Cohesion Policy Expenditures on Environment: Case of the Czech Regions

Lenka Smékalová

***Abstract*—**This article deal with the topic of environmental protecting and its reflection in using funds from the European Union (EU) structural funds in the Czech Republic (CR). The importance of environmental protection grows and is reflected in many areas of human activities worldwide. The EU accession had strong influence on environmental regulation and investments in the CR. Nowadays the funds are mostly prominently drawn from Operational Program Environment. The article aims to verify whether they are spent in those regions that represent the biggest environmental challenges on the level of NUTS III regions and also on level of selected NUTS IV regions. The results are quite ambiguous. While the environmental indexing created by the author shows similar results as other studies and overall public opinion presented in Czech media, contrasting the index with actual spatial distribution of EU resources does not confirm the initial idea of funds being spent where the environment is damaged the most. More detailed view on lower administrative level nevertheless confirms that the resources are actually spent on issues that are regionally perceived as very significant.

***Keywords*—**Czech Republic, environment expenditure, Moravian-Silesian region, structural funds

I. Introduction

THE concept of sustainable development lies at the forefront of European Union (EU) politics including the cohesion policy which is the main source of financing regional policy based intervention in the Czech Republic.

While there is no all-encompassing definition of sustainable development concept Brundtland commission report (1987) states that sustainable development is based on ability to satisfy present need without endangering the same ability of future generations. The concept of sustainable development has several dimensions economic, social and ecological and some authors, see e. g. [1], [2], [3], delve into bigger detail adding legal, moral, institutional, technical, political, corporate responsibility and other dimensions. The environmental dimensions of the sustainable development is mainly focused on nature and landscape sustainability but it closely relates to other dimension especially social [4].

The protection of environment is rather important in terms of sustainable development and falls under the ecological dimension of sustainable development. It closely relates to its economic aspect as the natural resources are often drawn into economic circle and the outputs of economic activities often negative must be absorbed into natural environment [5].

The overall increase in interest in environmental state is reflected by new laws being adopted that concern themselves with environmental protection, also in newly founded corporate responsibility and effort of the authorities to reduce negative effects of companies on environment by means of environment related taxes or limits [6], [7], [8]. It was also and was also highlighted in 2006 renewed Strategy of Sustainable development [9]. The expenditures on environment protection from the public budgets currently undergo the same strain as every other public expenditure [10]. While overall public expenditures have grown, see for example [11], [12], and so did those aimed at environmental protection [13], [14]. They are now subject of pressure on lowering public expenditures which are still mostly growing. The structural funds financed projects meanwhile present a possibility of drawing private resources together with public in order to protect and increase quality of environment.

This article aims to evaluate involvement of public expenditure from the EU fund sources and national sources of the Czech Republic in financing environmental protection and increase of environment quality oriented projects from Czech operational program Environment in programming period 2007-2013.

II. Problem formulation

The sustainable development and environmental protection do have their place not only on supranational strategic level represented by European Union Strategy for Sustainable Development. The member states of the EU have their own strategies concerning this issue although the national strategies vary greatly as do the needs and values of each country [15], [16], [17].

In the Czech Republic the concept of sustainable development and environmental protection and related investments while greatly promoted at the beginning of the 1990s (see fig. 1) was shifted into background in a few years [18] and then was strongly connected to impending EU accession terms although the pre-accession resources were used only sparsely for purposes of environmental protection [19] and their share in gross domestic product (GDP) stagnates until 2010 although the total amount of investment in CZK tends to rise in recent years (see fig. 2).

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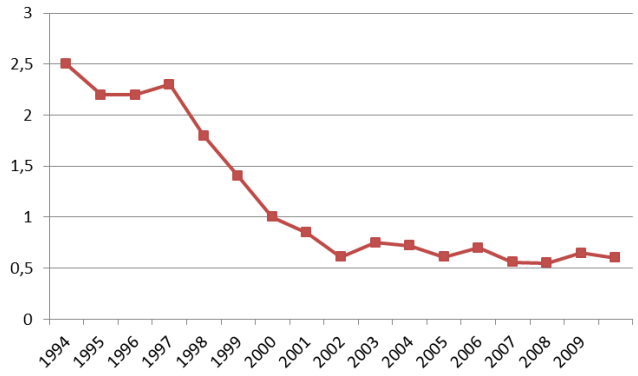


Fig. 1 Share of environmental investment in the GDP, source: www.cenia.cz

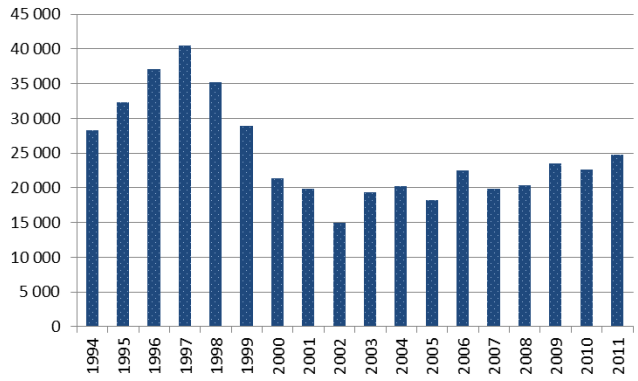


Fig. 2 Environmental protection investment, CZK million in current prices, source: Czech Statistical Office

The accession and following period brought new financial resources and demands on environmental protection. The state of the environment in the Czech Republic recorded great improvement in 1990s when the greatest damages were being mended and investments into protection were significant however lately the investments into environmental protection as well as overall environmental performance is viewed rather negatively and the Czech Republic is still being regarded as big polluter [20].

In the present period the environmental protection and improvement of quality of the environment within the concept of sustainable development and natural resources management and protection have been promoted in the new structure of EU budget [21] and in cohesion policy actions. In the Czech Republic these matters are mostly emphasized in Operational Program Environment (OPE) and outside the cohesion policy in the common agricultural policy in the Rural Development Program [22]. The OPE is the second largest of operational programs with total allocation of 18,4 % out of total allocation for the Czech Republic financed from both the Cohesion Fund and the European Regional Development Fund. It has priorities in improving water and waste management, energetic efficiency, brownfield situation, biodiversity and pollution situation. The funds are predominantly aimed at the convergence regions of the Czech Republic but the capital Prague is not excluded [23].

Regarding the use of funds from OPE the following hypotheses are made:

H1: In total sum of the researched projects the public resources outweigh the private resources.

H2: The EU allocation is predominantly spent in regions with the most damaged environment.

The second hypothesis will first be tested on the sample of 14 Czech NUTS III regions. However these regions consist of several smaller administrative units with quite heterogeneous characteristics in terms of environment, population, infrastructure, economic activity and of course different allocation of EU funds. This leads to a possible new venue of research in which the analysis of both environmental characteristics and EU allocations that could be studied at even lower levels of administrative structure which could better describe the otherwise heterogeneous regions of the Czech Republic in terms of efficiency of EU funds allocation in relation to the actual state of the environment. These lower levels are either LAU I (formerly NUTS IV) districts, or inner administrative units of the Czech Republic commonly referred to as municipalities with extended scope of powers that have no relation to European NUTS system. Those municipalities are comprised of several LAU II (formerly NUTS V) municipalities.

The most serious obstacle in performing the research is lack of data on these lower administrative levels. The lower the level is the less data is available also the lower the level the more units there are. Because of these reasons the author decided to conduct the analysis on LAU I level in a selected region which will be assessed as one with serious environmental damage.

III. Problem Solution

To verify previously stated hypotheses an extensive grid of projects and their attributes was made from data available on the website of Regional Information Service. It includes 2965 projects with complete set of information that were approved of, in process of implementation, or finished as of February 2012. The table contains information about project (budget in decomposition to public and private resources, thematic focus) and beneficiary (name, seat, region, number of employees).

To verify the H1 hypothesis the following table I was created. It describes the distribution of public and private resources among differently orientated projects. It clearly shows the dominance of public resources compared to private. It is interesting though to notice the total amount and the ratio of public to private resources in individual thematic categories. The most supported topics are by far the waste management followed by energetic efficiency and water management oriented projects. The ratio of public to private resources is most prominent in energetic efficiency targeting projects which are strongly supported from public resources. The public support is not as strong in water management projects and the waste management projects belong among those that

are most strongly co-financed by private funds even though in total sum the public funding prevails.

Table I – Financial resources allocated to different topics, mil. CZK, source: author´s calculation based on Regional Information Service Data

Theme	EU public resources	Czech public resources	Private resources
Air pollution	431	76	162
Energetic efficiency	6 030	1 114	10
Environmental education	354	62	3
Nature and landscape	1 830	309	63
Technical assistance	685	121	1
Waste management	4 914	921	973
Water management	9 614	1 696	137

As for the information that describe regional environment a complex indicator was made evaluating the overall status of the environment. The author however was limited in its composition by the available data on regional level. All the data used to compile this particular index were needed on NUTS III region level for the entire Czech Republic. The index covers several areas describing the status of the environment in the regions with accordance to the areas of intervention of the OPE (see table II).

Table II – Priority axes of the OPE and their financial allocation from both EU and national resources, source: OPE

Priority axis	Allocation (mil. €)	Share of allocation
1 - Water Management Infrastructure and the Reduction of Flood Risks	2 339	40,45 %
2 - Air Quality Improvement	746	12,90 %
3 - Sustainable Use of Energy Sources	791	13,68 %
4 - Waste Management and the Rehabilitation of Existing Ecological Burdens	913	15,79 %
5 - Limiting of Industrial Pollution and Environmental Risks	71	1,23 %
6 - Improving the State of Nature and the Landscape	705	12,19 %
7 - Environmental Education, Consultancy and Awareness	49	0,85 %
8 - Technical Assistance	168	2,91 %

The nature and landscape aspect of the environmental protection which are focused on in priority axis 6 of the OPE are represented by the coefficient of ecologic stability in form that the Czech Statistical Office uses which describes ratio of ecologically stable (hop fields, vineyards, gardens, orchards, grass land, forest soil, water surface) to ecologically unstable areas (arable soil, built-up areas, others) in the region. Ecologically stable areas are represented by natural landscape with small human usage while the unstable areas are typically areas with intensive agriculture or other human use with severely disturbed natural environment [24]. The coefficient closely correlates with amount of protected areas in the regions and the bigger value the coefficient reaches the better in terms of overall status of nature and landscape. The lower value it reaches the more situation calls for implementing measure for environmental stabilization.

The air pollution or lack of thereof is described by set of data on emissions of air pollutants (SO_2, NO_x, CO and solid matter) in tons per km^2 of region which reflects the second priority axis of the operational program.

The water pollution and management is the strongest topic in terms of financial allocation. More than 40 % of total OPE allocation is dedicated to this issue. The priority axis 1 intervention area is described by the data on surface water quality specifically by percentage of water profiles that are categorized in the fourth and fifth classes of waters which are dubbed as strongly polluted water and very strongly polluted water, respectively [24].

The waste management related part of indicator is represented by production of both industry and municipal waste. The industrial waste is related to gross domestic product of the regions (kg of waste per GPD in thousands) and the municipal waste to the number of inhabitant of every region (kg of waste per inhabitant). Waste management together with the issues of brownfields are of interest especially in priority axis four.

All these indicators compile the final index and at the same time cover majority of the main intervention areas of the OPE. Several priority axes are not reflected in the indicator as their allocation is rather small (e. g. axes 5 and 7). Technical assistance is an administrative tool which enables the daily functioning of operational program and its staff and therefore is not taken into account and neither are the projects implemented within its scope.

All the data necessary for completion of the index were collected for each of 14 Czech NUTS III regions as recorded in the year 2007 which marked the beginning of the programming period in which the OPE is valid (the OPE programming document however was only agreed upon by the Czech representatives and the European Commission in December 2007). All the data were indexed at the average value of the entire Czech Republic in order to create dimensionless values that in their sum would describe the overall status of environment of every region and enable the

author to compare said regions and allocations that were gained by each of them. All necessary data were collected and published by the Czech Statistical Office.

The environmental index values for each region (the greater the more damaged environment) are depicted in table III which shows that there are notable differences among the regions nevertheless it also confirms the general views of the Czech regions. Some of the regions which were previously typically industrial with emphasis on heavy industry e. g. Moravian-Silesian region still suffer the inheritance of previous period when the environmental status of the territory was of less or almost no concern to either public authorities or the business entities themselves. Together with Moravian-Silesian region the worst affected region in terms of environment is by far Ústí region. On the opposite side of spectrum there are Liberec or South Bohemian regions. These areas are characteristic by great share of mountain land and protected areas with less intensive and damaging human activities although South Bohemian region can also be described as partly agricultural. The position of the capital Prague is influenced by strong urbanization of this region as well as the extreme traffic load which greatly contributes to overall pollution, especially air pollution, and concentration of inhabitants and economic entities.

Table III – Values of environmental index for Czech NUTS 3 regions, source: author´s calculation based on Czech Statistical Office data

NUTS 3 Region	Environmental index value	Ranking
Prague	19,5	14
South Bohemian	3,1	2
South Moravian	5,7	8
Karlovy Vary	5,9	9
Hradec Králové	3,4	3
Liberec	2,4	1
Moravian-Silesian	12,9	12
Olomouc	4,0	5
Pardubice	6,2	11
Plzeň	3,6	4
Central Bohemian	6,1	10
Ústí	13,7	13
Vysočina	4,1	6
Zlín	4,2	7

The compiled environmental index can be put to direct comparison to the amounts of EU resources that were allocated to each region in order to improve all the components of the environment which were included in the index. The EU support allocation of all projects which in total exceeds 23,8 bill. CZK is broken down to amount allocated for individual regions in table IV, in total amount and also per inhabitant.

Table IV – EU Funds allocated to Czech NUTS 3 regions, source: author´s calculation based on Regional Information Service Data

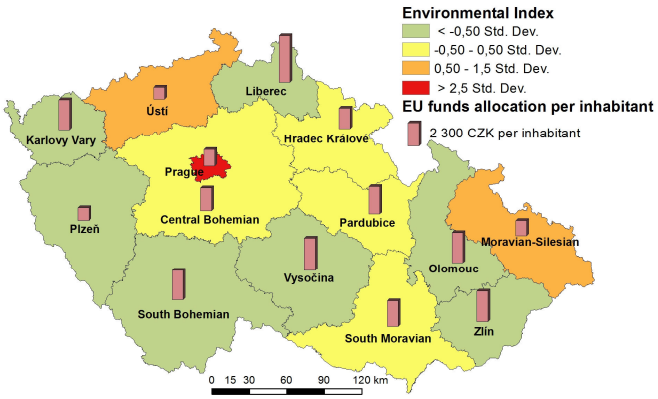
NUTS 3 Region	Total allocation (mil. CZK)	Per inhabitant (CZK)
Prague	1989	1674
South Bohemian	1849	2935
South Moravian	2915	2574
Karlovy Vary	909	2984
Hradec Králové	1124	2044
Liberec	1992	4623
Moravian-Silesian	1897	1518
Olomouc	1949	3046
Pardubice	1393	2743
Plzeň	719	1297
Central Bohemian	2703	2300
Ústí	965	1172
Vysočina	1657	3239
Zlín	1797	3047

At the first glance it seems that neither Moravian-Silesian nor Ústí region that were identified as most environmentally damaged apart from Prague in previous part of the article are the greatest beneficiaries of the EU support (see fig. 3). This finding was further confirmed by calculation of Pearson correlation coefficient which in fact indicated that there is inverse relationship between amount of EU funds and ratio of environment issues.

Prague is officially able to benefit from the OPE however the program is predominantly aimed at the Convergence regions of the Czech Republic where Prague does not belong not meeting the condition of having GDP per capita less than 75 % of the EU average. Therefore its position is of less interest as the environment in this region is also significantly

different from all others and has its specific mostly urban related issues (e. g. great concentration of population and economic activities leading to issues with transportation and subsequently air pollution, issues with land use, or waste production). These are reflected in other programs, e. g. OP Transport and operational programs that specially target Prague territory.

Fig 3 EU Funds allocated to Czech NUTS 3 regions in contrast with environmental index, source: author



To either confirm or deny this initial findings that point towards the funds not being used in the most environmentally afflicted regions the projects were further divided into two categories of environmental infrastructure related projects and other non-infrastructure projects. This was based on the notion that the environmentally challenged regions may improve their state by building necessary infrastructure while the regions that are environmentally sound might direct the resources less towards the infrastructure investments and more toward other types of projects (e. g. educational projects, projects of monitoring systems and so on).

The results of dividing the projects into categories of infrastructure related and other are depicted in fig. 4 and 5 and visibly show that the emphasis is given to infrastructure related projects rather than any others and while infrastructure related projects show somewhat higher allocations in environmentally more damaged regions the overall findings supported by calculation of Pearson correlation coefficient again suggest that there is inverse relationship between the calculated environmental index and the allocated amount of EU funds in both infrastructure and non-infrastructure projects and it is stronger in the infrastructure projects.

Fig 4 EU Funds for environment infrastructure related projects allocated to Czech NUTS 3 regions, source: author

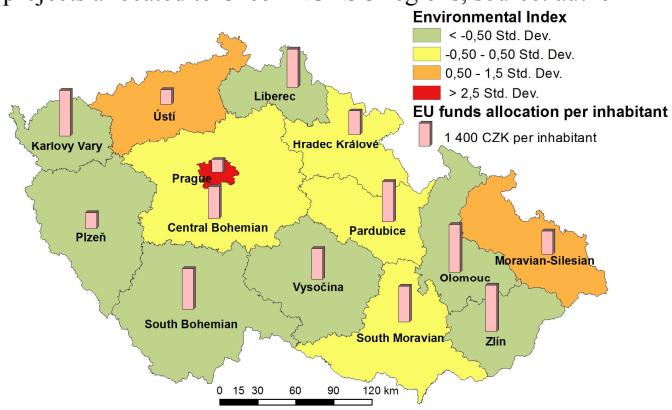
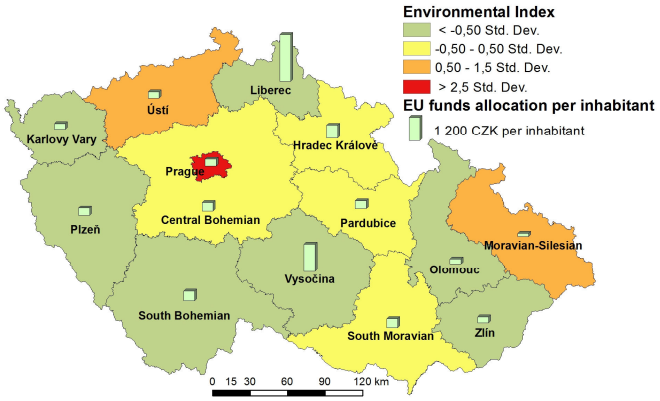


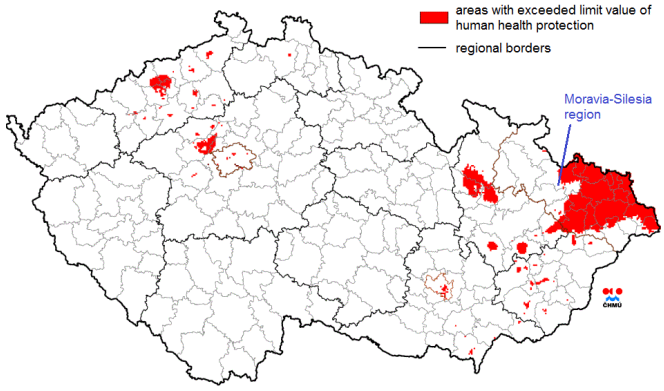
Fig 5 EU Funds for non-infrastructure relate projects allocated to Czech NUTS 3 regions, source: author



The initial findings on NUTS III level proved quite ambiguous. As was previously mentioned these regions are large in their area, very populated and heterogeneous. Their borders often separate natural regions which can further distort the results. Therefore it is desirable that the testing of second hypothesis is conducted on a lower administrative level with suitable dataset available. As the abovementioned levels of LAU 2 and municipalities with extended scope of powers are both numerous a single region with damaged environment was selected – the Moravia-Silesia region. It placed as third in terms of most damaged environment and it is also rather negatively perceived in the Czech Republic. The region and its environment are strongly influenced by mining industry [25] which together with heavy industry are dominant types of economic activities in term of employment within the Czech Republic [26]. Even in previous research oriented more on statistic and methodology this region was grouped among the most environmentally challenged usually together with the capital Prague and Ústí region mostly due to exceeding the limits of emissions of various harmful substances in the air (compare the results of author´s environmental indexing with [27], [28]). The air pollution in this region is so specific within the Czech Republic that even the central authorities namely the

Ministry of Environment reflects its current problems and two years in row (2011 and 2012) issued special Action plans for improving the air quality which mostly suffers from presence of large industrial sources of pollution both domestic and foreign, local heating units and transport [29]. The situation of Moravia-Silesia region is considered serious as large area which is heavily populated registers exceeding the limit value that are set in order to protect human health (see fig. 6).

Fig 6 Areas with exceeded limit value of human health protection in 2009, source: Czech Hydrometeorological Institute



As for the results of Moravian-Silesian region in comparison to the Czech Republic average in the environmental indexing the region has above average ecological stability coefficient relating to land use. This value is mostly affected by mountainous areas on western and southeastern borders of Moravia-Silesia where two protected areas (Jeseníky and Beskydy mountains) are situated. The share of the most polluted water profiles is close to the national average. However the emissions of all considered air pollutants are two times of the national average with the exception of carbon dioxide. This particular pollutant occurrence reaches values that are five times the national average. According to the national registries carbon dioxide is let loose mostly by companies manufacturing iron and steel which are particularly typical for Moravian-Silesian region and show the strongest concentration within the country. The production of communal waste is slightly under Czech average, the production of industrial waste is due to large concentration of industrial activities 50 % higher than national average value. For more details see table VII in appendix.

As was previously mentioned Moravian-Silesian region comprises of smaller administrative units – 6 districts (see fig. 7) and 22 municipalities with extended scope of powers The environmental index was newly compiled for the districts however not all the data used previously was available for this administrative level. The data pertaining to pollution of water profiles are only available at the level of the regions, lower level data do not copy the structure of administrative units but rather the areas of actual water profiles and do not correspond with districts. However the water related project represent significant part of OPE allocation therefore it was perquisite to find an alternative indicator. The pollution of water resources is strongly influenced by the availability of sewerage systems and the wastewater treatment plans whose positive pull was already recognized in the Czech Republic in early 1990s in Elbe river [30]. Because of this factor two related indicators were chosen; the share of population not connected to sewage system and the share population not connected to wastewater treatment plants. These data are usually collected on higher administrative levels and thus internal documents pertaining to sewage system of Moravian-Silesian regions were used that contained abovementioned data for the year 2005 only. Hence the entire index was compiled for this year.

Other data containing information about emission of the most common air pollutants or data for calculation of coefficient of ecological stability were available in exactly the same format on this level. The data about industrial and municipal waste production was only available in units of weight and had to be recalculated per inhabitant. Calculation per GDP was not possible as values of GDP are not recorded and made publicly available at the level of districts therefore recalculation per number of economic subjects in district was chosen.

The calculation of the index as previously was made by indexing the values of selected indicators to national average. The results (see table V) show that the Moravian-Silesian region is indeed internally very heterogeneous. The average value of environmental index for the entire country is 7,00 and the six districts of the region range from environmentally sound districts (Bruntál and Opava) that are below average to environmentally challenged districts (Frýdek-Místek, Karviná, Nový Jičín) with index being two to three time worse than national average and finally to the environmentally most damaged district, strongly industrial and highly urbanized Ostrava-city which encompasses the capital city of region Ostrava. While the urbanization contributes to improvement of some indicators (e.g. all the inhabitants of the district are connected to the sewage system and to wastewater treatment plants), the typical issues of large population concentration remain and in Ostrava are mostly represented by low ecological stability coefficient (large share of the soil is built-on), the air pollution indicators are above average due to heavy transport and industrial activity which is reflected also in increased production of industrial waste, almost four times the national average.

The previously mentioned environmentally healthy districts are far less urban and industrial with greater share of agriculture, protected land and very sound air compare to Ostrava-city.

Table V – Compilation of the environmental index for districts of Moravian-Silesian region, sources: author´s own calculation based on Czech Statistical Office, Czech Environmental Information Agency

District	**1**	**2**	**3**	**4**	**5**
Bruntál	0,31	0,34	2,66	0,30	0,70
Frýdek - Místek	0,44	0,45	2,51	1,40	4,50
Karviná	0,14	0,20	0,57	1,30	13,60
Nový Jičín	0,20	0,43	0,70	0,40	0,70
Opava	0,28	0,49	0,68	0,30	0,60
Ostrava - city	0,00	0,00	0,44	10,50	78,00
Czech average	0,21	0,27	1,04	0,40	2,70
District	**6**	**7**	**8**	**9**	**index**
Bruntál	0,30	0,80	0,83	14,26	2,87
Frýdek - Místek	2,80	38,00	0,77	49,75	22,73
Karviná	16,50	8,10	0,91	48,11	22,64
Nový Jičín	0,70	2,40	3,16	239,38	16,09
Opava	0,40	1,00	1,35	14,76	5,70
Ostrava - city	65,80	357,60	1,17	98,91	207,78
Czech average	2,00	3,10	1,22	25,87	7,00

1-Share of population not connected to sewage system, %

2-Share of population not connected to wastewater treatment plants, %

3 -Coefficient of ecological stability, dimensionless number

4-Emission of solid matter, tonne per km^2

5-Emission of SO_2, tonne per km^2

6-Emission of NO_x, tonne per km^2

7-Emission of CO, tonne per km^2

8-Production of communal waste, tonne/inhabitant

9-Production of industrial waste, tonne/economic subject

After establishing the hierarchy of districts in terms of environmental health the results must be compared to EU and national contribution to environmental cause. The total allocation from public and private resources is described in table VI. It also illustrates the major role the EU resources play compared to both public and private national contribution. Per one Czech crown spent from the private funds within the Moravian-Silesian region there are additionally 3,4 CZK from national public resources (state budget, regional or local budgets) and 19 CZK more that come from the structural funds.

Table VI – Financial resources allocated in districts of Moravian-Silesian region, mil. CZK, source: author´s calculation based on Regional Information Service data

Area	EU public resources	Czech public resources	Private resources
Bruntál	369,03	65,12	4,56
Frýdek-Místek	287,49	50,73	11,25
Karviná	209,44	36,96	53,98
Nový Jičín	252,57	44,97	2,31
Opava	163,95	28,93	8,09
Ostrava-city	614,31	111,42	19,46
Total	1 896,78	338,14	99,65

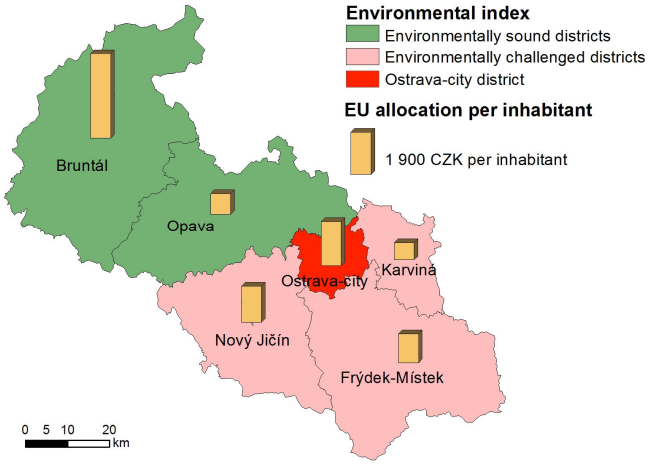
To better illustrate the comparison between EU allocation and the status of the environment fig. 7 gives an overview. It displays the per inhabitant allocation in contrast with the environmental index. The results show that the per inhabitant allocation of EU resources is the greatest in Bruntál district (3722 CZK per inhabitant) which actually features the most desirable value of environmental index in the entire region, Ostrava-city the environmentally most challenged district reached the second highest amount of EU allocation per inhabitant of 1977 CZK.

The closer look at this allocation in both regions shows that while its total amount might be surprising at first given the environmental index the more detailed look into thematic distribution explains. It was previously mentioned that Bruntál district is more or less rural and while this does have positive effect for example on air pollution it also means that the rural municipalities are far behind cities in other indicators. Majority of allocation in Bruntál district is headed towards the water management projects which mostly consist of building the missing wastewater infrastructure and energetic efficiency projects. There are absolutely no projects relating to air pollution which is consistent with previous findings made within the calculation of environmental index. The same can be said for Opava district which reached the second place in environmental indexing.

The Ostrava-city district has wider range of projects for one it consists of more thematic categories and of course the total absolute allocation of Bruntál district is much lesser than in Ostrava-city district. The most pronounced topic however is the energetic efficiency. Seemingly this topic should be less prominent than air pollution oriented projects however these are financially demanding issues of public buildings insulation mostly that also affect the overall status of the air in the district. The second most prominent allocation is in relation with landscape reflecting the poor value of ecological stability coefficient in the district. The issues with wastewater are as can be expected reflected only minimally in single sewerage system related project.

Thematic focus of the rest of the districts is slightly different from each other and it reflects the issues most perceived in the districts. There is common focus on energetic efficiency topic which is prominent due to its role in lowering the operating costs in public buildings as it mostly focuses on insulating schools and other public structures.

Fig 7 EU Funds allocation per inhabitant in Moravian-Silesian districts, source: author



IV. Conclusion

This article aimed to verify two hypotheses. The first of them suggests that the public funds prevail in financing environmental related projects co-funded from the OPE. This was efficiently confirmed by collecting extensive amount of data on individual projects from this particular operational program that in terms of different thematic focuses of the projects show domination of public resources both national and EU over then private resources. This domination is strongest in water management and energetic efficiency focused projects and less strong in waste management oriented projects. However there is no thematic focus where the private funds would exceed public.

The second hypothesis was in relation with the overall purpose of the OPE to increase the quality of the environment. The author however related this hypothesis also to the state of the environment as it was recorded by the Czech Statistical Office at the beginning of the EU programming period in 2007. A complex index was made consisting of characteristics related to water and air pollution, landscape and nature or waste production which was contrasted with the actual amount of EU funds allocated to individual NUTS 3 regions of the Czech Republic. The findings in this regard however do not confirm the previously stated hypothesis that the resources are used mostly in the regions with the most damaged environment, on the contrary all visual and statistical findings point to inverse relationship between said index and the EU funds allocation.

A direct relation between environmental damage and the EU allocation was not confirmed on lower level either. Due to lack of data the author was only able to move one administrative level lower to districts (NUTS IV/LAU I units). These indeed proved to be quite heterogeneous in the Moravian-Silesian region. In terms of the newly calculated environmental index they ranged from environmentally sound regions located in the western part to strongly urbanized and industrially active district housing the capital town of the region. The distribution of the EU resources among these districts however still shows no convincing proof of state of the environment being taken visibly into account. What it does show is the similar thematic focus of the group of the least environmentally challenged regions. Bruntál and Opava districts are both more rural and agricultural with no significant air pollution which is as a topic entirely omitted in the thematic orientation of the projects. Instead these regions focus on building the wastewater related infrastructure which is the most unfavorable area within the environmental index. Both also focus of energetic efficiency which in a way influences air pollution but is also a tool for lowering the operating costs in public buildings.

Energetic efficiency is about the most common between the focused on topics among the districts that are environmentally challenged and it is for the same reasons that were previously mentioned.

The Ostrava-city district was found to be the most environmentally damaged within the Moravian-Silesian region. The greatest contribution to this situation lies within the urbanization and strong air pollution. It is reflected in the focus on energetic efficiency which is not only mean of lowering public expenditures but also contributes to improvement of air pollution caused by the local heating systems. The second most prominent topic is the landscape and nature which aspires to improve the status caused by the strong concentration of people and economic activities on relatively small area.

While this hypothesis was not confirmed the findings cannot be interpreted as if the OPE does not contribute to the objective of improving environment because there are several limitations of our research which are mainly linked with the lack of data on lower administrative levels. In addition closer analysis of the project topics in Moravian-Silesian district shows that the OPE resources are actually used for solving the most strongly perceived issues of individual districts that often show in the basic statistical indicators related to environment. In this regard we can consider the OPE to be quite successful.

APPENDIX I

Table VII – Values used for compilation of environmental index on regional level in Moravian-Silesian region, source: Czech Statistical office

Environmental index component	Unit	CR average	Moravian-Silesian region
Coefficient of ecological stability	no unit / dimensionless	1,05	1,3
Strongly polluted water profiles	%	48,7	37
NO_x emission	tonne/km^2	3,59	5,96
CO emission	tonne/km^2	6,44	33,72
SO emission	tonne/km^2	2,75	5,6
Solid matter emission	tonne/km^2	0,85	1,68
Industrial waste	kg/1000 CZK of GDP	7,3	11
Communal waste	kg/inhabitant	293	272

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REFERENCES

[1] J. Bendell. and K. Kearins, "The political bottom line: The emerging dimension to corporate responsibility for sustainable development," *Business Strategy and the Environment*, Vol. 14, No. 6, pp. 372-383, November 2005.

[2] L. F. Girard, "The Institutional Dimension of Urban Sustainable Development," *International Journal of Environment and Pollution*, Vol. 10, No. 1, pp.163-176, January 1998.

[3] P. Naess, "Central Dimension in a Sustainable Urban Development," *Sustainable Development*, Vol. 3. No. 3, pp. 120-129, December 1995.

[4] A. Pawlowski, "How Many Dimensions Does Sustainable Development Have?," *Sustainable Development*, Vol. 16. No. 2, pp. 81-90, November 2007.

[5] T. Daniel, S. Dalia, V. Luminița, and T. Elena, "Natural dimension of sustainable development and economic and ecological integration in the evaluation of social welfare," *WSEAS Transactions on Environment and Development*, Vol. 7, No. 1, pp. 13-22, January 2011.

[6] I. Nicolae, "Some considerations on environmental law evolution," in Proceedings of the *7th WSEAS International Conference on Engineering Education*, Corfu, 2010, pp. 243-246.

[7] M. Bulaearca, M. Badileanu, C. Popescu, S. M. Muscalu and C. Ghiga, "Sustainable development and the need to manage taxes on pollution," *WSEAS Transactions on Environment and Development*, Vol. 7, No. 2, pp. 41-54, February 2011.

[8] R. A. Sova, I. Stancu, A Fratila, A. D. Sova and C. Rault, "Corporate environmental responsibility and corporate environmental performance: an empirical approach using panel data estimator," in *Proc. of the 4th Int. Conf. on Environmental and Geological Science and Engineering*, Barcelona, 2011, pp. 279-287.

[9] Council of the European Union, "*Review of the EU Sustainable Development Strategy (EU SDS) − Renewed Strategy"* [online], 2006, available: http://register.consilium.europa.eu/pdf/en/06/st10/st10117.en06.pdf.

[10] Z. Darvas, "The Impact of the Crisis on Budget Policy in Central and Eastern Europe," *OECD Journal on Budgeting*, Vol. 10, No. 1, pp. 1-42, January 2010.

[11] V. K. Borooah, "The growth of public expenditure in the United Kingdom, 1960-86," *European Journal of Political Economy*, Vol. 3, No. 4, pp. 493-521, 1987.

[12] T. Yay and H. Tastan, "Growth of public expenditures in Turkey during the 1950-2004 period: An econometric analysis," *Romanian Journal of Economic Forecasting*, Vol. 12, No. 4, pp. 101-118, 2009.

[13] D. Duran, I. Duran and A. Diaconu, "Issues on Costs and Investment for Environmental Protection," *Environmental Engineering and Management Journal*, Vol. 8. No. 4, pp. 705-708, July/August 2009.

[14] D. Pearce and C. Palmer, "Public and Private Spending for Environmental Protection: A Cross-Country Policy Analysis," *Fiscal Studies*, Vol. 22. No. 4, pp. 403-456, December 2001.

[15] V. Alenei, M. Chirila and D. V. Cavaropo, "Environment and sustainable development, coordinate of the planetary security," in *Proceedings of the 2nd International Conference on Environment, Economics, Energy, Devices, Systems, Communications, Computers, Mathematics*, Saint Malo & Mont Saint-Michel, 2012, pp. 104-108.

[16] J. Meadowcroft, "National Sustainable Development Strategies: Feature, Challenges and Reflexivity," *European Environment*, Vol. 17, No. 3, pp. 152-163, May 2007.

[17] R. Steurer, G. Berger and M. Hametner, "The vertical integration of Lisbon and sustainable development strategies across the EU: How different governance architectures shape the European coherence of policy documents," *Natural Resources Forum*, Vol. 34, No. 1, pp.71-84, February 2010.

[18] A. Fagin and P. Jehlička, "Sustainable Development in the Czech Republic: A Doomed Process?," *Environmental Politics*, Vol. 7, No. 1, pp. 113-128, 1998.

[19] M. Horak, "Environmental Policy Reform in the Post-communist Czech Republic: the Case of Air Pollution," *Europe-Asia Studies*, Vol. 53, No. 2, pp. 313-327, March 2001.

[20] B. Moldan and T. Hak, "Environment in the Czech Republic: A positive and rapid change," *Environmental Science and Technology*, Vol. 41, No. 2, pp. 358-362, January 2007.

[21] J. Kovárník, "The Analysis of the Budget of the European Union," in *Proceedings of the 3rd World Multiconference on Applied Economics, Business and Development*, Iasi, 2011, pp. 65-70.

[22] M. Hrabánková and I. Boháčková, "Conditions of sustainable development in the Czech Republic in compliance with the recommendation of the European Commission," *Agricultural Economics*, Vol. 55. No. 3, pp. 156-160, 2009.

[23] Ministry for Regional Development, "*Měsíční monitorovací zpráva o průběhu čerpání strukturálních fondů, fondu soudržnosti a národních zdrojů v programovém období 2007-2013, květen 2012"* [online], retrieved from http://www.strukturalni-fondy.cz/getdoc/697b2308-eac8-4955-bfd8-366deed8a39b/MMZ---kveten-2012.

[24] Czech Statistical Office, "Vybrané oblasti udržitelného rozvoje v krajích České republiky 2010", Czech Statistical Office, 2010.

[25] H. Doležalová, K. Holub and Z. Kaláb, "Underground Coal Mining in the Karviná Region and its Impact on the Human Environment," *Moravian Geographical Reports*, Vol. 16. No. 2, pp. 14-24, 2008.

[26] J. Mazurek, "Comparison of impacts of the financial crisis on the Czech Republic regions by cluster analysis," in *Lessons Learned from the Financial Crisis: Proceedings of 13th International Conference on Finance and Banking*, Karviná, 2011, pp. 396-404.

[27] L. Kuprová and J. Kamenický, " Multikriteriální hodnocení postavení krajů v rámci ČR v letech 2000 až 2004," *Statistika*, Vol. 43, No. 4, pp. 303-315, 2006.

[28] P. Mederly, P. Nováček and J. Topercer, "Regionální aspekty kvality života v České republice," in *Konsolidace vládnutí a podnikání v České republice a v Evropské unii II*, Prague, 2002, pp.89-96.

[29] Ministry of the Environment, "Akční plan pro Moravskoslezský kraj," [online], 2011, available: http://www.mzp.cz/C1257458002F0DC7/cz/akcni_plan_pro_moravsko

slezsky_kraj_2011/$FILE/omkpc-akcni_plan_pro_moravskoslezsky_kraj_2011-29022012.pdf

[30] J. Langhammer, "Classification of the dynamics of water quality changes in the Elbe River basin," *Geografie-Sborník CGS*, Vol. 110, No. 1, pp. 15-31, 2005.