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## ENVIRONMENTAL FEES. POLISH CASE STUDY

Some economic aspects of taxes and fees for the use of the environment have been discussed. The Polish environmental charge system is taken into account as an example of the tax system. The types of charges levied for use of the environment have been indicated as well as the persons and entities that must pay, rules of payment and the legal background in Poland. The revenues generated from environmental taxes have been shown on the example of European Union countries. Based on statistical data for Poland, the most important sources of revenue derived from fees for use of the environment were identified and analyzed both in terms of the type of payment as well as the geographical distribution of the entities which are charged.

### 1. INTRODUCTION

Everyone uses the environment every day, to a lesser or greater degree, through water use, sanitation and waste production. To maintain the natural balance of the environment, it is important to proceed in accordance with the doctrine of sustainable development. The concept was the brainchild of Hans Carl von Carlowitz and originally referred to forest management – over the long term only cut as many trees as you can replace. The idea of sustainability is concluded in the opening words of the 1987 report of the World Commission on Environment and Development, *Our Common Future: Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.* [1].

A lack of rational environmental management means that the environment is not able to regenerate itself quickly enough on its own. It needs support and responsible behavior from all stakeholders. Unfortunately, it is human nature on a personal and business level to maximize profits and minimize losses. Consequently, few entities perceive the real long-term costs and intangible pain in terms of environmental dam-

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age that can arise from short-term financial gains. Since it is difficult to force society to take responsibility for the environment and future generations of citizens, especially in the context of business and the economy, government has assumed a regulatory role towards users of the environment and imposed duties on them. These include:

- various types of permits and licenses,
- reports on use of the environment,
- fees, charges and taxes for use of the environment,
- penalties and additional fees for inconsistent use of the environment.

One of these duties – environmental taxes – are used as tools to repair damage to the environment, to raise awareness of the role the environment plays in society, and to promote and co-finance activities designed to reduce future negative effects on the environment. The paper presents some economic aspects of environmental taxes, various types of environmental duties that exist in Poland and discusses the revenues from environmental charge collection system in EU countries with particular emphasis on Poland.

## 2. ENVIRONMENTAL TAXES

The rules for charging environmental fees (or charges, or taxes) and the scope of entities and activities concerned with the environment differ among nations. They are mostly in accordance with the “polluter pays” principle, so as to encourage entities using the environment to reduce impact on the environment. According to this principle, entity that causes pollution must bear the costs of removing these contaminants.

The “polluter pays” principle is presented in two approaches. In broader terms, the perpetrator of the contamination is financially responsible for all damage caused by his business, regardless of whether the activity is lawful or not. More often the definition of the rules is used in a narrower sense: the polluter should bear the financial responsibility for complying with the full range of standards. The entity that directly or indirectly causes damage to the environment or creates conditions leading to damage is the cause of contamination.

Eurostat and the OECD have developed a definition of environmental taxes in order to facilitate comparative studies, such as environmental tax structures, between countries. An environmental tax is defined as: *A tax whose tax base is a physical unit (or a proxy of it) of something that has a proven, specific negative impact on the environment* [2].

These charges are imposed in many countries. Not all of these are referred to simply as taxes, due to legal provisions. Other existing terms are fees and charges. Despite varied names, their meaning is very similar, so in this paper in the context of European countries the term taxes will be used and in the case of Poland – fees – in accordance with the nomenclature of the Polish legislation.

The 1990s saw great change in the rules and methods of charging for environment use, with several countries in Europe moving beyond individual environmental taxes and implementing Environmental Tax Reforms (ETR) [3]. These changes were later defined by the European Environment Agency as “a reform of the national tax system where there is a shift of the burden of taxes from conventional taxes such as labour to environmentally damaging activities, such as resource use or pollution” [4]. A short description of the current principles of the environmental charge system in various European countries is available on the website of the Confédération Européenne Fiscale [5].

In Europe, among the most common taxes are those related to emissions – particularly CO<sub>2</sub> – aimed to counteract the greenhouse gas effect and the negative impact of pollution on society [6, 7]. Partially as a result of environmental taxes, there has been a significant drop in emissions of most environmental pollutants over the last 20 years. According to data collected by the European Environment Agency [8] in the period 1990 to 2009 (average of all 27 current EU member states – rounded figures used), sulfur oxides showed the biggest fall in emissions (80%). Other significant declines in emissions included carbon monoxide (62%), polycyclic aromatic hydrocarbons (61%) and non-methane volatile organic compounds (55%). Smaller emission declines were also observed in particulate pollution (27% for PM<sub>10</sub> and 34% for PM<sub>2.5</sub>) which at present, along with ground-level ozone, is the greatest problem affecting air quality in many parts of Europe [9].

Changes associated with charging for emissions correlate with changes in high-emission sectors such as energy, which especially attracted a lot of attention. An example of the changes in the energy industry in Nordic countries can be found in [10]. In this paper attention is also paid to the problem of simultaneous use of different climate policy instruments: energy taxes and the emissions trading scheme. Using the examples of Germany and the United Kingdom, the impact of ETR on energy prices is shown in [11] as is the knock-on effect on consumption and employment. Namely, after the introduction of environmental taxes, demand for energy fell alongside a small decline in employment in the energy sector.

Environmental taxes also apply to other components of the environment. A detailed comparison and summary of the current operating principles regarding water-related taxes in some European countries is offered in [12, 13]. In [13], the author tries to answer how water pricing policy must be devised if this aim is to be achieved, how water use can be reduced to the necessary minimum in order to protect wetlands, to avoid lack of water in certain regions, to reduce pollution, in brief to achieve a sustainable level of water use and if it is possible at all to reach such objectives by using economic instruments.

Environmental taxes from various sources in Sweden are analyzed by Palm et al. [14]. The paper presents the accounts for taxes and subsidies in the Swedish System of Environmental and Economic Accounts, linked to the accounts for emissions data by

industry. The authors demonstrated disparities between emissions and environmental taxes, as well as where industries or environmental problems are not regulated. The studied data show that in Sweden, economic instruments are always aimed at particular actors or areas, and are never quite as comprehensive as recommended by economic theory.

The claims based on the environmental and economic benefits of environmental taxes and other market-based mechanisms over standards-based legislation based on the European Union Packaging Waste Directive in selected European countries are analyzed by Bailey [15]. The conclusions are that the pollution-reducing effect of environmental taxation is severely constrained for price-inelastic commodities but that revenue hypothecation for defensive expenditures provides genuine possibilities for promoting environmental improvements whilst retaining the economic benefits of market-based regulation.

The rationale behind introducing economic instruments such as environmental taxes is the existence of negative environmental effects from economic activities. If the cost of producing and supplying goods or services does not take into account the negative impact on the environment, prices are improperly formed encouraging further environmental degradation. Factoring environmental damage into the costs of production stimulates the use of environment-friendly technologies and results in correct pricing [16].

Ekens et al. [17] discuss the distributional implications of ETR for households and present new results from modeling the impacts of ETR for the European Union. The distributional effects arise from new environmental taxes, any tax reductions made as part of the ETR, wider macroeconomic impacts from the ETR, any special provisions in the ETR, and environmental benefits from the ETR. The modeling results suggest that an ETR in Europe will actually increase real incomes across the EU as a whole, and will not be generally regressive, although the results differ by country and for different socio-economic groups.

The social aspects of environmental taxes are described by Kallbekken et al. [18]. The analysis shows that public acceptance of environmental taxes cannot be well explained without capturing a broad range of motivational factors. It implies that there is no magic formula for increasing public support for environmental taxes. There are, however, some issues which can be addressed: trust in how well the government spends the revenue and the perception that taxation does very little to change behavior and thus to reduce environmental problems.

An overview of the ramifications of ETR can be found in [19, 20]. The authors compared shares of environmental taxes on GDP and overall tax revenues in the EU in years 1995–2010 to identify the real impact of such efforts. They found that importance of environmental taxes in fact declined in the last decade in most European countries with very few exceptions. They also identified reasons for such a surprising development. Among these, rising energy prices and introducing new environmental

and economic policies such as tradable permit schemes or feed-in-tariff schemes for promotion of renewable energy sources are the most important.

An analysis of environmental taxes as a percentage of GDP is presented by Chivu et al. [21]. The authors say that despite the contradictory signals related to the efficiency of environmental taxes as well as to the downtrend in the revenues from such taxes at the level of the European Union, the situation of the resources available to the state for the achievement of the economic and social policy objectives, also influenced by the current global context suggests that, in the future, the importance of environmental taxes might grow.

As it can be seen, environmental taxes relate to various aspects of life and economic activities. It is important to correctly identify the sources (e.g. business) which are liable for the payment of taxes as well as the correct allocation of the collected funds.

### 3. USING THE ENVIRONMENT IN POLAND

In Poland, it is the responsibility of an entity using the environment in any way to collect data and calculate the environmental fees due. The term entity using the environment is defined in the Polish *Environmental Protection Act of 27 April 2001* (PEPA). Under Art. 3 p. 20 entities using the environment are:

- businesses and persons engaged in farm production activities in agricultural crops, breeding or rearing livestock, horticulture, vegetable growing, forestry, inland fisheries, and veterinary professionals in individual practice or individual specialist practice;
- individuals who are not in business but who use the environment in a manner that requires special permission, for example:
  - in agriculture extracting groundwater to irrigate land and crops with sprinklers,
  - use of groundwater or surface water for household or agricultural purposes in an amount greater than 5 m<sup>3</sup>/d,
  - discharge of wastewater from households or farms to water or soil in an amount greater than 5 m<sup>3</sup>/d;
- organizational units which are not business entities as per the *Act on Freedom of Economic Activity* (government offices, municipal facilities, schools, associations, foundations, etc.).

Article 4 of PEPA distinguishes among:

- widespread use of the environment that is available to anyone consisting of use of the environment without any installations to meet the needs of personal and household effects including leisure and sports, discharge of substances or energy into the air, and other types of public use of water in the meaning of the *Act of 18 July 2001 on Water Law*;

- regular use of the environment, use beyond widespread use but which requires no permit, and regular use of water under the provisions of the *Act of 18 July 2001 on Water Law*;

- use of the environment beyond widespread use requiring a permit.

Both regular use of the environment and use of the environment beyond widespread use are covered by reporting requirements and possible fees.

PEPA lists most of the environmental reporting obligations applicable in Poland. In addition, it includes references to many other rules that provide details on forms and reports for submitting information on use of the environment and related fees.

#### 4. ENVIRONMENTAL REPORTING AND FEES IN POLAND

In Poland, most entities are obliged to report on air-related matters but many entities also report in the areas of water, wastewater and waste, where a major requirement is the filing of a report (hereinafter referred to as reports) defined by the *Regulation on the report and data on the use of the environment and amount of fees due*. The regulation determines the content of the reports on use of the environment in the areas of:

- emission of gases or dust into air,
- consumption of water,
- emission of wastewater into water or soil,
- storage of waste.

Common, important annual requirements include:

- Product charge report (*Regulation of the Minister of Environment of 29 December 2010 on the annual report of product charges*) filed by businesses involved in the production, import and manufacture of intra-packed products or products listed in the *Act of 11 May 2001 on packaging and packaging waste*, as well as acting on behalf of business recovery organizations. This report must be also submitted annually to the governor of the region.

- Report on end-of-life vehicles and electrical or electronic equipment waste (*Regulation of the Minister of Environment of 27 December 2010 on the transmission mode and format of information on End-of-Life Vehicles and electrical or electronic equipment waste*).

- Documents under the Act of 24 April 2009 on batteries and accumulators:

- report for the previous year on the type, quality and weight of batteries and accumulators placed on the market (*Regulation of the Minister of Environment of 24 September 2009 on the annual report on the type, quantity and weight of batteries and accumulators placed on the market*),

- list of plants that handle battery or accumulator waste and have signed an agreement with dealers (*Regulation of the Minister of Environment of 12 February 2010 on the report for establishments that process battery or accumulator waste*),
- report for the previous year on the amount of contributions to public education campaigns (*Regulation of the Minister of Environment of 12 February 2010 on the annual report on the amount of funds allocated to public education campaigns*),
- report for the previous year filed by businesses that place portable batteries or accumulators on the market regarding achieved levels of collection together with a list of collection points operated by the collector and a list of collection points where the collector receives used portable batteries or accumulators (*Regulation of the Minister of Environment of 22 December 2009 on the annual report on the weight of collected portable used batteries and accumulators*),
- information on service charges for excavated minerals from deposits (*Regulation on the report and data on mining fees for excavated minerals from deposits*).

These are just a few examples of reporting obligations imposed by the parliament on entities using or having an effect on the environment. More information on requirements can be found in [22, 23].

Based on the above mentioned and other types of reports, entities using the environment are required to pay various fees, called environmental fees. Table 1 shows the most important types of environmental fees (including penalties) in Poland.

Table 1

Most important types of environmental fees in Poland

No.	Type of duty	Paid by
1	Fees for use of the environment (coming from Reports)	entity using the environment for: emission of gases or dust into air consumption of water emission of wastewater into water or soil storage of waste
2	Increased fees for use of the environment ("advance", coming from Reports)	entity using the environment lacking a permit for: emission of gases or dust into the air consumption of water discharge of wastewater into water or soil storage of waste
3	Administrative fines for use of the environment	entity using the environment (without a permit or special decision) for: exceeding or violation of terms of using the environment determined in the conditions of introduction of gases or dust into the air, waste water into water or soil, water consumption, waste storage, storage of waste and emission of noise to the environment.

Table 1

## Most important types of environmental fees in Poland

4	Registration fee for issuing an integrated permission	the integrated permit applicant
5	Mineral exploitation fees and concession fees under the <i>Geological and Mining Act</i>	entity holding a geology concession concerning mineral exploration, mineral extraction, storage and disposal of waste substances in the subsurface, prospecting for mineral deposits
6	Fees under the <i>Water Law</i>	entity using inland waterways and water facilities, fishing district, land covered with water, entity which shares information with the water registry
7	Fees under the <i>Act of 20 April 2004 on substances that deplete the ozone layer</i>	entity placing the substances: HCFC, CFC, and bromomethane on the market for the first time
8	Additional fees under the <i>Act of 20 April 2004 on substances that deplete the ozone layer</i>	entity for underpaying or failing to make a payment
9	Fines under the <i>Act of 25 August 2006 on biocomponents and liquid biofuels</i>	entity that produces, stores or markets biocomponents contrary to the Act, entity which fails to prepare a report
10	Fees under the <i>Act of 17 July 2009 on the management system for greenhouse gas emissions and other substances</i>	entity for the allocation of emission allowances, entity for inclusion in the <i>National Register of Emission Allowances</i>
11	Fines under the <i>Act of 17 July 2009 on the management system for greenhouse gas emissions and other substances</i>	entity against which there was a negative determination of emission allowances in a review of the annual report or which an audit found to be acting without authorization
12	Product fee under the <i>Act of 11 May 2001 on the obligations in the field of management of certain waste and the product fee and deposit fee</i>	entity that does not ensure the recovery and recycling of waste
13	Increased product fee under the <i>Act of 11 May 2001 on the obligations in the field of management of certain waste and the product fee and deposit fee</i>	entity underpaying or failing to make a payment
14	Fees under the <i>Act of 20 January 2005 on recycling End-of-Life Vehicles</i>	entity introducing to the market a vehicle that does not provide a vehicle collection network and a non-business that makes an intra-Community acquisition or importation of vehicles, entity introducing a vehicle that is required to ensure the collection of vehicles and the network does not comply with this obligation
15	Increased fees under the <i>Act of 20 January 2005 on recycling End-of-Life Vehicles</i>	entity that fails to comply with a decision of Chief Inspectorate for Environmental Protection
16	Fines under the <i>Act of 20 January 2005 on recycling on End-of-Life Vehicles</i>	entity which carried out the station renovation or removal and dismantling of ELV components or hazardous substances, objects or parts of equipment

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17	Product fees for waste electrical and electronic equipment	entity introducing electrical and electronic equipment to the market which does not satisfy the requirement of recovery and recycling.
18	Additional product fees for waste electrical and electronic equipment	entity that fails to comply with a decision of Chief Inspectorate for Environmental Protection.
19	Cash collateral for waste electrical and electronic equipment	entity introducing electrical or electronic equipment to the market in the absence of an agreement with an organization recycling electrical and electronic equipment
20	Fines for waste electrical and electronic equipment	entity placing on the market equipment which is not listed in the register maintained by Chief Inspectorate for Environmental Protection, failure to lodge financial security failure to communicate to retailers or wholesalers information on the costs of waste management.
21	Financial resources for conducting public education campaigns	entity introducing to the market electrical and electronic equipment.
22	Fines under the <i>Law of 29 June 2007 on international shipments of waste</i>	recipient of illegally imported waste without a filing for sending waste: no requisite filing, or without the consent of the competent authorities, or if obtaining consent through falsification, misrepresentation or fraud
23	Fines under the <i>Act of 24 April 2009 on batteries and accumulators</i>	Trader of batteries for the lack of: entry in the register of Chief Inspectorate for Environmental Protection, information about the product in Polish, as well as information on what kind of batteries are in the device possibility of free of charge disposal of used batteries by its customers.
24	Administrative fines under the <i>Act of 14 December 2012 on waste</i>	Holder of waste or transporter of waste that: disposes of waste contrary to the rules on waste management delivers waste to entities not having the required permits, unless a license was not required dilutes or prepares mixtures of waste with each other or with other substances or objects in order to meet the eligibility criteria for the storage of waste in landfill.
25	Substitution fees under the <i>Energy Law</i>	Energy companies lacking certificates of origin for energy from renewable sources
26	Fines under the <i>Energy Law</i>	Energy companies for failure to pay substitution fees

The number of applicable fees related to the environment in Poland is quite large. To the largest number of entities apply fees from reports (Nos. 1 and 2), product charges (Nos. 12–22), and mineral exploitation fees (No. 5).

Fees resulting from reports are paid to the office of the regional governor whose remit covers the place of use of the environment. The collected fees are passed on by the regional governors' offices to, among others, the National Fund for Environmental Protection and Water Management (National Fund) and the Regional Fund for Environmental Protection and Water Management (Regional Fund). The fees are used to finance environmental protection work performed by the respective bodies [24].

Each entity using the environment calculates the fees itself based on an annual unit rate and formulas contained in separate secondary legislation. The user of the environment may be exempt from fees in these situations:

- if the fee for using the environment for all environmental components (i.e., gas or dust emission into air, water consumption, wastewater emission into water or soil, and waste storage) does not exceed PLN 800 per year,
- for emergency services such as water used for firefighting purposes or use of fuel for vehicles involved in rescue operations.

A five-fold surcharge above the normal fee is payable if the user does not have a required or valid permit. Currently, approximately 200 000 entities submit half-yearly reports and approximately 50 000 pay a fee [25, 26].

The product fee is calculated by multiplying the product fee rate and the difference between:

- the weight of waste portable batteries and waste portable accumulators which should be collected in order to achieve the required level of collection in a calendar year, and the weight of collected waste portable batteries and waste portable accumulators in the year,
- required and achieved levels of recovery (recycling) converted to the weight of the products or packaging.

An entity using the environment must pay the product fee to:

- regional governor's office not later than by 15 March for the previous year in the case of portable batteries and accumulators,
- regional governor's office not later than by 31 March for the previous year in the case of used packaging and products;
- regional environmental fund not later than by 31 March for the previous year in the case of electrical and electronic equipment waste.

Mineral exploitation fees related to reporting under the *Geological and Mining Act* are charged for:

- mineral exploitation,
- prospecting or exploration of mineral deposits,
- storage of waste in the subsurface, including underground mining excavations,

- non-reservoir storage of substances in the subsurface, including underground mining excavations.

Mineral exploitation is calculated by multiplying the royalty rate for the mineral type and quantity of minerals extracted in the accounting period. An entity computes the mineral exploitation fees quarterly on its own and pays them in the following proportions: 40% to the National Fund, and 60% to the municipality or municipalities responsible for the place of business covered by the concession.

All of the aforementioned fees are paid by entities that use the environment and are the main source of revenue for the institutions that collect them. The largest administrator of proceeds from fees is the National Fund. Together with the provincial, county and municipal funds, it serves as the pillar of the Polish system of environmental funding. PEPA underpins the functioning of the National Fund. Financing of the National Fund comes from fees for using and changing the environment (including use of water, discharge of sewage into water and soil, mineral exploitation and license fees arising from the *Geological and Mining Act*), penalties for violation of environmental protection requirements, mineral exploitation without required permission and flagrant violation of permit terms (Article 128 of the *Geological and Mining Act*), as well as other sources (such as from navigation and rafting, extraction of aggregates and sand with water, interest on loans and bank accounts, etc.). These funds are allocated primarily to support large investments of national or supra-regional importance to combat water, air and earth pollution. They also fund tasks in the field of geology and mining, environmental monitoring, environmental threats, conservation and forestry, spreading ecological knowledge, prevention, child care and research works and expertise.

## 5. REVENUES FROM FEES FOR USE OF THE ENVIRONMENT

Table 2 presents incomes of environmental taxes in the years 2006–2010 based on data provided by Eurostat. As previously mentioned, different countries have different definitions and classifications of environmental taxes, charges and fees, thus the following table contains the proceeds of pollution taxes and resource taxes<sup>2</sup>. Pollution taxes include taxes on measured or estimated emission (without CO<sub>2</sub>) to air or water, management of solid waste and noise. Resource taxes are related to water consumption, forestry and mining.

These data indicate that revenues from the above mentioned categories of environmental taxes in Poland are quite significant when compared to other EU countries. In 2010, Poland was ranked on the fourth place among the 24 countries for which data were obtained (after the Netherlands, France and United Kingdom). Revenues gener-

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<sup>2</sup>Full list of tax components is available at:  
[http://epp.eurostat.ec.europa.eu/cache/ITY\\_SDDS/en/env\\_ac\\_taxind\\_esms.htm](http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/en/env_ac_taxind_esms.htm)

ated from these taxes in Poland are about 7% of the revenues derived from this source in the European Union.

Table 2

Environmental taxes: pollution and resource taxes [millions of euro] (source: Eurostat)

Item	Year				
	2006	2007	2008	2009	2010
European Union (27 countries)	10 866.25	11 124.69	11 262.02	10 825.57	11 356.05
Euro area (17 countries)	7311.79	7699.5	7878.61	7836.57	8110.39
Belgium	523.2	498.9	509.4	505.4	531.6
Bulgaria	31.54	24.94	47.12	27.72	28.57
Czech Republic	27.77	33.42	32.11	47.47	51.93
Denmark	648.27	676.13	666.37	599.27	503.53
Germany	20	20	20	20	20
Estonia	43.6	54.5	54.7	53.5	45.1
Ireland	12.23	4.93	9.61	2.11	2.57
Spain	174	198	165	130	205
France	2196	2412	2470	2303	2331
Italy	464	492	486	478	490
Latvia	16.34	15.46	13.96	11.31	13.29
Lithuania	16.83	18.34	20.81	18.11	7.37
Hungary	128.13	141.81	169.34	156.98	100.55
Malta	12.21	16.44	17.7	13.84	12.21
Netherlands	3565	3685	3875	4088	4219
Austria	82.8	81.96	74.25	67.49	60.79
Poland	696.37	485.24	623.84	732.05	802.81
Portugal	0.92	0.92	2.53	0.83	0.67
Romania	92.04	22.43	14.34	7.48	15.55
Slovenia	58.59	61.69	61.96	54.37	58.93
Slovakia	42.25	47.17	29.46	28.02	25.52
Finland	117	126	103	92	103
Sweden	217.63	201.3	152.88	112.44	120.37
United Kingdom	1679.55	1806.12	1642.64	1276.18	1601.7

In contrast to many other countries, these revenues have a tendency to increase. In the year 2010 compared to 2006, they increased by over 15%, while the average increase for all countries of the European Union was slightly more than 13%. 13 countries in 2010 reported lower revenues than in 2006. In some of them reduction in revenues was approximately 80% (Ireland, Romania). The volatility of the fees in particular years can be observed which results from changes in the law.

Funds raised from environmental taxes are quite significant. Income from this source in the EU-27 countries in 2010 amounted to about 293 billion of euro, which is equivalent to 6.45% of the total revenues from taxes and contributions and 2.48% of

GDP. Since 2003, revenues from environmental taxes as a share of GDP fell, reaching a historical low 2.38% in 2008 [27]. In most countries, these revenues account for approximately 2–3% of GDP [28].

Table 3 shows the revenues from environmental fees and fines collected by authorized institutions based on Central Statistical Office (CSO) data and recalculated in euro (1 euro = 4 PLN). The adjacent columns indicate the main sources of fee revenue. Penalties denote fines imposed for both environmental contaminants in excess of admissible standards and making changes to the environment.

Table 3

Proceeds from environmental fees and fines [thousand euro] [29]

Year	Revenues from fees			Penalties
	Wastewater and water protection	Protection of air and climate	Waste management	
2006	109 694.98	200 726.63	65 227.95	12 881.45
2007	114 467.50	205 962.13	85 292.78	16 392.95
2008	112 320.00	204 312.63	130 502.63	17 213.33
2009	112 237.30	163 923.65	176 494.83	15 852.83
2010	114 147.48	180 347.18	178 644.03	12 900.58

The data show a steady increase in revenues for use of the environment in part as a result of increasing rates typically adjusted annually according to inflation. The largest increase in revenue among all categories is in waste management. This reflects greater attention paid by government units to the problem of collecting and processing waste, and the greater responsibilities and costs in this field that have emerged in recent years. The second reason for the increase in fees is stricter enforcement of the national system for waste management charges and thus higher collection rates. Important in this case may be the year 2013 in which the Polish government has introduced important law on waste, imposing additional fees on citizens. Based on this law, it is likely to further increase the amount of revenue generated by waste management.

Charges related to air protection remained relatively unchanged. Emissions, in particular CO<sub>2</sub>, have attracted much government attention since the 1990s. The measures introduced before the year 2000 have proved to be stable with little variance in subsequent years; hence, the principles of reporting, type of data, and fees have changed only marginally. The same is true in the case of wastewater management and water protection, except here the impact of world politics has not been as strong.

In the case of emissions, the third phase of the *European Union Emission Trading Scheme* (EU-ETS) settlement launched this year initiates a difficult period for the Polish energy and heat economy, requiring the introduction of a number of changes in its structure and organization. In view of the restrictions imposed by the European trading system adopted under the climate and energy package, and the assumptions of

the *Roadmap towards a low carbon economy in 2050*, the implementation of new environmental policy of the European Union seems to be inevitable. Moving gradually away from the system for free allocation for auctioning and the consequent reduction of the allowances amount distributed in the primary market may lead to a systematic increase in the demand for emission allowances among entities and increase in prices on the secondary market.

As the structure of the Polish heat and energy system generates limited potential for reducing CO<sub>2</sub> emissions, it will have to be followed by the implementation of new low-carbon technologies and reducing emissions (nuclear power, increased efficiency of coal-gas energy, etc.). Table 4 shows the distribution of revenues from the fees for each region for 2010.

Table 4

Distribution of revenues [thousand euro]  
derived from particular types of fees by regions in 2010 [29]

Voivodship	Revenues from fees			Penalties
	Wastewater and water protection	Protection of air and climate	Waste management	
Dolnośląskie	11 193.48	13 174.58	14 107.28	845.60
Kujawsko-Pomorskie	9 193.25	7 899.95	7 416.83	329.70
Lubelskie	4 526.43	5 419.55	6 397.88	434.90
Lubuskie	2 398.60	2 637.95	3 352.00	183.63
Łódzkie	6 835.60	20 262.98	23 619.85	351.43
Małopolskie	8 639.45	12 351.80	15 237.83	710.53
Mazowieckie	14 052.10	25 582.78	18 216.73	2 348.63
Opolskie	3 269.83	7 579.98	4 784.43	129.88
Podkarpackie	2 943.50	4 098.78	5 809.95	179.15
Podlaskie	1 768.30	2 387.53	2 379.90	112.35
Pomorskie	6 432.63	6 443.25	13 657.98	175.85
Śląskie	26 696.25	41 101.63	20 852.78	5 862.55
Świętokrzyskie	2 814.03	7 965.68	3 896.30	115.08
Warmińsko-Mazurskie	2 481.98	3 085.20	4 831.25	131.30
Wielkopolskie	7 038.48	13 694.53	19 975.75	543.43
Zachodniopomorskie	3 863.65	6 661.05	14 107.33	446.60

Revenues are highly dependent on the degree of industrialization in the region. The figures show that the most industrialized regions are Silesia (Śląskie) and Mazovia (Mazowieckie). Large amounts from the protection of air and climate fees in Silesia are caused by the accumulation of large industrial plants and many power stations. In the case of the Łódź region (Łódzkie), high revenues come from the biggest Polish power plant, located in Bełchatów. The least industrialized regions, thereby generating the lowest revenues, are Podlaskie and Lubuskie.

These data show the importance of appropriate distribution of the collected funds for the National Fund which can allocate resources to invest in any region of the country, and regional funds allocating funds for projects in their region. Since some of the money from the heavily industrialized regions goes to the National Fund, the environmental activities paid for by these funds can also be carried out in regions where revenues are very low (Podlaskie, Lubuskie, Warmińsko-Mazurskie). This is very important because many types of pollution move across the boundaries of regions; therefore eliminating their effects is desirable not only for local places of origin but also in more distant regions of the country. Good examples here are air pollution or sewage discharged into rivers. If environmental funding for the elimination of pollution damage were earmarked only on a local scale, the less industrialized areas would be negatively affected in an unfair way.

The most significant components of these revenues are charges resulting from the reports submitted on the use of the environment. All revenues referred to as protection of air and climate come with them, and much of the amounts referred to as wastewater management and water protection and waste management.

For comparison, let us look at how much is constituted by revenues from product fees (Table 5).

Table 5

Revenues from product fees [thousand euro] by regions in 2010 [29]

Voivodship	Total revenues from product fees	Revenues from fees		
		Packaging	Accumulators	Other
Dolnośląskie	79.98	76.78	3.05	0.18
Kujawsko-Pomorskie	37.98	37.88	0.00	0.08
Lubelskie	20.80	20.80	0.00	0.00
Lubuskie	16.03	15.23	0.05	0.75
Łódzkie	148.90	148.43	0.05	0.43
Małopolskie	135.93	128.73	0.00	7.20
Mazowieckie	870.70	716.23	43.68	110.80
Opolskie	33.43	30.85	0.28	2.30
Podkarpackie	152.63	86.45	0.13	66.05
Podlaskie	78.35	68.60	0.70	9.03
Pomorskie	106.75	104.58	0.88	1.30
Śląskie	348.90	286.73	0.00	62.15
Świętokrzyskie	34.68	34.38	0.00	0.30
Warmińsko-Mazurskie	171.55	153.85	0.98	16.73
Wielkopolskie	62.40	56.15	0.20	6.08
Zachodniopomorskie	64.50	64.45	0.00	0.05

In relation to revenues coming from the reports, product fees provide much lower revenues for authorities responsible for their collection. The largest part of product

fees (over 85%) are fees from businesses or organizations engaged in the recovery of post-consumer packaging waste, or which have not fulfilled their obligation in terms of achieving certain levels of recovery specified in the *Act on the obligations in the field of management of certain waste and the product fee and deposit fee*. Nearly 1/3 of all fees are collected from entities operating in the Mazovia region, and the least in the lubelskie and lubuskie regions.

## 6. CONCLUSIONS

Reporting and fee collection in Poland involves a large number of entities and brings in substantial revenue (in comparison to other European countries) that is spent on pro-environmental actions. For example, in the years 1989–2008 the National Fund has signed more than 14 000 contracts (mainly for grants, loans and credits granted through the Bank of Environmental Protection) and earmarked to environmental projects nearly 5.35 billion euro. The cost of projects co-funded by the National Fund during this period exceeded 19.1 billion euro<sup>3</sup>.

With such large-scale money flows, it is important that funds should be spent on the most important needs for improvement of the environment and elimination of the damage caused. The financial burden should be affected to entities that contribute to the formation of damage, and the fees should be chosen depending on the scale of damage caused by a particular action or pollution.

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