

Environmental activity accounts

Environmental taxes and EGSS

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Outline (45min)

- What are environmental activity accounts?
 - Protection expenditures
 - Goods and services
 - Taxes and subsidies
- Questions and discussion (15min)



Learning objectives

- What Environmental Activity Accounts are and why they are important
- The basic concepts
- How they are treated in the SEEA
- Country examples
- Data sources and measurement challenges

Environmental Activity Accounts

	Industries	Final demand	Assets		
Sectors			Financial and produced assets, opening balance	Natural resource assets, opening balance	Natural resource assets, opening balance
	Industrial output of goods and services EGSS output				
Commodities	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

Scope of environmental activities

- SEEA-CF 4.11...*economic activities whose **primary purpose** is to reduce or eliminate pressures on the environment or to make more efficient use of natural resources.*
 - Environmental restoration, conservation
 - Resource management
 - Technologies to reduce impacts
 - Taxes, subsidies and permits

- How to decide on **primary purpose**?

Which are environmental?

- Installation of solar panels
 - Buying equipment to measure pollution
 - Buying an apartment in an area with less pollution
 - Buying mercury-free batteries
 - Installing low-flow shower
 - Taxing fuel
 - Taxing carbon emissions
-
- Remember: Primary purpose criterion?

Environmental Activities in SEEA-CF

Supply	Use	From → To
Environmental Goods and Services Sector (EGSS)	Environmental protection expenditure accounts (EPEA)	All → All
Environmental subsidies and similar transfers		Government → All
	Environmental taxes & permits	All → Government

Uses



- Implied in 9 SDGs
 - How much are we spending?
 - Who provides?
 - How financed?
- Assessing benefits/costs
- Allocating funds
- Tax or cap?



EPE Accounts

Table 4.1

Classification of Environmental Activities: overview of groups and classes

Group	Classes
I: Environmental protection (EP)	1 Protection of ambient air and climate
	2 Wastewater management
	3 Waste management
	4 Protection and remediation of soil, groundwater and surface water
	5 Noise and vibration abatement (excluding workplace protection)
	6 Protection of biodiversity and landscapes
	7 Protection against radiation (excluding external safety)
	8 Research and development for environmental protection
	9 Other environmental protection activities
II: Resource management (RM)	10 Management of mineral and energy resources
	11 Management of timber resources
	12 Management of aquatic resources
	13 Management of other biological resources (excluding timber and aquatic resources)
	14 Management of water resources
	15 Research and development activities for resource management
	16 Other resource management activities

EPE Accounts

- Environmental protection and expenditure accounts
 - Payments from user to supplier (\$)
 - Some information on “supply” but incomplete (→ EGSS)
 - SEEA-CF 4.45 *...to enable identification and measurement of society’s response to environmental concerns through the **supply of and demand for** environmental protection services and through the adoption of production and consumption behaviour aimed at preventing environmental degradation.*

EPE Accounts

- Table 4.2 Production of environmental protection specific services (\$)
 - Producers by type
- Table 4.3 Supply and use of environmental protection specific services (\$)
 - Specific services, taxes - subsidies
- Table 4.4 Total national expenditure on environmental protection (\$)
 - Who pays (by type; includes connected and adapted)
- Table 4.5 Financing of national expenditure on environmental protection (\$)
 - Who pays whom?

EPE Accounts

- Data sources
 - SNA for aggregates & benchmark
 - More detail
 - Government expenditure accounts
 - Balance of payments/trade
 - Focussed survey of EPE

EPE Accounts

- **Canada: Bi-annual industry Survey of Environmental Protection Expenditures (SEPE)**

The Daily Q		
In the news	Indicators	Releases by subject
Special interest	Release schedule	Information

Environmental protection expenditures by businesses, 2012

[Text](#)
[CANSIM tables](#)
[Related information](#)
[Previous release](#)
[PDF \(128 KB\)](#)

Released: 2015-04-29

Canadian businesses reported that they spent \$10.9 billion on environmental protection in 2012, up 15% from 2010.

Two categories of expenditures—pollution abatement and control processes, and waste management and sewerage services—accounted for just over half the total.

The oil and gas extraction industry reported spending \$4.7 billion or 43% of total business environmental protection expenditures. This was the most among the 16 industry groups surveyed. The mining and quarrying industry followed, spending \$1.4 billion or 12% of total expenditures, while the electric power generation, transmission and distribution industry spent just over \$1.3 billion in 2012.

EPE Accounts

- **Canada: Survey of Environmental Protection Expenditures (SEPE)**
 - 3,500 respondents (20+ employees)
 - Capital & operating expenditures
 - *“spending made in response to current or anticipated regulations, conventions or voluntary agreements”*
 - Spending on renewable energy and on greenhouse gas emission mitigation
 - All expenditures (including voluntary)

EPE Accounts

INEGI Mexico “Green” GDP

- Depletion costs
 - Hydrocarbons
 - Forest resources
 - Groundwater
- Degradation costs
 - Soil
 - **Solid waste treatment expenditures**
 - **Water pollution**
 - **Air pollution**
- 8.5% of GDP in 2003
- 6.3% in 2012
- National plan → 4.5% by 2018

COSTOS TOTALES POR AGOTAMIENTO Y DEGRADACIÓN AMBIENTAL, 2012
(MILLONES DE PESOS)

Concepto	Costos por agotamiento y degradación ambiental	Porcentajes respecto al PIB
Costos Totales	985,064	6.3
Costos por Agotamiento	261,620	1.7
Agotamiento de hidrocarburos	217,968	1.4
Agotamiento de recursos forestales	14,174	0.1
Agotamiento del agua subterránea	29,478	0.2
Costos por Degradación	723,444	4.6
Degradación del suelo	74,564	0.5
Residuos sólidos	51,569	0.3
Contaminación del agua	64,632	0.4
Contaminación atmosférica	532,679	3.4

Fuente: INEGI.

EPE Accounts

- Challenges
 - Small sample → limit detail released
 - Harmonizing with government & private expenditures

EGSS

- Environmental Goods and Services Sector
 - Supply side of environmental activities
= production of environmental goods and services
- Objective
 - assess the contribution of EGSS to the total economy and employment
- Indicators
 - Production, “green” employment, value added, exports, gross investment

EGSS

- Scope:
 - ...producers of all environmental goods and services
 - ...all products that are produced, designed and manufactured for environmental protection and resource management...
- Environmental specific services, connected products, adapted goods and technologies
- ‘Primary purpose’ criterion (technical nature of product or activity / intention of the producer)

EGSS



Sewage and refuse disposal



Recycling



Waste & scrap, recycled goods



Renewable energy production



Sustainable energy systems



Insulation



Equipment



Consulting & engineering



Construction, inspection



Organic agriculture



Government, NGOs, education

Environmental Goods and Services

- **Methodology:** activity / product approach
 - **Product approach:** Identify environmental goods and services in source data
 - **Activity approach:** Identify environmental activities in source data
- **Data sources:** surveys (new or already existing), statistics, SNA, external reports

Environmental Goods and Services

- ***Netherlands***
 - Many environmental activities have been identified by Statistics Netherlands as EGSS activities
 - For every activity a specific methodology has been developed to compile the data
- ***Canada***
 - Ongoing frame developed from existing surveys (EPE)
 - Screening in other surveys (e.g., innovation, biotech)

Environmental Goods and Services

- *Netherlands* data sources

Activity	Main source
Sewage and refuse disposal services	National accounts, supply and use tables
Wholesale in waste and scrap	National accounts, supply and use tables
Environmental related inspection and control	Employment registers
Government governance related to the environment	Environmental Statistics, EPE statistics
Organisations and associations on the environment	Employment registers and business register
Internal environmental activities at companies	Environmental Statistics, EPE statistics
Renewable energy production	Energy Statistics, Renewable energy statistics
Energy saving and sustainable energy systems	Own constructed database and Production Statistics
Insulation activities	National accounts
Organic agriculture	Agriculture statistics, area of organic agriculture
Recycling	National accounts, supply and use tables
Second hand shops	Production Statistics
Water quantity control by waterboards	National accounts, Government accounts
Environmental advice, engineering and other services ¹	Own constructed database and Production Statistics
Industrial environmental equipment ¹	Own constructed database and Production Statistics
Environmental technical construction ¹	Own constructed database and Production Statistics
Environmental related education	Education statistics

Environmental Goods and Services

Canada results

Table 1
Revenues from sales of environmental goods manufactured in Canada, by type of good, 2012

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Select columns

	Manufactured in Canada ¹
	thousands of dollars
Total	1,770,279
Renewable energy production	603,338 ^A
Non-hazardous waste management	308,540 ^B
Industrial air pollution or flue gas management	167,360 ^D
Industrial wastewater and municipal sewage treatment	506,729 ^B
Remediation of ground and surface water, leachate, soil, sediment and sludge	184,312 ^D

^A excellent (0.00% to 4.99%)

^B very good (5.00% to 9.99%)

^C good (10.00% to 14.99%)

^D acceptable (15.00% to 24.99%)

Note(s): Figures may not add up to the total as a result of rounding. Estimates contained in this table have been assigned a letter value to indicate the quality of the estimate, as measured by the coefficient of variation (expressed as a percentage).

Source(s): Survey of Environmental Goods and Services (1209).

Environmental Goods and Services

Canada results

Table 2
Revenues from sales of environmental services, by type of service and industry group, 2012

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Select columns

	Site remediation and emergency environmental services	Environmental consulting	Total
	thousands of dollars ¹	thousands of dollars ¹	thousands of dollars ¹
Total	756,804	1,536,405	2,293,209
Manufacturing and wholesale ²	86,380 ^B	...	86,380
Remediation ²	670,424 ^A	...	670,424
Environmental consulting services ³	.	1,536,405 ^A	1,536,405

. not available for any reference period

... not applicable

^A excellent (0.00% to 4.99%)

^B very good (5.00% to 9.99%)

Note(s): Figures may not add up to totals as a result of rounding. Estimates contained in this table have been assigned a letter value to indicate the quality of the estimate, as measured by the coefficient of variation (expressed as a percentage).

Source(s): Survey of Environmental Goods and Services (1209).

Environmental Goods and Services

- **Challenges**

- Identifying primary purpose
 - “widget” could be for pollution reduction or creation
- Identifying target population
 - Many industrial sectors (manufacturing, consulting)
- International comparability
 - Scope
 - Methodology
 - Data sources
 - The more effort, the larger the EGSS?
- Cleaner goods / resource efficient goods = “green”?
- Integration in EPEA / ReMEA
- Dissemination of the results (confidentiality)

Environmental taxes

- ... *tax base is a physical unit of something that has a ... negative impact on the environment*
 - Energy taxes: Carbon, fuel, other
 - Transport taxes
 - Pollution taxes
 - Resource taxes
- Remember “primary purpose” criterion

Environmental taxes

Table 4.9
Environmental taxes by type of tax

Type of environmental tax	Type of tax						Total
	Taxes on products	Other taxes on production	Taxes on income		Other current taxes	Capital taxes	
			Corporations	Households			
Energy taxes	10 800	1 500				300	12 600
Carbon taxes	4 600						4 600
Taxes on fuel used for transport	4 700						4 700
Other energy taxes	1 500	1 500				300	3 300
Transport taxes	2 600	800			1 400	100	4 900
Pollution taxes	400	500			200		1 100
Resource taxes	200	400			300		900
Total environmental taxes	14 000	3 200			1 900	400	19 500
Non-environmental taxes	79 000	15 400	23 000	74 000	5 800	1 600	198 800
Total taxes	93 000	18 600	23 000	74 000	7 700	2 000	218 300
<i>Share of environmental taxes (percentage)</i>	<i>17.7</i>	<i>20.8</i>	<i>0.0</i>	<i>0.0</i>	<i>32.8</i>	<i>25.0</i>	<i>9.8</i>

Environmental subsidies

- *4.138 ...transfer intended to support activities that protect the environment or reduce the use and extraction of natural resources...*
 - *subsidies, social benefits to households, investment grants and other current and capital transfers.*

Environmental subsidies

Table 4.8
Selected payments to and from government and similar transactions

		Payments received by				
		Government	Corporations	Households	NPISH ^a	Rest of the world
Payments made by	Government	Transfers between levels of government	Subsidies and investment grants	Current and capital transfers	Subsidies; current and capital transfers	Current and capital transfers
	Corporations	Taxes, fines, fees, charges and rent	Rent	Rent	Donations	Donations to NPISH in rest of the world
	Households	Taxes, fees, charges and fines			Donations	Donations
	NPISH ^a	Taxes	Current and capital transfers	Current and capital transfers		Current and capital transfers
	Rest of the world	Taxes and current transfers			Donations	

^a Non-profit institutions serving households.

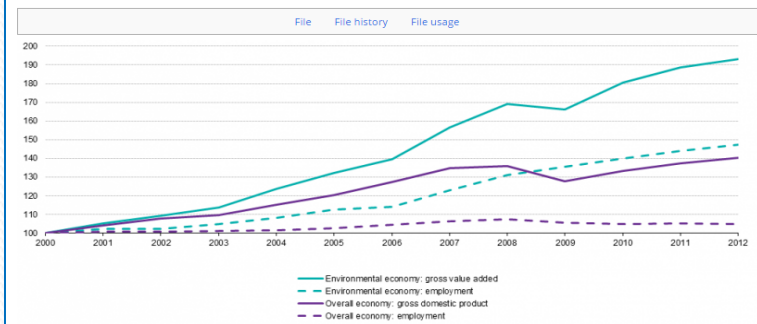
Environmental taxes & subsidies

- Data sources
 - SNA
 - Tax department
 - Surveys
- Country examples
 - EU

Environmental activities (EU)

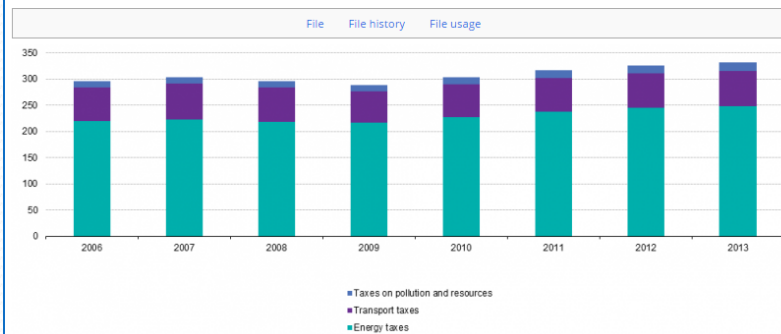
- EGSS
- EPEA
- Taxes, transfers and subsidies

File:Development of key indicators for the environmental economy and the overall economy, EU-28, 2000-12 (2000 = 100) YB15.png



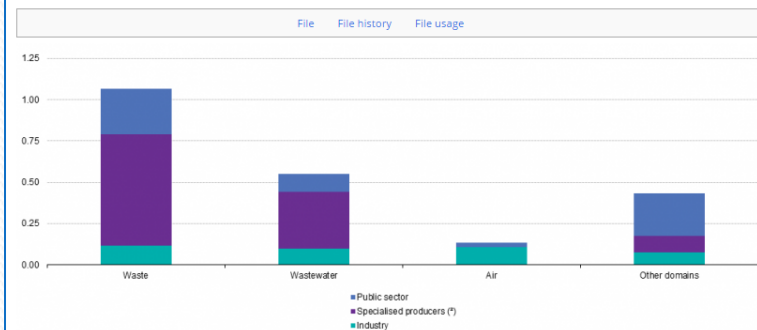
(*) Estimates.
Source: Eurostat (online data codes: env_ac_egss1, env_ac_egss3, nama_10_pe and nama_gdp_c)

File:Total environmental tax revenue by type of tax, EU-28, 2006-13 (1) (billion EUR) YB15.png



(*) Provisional.
Source: Eurostat (online data code: env_ac_tax)

File:Total environmental protection expenditure by domain, EU-28, 2013 (1) (% of GDP) YB15 II.png



(*) Estimates.
(*) Air: not available.
Source: Eurostat (online data codes: env_ac_exp12 and env_ac_exp2)

Environmental Activities

- Discussion
 - Does your NSO track Environmental Activities?
 - EPE, EGSS, taxes, subsidies
 - Which would be the most important?
 - Who are/could be your data providers

References

- Statistics Netherlands: <https://www.cbs.nl/en-gb/our-services/methods/surveys/korte-onderzoeksbeschrijvingen/environmental-protection-expenditure>
- Statistics Canada: <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=1903>
- Eurostat: <http://ec.europa.eu/eurostat/web/environment/environmental-goods-and-services-sector>
- OECD: <http://www.oecd.org/tad/envtrade/environmentalgoodsandservices.htm>

Acknowledgements

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Thank you

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Table 4.2
Production of environmental protection specific services (currency units)

	Producers				Total
	Specialist producers			Own-account producers	
	Government producers	Other specialist producers	Non-specialist producers		
Output of environmental protection specific services	3 000	6 500	2 400	1 600	13 500
Intermediate consumption	2 000	3 000	600	400	6 000
Environmental protection specific services	1 800	1 500	500	300	4 100
Other goods and services	200	1 500	100	100	1 900
Gross value added	1 000	3 500	1 800	1 200	7 500
Compensation of employees	600	2 000	1 200	800	4 600
Taxes less subsidies on production					
Consumption of fixed capital	400	1 000	600	400	2 400
Net operating surplus		500			500
Supplementary items					
Labour input (hours worked)	4 000	10 000	4 500	4 000	22 500
Gross fixed capital formation	1 100	1 000	2 000	500	4 600
Acquisition less disposals of non-produced, non-financial assets		200			

Table 4.3

Supply and use of environmental protection specific services (*currency units*)

Supply table

	Output at basic prices	Taxes less subsidies on products	Trade and transport margins	Output at purchasers' prices	Imports	Total supply
Environmental protection specific services	13 500	270		13 770		13 770

Use table

	Intermediate consumption		Final consumption		Gross fixed capital formation	Exports	Total use
	Specialist producers	Other producers	Households	Government			
Environmental protection specific services	1 500	7 400	2 970	1 800	100		13 770

Table 4.4
Total national expenditure on environmental protection (currency units)

	Users						Total
	Industry			Households	General government	NPISH ^a	
	Producers of environmental protection specific services		Other producers				
	Specialist producers	Non-specialist and own-account producers					
Type of expenditure by product							
Environmental protection specific services							
Intermediate consumption	NI	4 000	3 400				7 400
Final consumption				2 970	1 800		4 770
Gross fixed capital formation	NI		100				100
Connected products							
Intermediate consumption	NI		200				200
Final consumption							
Gross fixed capital formation	NI						
Adapted goods							
Intermediate consumption	NI						
Final consumption				600			600
Gross fixed capital formation	NI						
Capital formation for characteristic activities	2 100	2 500					4 600
Transfers for environmental protection not included above							
Environmental protection transfers to and from the rest of the world (net)					200		200
Total national expenditure on environmental protection	2 100	6 500	3 700	3 570	2 000		17 870

Note: Dark grey cells are null by definition.

"NI" means "not included in the derivation of total national expenditure on environmental protection".

^a Non-profit institutions serving households.

Table 4.5
Financing of national expenditure on environmental protection (*currency units*)

Financing units	Users							Total
	Producers of environmental protection specific services			Households	Government	NPISH ^a	Rest of the world	
	Specialist producers	Non-specialist and own-account producers	Other producers					
Government	1 300	1 100			1 700		300	4 400
Corporations								
Specialist producers	800	5 400						6 200
Other producers			3 700					3 700
Households				3 570				3 570
National expenditure	2 100	6 500	3 700	3 570	1 700		300	17 870
Rest of the world					100			100
Total uses of resident units	2 100	6 500	3 700	3 570	1 800		300	17 970

^aNon-profit institutions serving households.