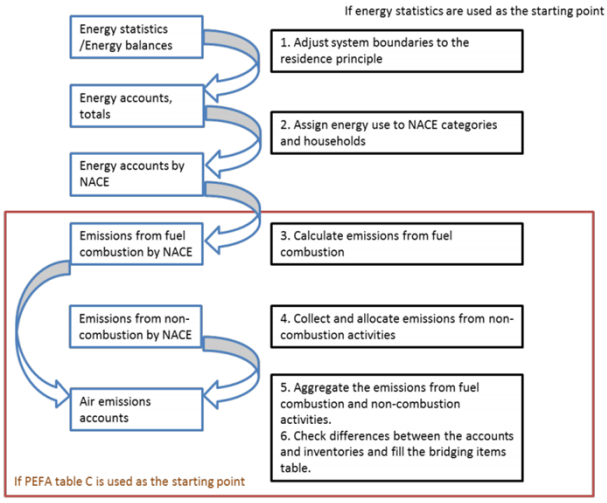
Energy first approach—a schematic



Source: Eurostat

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LINK TO EMISSION INVENTORIES

United Nations

Emission inventories vs. emission accounts

Air emissions inventory	Air Emissions Accounts
Territorial principle	Residence principle
Process-based allocation of emissions	Allocation of emissions to economic activities
Breakdown by seven sectors (Energy, industrial processes; solvent and other product use; agriculture; land use, land-use change and forestry; waste; other)	Breakdown by industries (NACE 2-digit level) and households
Functional allocation of transport emissions	Allocation of transport emissions to the final producer

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Two examples-Denmark

2014	Carbon dioxide incl. biomass (CO2), 1000 tonnes
Total emissions originating from the Danish territory (IPCC-inventory)	52 226
+Emissions caused by Danish residents operated vehicles abroad	2 255
+Emissions caused by Danish residents operated planes abroad	2 021
+Emissions caused by Danish residents operated ships abroad	30 388
+Other differences in emissions from transport and cross border trade	918
Total emissions from Danish economic activities (Environmental Accounts)	87 808

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Two examples-Netherlands

	2001	2005	2010	2011	2012	2013*
	Mton CO_2 equivalents					
1. Stationary sources[1]	184	180	183	169	168	168
2. Mobile sources on Dutch territory	40	41	41	42	41	41
3. Mobile sources according to IPCC	38	39	38	39	37	36
4. Short cyclic CO_2	8	11	14	14	14	13
5. Total, IPCC (excl. LULUCF)[2] = 1+3-4	213	208	208	194	191	192
6. Land Use, Land-Use Change and Forestry (LULUCF)	3	3	3	3	3	3
7. Total, IPCC (incl. LULUCF) = 5+6 (Kyoto-protocol)	215	211	211	197	195	195
8. Actual emissions in the Netherlands = 1+2	224	221	224	211	209	210
9. Residents abroad	26	26	25	25	26	26
10. Non-residents in the Netherlands	6	7	7	7	7	7
11. Total emissions by residents = 8+9-10	243	241	243	229	228	228

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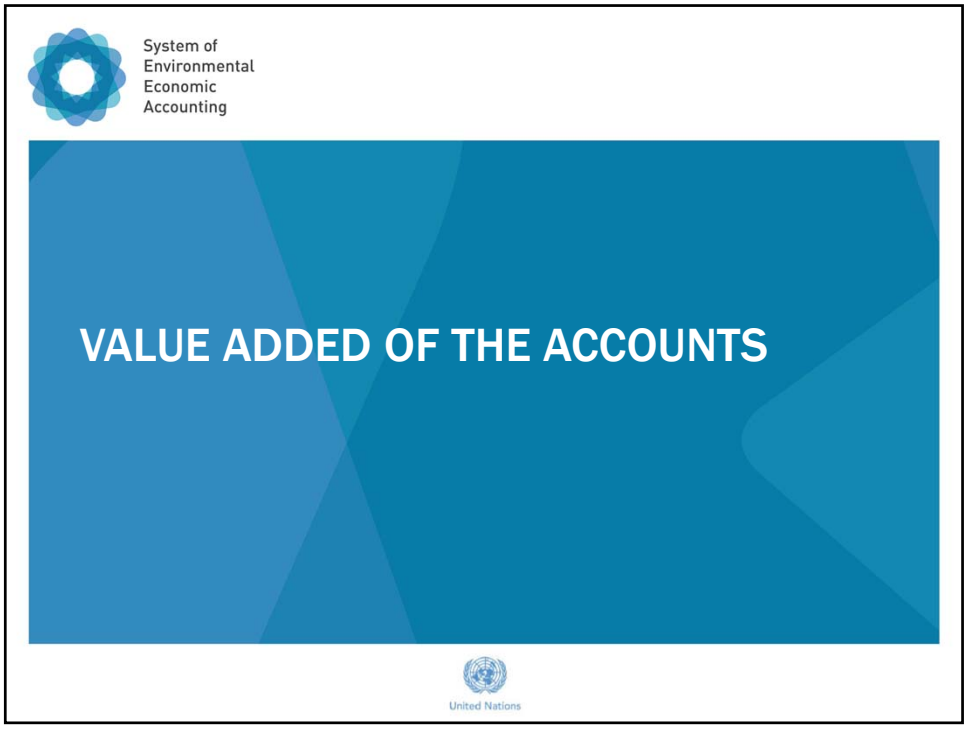

Examples

- offer a breakdown by emitting industries plus households as defined and classified in the national accounts.
- offer possibilities for coherent and detailed comparisons of air emissions and economic activities - contribution of a specific industry to total emissions of an economy
- offer possibilities for analysis through, for instance, input-output modelling

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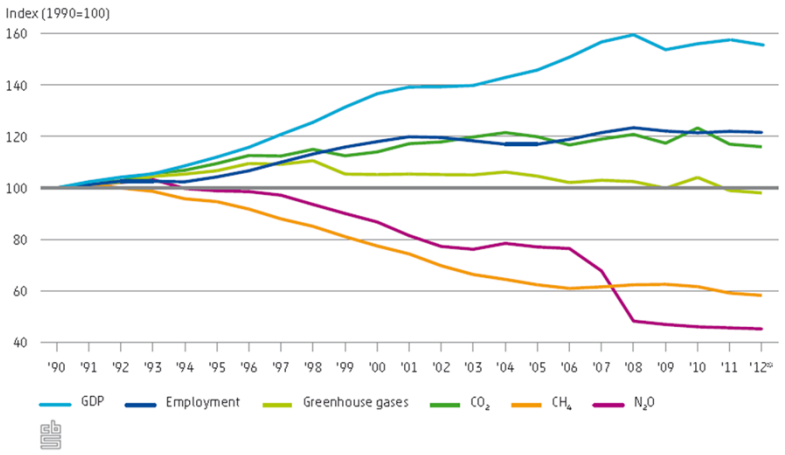
Applications



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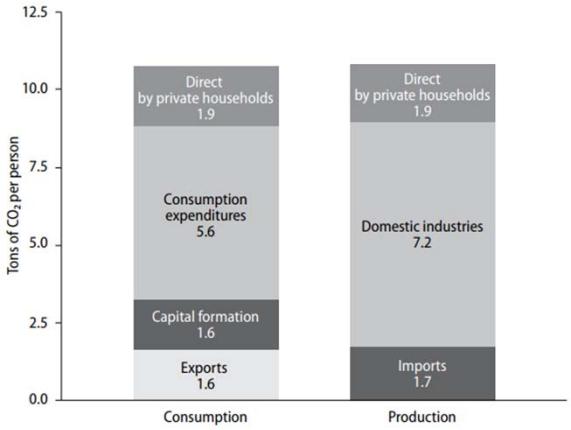
Applications

Production and consumption based CO_2 emissions per capita



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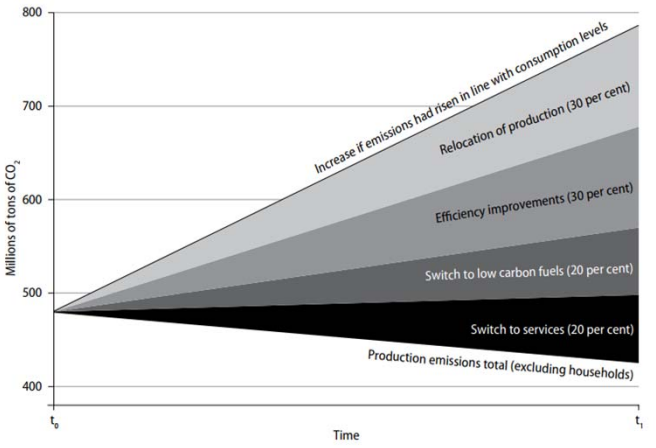
Applications

Decomposition of changes in CO_2 emissions



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SOME FINAL OBSERVATIONS

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Some final observations

- Implementation of air emission accounts closely linked to energy accounts and emission inventories
- Usefulness of bridge table for dissemination/communication
- Collaboration among different actors

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THANK YOU

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