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## POLAND'S EXPERIENCE WITH ENVIRONMENTAL GOODS AND SERVICES ACCOUNTS

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**ABSTRACT:** The paper deals with the statistical reporting of a range of products related to environmental protection, manufactured for the conservation and management of natural resources. The latest regulations of the European Union, in the form of a regulation of the European Parliament and of the Council of 2011 on European economic environmental accounts, impose reporting obligations in this field on the Member States. These requirements are based on the special prerequisites in accordance with the applicable/binding questionnaire prepared by Eurostat. This article presents the rules for creating statistical reporting on the environmental goods and services accounts according to these above mentioned requirements. The analysis and evaluation of methodological assumptions to the pilot project of the account of environmental goods and services prepared by Central Statistical Office of Poland for 2014 were undertaken within the research. Moreover, the consolidated results for those accounts were presented.

**KEY WORDS:** environmental goods and services, statistical reporting, Eurostat

## Introduction

All the Member States of the European Union, including Poland, are obliged to provide data on national economy output that generates environmental products (European Environmental Economic Accounts). This follows from the provisions of the Regulation of the European Parliament and of the Council on European environmental economic accounts of 2011 (EU, 2011) and the Regulation amending them of 2014 (EU, 2014). In the original regulation, the environmental economic accounts included three specific accounts called modules. These comprised air emissions accounts, environmental taxes and economy-wide material flow accounts. The amendment of 2014 introduced three new modules: environmental protection expenditure accounts (EPEA), environmental goods and services sector (EGSS) accounts, and physical energy activity accounts.

This article deals specifically with the Environmental Goods and Services Sector Accounts (EGSS). The EGSS comprise all the economic activities that result in products (goods and services) related to environmental protection. As part of these accounts, the EU Member States are requested to submit to Eurostat on an annual basis data on the activities of the national economy which result in the production of environmental goods and services.

In preparation for the implementation of future obligations under the said regulations, Poland collected the required data for the environmental goods and services sector in the national economy for 2014 as part of a pilot project "The European Environmental Economic Accounts: the environmental goods and services account module (EEEEA-EGSS)." The project was carried out in 2014 and 2015 by the Central Statistical Office with a substantial support from the Foundation of Environmental and Resources Economists in Białystok. The main objective of the project was to develop a methodology for compiling the EGSS accounts and complete Eurostat's special questionnaire – Environmental Goods and Services Sector (EGSS) – Data Collection Questionnaire – with data on 2014.

The primary aim of this paper is to analyse and evaluate the rules for compiling the environmental goods and services accounts in Poland in accordance with the current Eurostat requirements. In particular, the article assesses the methodological assumptions adopted for the account and for the completion of the current questionnaire using appropriate data within the framework of the said pilot project. It is hoped that the conclusions drawn from the analysis improve these accounts in the future. The substantive content of this article is based on detailed calculations made by the Central Statistical Office, which are described in detail in the report on the EGSS pilot project (Eurostat, 2015).

## The theoretical basis for the environmental goods and services sector account

The main purpose of the environmental goods and services sector account is to obtain data on the production activities of national economies, which result in the provision of goods and services related to environmental protection, i.e. products manufactured for the express purpose of environmental protection and resource management (Broniewicz, Domańska, 2016).

In the light of the provisions contained in Annex V to the Regulation of 2014 amending the original regulation on European environmental economic accounts (EU, 2014bis), the statistics on goods and services related to the environmental goods and services sector record and present data on the economic activities that result in products for environmental protection and resource management in accordance with the requirements of the European System of Accounts (ESA)<sup>1</sup>. At the same time, the environmental goods and services sector accounts have the same system boundaries as ESA, and adopt the same definition of production (an activity carried out under the control and responsibility of an institutional unit that uses inputs of labour, capital and goods and services to produce goods and services). The environmental goods and services sector accounts should be based on existing information from national accounts, structural business statistics, the business register and other sources.

The goods and services associated with environmental protection fall within the following four categories (Broniewicz, Domańska, 2016):

1. specific services related to environmental protection – services characteristic of environmental protection and resource management, e.g. wastewater treatment, waste management, organic farming, energy from renewable resources, environmental monitoring and measurement, and environmental education;
2. products aimed exclusively at the environment (related products) – products directly and exclusively applicable to environmental protection and resource management or other services;
3. customised goods – alternatives to the traditional ones, more environmentally friendly, generating less pollution or waste, and more resource-efficient;
4. technologies related to environmental protection – divided into end-of-pipe and integrated technologies.

As was mentioned at the outset, in order to collect the statistics for the environmental goods and services sector accounts, Eurostat devised a spe-

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<sup>1</sup> The system of national accounts recommended by the European Union.

cial reporting questionnaire – EGSS. It consists of the following four basic tables to be completed with national data regarding environmental goods and services:

- production,
- exports,
- added value,
- employment.

In relation to the four components, the reported data are broken down by type of economic activity – NACE Rev. 2 (Nomenclature statistique des Activités économiques dans la Communauté Européenne)<sup>2</sup>, by environmental protection activity – CEPA (Classification of Environmental Protection Activities), and by resource management activity – CReMA (Classification of Resource Management Activities).

Data are collected and disseminated using the following CEPA breakdown:

- CEPA 1 – Protection of ambient air and climate;
- CEPA 2 – Wastewater management;
- CEPA 3 – Waste management;
- CEPA 4 – Protection and remediation of soil, groundwater and surface water;
- CEPA 5 – Noise and vibration abatement;
- CEPA 6 – Protection of biodiversity and landscapes;
- CEPA 7 – Protection against radiation;
- CEPA 8 – Environmental research and development;
- CEPA 9 – Other environmental protection activities.

The Classification of Resource Management Activities includes the following categories:

- CReMA 10 – Management of water;
- CReMA 11 – Management of forest resources;
- CReMA 12 – Management of wild flora and fauna;
- CReMA 13 – Management of energy resources:
  - CReMA 13A – Production of energy from renewable resources;
  - CReMA 13B – Heat/energy saving and management;
  - CReMA 13C – Minimization of the use of fossil energy as raw materials;
- CReMA 14 – Management of minerals;
- CReMA 15 – Research and development activities for resource management;
- CReMA 16 – Other resource management activities.

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<sup>2</sup> NACE Rev. 2 is the new revised version of the NACE Rev. 1 in force since 2008. In Poland, its equivalent is Polska Klasyfikacja Działalności (PKD 2007).

## Synthetic results of the environmental goods and services sector accounts

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As a result of the pilot report on the environmental goods and services sector accounts in Poland for 2014, specific figures were obtained that characterise the activities carried out within this sector. Most of these are expressed in monetary units. The results are shown in general terms in Table 1.

As we can see, the calculated global output of the environmental goods and services sector in Poland in 2014 amounted to PLN 83,575 m. It is divided almost evenly into the production of environmental goods and services (CEPA, approx. 48% of the total) and the production of goods and services for resource management (CReMA, approx. 52% of the total).

Figures 1 and 2 show the breakdown of the global output in the environmental goods and services sector, respectively, split by environmental protection activity and by resource management activity. In CEPA, the largest shares in total output (approx. 20%) belong to four environmental protection areas: wastewater management, waste management, protection of ambient air and climate, and the protection and remediation of soil, groundwater and surface water. According to CReMA, three areas of environmental resource management add up to approx. 30% of the total and include: production of energy from renewable sources, management of waters, and heat/energy saving and management.

## Evaluation of the methodological assumptions underlying the environmental goods and services sector accounts in Poland for 2014

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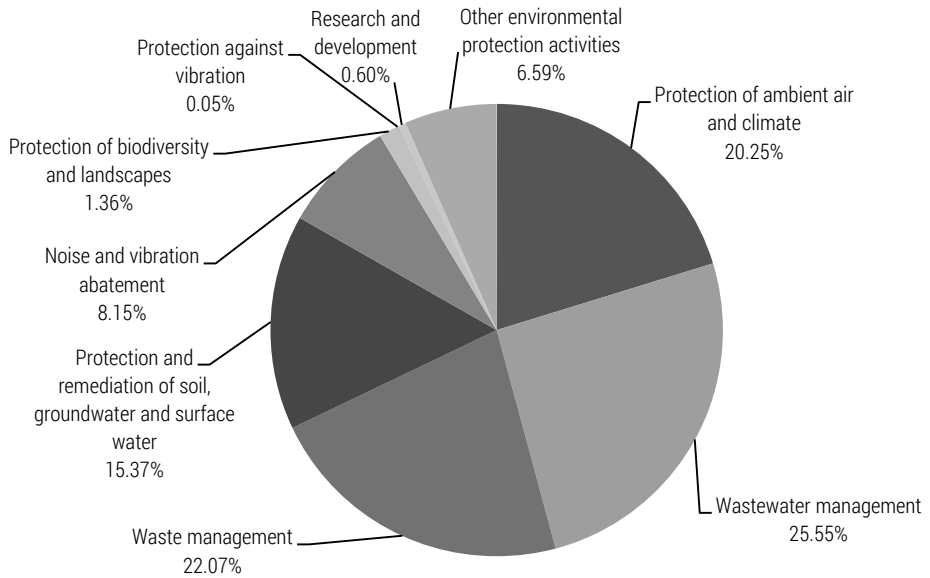
The article analyses and evaluates the main methodological assumptions adopted for the environmental goods and services sector accounts. They were adopted by the Central Statistical Office when compiling the relevant reports for Poland for 2014 and served as a basis for completing the Eurostat questionnaire current at the time (expressed mostly in monetary values). These assumptions are presented in detail in Chapter Three and, in particular, Chapter Four of the said Report on the pilot project of environmental products and services accounts.

**Table 1.** Output, value added, exports and employment in the environmental goods and services sector by environmental protection activity and by resource management activity in Poland in 2014

EGSS accounts by type activity of		Output	Value added	Exports	Employment
		[mln PLN]			In FTE <sup>*)</sup>
CEPA 1	Protection of ambient air and climate	8 070	2 424	2 906	8 285
CEPA 2	Wastewater management	10 183	6 574	687	24 518
CEPA 3	Waste management	8 797	3 259	2 314	30 398
CEPA 4	Protection and remediation of soil, groundwater and surface water	6 127	2 754	500	12 647
CEPA 5	Noise and vibration abatement	3 249	923	2 334	33 595
CEPA 6	Protection of biodiversity and landscapes	541	274	16	5 545
CEPA 7	Protection against radiation	19	10	2	123
CEPA 8	Environmental research and development	240	131	19	1 330
CEPA 9	Other environmental protection activities	2 627	1 618	184	16 335
Total CEPA		39 853	17 967	8 962	132 776
CRema 10	Management of water	12 901	6 924	700	61 276
CRema 13 A	Production of energy from renewable resources	14 270	5 630	777	75 215
CRema 13 B	Heat/energy saving and management	11 037	2 933	3 305	104 989
CRema 13 C	Minimization of the use of fossil energy as raw materials	1 754	396	1	9 896
CRema 14	Management of minerals	3 760	1 454	0	41 804
Total CRema		43 722	17 337	4 783	293 180
Total CEPA and CRema		83 575	35 304	13 745	425 956

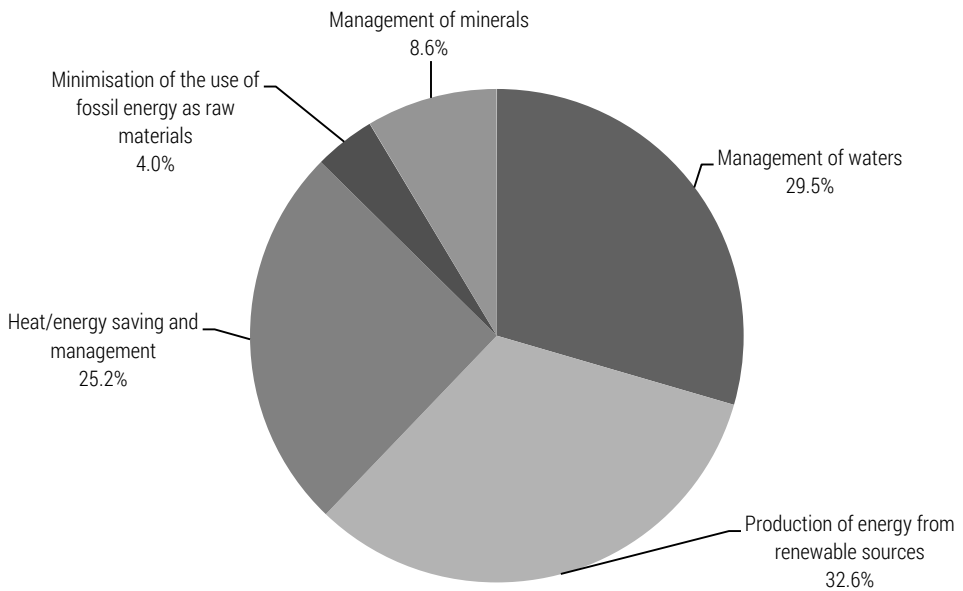
<sup>\*)</sup> Full-time equivalent

Source: author's own work based on: Broniewicz, Domańska, 2016.



**Figure 1.** Output of the environmental goods and services sector by environmental protection activity in Poland (2014)

Source: same as for table 1.



**Figure 2.** Output of the environmental goods and services sector by resource management activity in Poland (2014)

Source: same as for table 1.

The analysis justifies a handful of critical comments as to the validity of certain methodological assumptions behind the environmental goods and services sector accounts as the ensuing guidelines for completing the Eurostat questionnaire. It should be emphasised, however, that some of these remarks are related to the provisions contained in the aforementioned Report (and adopted for the compilation of specific accounts), but duplicate specific points of content (entries) included in the relevant legislation promulgated by the European Union<sup>3</sup>. Occasionally, they result from disputable translations from English into Polish of the provisions contained in these acts as well as from some interpretations ‘imposed from above’ (i.e. by Eurostat). Nevertheless, they should also be taken under considerations since they are essential from the perspective of the broadly conceived aim of this article, which is to improve the entire system of environmental economic accounts.

The critical remarks related to the adopted assumptions lead to more general conclusions, which are mentioned in the last section of this article. In particular, these comments concern the following issues:

1. The terminological issues refer, in particular, to the distinction between ‘goods’ and ‘services.’ According to economic theory, a ‘good’ is a product of human labour intended for sale, but the term covers consumer and manufacturing goods as well as services (Dach Z. (ed.), 2002). The formulation – goods and services – derives from the regulation on European economic environmental accounts (fundamental to EEEA), but the original English version includes the expression *environmental goods and services*. Hence the Polish-language translation should reflect this fact by approximating the original more closely<sup>4</sup>.
2. Another question is related to the absence of a clear explanation of the relationship between the production of goods and provision of services and environmental activities. The analysed report contains the following expression: “Environmental protection groups together all actions and activities that are aimed at the prevention, reduction and elimination of pollution as well as any other degradation of the environment.” (Eurostat, 2015, p. 6). This formulation is imprecise, or actually ‘immeasurable.’ How are we supposed to understand the expression *aimed at*? There are no specific criteria by which particular activities or actions could be judged as aimed at the reduction and elimination of pollution as well as any other kind of environmental degradation.

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<sup>3</sup> This primarily concerns the Regulation (EU, 2014).

<sup>4</sup> Similar expressions are also used in the Regulation in other official European languages – *biens et services environnementaux* (French), *Umweltgüter und -dienstleistungen* (German).



3. A similar question applies to the relatively homogeneous types of activities in the sector in which only a part of the production is associated with environmental protection and resource management (Eurostat, 2015, p. 11). What is this part? What is meant by *relatively*? To what extent are the activities homogeneous? No criterion was adopted to specify the basis for evaluation (measurement).
4. Another question refers to the phrase “based on the analyses carried out by Eurostat, it was found that the main producers of services in other areas of environmental protection are entities representing NACE, Section M.” (Eurostat, 2015, p. 14). What is missing is the definition of *the main producers*. These doubts lead to the suggestion that in order to improve the preparation of the European environmental goods and services sector accounts, one should find a way to solve such dilemmas, e.g. by instituting a form of ‘expert methods’ or questionnaire surveys.
5. The authors of the report studied discuss the so-called end-of-pipe technologies and integrated technologies. In this context, the following statement appears: “The most important criterion to be applied to the above-mentioned categories is that of purpose – the production of goods and services is undertaken in order to protect the environment and/or the natural resources.” (Eurostat, 2015, p. 7). Yet we know all too well that integrated technologies indeed reduce the amount of pollution, but by modifying processes, which result in numerous measurable effects, quite distinct from the environmental ones. Accordingly, in this case the environmental purpose is not the only, and perhaps not even the most important one.
6. The cited report also contains the following phrase: “We adopted a list of products resulting from the activities of the environmental goods and services sectors proposed by Eurostat.” (Eurostat, 2015, p. 17). The list consists of three sections, including products relevant for the EGSS, but their share in production should be determined on an individual basis. It is not known, however, how this individual determination is supposed to take place.

No serious reservations apply to the other methodological assumptions. On a more positive note, the authors of the cited report were able to devise appropriate methodological solutions in frequently occurring situations involving the lack of specific data in the available statistical sources (and in the required systems). These problems were solved by making relative assessments using of specific general indicators either present in the available literature sources or devised originally, which provided the basis for estimating the data needed in the required formats.

Apart from the relatively few doubts regarding the assumptions adopted in the report, it can be said that the Eurostat questionnaire was completed correctly, even though the data was reported in accordance with the methodological assumptions, some of which have been criticized in this article. It should be mentioned that the assumptions took into account various difficulties and constraints that affected the final calculations, mainly regarding the availability of statistical data in the required formats, which naturally translated into the individual results of calculations.

## Conclusions

In fulfilment of the obligations arising from EU regulations on European environmental economic accounts, Poland's Central Statistical Office prepared a pilot environmental goods and services sector accounts for 2014 by completing of a relevant report and a special Eurostat questionnaire. The value of the output of the environmental goods and services sector in Poland in 2014 totalled approx. PLN 83.6 billion almost evenly divided between the production of environmental goods and services and the production of goods and services for resource management. The production of energy from renewable sources and the management of waste water, respectively, have the biggest share in these two groups of activities.

The analysis carried out by the author of this article concerning the assumptions adopted for the preparation of the pilot environmental goods and services sector accounts (report and questionnaire) reveals that in certain places there is no uniform definition (or above all measurement) of relationships between the production of environmental goods and the provision of environmental services and activities. Admittedly, the report mentions such concepts as 'the main purpose of environmental activity' or 'the main providers of environmental services,' but fails to define them. Consequently, in order to improve the system for preparing environmental economic accounts, a way of solving such problems should be found. One must add, however, that similar ambiguities are present in the EU regulations under consideration. It is also worth emphasising that the authors of the cited report found good methodological solutions for the frequent lack of specific figures (in the required systems) in the available statistical sources.

## Literature

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- Broniewicz E., Domańska W. (2016), *Rachunki sektora towarów i usług związanych z ochroną środowiska*, "Wiadomości Statystyczne" No. 4
- Dach Z. (ed.) (2002), *Mikroekonomia*, Kraków
- EU (2011) Regulation (EU) No 691/2011 of the European Parliament and of the Council of 6 July 2011 on European environmental economic accounts, Journal of Laws 192 of 22 July 2011
- EU (2014) Regulation No 538/2014 of the European Parliament and of the Council of 16 April 2014 amending Regulation (EU) No 691/2011 on European environmental economic accounts, Journal of Laws 158 of 27 May 2014
- EU (2014bis) Annex V to Regulation (EU) No 538/2014 of the European Parliament and of the Council of 16 April 2014 amending Regulation (EU) No 691/2011 on European environmental economic accounts (Journal of Laws 158 of 27 May 2014)
- Eurostat (2015) Report And The Methodology Description Within The Grant-Agreement. No 05121.2013.003-2013.344. Action Entitled: European Environmental Economic Accounts: Module For Environmental Goods And Services Sector (EEEE-EGSS), Warsaw, [www.ec.europa.eu](http://www.ec.europa.eu) [07-12-2016]