

# Environmental activity accounts: EPEA and EGSS

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## Introduction

### SEEA CF :

- Physical flow accounts
- Asset accounts
- **Monetary activity accounts** ←

**Monetary activity accounts:** *separately identify environmentally-related transactions presented in the existing SNA flow accounts in order to make them more explicit for analysis*

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## Key concepts

- What are environmental activities ?
- How can we classify environmental activities ?
- What are environmental goods and services ?
- What are environmental producers ?

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## Scope and definition of environmental activities

**The scope of environmental activities** include those economic activities whose primary purpose is to reduce or eliminate pressures on the environment or to make more efficient use of natural resources.

### Primary purpose criterion

→ Technical nature of the activity

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## Environmental protection and resource management

### Environmental protection

→ activities whose primary purpose is the prevention, reduction and elimination of pollution and other forms of degradation of the environment  
→ Classified by environmental domain



### Resource management

→ activities whose primary purpose is preserving and maintaining the stock of natural resources and hence safeguarding against depletion.  
→ Classified by type of resource



## Classification of environmental activities

Group	Classes
CEPA	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
CReMA	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

## Characteristic or non-characteristic activities

- Environmental activities that directly serve an environmental purpose are called **characteristic environmental activities**.
- Activities that produce specifically designed products whose use serves an environmental purpose are called **non-characteristic environmental activities**.



## Environmental goods and services

- **Specific services**  
(characteric products)



- **Connected products**

- **Adapted products**



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## Environmental producers

- Specialist producers
    - Government
    - Other industries (primarily ISIC 37-39)
  - Non-specialist producers (secondary production)
  - Own-account producers
- Can also be classified according to ISIC

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## Exercise: which activities are environmental ?

- Installation of solar panels to generate electricity
- Buying equipment to measure pollution
- Buying an apartment in an area with less pollution
- Buying mercury free batteries
- Buying a railway ticket (instead of going by car)
- Taking environmental education

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## Environmental activity accounts in SEEA-CF



- **Environmental protection expenditure accounts (EPEA)**
- Resource management expenditure accounts (ReMEA)
- **Environmental goods and service sector (EGSS)**
- Environmental taxes
- Environmental subsidies and similar transfers
- Environmental permits

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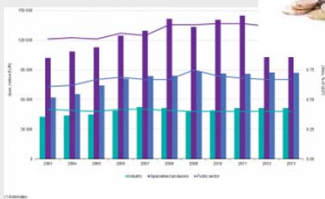


## Guidelines and handbooks

- SEEA CF
- Eurostat handbook on EPEA
- Eurostat handbook on ReMEA
- Eurostat handbook on EGSS
- Eurostat EGSS – Practical guide
- SEEA technical notes



## Environmental protection expenditure (EPEA)



## EPEA

- **EPEA** = Environmental Protection Expenditure Account
- **Purpose:** to enable identification and measurement of society's response to environmental concerns through the supply of and demand for environmental protection services.
- **EPEA** provide information on the *output* of environmental protection specific services produced across the economy and on the *expenditure* of resident units on all goods and services for environmental protection purposes.
- The EPEA is as a functionally oriented **satellite account** to the national accounts

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## Why EPEA ?



To answer questions on economic efforts made by a country for environmental expenditure

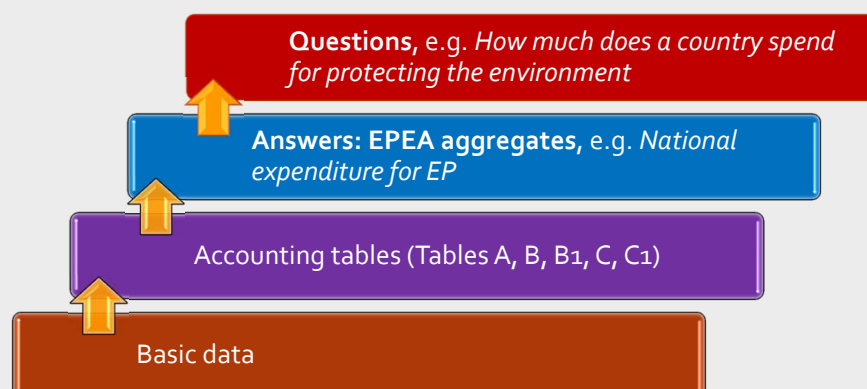
- How much does a country spend for protecting the environment? (use side)
- Which is the size of the sector of the economy which carries out EP activities? (supply side)
- Who finances the national expenditure for EP? (financing perspective)
- Who pays for EP? (cost born by each sector of the economy)

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## How does EPEA answer the questions?



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## Main data sources

- Government statistics : COFOG 05
- Budget analysis
- National accounts: production account ISIC 37-39
- Structural business statistics
- Specific surveys for environmental expenditure

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## Tables of the EPEA

### Four tables:

1. Combined production and generation of income account
2. Supply and use tables for specific services
3. National environmental expenditure account
4. Financing of National expenditure on environmental protection

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## 1) Production of environmental protection specific services

	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			



## 2) Supply and use of environmental protection specific services

**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

## 3) Total national expenditure on environmental protection

Type of expenditure by product	Users						
	Industry			Households	General government	NPISH*	Total
	Producers of environmental protection specific services		Other producers				
	Specialist producers	Non-specialist and own-account producers					
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".

\* Non-profit institutions serving households.



## Key aggregates / indicators



- How much does a country spend for protecting the environment? (use side)  
→ **Total NATIONAL EXPENDITURE FOR EP**
- Which is the size of the sector of the economy which carries out EP activities? (supply side)  
→ **PRODUCTION OF EP SERVICES**
- Who pays for EP? (cost born for EP)  
→ **NET COST OF EP** (Financial burden of EP, cost of EP actually born by each institutional sector)

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## NATIONAL EXPENDITURE FOR EP

*Production environmental services +*  
*Taxes on products/subsidies/ VAT +*  
*Import environmental services –*  
*Export environmental services =*  
**Environmental services for National use +**  
*Gross fixed capital formation +*  
*Environmental transactions Rest of the world =*  
**Total national expenditure for environmental protection**

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## Resource management expenditure accounts (ReMEA)

- Same principles, tables but for **resource management** (CReMA)
- Expenditures on energy management (renewable energy, energy saving), water management, timber, recycling of materials etc.
- Module still under development in Europe



## Legal base voor EPEA in Europe



- The full EPEA framework is quite expensive in terms of resources to be set up
- The EPEA module under Regulation 691/2011 significantly simplifies the full framework
- In 2017 first data submission
- Annual questionnaire

**Main goal:** To determine total national expenditure for environmental protection

## Key variables

- **Production** of environmental services
- **Intermediate consumption** of environmental services by specialised producers,
- **Import and export** of environmental services,
- **VAT and taxes on products minus subsidies** on environmental services
- **Gross fixed capital formation** for environmental protection,
- **consumption** of environmental services by households,
- **Environmental transfers** (received/payed).

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## Tables for the legal base

1. General government
2. Corporations: ancillary activities (total)
  - 2a Mining and quarrying
  - 2b Total manufacturing
  - 2b add Detailed manufacturing industries
  - 2c Electricity, gas and steam supply
  - 2d Water supply
  - 2e Other NACE divisions (voluntary)
3. Corporations as secondary and specialist producers of market environmental protection services
4. Total supply of environmental protection services
5. Households
6. Environmental protection transfers
7. Total economy

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## Environmental goods and service sector (EGSS)



## Environmental goods and service sector (EGSS)

- **The EGSS** consists of producers of all environmental goods and services. → Thus, all products that are produced, designed and manufactured for purposes of environmental protection and resource management are within scope of the EGSS.
- **Purpose:** assessing the contribution of EGSS to the total economy and its employment potential
- **Key indicators:** *Total production, total employment, total value added, total exports, total gross fixed capital*

## Why EGSS ?

- Determine total output / value added environmental goods and services in monetary terms
- Determine employment related to production of environmental goods and services
- Identify economic opportunities related to environmental protection and resource management

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## Scope EGSS

### The Environmental Sector comprises:

- Environmental technologies, goods and services (EGS) for every kind of use (intermediate or final consumption, gross fixed capital formation)
- Only EGS, which are produced for the environment ("main purpose criterion"), i.e. environmental protection or resource management
- EGS produced by corporations and the general government
- EGS produced as principal, secondary or ancillary activity
- Market and non market activities

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## EGGS versus EPEA

EPEA	EGSS
Focus on demand (use)	Focus on production (supply)
Only specific services	All environmental goods and services
Only environmental protection	environmental protection plus resource management
Full functional accounts	Tables of production related statistics
Net/extra costs only	Full value (at basic prices)

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## Exercise

Please state whether the following are environmental protect or resource management activities

Activities	Environmental Protection	Resource Management
Treatment of wastewater		
Collection and transportation of waste		
Water recycling		
Construction of anti- noise facilities		
Tree planting		
Monitoring the air quality		
Data collection on natural resource		

## Methodology: activity approach versus product approach

- **Product approach:** Identify environmental environmental goods and services in source data
- **Activity approach:** Identify environmental activities in source data

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## How to identify producers and activities belonging to EGSS?

- Only the producer of the final environmental technology, good or service (= main producer) is taken into account.
- Suppliers of components which are not used exclusively in environmental technologies are excluded from EGSS.
- Distributors of environmental technologies and goods are also not part of EGSS.
- Installation activities are part of EGSS as producers of connected services, if they are specialised in the installation of environmental technologies and products.
- Construction activities can be part of EGSS, e.g. construction of passive/energy-efficient houses, construction of wastewater treatment facilities.

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## Most important data sources

### Specific EGSS surveys

### Existing data sources

1. **SNA data** → environmental services
2. Own constructed data base of environmental companies plus **production statistics** (PRODCOM), international trade statistics etc.
3. **Government statistics**
4. **Agricultural statistics**
5. **Labour registers**
6. **Trade statistics**
7. **EPEA**

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## Table for the EGSS

		Producers			
		Specialist producers		Non-specialist producers	Own-account producers
		Government producers	Other specialist producers		
Output of environmental goods and services					
Environmental specific services	Environmental protection	3 000	6 500	2 400	1 600
	Resource management	3 100	4 500	300	1 600
Sole-purpose products	Environmental protection			250	
	Resource management			400	
Adapted goods	Environmental protection			1 000	
	Resource management			3 000	
End-of-pipe technologies	Environmental protection	100	200	1 200	100
	Resource management	100	300	1 500	
Integrated technologies	Environmental protection			800	
	Resource management			700	
Total environmental goods and services produced		6 300	11 500	11 550	3 300
Intermediate consumption		3 800	6 500	6 700	1 450
Gross value added		2 500	5 000	4 850	1 850
Compensation of employees		2 100	4 200	4 300	1 500
Gross fixed capital formation		1 500	1 820	1 500	590
Exports of environmental goods and services			200	2 300	
Employment (thousands of people)		120	210	220	80

## Legal base for EGSS in Europe

- Extension Legislation 691/2011
- In 2017 first data submission
- Annual questionnaire
- Main variables: Output, value added, employment, export



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## Compilation of EGSS in the Netherlands

- Ten years experience in the field EGSS
- Work carried out in national accounts department, as part of environmental accounts
- Development in earlier years, statistic is since 2010 'in production' (annual publication of data).
- Work load: approximately 0,4 FTE every year for EGSS
- Further development is still going on. Learning by doing aspect is very important. Every year methods are fine tuned and populations have been changed due to new insights.

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## Key characteristics EGSS

- Production, value added, employment, export
- Data for t-2
- Timeseries 2001-2015
- No additional questions/surveys
- Main data sources
  - I National accounts
  - II Micro database
  - III Production statistics
  - IV Labour registers
  - V Foreign trade statistics (goods and services)
  - VI Additional data (shares)

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## Methodology: activity approach

- Many different environmental activities have been identified by Statistics Netherlands as EGSS activities
- For every activity a specific methodology has been developed in order to compile the data

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 <sup>1</sup>	Own constructed database and Production Statistics
Industrial environmental equipment <sup>1</sup>	Own constructed database and Production Statistics
Environmental technical construction <sup>1</sup>	Own constructed database and Production Statistics
Environmental related education	Education statistics

## Overview: activities in EGSS (Netherlands)

1) Sewage and refuse disposal services (ISIC 37-39)



2) Recycling (ISIC 38.3)



3) Wholesale in waste and scrap



## Overview: activities in EGSS (Netherlands)

4) Renewable energy production



5) Production of energy saving and sustainable energy systems



6) Insulation activities



## Overview: activites in EGSS (Netherlands)

- 7) Production of environmental equipment



- 8) Environmental advise, environmental engeneering



- 9) Environmental technical construcion



## Overview: activites in EGSS (Netherlands)

- 10) Environmental related inspection



- 11) Second hand shops



- 12) Organic agriculture



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## Overview: activities in EGSS (Netherlands)

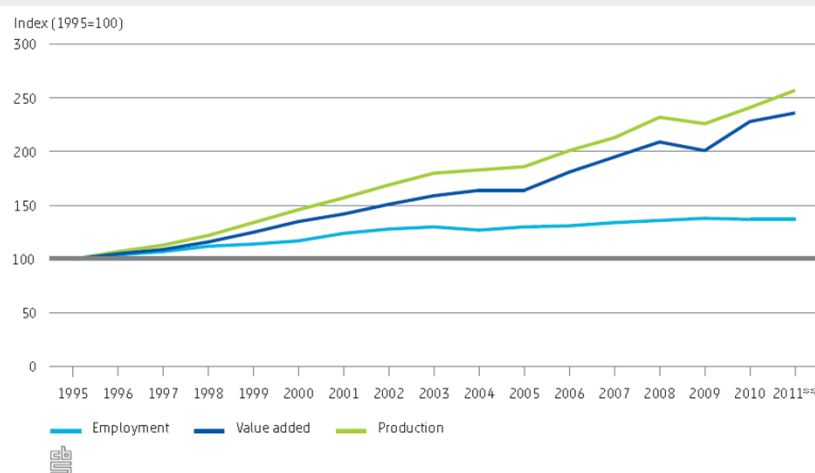
- 13) Own account activities
- 14) Government governance related to the environment
- 15) Environmental non profit organisations
- 16) Environmental education



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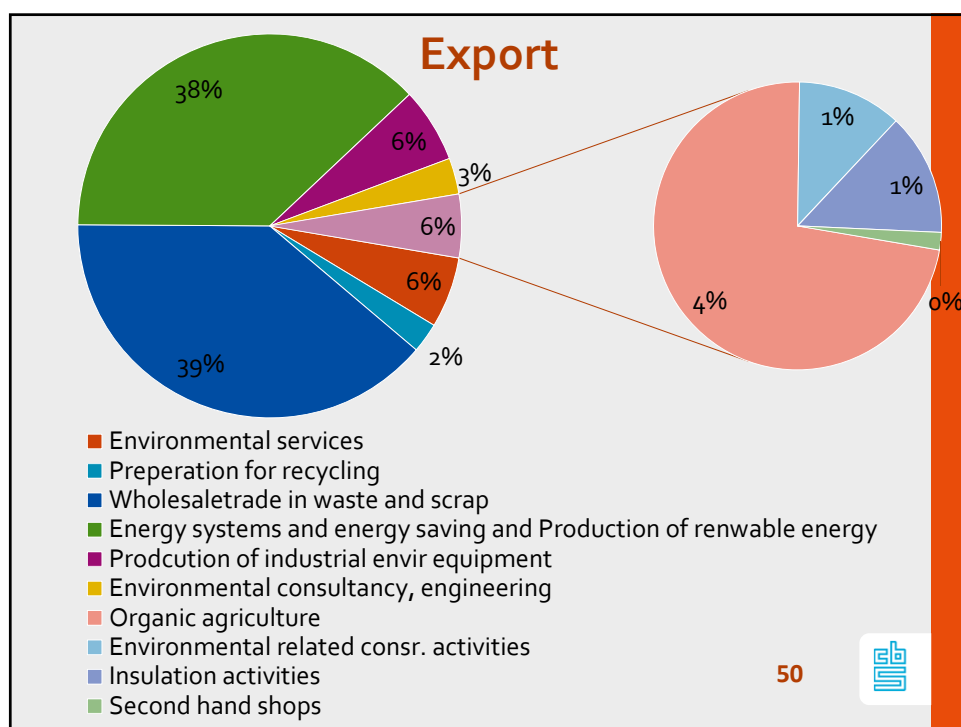
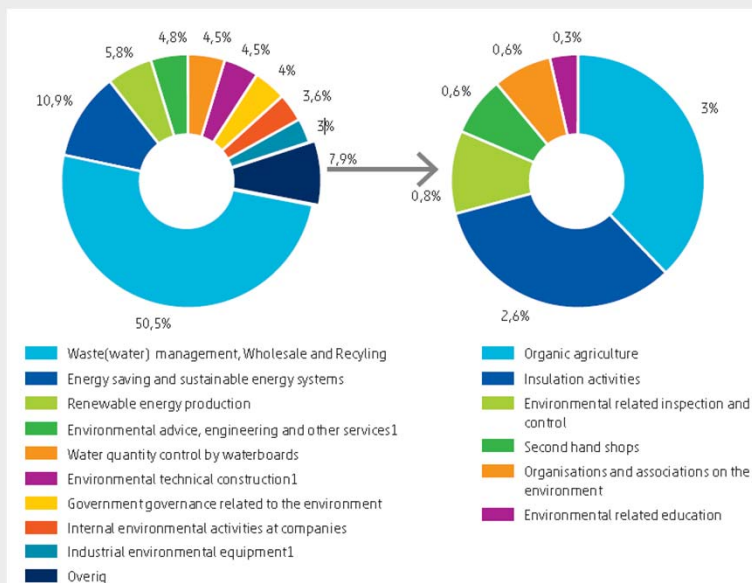


## Employment, production and value added in the EGSS





### Distribution of value added EGSS over different activities, 2011



**Thanks you for your attention!**

Questions ???

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