25th March 2021 ENVIRONMENTAL ACCOUNTS 2018

IN 2018 THE ENVIRONMENTAL GOODS AND SERVICES SECTOR GENERATED 2.6% OF NATIONAL GVA. NATIONAL EXPENDITURE ON ENVIRONMENTAL PROTECTION INCREASED 7.9%

In 2018, the environmental goods and services sector generated 2.6% of the national Gross Value Added (GVA), 3.8% of exports and 2.2% of employment. Compared to the previous year, exports increased by 8.3% in nominal terms, a higher pace than total exports in economy (6.5%). Portugal was the eighth country in EU28 with the largest share of environmental goods and services sector GVA in the national GVA and the fifth with the largest share of exports in the national total.

In the same year, National Expenditure on Environmental Protection (NEEP) amounted to 2,935.7 M € (1.4% of GDP), an increase of 7.9% compared to the previous year (change of 18.9% in 2017).

Despite the circumstances determined by the COVID-19 pandemic, INE calls for better collaboration by companies, families and public entities in responding to their requests. The quality of official statistics, particularly its ability to identify the impacts of the COVID-19 pandemic, depends crucially on this collaboration that INE is grateful for in advance.

This press release summarizes the main results of the Environmental goods and services sector accounts (EGSS) and the Environmental protection expenditure accounts (EPEA) for 2018. At the end, methodological notes on both projects are presented.

In Statistics Portugal website, in the area of National Accounts (Satellite Accounts section), additional tables are available.

1. Environmental Goods and Services Sector Accounts (EGSS)

With reference to the values for the Portuguese economy, in 2018 the sector of environmental goods and services was responsible for 3.6% of production (13,045 M €), 2.6% of GVA (4,676 M €), 3.8% of exports (3,365 M €) and 2.2% of employment (103,399 Full-time equivalents - FTE).

Exports grew by 8.3% (compared to a 6.5% increase in total national exports).

Results by environmental domain show relevance of energy resource management

Environmental goods and services are grouped into two classifications of major environmental domains:

- Environmental protection (CEPA) activities and actions that have as main objective the prevention, reduction and elimination of pollution, or other degradation of the environment
- Resource management (CReMA) activities and actions aimed at the preservation, maintenance and reinforcement of existing natural resources, how to combat their decrease and avoid depletion (see methodological notes).

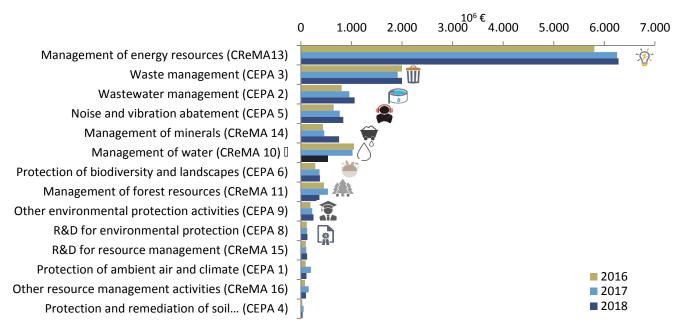
In 2018, the output of **environmental protection** goods and services amounted 4,887 M \in (37.5%) and that of **resource management** reached 8,158 M \in (62.5%).

Output related to **environmental protection** increased by 6.0%, mainly as a result of growth in *wastewater management* (+10.7%), *protection against noise and vibration* (+9.3%) and *waste management* (+9.1%). **Resource management** recorded a decrease in output compared to the previous year, which largely reflects a break in series in *water management*. In fact, from 2018 onwards it was possible to introduce an improvement in the compilation of information in this area, adapting it to Eurostat's recommendations to narrow its scope to the efficient use of water, thus excluding the collection and distribution of water (see methodological notes). Excluding *water management* domain affected by this scope restriction, output related to resource management increased by 3.2% in 2018 compared to the previous year.

The analysis by domains reveals that the *management of energy resources* remained the most relevant, representing almost half of the total output of environmental goods and services (48.1%). *Waste management* was the second most important domain (16.0%), followed by *wastewater management* (8.1%).

In the management of energy resources, the subdomain of energy production from renewable sources stands out (72.9% of the total).

Figure 1. Output by environmental domain (2016 - 2018)

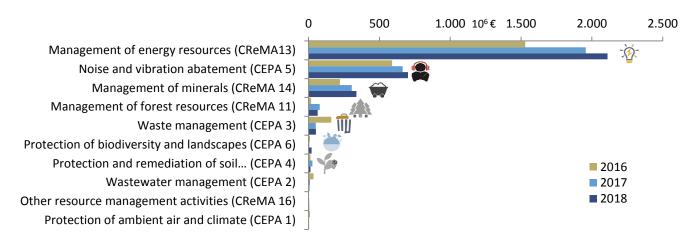


Source: Statistics Portugal (Environmental Goods and Services Sector Accounts)

Note: 28 Break in series; in 2018 Management of water excludes collection, treatment and distribution of water, in accordance with Eurostat recommendations.

In 2018, 25.8% of the environmental goods and services output was exported (compared to 23.6% in 2017 and 20.8% in 2016). The *management of energy resources* was responsible for 62.7% of these exports, with an increase of 7.9% compared to the previous year. In this domain, the equipment for wind energy generation stands out, such as generating sets of wind energy and other components. The *noise and vibration abatement* should also be emphasized, with a relative weight of 22.3% and a growth of 13.2%, mainly due to exports of silencers for motor vehicles. In third place is the *management of minerals*, which represented 10.0% of exports, having grown 10.8% compared to 2017 as a result of the increase in exports of metallic and non-metallic mineral waste.

Figure 2. Exports by environmental domain (2016 - 2018)

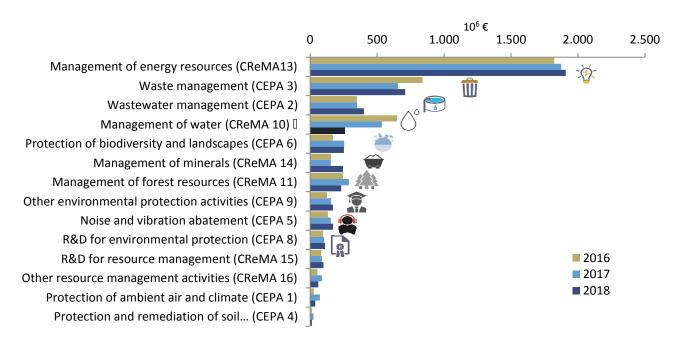


Source: Statistics Portugal (Environmental Goods and Services Sector Accounts)

In 2018, environmental protection goods and services sector GVA amounted 1,868 M€ (39.9%) and resource management 2,808 M € (60.1%).

The environmental domains that contributed most to GVA were management of energy resources (40.8%), waste management (15.2%) and wastewater management (8.6%). The hierarchy of activities in terms of employment was similar: management of energy resources was the most relevant (30.8%), followed by waste management (22.7%) and wastewater management (9.6%).

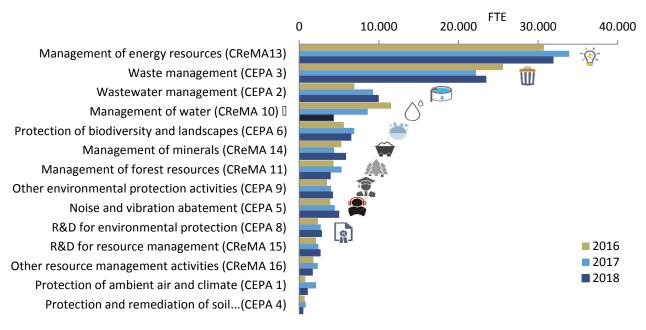
Figure 3. GVA by environmental domain (2016 - 2018)



Source: Statistics Portugal (Environmental Goods and Services Sector Accounts)

Note: 🛭 Break in series; in 2018 Management of water excludes collection, treatment and distribution of water, in accordance with Eurostat recommendations.

Figure 4. Employment by environmental domain (2016 - 2018)



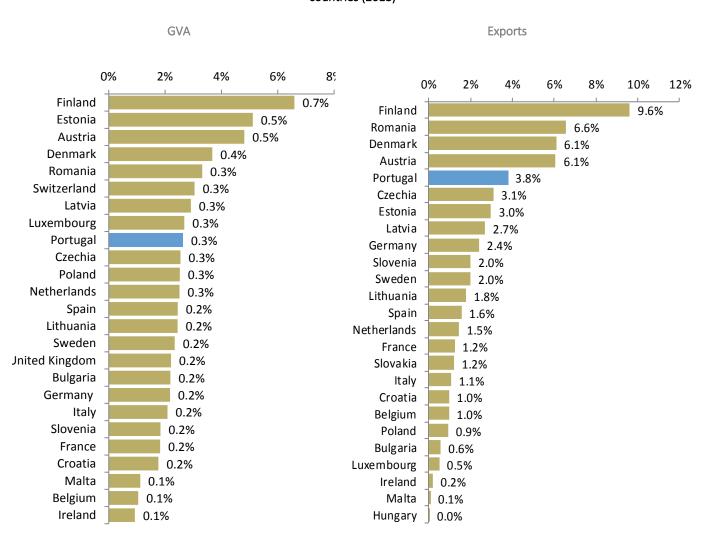
Source: Statistics Portugal (Environmental Goods and Services Sector Accounts)

Note: 🛭 Break in series; in 2018 Management of water excludes collection, treatment and distribution of water, in accordance with Eurostat recommendations.

International comparisons

In 2018 Portugal registered the eighth highest relative position, among the EU28 countries, in terms of the weight of the GVA for Environmental Goods and Services in the national GVA (2.6%), and the fifth position in terms of exports of Goods and Services (3.8%).

Figure 5. Weight (%) of environmental goods and services sector GVA and exports in national GVA and exports, in European countries (2018)



Source: Eurostat (data extracted on the 4th March 2021)

2. Environmental Protection Expenditure Accounts (EPEA)

Compared to EGSS, EPEA limits observation domains to environmental protection (not covering resource management - see methodological notes). These Accounts cover specific **environmental protection** services, the most relevant of which are *waste management* and *wastewater management*.

National expenditure on environmental protection (NEEP) is the main variable, corresponding to the economic resources allocated to environmental protection. This indicator is obtained as follows:

NEEP = final consumption expenditure

- + intermediate consumption (IC)¹
- + investment (GFCF + NP)²
- current and capital transfers³ received from the Rest of the World
- + current and capital transfers paid to the Rest of the World

Main results

In 2018, NEEP totalized 2,935.7 M €, having increased by 7.9% compared to 2017, with the most representative variables showing growth compared to the previous year:

- Increase of 12.8% in the IC of environmental protection services (EP services), higher than at the national economy level (+ 6.2%)
- 10.2% increase in investment for the production of environmental protection services (which compares with + 9.3% for the national economy), driven by the significant increase in investment by the Companies (+54.5%), which more than offset the decrease observed in General government investment (-31.1%)
- 15.3% growth in current and capital transfers received from the RoW for environmental protection, with emphasis on the amounts of subsidies attributed to Companies, within the scope of the agrienvironmental programme of the Common Agricultural Policy (CAP). In the national economy, transfers received from the Rest of the World (RoW) increased by 6.5%.

¹ Intermediate consumption (IC), excluding the IC of environmental protection services by specialized producers in environmental protection (producers whose main activity is the production of environmental protection services).

² Sum of gross fixed capital formation (GFCF) and acquisitions less disposals of non-produced assets (NP).

³ Current transfers include subsidies.

Figure 6. Main results of the Environmental Protection Expenditure Accounts (2016 – 2018)

unit: 10 ⁶ euro	2016	2017	2018	Rate of variation 15/16 (%)	Rate of variation 16/17 (%)	Rate of variation 17/18 (%)
National expenditure on EP (NEEP)	2,289.4	2.721,1	2.935,7	-6.3	18.9	7.9
Despesa de consumo final (CF) de serviços PA	958.4	1,058.3	1,086.8	11.4	10.4	2.7
Final consumption expenditure in national economy	154,824.0	160 ,214.1	166,705.6	3.3	3.5	4.1
Weight of final consumption expenditure of EP services in the national economy	0.6%	0.7%	0.7%			
Intermediate consumption (IC) of EP services ¹	1,331.7	1,371.9	1,546.9	9,9	3,0	12,8
Intermediate consumption in national economy	162,830.1	178,151.0	189,268.5	0.9	9.4	6.2
Weight of intermediate consumption of EP services in the national economy	0.8%	0.8%	0.8%			
Investment (GFCF+NP) for the production of EP services	511.3	578.2	637.4	-25.3	13.1	10.2
Investment, in the national economy	28,893.4	32,887.7	35,953.4	3.6	13.8	9.3
Weight of investment for the production of EP services in the national economy	1.8%	1.8%	1.8%			
Current ² and capital EP transfers received from the Rest of the world (RoW)	513.8	293.3	338.2	61.5	-42.9	15.3
Total current and capital transfers received from the RoW	18,990.0	9,635.2	10,260.9	86.9	-49.3	6.5
Weight of EP transfers received, in total transfers received from the RoW	2.7%	3.0%	3.3%			
Current and capital EP transfers paid to the Rest of the world (RoW)	1.8	6.1	2.9	-55.2	243.8	-52.6
Total current and capital transfers paid to the RoW	3,630.2	3,232.2	3,738.0	0.6	-11.0	15.6
Weight of EP transfers paid, in total transfers paid to the RoW	0.0%	0.2%	0.1%			

^{1 -} excluding the IC of EP services by specialized producers in environmental protection

by memory:

GDP	186,489.8	195,947.2	205,184.1	3.8	5.1	4.7

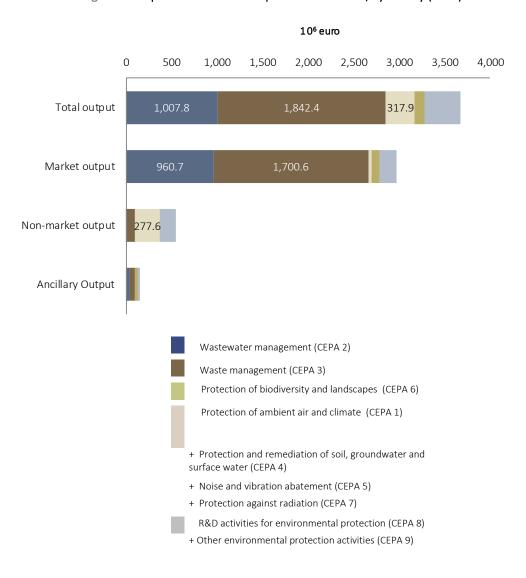
Source: Statistics Portugal (Environmental Protection Expenditure Accounts)

^{2 -} including subsidies

The intermediate consumption (IC) for environmental protection services is obtained by balancing resources and use of environmental protection services, where total production is the main resource.

- Total output of environmental protection services increased by 8.5% in 2018, maintaining the upward trend of recent years
- Waste management represented 50.2% of **total output**, followed by wastewater management (27.5%), with changes of +10.6% and +16.6% compared to the previous year, respectively
- After 2017, when the forest fires fight led to a 34.1% increase in **total output** in *protection of biodiversity* and landscape, in 2018 there was a 4.2% reduction
- The increase of 8.5% in the **total output** of environmental protection services contributed positively to the totality of **market output** and **output produced for own final use** (+12.4%). **Non-market output** and **ancillary output** decreased by 6.1% and 2.5%, respectively
- The 6.1% decrease in **non-market output** was essentially due to *waste management* (-19.0%) and the protection of biodiversity and landscape (-6.1%), overlapping the increases observed in research and development (R&D) activities for environmental protection (+ 3.8%) and other environmental protection activities (+ 5.4%)
- Market output maintained the growth trend of the last 4 years, registering an increase of 12.4%. The increase was almost widespread, highlighting the evolution observed in wastewater management (+17.6%) and waste management (+12.9%).

Figure 7. Output of environmental protection services, by activity (2018)



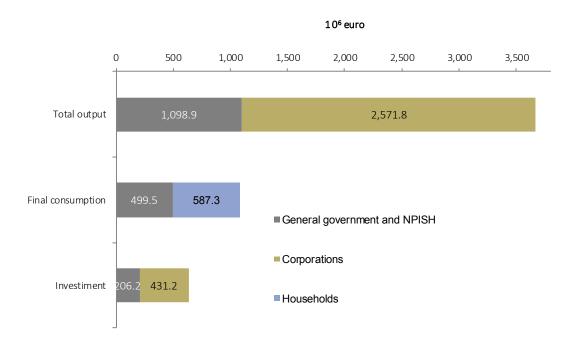
Source: Statistics Portugal (Environmental Protection Expenditure Accounts)

At NEEP by institutional sector, the largest contribution was from Corporations

- The contribution of the **Corporations** to NEEP has expanded in the last 4 years, having increased from 52.6% in 2017 to 67.4% in 2018
- For the total output of environmental protection services, the **Corporations** contributed with 70.1%, and the **General government** and **NPISH** with the remaining 29.9%. In 2017 these percentages were 66.7% and 33.3%, respectively

- Final consumption expenditure on environmental protection services by **Households** was 54.0% of the total, the remaining by **General government** and **NPISH** (46.0%), reversing the relative position of previous years (namely 2017, where Households were responsible for 47.2%)
- Most of the investment for the production of EP services came from the **Corporations** (67.7%), with the **General government** and **NPISH** being responsible for the remaining 32.3%, reversing the relative position of the previous year, in which the Corporations were responsible for 48.3% of the total.

Figure 8. Main variables of Environmental Protection Expenditure Accounts, by Institutional Sector (2018)



Source: Statistics Portugal (Environmental Protection Expenditure Accounts)

METHOODOLOGICAL NOTES

The Environmental Goods and Services Sector Accounts (EGSS) and the Environmental Protection Expenditure Accounts (EPEA) are part of the System of European Economic Environmental Accounts (SEEA) and are two mandatory transmission modules, from 2017 onwards, to comply with Regulation (EU) No. 538/2014. Accordingly, Member States are required to report these accounts to Eurostat from December 2017.

The environmental accounts were developed in interconnection with the System of National Accounts (SNA). They are a satellite account system that presents environmental information in a format compatible with the National Accounts information, enabling an integrated analysis.

The national macroeconomic aggregates for national economy are based on the Portuguese National Accounts base 2016.

A.1 Environmental Goods and Services Sector Accounts (EGSS)

Environmental goods and services sector comprises goods and services produced for the purpose of protecting the environment and managing resources.

In addition to the Regulation, EGSS's main methodological reference documents are the Eurostat handbooks: <u>Environmental goods and services sector accounts Handbook</u> and <u>Environmental goods and services sector accounts</u> <u>Practical guide</u>. In addition, since EGSS is a project consistent with the SNA, the use of its concepts, nomenclatures and methodological references is essential, namely the United Nations System of National Accounts (SNA 2008) and the European System of Accounts (ESA 2010).

Statistics on environmental goods and services record and present data on production activities of national economies that generate environmental products in a manner consistent with the data transmitted under ESA2010. Environmental products (environmental goods and services) have as their main objective environmental protection or resource management. The selection and classification of the products and economic activities covered by this project comply with the requirements of the Eurostat manual <u>Environmental goods and services sector accounts</u> <u>Practical guide</u>.

EGSS results are not directly comparable with the results of the Environmental Goods and Services Sector Survey, because: 1) EGSS are a derived statistic, i.e. cross several sources of information (namely this survey); 2) EGSS is a satellite account of the National Accounts. Therefore, it uses identical sources, methodologies and principles, namely exhaustiveness.

The comparisons with the results of other countries should be made with some caution. In fact, not all data presented originates from Satellite Accounts, and in some cases may result from the simple appropriation of surveys. In addition, there is still no complete harmonization in the type of environmental goods and services and units considered within the EGSS perimeter.

Main data sources

• Statistics Portugal:

- o Portuguese National Accounts (Base 2016)
- o Portuguese National Accounts (Base 2011)
- o General File of Statistical Units (FGUE)
- o Farm Structure Survey (FSS)
- o Environmental Goods and Services Sector Survey (ISBSA)
- o Municipal Environmental Protection Survey (IMPA)
- o Business Survey on Management and Protection of the Environment (IEGPA)
- o Survey of Fire Brigade Entities (IEDCB)
- o Survey on Urban Waste Management Entities (IEGRU)
- o Survey on Non-Governmental Environmental Organizations (IONGA)

• Other sources:

- o Detailed analytical balance sheets of General government entities (including the General State Account)
- o Simplified Business Information (SBI)
- o National Scientific and Technological Potential Survey (IPCTN)
- o Electronic pages of units of economic activity
- o Reports and Accounts

EGSS data is broken down according to the following nomenclature of environmental activities and products:



Table A.1. Classification of the domains of the environmental goods and services sector

	Classification of env	vironmental goods and services sector domains
Environmental	protection activities	Examples
CEPA 1	Protection of ambient air and climate	Equipment for the reduction of atmospheric emissions.
CEPA 2	Wastewater management	Collection and treatment of wastewater including monitoring and regulation activities.
СЕРА З	Waste management	Collection and treatment of waste, including monitoring and regulation activities. Recycling and composting, street cleaning and the collection of public litter.
CEPA 4	Protection and remediation of soil, groundwater and surface water	Monitoring and control of soil and groundwater pollution.
CEPA 5	Noise and vibration abatement	Reduction of noise in places frequented by the public (swimming pools, discos, etc.), production of car automotive silencers, etc.
CEPA 6	Protection of biodiversity and landscapes	Maintaining or establishing certain landscape types, biotopes, eco-zones , etc. having a clear link to biodiversity preservation.
CEPA 7	Protection against radiation	Handling, transportation and treatment of high level radioactive waste that requires shielding during normal handling and transportation.
CEPA 8	Research and development (R&D) for environmental protection	R&D activities oriented towards environmental protection (identification and analysis of sources of pollution, their effects on human beings, the species and the biosphere); R&D for the prevention and elimination of pollution.
CEPA 9	Other environmental protection activities	Training or teaching activities specifically oriented towards environmental protection and consulting activities in non-discriminated environmental protection areas.
Resource man	agement activities	Examples
CReMA 10	Management of waters	Minimisation of inland waters intake through the reduction of water losses and leaks or water reuse and savings.
CReMA 11	Management of forest resources	
CReMA 11A	Management of forest areas	Measuring, controlling and monitoring forest areas and timber stocks; education, training and general administration activities linked to the management of forests.
CReMA 11B	Minimisation of the intake of forest resources	Reducing the input of forest-related products (wood and non-wood); recovery, reuse of savings of forest products and byproducts Non wood forest products include cork.
CReMA 12	Management of wild flora and fauna	Restoration activities (replenishment of wild flora and fauna stocks); education, training and general administration activities linked to the management of wild flora and fauna.
CReMA 13	Management of energy resources	
CReMA 13A	Production of energy from renewable sources	Production of energy from renewable sources (wind, solar, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases).
CReMA 13B	Heat/Energy saving and management	Energy savings, thermal insulation activities and energy recovery (e.g. cogeneration, reduction of energy transport and distribution losses, energy efficiency improvements)
CReMA 13C	Minimisation of the intake of fossil resources as raw material	Minimization of fossil resources through changes in the manufacturing process, recovery of materials based on non-energy fossil resources and production of petroleum product substitutes.
CReMA 14	Management of minerals	Saving of mineral resources through recovery of mineral-based materials (waste and scrap processing of metallic and non-metallic mineral materials and other articles).
CReMA 15	Research and development (R&D) for resource management	R&D activities for new applications in the field of natural resource management and savings: R&D for renewable energy, for energy and minerals savings, for timber and other biological resources savings, etc.
CReMA 16	Other resource management activities	Education and training activities that relate to natural resources, as well as other kinds of consulting activities leading to indivisible output.

Source Based in Eurostat, *Environmental goods and services sector accounts, Practical Guide*

In the classification by domains of the environmental goods and services sector, the collection, treatment and distribution of water should, in principle, be excluded from the activity of resource management CReMA 10 - *Water management*. However, the Environmental goods and services sector accounts, Practical Guide provides that, if the available data sources do not allow their separation, they can be included in CReMA 10. In Portugal, water collection, treatment and distribution activities were included in the *Water Management* domain until 2017, due to the unavailability of detailed information.

However, in 2019 there was a revision of the rating instrument of Environmental Goods and Services Sector Survey (ISBSA), with reference to data for 2018, making it possible to restrict the scope of activities to report to minimizing water abstraction. and the efficient use of water, eliminating water collection, treatment and distribution activities. However, this improvement has determined that it is not possible to compare 2018 data with previous years.

A.2 Environmental Protection Expenditure Accounts (EPEA)

EPEA present data on expenditure in the fields of environmental protection, that is, the economic resources allocated by resident units to the protection of the environment. These Accounts make it possible to compile the National Expenditure on Environmental Protection (NEEP). The algorithm provided by the reporting system to Eurostat and used for the calculation of NEEP is:

NEEP = final consumption expenditure + intermediate consumption (CI) + investment (GFCF + NP) - current and capital transfers received from the Rest of the World + current and capital transfers paid to the Rest of the World

Like the EGSS, in addition to the National Accounts Regulation and methodological references, the EPEA have other specific reference methodological documents, namely <u>Environmental protection expenditure accounts Handbook 2017 edition</u>. The list of products and economic activities covered by this project also complies with the provisions of <u>Environmental goods and services sector accounts - Practical guide</u>.

The results of EPEA are not directly comparable with the results of the environmental surveys because: 1) EPEA focus only on environmental protection services and do not cover other environmental protection products or resource management; 2) EPEA is a derived statistic, that is, they cross several sources of information; 3) EPEA is a satellite account of the National Accounts and therefore use identical sources, methodologies and principles, including completeness.

The main sources of information used in the EPEA are the same as those of the EGSS.

These accounts relate to EGSS, but:

- Restrict the domains of observation to environmental protection (CEPA classification), i.e. they do not cover Resource Management (CReMA classification);
- Focus predominantly on the share of specific environmental products that correspond to **specific environmental protection services**. Environmental protection products, which encompass goods and services, can be categorized by purpose (primary or secondary) to protect the environment. Products whose primary purpose is environmental protection are designated in the methodological manual by

Specific Products EP. The portion of the specific EP products corresponding to services are the environmental protection services or, abbreviating, **EP services**;

- Do not detail activities by NACE;
- Extend the number of estimated variables; and
- Detail most of the variables by institutional sector.

The total environmental protection services output comprises:

- Market output output that is disposed, or intended to be disposed on the market;
- Output produced for own final use consists of services retained for own final consumption; the EPEA
 questionnaire foresees the addition of this output to the market output and the inclusion in that
 operation;
- Non-market output output provided to other units for free, or at prices that are not economically significant;
- Ancillary output it comes from ancillary activities, such as waste treatment activities that do not
 constitute the productive activity of the entities and can be estimated by the sum of the costs.

Note on the international trade of environmental protection services:

International trade in environmental protection services, within the scope of wastewater management (CEPA 2) or waste management (CEPA 3), includes operations for commissioning (without transfer of ownership) between two countries. In these cases, the export of these services corresponds to the value of the service rendered by Portugal abroad, and the importation appears in the opposite case, when Portugal resorts to another country to treat its waste.

Final considerations and revisions:

Although EGSS and EPEA are already under Regulation, these projects are still subject of conceptual discussion at Eurostat, namely on the boundaries of the environmental domains and the classification of products included.

The series available is based on the National Accounts, benchmark year 2016 (which replaces the previous benchmark year 2011), also incorporating some revisions to the classifications of environmental activities. The adjustments essentially affected resource management activities, by changing subdomains for classifying cogeneration units, for the subdomain *production of energy from renewable sources* (CReMA 13A): 1) by transferring units from the subdomain heat/energy saving and management (CReMA 13B); 2) by transferring units from the subdomain *minimisation of the intake of forest resources* (CReMA 11B). **The adjustments made had an impact only on EGSS**, since the CDPA is limited to environmental protection services.

The total amounts of Production and GVA remained in 2016 and 2017, however, there were revisions in the Economic Activity Classifications (CAE Rev3) of the "Wood and cork industry and its works, except furniture; Manufacture of basketwork and straw goods; Manufacture of pulp, paper, cardboard and articles thereof; Printing and reproduction of recorded media "(C16-18) and" Production and distribution of electricity, gas, steam and cold air "(D35) in the subdomains *minimisation of the intake of forest resources* (CReMA 11B). In 2017 there were additional revisions in Employment due to an update of the calculations, which led to a transfer of FTE from the domain of resource management (CReMA) to the domain of environmental protection (CEPA).

Table A.2. EGSS revisions

Variable	Environmental activity	Unit	2016	2017
Output	11B		-47.9	0.0
	13A		+59.7	+701.7
	13B	10 ⁶ Euro	-11.8	-701.7
GVA	11B	10 Euro	-9.9	0.0
	13A		+12.9	+203.0
	13B		-3.0	-203.0
Employment	11B		-58	0
	13A	FTE	+69	+391
	13B		-11	-391

EPEA consists of a set of information of an economic nature, with mandatory and optional calculation variables. Variables of these two types contribute to **NEEP**. Statistics Portugal calculates a significant number of variables in addition to those required by regulation, namely all variables underlying NEEP.

The results now presented implied minor revisions for 2014-2017 compared to the previous publication released in February 2020, due to the incorporation of the changes underlying the change from Base 2011 to Base 2016 of National Accounts implemented in September 2019. These reviews have no material impact on the main results of EPEA.

ACCOUNTS AND NAMES

CAP: Common Agricultural Policy

CEPA: Classification of environmental protection activities

CReMA: Classification of resource management activities

EGSS: Environmental goods and services sector accounts

EPEA: Environmental Protection Expenditure Accounts

EP: Environmental protection

FC: Final consumption expenditure

GDP: Gross domestic product

GFCF: Gross fixed capital formation

IC: Intermediate consumption

NEEP: National expenditure on environmental protection

NPISH: Non-profit institutions serving households

Statistics Portugal: National Institute of Statistics

NP: Acquisitions less disposals of non-produced assets

RoW: Rest of the world

SNA: System of National Accounts