Barbara KRYK

ECONOMIC ACCOUNTS OF THE ENVIRONMENT IN POLISH PUBLIC STATISTICS

Barbara **Kryk**, PhD, Prof. – *University of Szczecin*

Correspondence address:
Faculty of Economics and Management
Mickiewicza 64, 71–101 Szczecin, Poland
e-mail: krykb@wneiz.pl

ABSTRACT: Several legislative acts have been established over the past 20 years that have led to the realization of the idea and creation of the EEEA system. The practical implementation began in 2011. Hence the aim of this article is to assess the progress of the development and implementation of environmental accounts in Polish public statistics. Desk research and deduction were used as the study method. The article has an informative and popularizing character.

KEY WORDS: economic accounts of the environment

Introduction

European Environmental Economic Accounts (EEEA) complements the European System of National and Regional Accounts in the European Union (ESA 2010) and is an important source of information about the economic conditions of the environment and its resources. Development and implementation of European Environmental Economic Accounts is dictated by, among others, the need to meet the growing information needs in this regard, the creation of new indicators to measure the sustainable development goals and monitoring environmental conditions in respect of the quality of life. For these reasons, a number of activities were undertaken and a wide variety of acts have been adopted throughout the last 20 years, both internationally and in the European Union, which have contributed to the development of the EEEA system model (Kryk 2015). The basis of reference for EEEA is the System of Environmental-Economic Accounting (SEEA). Its refined and modified version of 2012 was adopted by the Statistical Commission of the United Nations as an international standard in the field of the statistics of environmental economic[1] . Developed and implemented modules of EEEA are fully compatible with this standard. EU Member States are obliged to enable the individual modules of these accounts to the official statistics within the deadlines set by the European Parliament and the EU Council. Poland has taken specific action in this respect, hence the aim of this article is to present and evaluate the progress of the development and implementation of environmental accounts in Polish public statistics.

Research methods

Desk research, analysis of documents, descriptive analysis and deduction were used as the study method.

Results of the research

European Environmental Economic Accounts

European environmental economic accounts are a reporting system, showing the relationship between the economy and the environment statistically. They supplement the national accounts for information on natural

[1] SEEA has been developed jointly by the United Nations, the European Commission, the International Monetary Fund, the OECD and the World Bank.

capital and the exploitation of nature in the country. They illustrate the state of nature, the degree of its load and overexploitation/destruction in a physical and monetary form as a result of economic activity and measures/remedial action taken. These reports are subordinated to the concept of sustainable development and express the awareness that the same emission data in the area do not provide sufficient information about its condition; broader reference to global environmental problems is necessary, especially related to the over-exploitation of natural resources. Taking the above into consideration, a modular structure of these accounts has been adopted, which is so flexible that it allows, among others, introduction of additional modules.

The basic criterion for the formal implementation and development of European Environmental Economic Accounts contain two regulations:

1. *Regulation of the European Parliament and Council Regulation No 691/2011 on European environmental economic accounts* (Journal of laws L 192 of 22.07.2011). It introduced the obligation of reporting data by the Member States (the so-called first round) in the three modules of accounts: I – *Air Emissions Accounts* (AEA) module, II – *Environmentally Related Taxes by Economic Activity* (TAXES) module, III – *Economy-Wide Material Flow Accounts* (EW-MFA) module. The first transmission of data for these accounts took place in 2013. Poland was granted derogation, and the first year of reporting these modules was 2015.
2. *Regulation of the European Parliament and of the (EU) Council No 538/2014 of 16 April 2014 amending Regulation No 691/2011* (Journal of Laws L 158 of 27.05.2014), which introduced the obligation to report data (so called second round) for three consecutive modules, that is IV – *Environmental Protection Expenditure Accounts* (EPEA) module, V – *Environmental Goods and Services Sector Accounts* (EGSS) module, VI – *Physical Energy Flow Accounts* (PEFA) module. The first mandatory transmission of data for these modules is planned for 2017. Implementation is underway in all EU Member States.

The purpose of these laws is to establish a common framework for the collection, compilation, transmission and evaluation of accounts. The modules already implemented and planned[2], are introduced to the legal basis in accordance with the guidelines of Eurostat, which prepares them to the possibilities and the financial and administrative burden for the Member States. The introduction of reporting obligations in the field of environmental economic accounts has caused them to gradually switch to permanent tasks of public statistics, by entering the statistical programmes. It is indicated for the realization of methodological work, whose aim is to prepare the statistics for

[2] Among the proposed future modules, water bills, forestry bills, and waste bills are mentioned.

mandatory reporting in this area. Therefore, the situation of the implementation of EEEA modules in Poland was introduced.

Environmental economic accounts – the situation in Poland

Already 3 EEEA modules have been fully implemented in the study of Polish public statistics (table 1). This means that their methodologies, subjective and objective range have been developed, data sources, providers of statistical data and the form of their transfer have been defined, frequency (data compiled and transmitted on a yearly basis), and date and place of transfer of data, the types of statistical information, and the date and form of their availability and the costs associated with it have been specified. Environmental data are collected for national and international needs (Eurostat). When analyzing the table it can be noted that the data in the environmental accounts modules are secondary, are collected based on the principle of administrative simplification and by using a variety of sources containing basic data[3]. With the re-use of existing data additional burden on economic operators in the provision of response is very low. Mainly the statistical office is obliged for the processing of existing data and improving the usefulness of analytical data core by bringing them to the concepts and the classification of national accounts[4].

Three more environmental accounts modules are under development (as indicated in the above Regulations – IV, V, VI), in which reporting is provided in the second round. Module IV is the expenditure accounts for environmental protection[5]. They are a compilation of information on the national environmental expenditure, defined as the sum of services for the protection of the environment by the resident units, gross fixed assets earmarked for activities involving protection of the environment and transfers related to the environment (not constituting the equivalent of the above items), less fund-

3 These sources include: questionnaires, statistical estimation (in the case of items that are not observed for all units), administrative sources.

4 Eurostat has supported Member States in implementing the ERES modules through various means, among others: grants for pilot studies to facilitate the sharing of experiences between countries, training courses under the training of European statisticians, manuals and instructions, optimizing and streamlining the method of data transmission on the first three modules for Eurostat.

5 In other words – these expenditures represent economic resources devoted to environmental protection; environmental protection covers all types of activities and actions whose main objective is the reduction and elimination of pollution and any other forms of environmental degradation, as well as the prevention of these phenomena. These activities and the activities include all the measures taken to renew degraded environment, in addition to those designed to only meet the technical requirements or internal requirements of hygiene and safety and security in an enterprise or other institution.

Table 1. Specification of environmental economic accounts

Subjective scope	Objective scope	Data sources	Providers of statistical data	Form of transmission of data	Types of statistical information
Accounts of material flows [a)] Objective: To assess and analyze the abstracted quantity of biomass from agriculture, forestry, fishing, hunting and gathering; the extraction of mineral and energy resources; import and export of biomass and biomass products, minerals and energy resources, and waste for final treatment and disposal in order to develop a basic bank account and indicators of material flows.					
Economic operators manufacturing crop production, loggers and forest land effects, game animals; fish and other products from aquaculture; plants exploiting deposits or deposit users; entities importing and exporting goods within the EU and all exporters and importers exchanging goods with countries outside the EU, whose nature and quantity indicate a destination for business.	• Production of agriculture, forestry, fishing, hunting and gathering, • Exploitation of mineral and energy resources, • Import and export of biomass and biomass products, minerals and energy resources, and waste for final treatment and disposal	Reuse of data from specific publications: GUS[b)], the Polish Geological Institute[c)], Institute of Agricultural and Food Economics[d)], concerning the production of major agricultural and horticultural crops and systems of international trade in goods of the Ministry of Finance	Not applicable	Not applicable	Result tables with data (including estimates) of production: biomass from agriculture, forestry, fishing, hunting and gathering, extraction of mineral and energy resources data as well as data on import and export of specific goods; indicators calculated on the basis of result tables: DE (use of national acquisition), DMI (Direct Material expenditure), DMC (Domestic Material Consumption), PTB (Physical trade balance) in total tonnes and per 1 inhabitant and per GDP unit.

Subjective scope	Objective scope	Data sources	Providers of statistical data	Form of transmission of data	Types of statistical information
Air emissions accounts [e)] Objective: registration and presentation of data on emissions into the air in a manner consistent with the system of national accounts, within EEEA.					
Economic operators emitting gases and dust into the air	Emissions of gaseous and particulate pollutants by the selected list of items. Registering air emissions from the national economy by division in the ESA by types of economic activities resulting emissions, economic activity includes the production and consumption	The data from the information system on the emission of gases and other substances of the Institute of Environmental Protection – National Research Institute IOŚ-PIB, including estimates based on information from: national balances of emissions into the air; fuel and energy balances; publications and GUS estimates; reuse of data from the Ministry of Internal Affairs of the central register of vehicles; industry studies and expert estimates	Institute of Environmental Protection – National Research Institute – IOŚ-PIB	Information system on greenhouse gas emissions and other substances; aggregated data on estimates of annual emissions of greenhouse gases and major air pollutants (carbon dioxide without emissions from biomass, carbon dioxide from biomass, nitrous oxide, methane, perfluorocarbons, hydro-fluorocarbons, sulfur hexafluoride, nitrogen oxides, non-methane volatile organic compounds, carbon monoxide, dust suspended <10 microns, particulate matter <2.5 micrometres, sulfur dioxide, ammonia) for industry and services (by type of activity) and households; in electronic form	Scoreboards including emission of greenhouse gases and major air pollutants: the industry and the service sector – in the system activities (NACE Rev. 2), households, bridging positions (plus domestic entities abroad, minus foreign entities in the country)

Subjective scope	Objective scope	Data sources	Providers of statistical data	Form of transmission of data	Types of statistical information
Account of environmentally related taxes [f)] Objective: drawing up accounts showing the cash flow from the force of environmentally related taxes in Poland. Such payments shall be identified in the ESA as taxes, which are the base units of physical interaction (or substitute / replacement for that unit) with proven, negative impact on the environment.					
Operators and households that are end taxpayers of environmentally related taxes and fees methodologically qualified for ecological taxes	The amount of funds coming from environmentally related taxes, according to NACE Rev. 2, assigned to the 64 business groups (A * 64) and households, as well as four generic groups: energy taxes, transport taxes, taxes on pollution, taxes for the use of natural resources. The following are accepted to study the tax base : excise tax on heating fuel, driving, LPG, electricity, cars, lubricating oils, duty on imported mineral fuels, vehicles, aircraft, vessels and associated transport equipment; registration fees and vehicle registration; tax on means of transport; the fee for substances placed on the sewage to water and land; fees for gases or dust introduced into the air; product charges, charges for removal of trees and shrubs; no network	Secondary use of data: • On the supply and use of goods and services (tax flows) • System of Declaration Service CELINA of the Ministry of Finance, the data of import customs declarations and adjustments to these reports (aggregate data on value, quantity and directions of imports from countries not in the EU, • A collection of reporting data of the Ministry of Finance about the size of the domestic sales, imports and intra-Community acquisition of certain excise (individual data on income from excise duties according to articles) • from the internal information system of the National Fund for Environmental Protection and Water Management on fees and penalties for use of the environment	Not applicable	Not applicable	Data scoreboards (including estimates) on cash from the force of environmentally related taxes in Poland. Aggregated data broken down into 64 types of activity according to NACE Rev. 2 and households

Subjective scope	Objective scope	Data sources	Providers of statistical data	Form of transmission of data	Types of statistical information
	charges for collection vehicles; fees for ozone-depleting substances; charges for failure to take the required amount of renewable energy; fuel surcharge				

[a] Accounts of material flows means consistent compilations of the material contribution to national economies, the changes of material stock in the economy and the influence of the material to other economies or to the environment.

[b] Specifically: *„The results of crop production "," Production of agricultural and horticultural crops "," Statistical Yearbook of agriculture "," Livestock "," Use of land and sown area "," Forestry "," Maritime Economy in Poland".*

[c] i.e. *„Balance of mineral deposits and groundwater in Poland".*

[d] i.e. *„Fish market – the state and prospects".*

[e] On these accounts are being recorded the flows of residual gases and particulates from the national economy and flowing into the atmosphere. Record emissions arising from the activities of all resident units, regardless of where in fact they take place in a geographical sense.

[f] These accounts record and present data from the perspective of the entities paying the taxes related to the environment by types of economic activity (business activity includes production and consumption). Statistics on environmentally related taxes are being developed for the following items: taxes on energy, pollution, transport and taxes for the use of natural resources.

Source: based on the Council of Ministers regulation dated 21.07.2015 On the programme of statistical surveys for 2016, OJ 2015 item. 1304 the Council of Ministers regulation dated 26.01.2016 Amending the regulation on a programme of statistical surveys for 2016, OJ 2016 item. 118.

ing from abroad (Journal of Laws L 158 z 27.05.2014). These accounts show the expenditure on environmental protection in relation to the primary, secondary and auxiliary activity of:

- general government sector (including non-commercial institutions serving households), and enterprises and financial institutions as institutional sectors providing services related to environmental protection. Specialized producers (environmental services sector) provide services related to environmental protection as part of its core business;
- households and general government sector, businesses and financial institutions as consumers of services for the protection of the environment;
- foreign countries as beneficiaries or as a source of transfers relating to the protection of the environment.

Accounts of expenditure on environmental protection, as well as other modules of environmental accounts are compiled in accordance with ESA, and spending on the environment is recognized by environmental domains, according to CEPA (Classification of Environmental Protection Activities).

In Poland, as part of a pilot project (conducted by *GUS* – the Central Statistical Office of Poland, the substantial support of the Foundation of Environmental and Resources Economists – FEŚIZN) the development of the methodology of preparing these accounts was compiled as well as the subjective and objective range; data sources[6] (are it existing in the public statistics reports and systems) were defined as well as the providers of statistical data and the form of their transfer, specification of frequency (data compiled and transmitted on a yearly basis), and date and place of transfer[7]. Moreover, the content of 7 result sets were precisely defined, making up the *Eurostat Questionnaire for EPE legal module*, through which the data is being transmitted[8]. In order to refine the remaining doubts / methodological shortcomings that emerged in the course of the project, among others, existing discrepancies between the data from different data sources, lack of data on the amount of taxes for energy and transport after 2010 and the amount of other taxes, as well as the amount of other subsidies for production, on the frequency of

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6 The main sources of information are research spending on environmental protection conducted in Poland, i.e.: research expenditure on fixed assets in environmental protection and water management as well as their material effects (conducted since 1970). Research spending environment in households (conducted every 3 years) and research costs of the current environment (conducted since 1998). See (Broniewicz, 2016).

7 The first transmission of data to Eurostat is scheduled for December 2017 and the reference years are 2014 to 2015. Further data shall be submitted annually.

8 A detailed description of all the elements on the methodology for drawing up the accounts of expenditure is presented in the article by (Broniewicz, Domańska, 2016b).

testing of the running costs of environmental protection, are to be carried out at least every 3 years[9].

Module V is the environmental goods and services sector accounts. It records and presents data on production activities of the national economy, which resulted in goods and services related to environmental protection[10], in accordance with the ESA. Goods and services related to environmental protection are classified into 4 categories: services related to environmental products, products with exclusive environmental purpose, goods adapted and technologies related to environmental protection. During the European Environmental Economic Accounts, entitled *module sector accounts for environmental goods and services pilot project*; the Central Statistical Office in Poland with the FEŚIZN also conducted content in the years 2014–2015, with developed methodology for compiling these accounts and completing the questionnaire tables of *Eurostat Environmental Goods and Services Sector (EGSS),* which consists of 4 tables covering individual elements of the account (the production of environmental goods and services, exports, added value and employment)[11]. In order to prepare accounts existing data sources were used, without conducting special research in the EGSS sector units. The first transmission of data to Eurostat is planned for December 2017. The pilot study indicated the need to refine, among others, convergence and detail of the data obtained from the two applied research approaches (demand and supply), to adapt to the requirement of the price for which the accounts are drawn up (should be basic prices, but the buyer prices exist) and others[12].

The accounts of physical energy flows mean consistent compilations of the natural flow of energy to the national economy, energy flows within the economy and the flow of energy to other economies or to the environment (Journal of Laws L 158 z 27.05.2014). In Poland, work on them began in 2010 and should be completed in the form of a report in August 2017[13]. Accounts of physical energy flows are being developed on the supply and consumption of energy in physical terms, including significant flows in terms of emissions. The first accounts will cover the years 2014–2015. These accounts are

9 I quote the Ibid.

10 Products related to environmental protection are produced to protect the environment and the management of its resources

11 Data on these elements developed by the NACE Rev. 2, broken down into 21 sections. In addition, data are grouped according to CEPA and CREM classification (*Classification of Resource Management Activities* – Klasyfikacja Działalności Związanej z Gospodarką Zasobami). A detailed description of the methodology of preparing these accounts are contained in the article of (Broniewicz, Domańska, 2016a).

12 I quote the Ibid.

13 The report of the methodological work should contain a set of tabular accounts of physical energy flows along with the description of data sources, methodology of filling tables, methods of estimation.

focused on the integrated macroeconomic and environmental analysis and complement the information provided by the statistics (specialist statistical survey in the field of fuel and energy) and energy balances[14], which remain the main source of information for monitoring energy policy[15]. Since the development of these accounts have not yet been completed, it is not possible to indicate whether some flaws during the work there will be revealed.

Conclusions

In Poland, the first three EEEA modules, which accounts for air emissions, environmentally related taxes and material flows have been already permanently implemented to the research of public statistics. Work related to perfecting the methodology and matters of formal and technical implementation of the following three modules, i.e. accounts of environmental spending, environmental goods and services sectors and the physical flows are upon completion. Recording the latter accounts for the programme of statistical surveys of the public project is planned for 2018 as a continuous survey with a specific purpose, scope and cost, which means that during this time methodological problems revealed in the course of pilot studies must be resolved. Timely implementation of the various modules of environmental accounts are related to, among others, the fact that all the accounts are drawn up on the basis of existing data sources, without conducting special studies, which greatly facilitated the work of application and reduced compliance costs in this regard to EU requirements.

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14 The available tabular accounts of physical energy flows are analyzed in the following areas: industry, transport, services, agriculture and households and methodological principles of filling them.

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