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FINANCING ENVIRONMENTAL PROTECTION INFRASTRUCTURE IN POLAND AND IN PORTUGAL

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Abstract. *The purpose of this study has been to identify changes in sums of money allocated to financing the environmental protection in Poland and in Portugal, which occurred between 2005 and 2015. The analyses were based on statistical data published by the Polish Main Statistical Office and the Portuguese Instituto Nacional de Estatística. It was found that inputs into environmental protection increased slightly in both countries over the years 2005-2010. However, the investment trends in the financing of environmental protection facilities in both countries were different. In Poland, more money was allocated to water management, while in Portugal waste management and climate protection received more funding. In both countries, regional variation was discovered.*

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Introduction. Portugal has been a member state of the European Union for over 30 years. In the first two decades, the country went through a period of dynamic economic development. It was even proposed to decelerate the growth rate so as to avoid recession. This happened not only in Portugal, but in the entire European Union and in other parts of the world. When Poland joined the European Union on 1 May 2004, environmental protection, next to agriculture, was considered to be the greatest barrier to integration (Halamska 2005). Although Portugal covers an area that equals a third of Poland's area and had a three-fold smaller population, its GDP at that time was not lower than the Polish one by the same proportion. Con-

versely, when expressed per capita, Portugal's GDP was about 1/3 higher than in Poland (Witkowska et al. 2015).

Looking at the trends over the past several years, forecasts for the economic growth of Portugal and Poland are optimistic. The economic invigoration suggests that Portugal has entered a pathway of moderate economic growth, which was effected by the GDP increasing by 1.1% in the fourth quarter of 2014 relative to the same time period in the previous year (which happened for the first time since the 4th quarter of 2010). The said increase was stimulated by an increase in both internal and external demand. The GDP per capita in Portugal corresponds to about 79% of the EU average. In 2014, this index increased by 3 per cent points. In respect of the value of the GDP per capita, Portugal occupied the 14th position among all EU countries, followed by Slovakia, Greece, Estonia and Latvia. In 2014, for the first time since 2009, Portugal experienced deflation.³ Likewise, predictions for Poland are optimistic. According to estimates by the Polish Main Statistical Office (the Polish acronym GUS), the GDP was higher by 3.3 per cent compared to that in 2013 (in year-averaged prices). Individual consumption increased much faster, same as gross inputs into tangible assets. The gross domestic product in 2015 increased in actual value by 3.6% over the whole year. In the previous year, the increase equalled 3.3%, while in 2013 the Polish economy grew by 1.3%. Both industrial sectors, including civil engineering and building, and services recorded a growth.⁴

Purpose of the study: The purpose of this study has been to identify changes in sums allocated to the financing of environmental protection in Poland and in Portugal in the years 2005-2015.

Materia and methods. The analyses were based on statistical data published by the GUS and Instituto Nacional de Estatistica in 2005, 2010 and 2015. The term 'investment inputs' is to be understood here as: inputs into methods, technologies, processes, equipment or parts of equipment, whose main aim is to collect, neutralise, monitor, reduce, prevent or eliminate pollutants or environmental losses (Bujanowicz-Haraś, 2009). The research comprised horizontal and vertical comparative analysis of data from Portugal and Poland, including division into regions. The total financing as well as financing trends were analysed (the average currency exchange rate of the US dollar as of 31 December each year was used in the comparisons), and the sums were expressed per capita. In order to evaluate the outcome

³ Department of Trade Promotion and Investments– Lisbon, Embassy of the Polish Republic in Portugal. Source: World bank (March 2015).

⁴ Ministry of Economy – the GDP increase in 2014 – the GUS preliminary

of the analysed investment financing, an example of tangible effects of investments was demonstrated, in which the share of the population using the water and sewage management infrastructure in Portugal and Poland was presented. Mutual relationships between the availability of piped water and sewers facilitate an assessment of the scale of wastewater and sewage handling because, as a rule, access to waterpipes in households leads to the generation of larger quantities of wastewater.

Results of the study. It is not easy to identify all inputs into conservation and protection of nature. The ones which can be identified are outlays into the protection of the environment, reduction of contamination or repair of environmental damage (Poskrobko, Poskrobko ... 2012). This group of expenses does not include costs of enterprises which can have a beneficial influence on nature but whose principal goal is not environmental protection.

In the two analysed countries, inputs into the protection of the natural environment increased slightly over the tested time period. Expressed per capita, they were similar in Poland and Portugal. The year 2010 was exceptional in that the said inputs in Poland exceeded 322 USD per person (fig. 1).

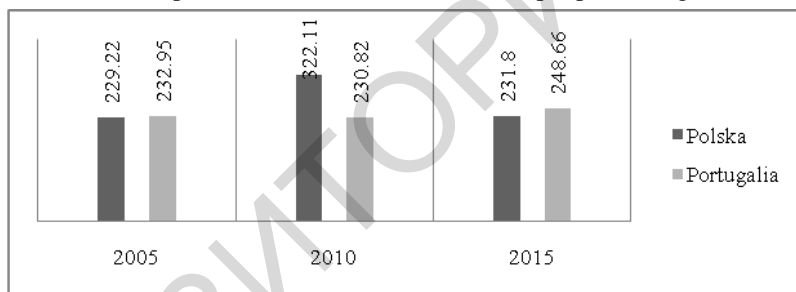


Figure 1 – Inputs into the environmental protection per person (US\$)

Source: the authors, based on data of the Main Statistical Office in Poland and Instituto Nacional de Estatística in Portugal.

The literature data prove that the level of investment into the environmental protection in 2007 varied between regions in Poland (Bujanowicz-Haraś 2009). The highest sums were invested in the provinces of Silesia and Masovia. The lowest financing into environmental protection occurred in the provinces of Podlasie, Świętokrzyskie and Warmia and Mazury.

It is also reasonable to mention the regional variation in terms of investment trends in both Poland and Portugal (tab. 1). In Portugal, converted per capita, most money was dedicated to waste management and to soil protection, whereas in Poland highest sums were allocated water protection. The latter resulted in the improved accessibility to wastewater treatment infrastructure.

Table 1 – Inputs into environmental protection according to investment trends, calculated per capita (in PLN)

Specification	Country	Years		
		2005	2010	2015
Air and climate protection	Portugal *	0.02	0.02	0.07
	Poland	7.62	3.94	17.22
Water protection	Portugal	17.28	.	.
	Poland	23.96	47.76	37.33
Waste management including soil protection	Portugal	35.54	44.47	46.76
	Poland	5.62	6.56	9.34
Protection against noise	Portugal	0.10	0.13	0.12
	Poland	0.75	0.94	2.71
Protection of biodiversity	Portugal	.	12.21	11.84
	Poland	0.05	0.18	1.01

* re-calculated according to the average US\$ exchange rate in each year

Source: the authors, based on data of the Main Statistical Office in Poland and Instituto Nacional de Estatistica in Portugal.

Until 2010, the least inputs in Portugal had been invested into climate protection and noise prevention, while in Poland the protection of biodiversity had received the lowest financing. However, between 2010 and 2015, a considerable increase was observed in the financing of climate protection in Portugal. This may have been caused by the obligation to fulfil the provisions of the Kyoto protocol. The highest increase in the emission of greenhouse gases among all the UE countries (the Kyoto protocol, which became effective on 16 February 2015, envisaged reduction of 6 greenhouse gases) between 2005 and 2010 took place in Spain (23%), Greece (11%), Ireland (10%) and Portugal (17%). Meanwhile, the highest decrease was recorded in Lithuania (50%), Romania (48%), Bulgaria (46%), Latvia (45%), Estonia (44%), Hungary (35%), Slovakia (28%) and Poland (23%) (Witkowska et al. 2015).

While analysing the results of our research, we were not always able to identify trend because both in Poland and in Portugal the figures were varied and changed in both directions,. However, there was an evident increase in the financing in both countries with respect to waste management and soil protection.

Poland belongs to the European countries with the highest biodiversity index, in terms of the number of species and environmental assets. Various forms of nature protection have been established in this country, and consequently over 35% of Poland's area has been submitted to different nature protection forms. In the analysed decade, the financing of biodiversity protection rose in Poland.

In Portugal, legally protected areas of nature constitute just 6.1% of the country's total area. The principles of nature protection in Portugal are not comparable with the ones binding in Poland. Environmental conservation in

Portugal is closely associated with the countryside, which a few years after Portugal had joined the EEC (EU) underwent a valuation survey of natural resources, and since then has uncovered its unique cultural, social and natural assets. Although the earliest efforts to protect the natural environment in Portugal can be traced back to the 19th century, it was not until 1990 when, under the external pressure (the European Union, the Rio Conference), the Ministry of the Environment was established (Halamska 2005).

Between 2010 and 2015, there was an evident rise in the financing of biodiversity protection measures. However, a question remains whether this strategy will be actually implemented. Moreover, the increase in the inputs into biodiversity protection is small in comparison with the other investment trends. Doubts arise mostly from the indifferent attitude of the society to environmental issues. And the entry to the European Union, which obliges the member states to adhere to increasingly stringent nature protection regulations, did not cause a breakthrough change in this regard (Analysis of conditions ... 2010).

To illustrate the effects of the analysed financing trends, table 2 shows information on the access to linear environmental protection infrastructure. For evaluation, the percentage of the population using the water and sewage infrastructure was taken as an index.

Table 2 – Percentage of the population using the amenities (%)

Years	Waterworks		Sewers	
	Poland	Portugal	Poland	Portugal
2005	86	92	59	74
2010	87	96	61	81
2015	92	98*	70	87*

**estimates*

Source: the authors, based on data of the Main Statistical Office in Poland and Instituto Nacional de Estatística in Portugal.

Nearly all these indicators show differences between Poland and Portugal (sometimes by a few and up to twenty per cent points) to the advantage of the latter country. Moreover, in both countries, there is an evident increase in the consecutive years of the share of the general population having access to the facilities. The greatest change between 2005 and 2015 occurred in Portugal with respect to the availability of sewerage systems, which rose by 14 per cent points (11 in Poland). Changes in the access to piped water were smaller, owing to relatively well-developed systems of waterworks in both countries prior to 2005.

However, there were certain disproportions in particular regions of Portugal (tab. 3) and Poland (tab. 4). No data for the year 2015 for Portugal are presented because they were lacking from the information published by

Instituto Nacional de Estatística. Nonetheless, it can be expected that the differences between the regions became smaller owing to the financing from the cohesion fund.

Table 3 – Share of the population, as of 2005, with access to the amenities according to regions in Portugal (in %).

Regions	Specification	
	Piped water supply	Wastewater and sewage discharge
Continente	92	78
Norte	84	64
Centro	97	73
Lisboa	99	96
Alentejo	95	84
Algarve	93	84

Source: the authors, based on data form Instituto Nacional de Estatística

In 1986-2006, Portugal received over 29.6 billion euro in total from the EU structural fund, cohesion fund and other action plans (Analysis of conditions ...2010). Much of this sum was spent on protection of the natural environment and regional development programmes. In 2005, the region Lisboa had the best developed waterwork and sewer system. This region comprises the country's capital city. It consists of Grande Lisboa and the peninsula Setúbal.

In Poland, the regions with the best access to waterworks and sewers were the ones in the west and north of Poland (tab. 4) (the north-eastern, the south-western and the northern subregions). However, there are some differences between individual provinces within these subregions (tab. 4). For example, the population living in the Province of Opole has the best access to waterworks. However, the system of waterworks in this province of Poland had been already well developed before 2005. The highest percentage of households connected to sewers is in the Province of West Pomerania: 77.5% of the whole province's population.

Table 4 – Share of the population, as of 2005 and 2015, with access to the amenities according to regions in Poland (in %).

Regions	Specification			
	Piped water supply		Wastewater and sewage discharge	
	2005	2015	2005	2015
Central region	83.2	91.1	57.7	66.2
Southern region	83.2	89.5	59.7	70.5
Eastern region	79.2	86.3	48.8	60.7
North-western region	91.5	96.0	62.8	73.7
South-western region	91.8	95.5	62.8	68.8
Northern region	90.1	91.5	66.7	75.9

Source: the authors, based on data of the Main Statistical Office in Poland (GUS)

The greatest progress was observed in the accessibility of sewerage facilities in the eastern region (11.9 per cent points), and in the accessibility of waterworks in the central region (7.9 per cent points), southern region (6.3) and eastern region (5.1). This is a good tendency because this is where the backwardness was the worst.

Consluion. Social and economic transformations have come in waves, different in timing and intensity, from the 'core of Europe', i.e. the EU founding states, to the rest of the European Union. Poland, together with some other Central European countries, as well as Portugal are located in the most outward circle of these changes. The main source of differences between Poland and Portugal is the time of their membership in the European Union. Inputs into environmental protection in 2005-2015 increased slightly in both states, Expressed per capita, they were similar in Poland and Portugal. However, the investment trends were different. In Poland, much financing went into water management, mostly because the country lies in the basin of the Baltic Sea and is obliged to abide by the law regulating its protection. In both countries, regional variation was noted in the access to the water and sewage infrastructure.

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