



COHESIFY
The Impact of EU Cohesion Policy
on European Identification

Data review and mapping of Cohesion Policy implementation and performance (Report)

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Abstract

The aim of the report is to review the available data of cohesion policy implementation and performance and to conduct analysis on spatial differentiation patterns at the regional level. The report consists of two parts. The first part reviews existing data sources and assesses the spatial and thematic coverage and quality of the data. The second part is focused on analysis and mapping of cohesion policy implementation and performance in terms of: the scale and structure of cohesion policy allocations and spending by regions; the implementation and delivery systems; implementation effectiveness; and policy effectiveness

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INTRODUCTION

Cohesion Policy (earlier known as regional policy) is one of the two main spending policies of the European Union (formerly the European Economic Community) alongside Common Agricultural Policy (CAP). From the very start of European integration, these two Community policies accounted for 80% of expenditure made by the EEC, and later the EU; at the onset of the integration process, the CAP used up nearly all of these funds, but now the share of each policy is almost on a par. What is more, the CAP provides funding for many of the tasks which previously remained within the remit of the regional policy (later Cohesion Policy) such as development of rural areas, management of natural resources and protection of the natural environment.

The evolution of regional policy (since the establishment of the European Regional Development Fund in 1975) and of Cohesion Policy – beginning with the Single European Act of 1988, to the Lisbon Strategy and the Europe 2020 Strategy - is well known and has been extensively described in the literature (e.g. Molle, 2015). This evolution has been driven by two main factors. The first was the need to adapt the development directions of the Member States and the Union to the dynamically changing conditions arising from technological progress and globalisation of social, political and economic relations. The second was the challenges arising from enlargement to integrate countries with different levels of development, i.e. more developed countries in 1973 (United Kingdom, Denmark and relatively poorer Ireland), less developed countries of southern Europe in 1981 and 1986, more developed Nordic countries and Austria in 1995, and less developed Central and Eastern European countries in 2004, 2007 and 2013. On each such occasion, the enlargement confronted the Community with new challenges, which the Community policies, and above all Cohesion Policy, had to address.

Cohesion Policy (and earlier regional policy) has solid treaty foundations, first enshrined in the Treaty of Rome of 1957. The Treaty provides that the aim of regional policy, later also embraced by Cohesion Policy, is to provide support to the least developed regions and those which are backward due to unfavourable conditions such as location or physical characteristics. Such an orientation stems from two sources: the regional policy being rooted in the traditional doctrine dating back to the Great Depression, a time when contemporary regional policy was conceptualised, and the political factors whereby 'excessive' (although no one defined the values from which such 'excessiveness' starts) interregional disparities could fuel political, social and economic instability.

The report reviews the available data on cohesion policy implementation and performance and conducts analyses of spatial differentiation patterns at the regional level. The report is structured in two parts. The first part presents existing data sources and assesses the spatial and thematic coverage and quality of the data. The second part is focused on analysis and mapping of cohesion policy implementation and performance in terms of the scale and structure of cohesion policy allocations and spending by regions; the implementation and delivery systems; implementation effectiveness in terms of absorption and regularity; and policy effectiveness with respect to reported achievements and the impacts on regional growth.

PART 1. DATA REVIEW

This section of the report discusses availability and quality of data on implementation and performance of the EU cohesion policy on the regional (sub-national) level. First, we describe available data sources. We identified nine relevant datasets, seven related to the 2007-13 programming period and two related to the current 2014-20 programming period. These data sources were reviewed from the point of view of relevant indicators. Second, the temporal, thematic, and territorial coverage of main indicators were reviewed. Third, the main concerns regarding the quality of data are discussed. The section concludes with a description of the final database and additional datasets prepared for the analyses presented in the second part of the report.

1.1. Data sources

DG Regio is the main provider of data on implementation and performance of the Cohesion Policy (CP) across the European Union. There are a number of tools available to make the data accessible for general public. First, there is a section of the DG Regio's website called *Data for research* ([link](#)). Secondly, DG Regio runs the *ESI Funds Open Data Platform* ([link](#)). Moreover, third, there is yet another section on the DG Regio website, where results of evaluations undertaken for the Commission are published ([link](#) for the 2007-13 programming period). The content of the three data platforms overlaps to some degree, thus undermining the clarity and user-friendliness of the DG Regio data system.

In the table below, we describe in detail a selection of datasets on the CP implementation and performance across European regions. The selection process was guided by an effort to carry out a comprehensive analysis of CP – its scale, structure, and achievements – at the sub-national level. However, given the data constraints, some datasets presenting data broken down by Operational Programmes (OPs) and Member States (MS) were also included. Apart from the publicly available data, the background dataset for the 6th Cohesion Report, obtained upon request from a DG Regio representative, is also included below.

Tab. 1. Description of Cohesion Policy datasets

DATASET	SOURCE	DATA INCLUDED // DIMENSION	DETAILED DESCRIPTION
2007-13 programming period			
[1] Integrated database of allocations and expenditure for 2000-2006 / 2007-2013	Ex Post Evaluation of the ERDF and CF: Key outcomes of Cohesion Policy in 2007-2013: WP13: Geography of expenditures - link to the database - link to the website	Final commitments and payments (period 2000-06) Cumulative allocations and expenditures as of 2013 and of 2014 (period 2007-13) Broken down by: - NUTS 2 regions and - 12 thematic categories Dimension: SCALE, STRUCTURE	The dataset identifies cumulative ERDF/CF allocations to selected projects and expenditures at NUTS2 level, broken down by 12 thematic categories. It also includes information on sources of funding (Objective 1 or 2, Multiobjective – ETC is excluded from the dataset). The data collected from Managing Authorities for the 2007-2013 programming period was combined with similar data collected/estimated for the 2000-2006 period to produce a consolidated database covering the regional ERDF and CF investments from the year 2000 to the year 2014. Some adjustments were necessary to match NUTS codes in the two datasets. A common set of thematic categories was identified to allow consolidation, but the consolidation has some limitations. Most notably, while in the 2007-

			<p>2013 data, both allocations and expenditures data were collected as such at the source, for the 2000-2006 data, only commitments were collected at the source. 2000-2006 expenditure data was not available and payments were estimated using the absorption rates by country and fund. Also, no adjustment has been made with respect to inflation, meaning that all values represent current prices (do not account for inflation).</p> <p>For more info: see WP13 final report here</p> <p>Published: August 2015</p>
<p>[2] Project selection data - reported by OPs by combination of dimension codes_2013 AIR 2007-2013</p>	<p>DG Regio: Data for research</p> <ul style="list-style-type: none"> - link to the database - link to the website 	<p>Cumulative allocations to selected projects as of 2013 (period 2007-13), broken down by:</p> <ul style="list-style-type: none"> - operational programme, and - 86 priority themes - forms of finance - territorial dimension - economic dimension - NUTS 2 <p>Dimension: SCALE, STRUCTURE</p>	<p>Based on data provided by Member States in their Annual Implementation Reports for 2013. Provides ERDF/CF project selection data reported for all Operational Programmes, including cross-border cooperation (CBC) programmes. Consists of data on cumulative allocations against 5 categories, i.e. "Priority theme codes", "Form of finance", "Territorial dimension", "Economic dimension" and "Location" (NUTS2 codes).</p> <p>For more info see: explanatory note (link) and categorization of the 5 coding systems mentioned above (link).</p>
<p>[3] Database of the cumulative allocations to selected projects and expenditure at NUTS2 2007-2013</p>	<p>Ex Post Evaluation of the ERDF and CF: Key outcomes of Cohesion Policy in 2007-2013: WP13: Geography of expenditures</p> <ul style="list-style-type: none"> - link to the database - link to the website 	<p>Cumulative allocations and expenditures as of 2013 and 2014, broken down by:</p> <ul style="list-style-type: none"> - operational programme, and - NUTS 2 - fund - objective - 86 priority themes <p>Dimension: SCALE, STRUCTURE</p>	<p>The database consists of the regional breakdown of the ERDF and CF 2007-2013 funds invested through Operational Programmes (Convergence Objective, RCE Objective and CBC programmes under the ETC Objective). It identifies cumulative allocations and expenditures at NUTS2 level broken down by the 86 priority themes, for 2013 and 2014. A separate database was elaborated for NUTS3 level (link). The database allows to look at financial flows both from the perspective of a given programme and a given region.</p> <p>Published: August 2015</p>
<p>[4] ERDF CF 2007 2013 output indicators - full database including all core indicators and programme</p>	<p>Ex Post Evaluation of the ERDF and CF: Key outcomes of Cohesion Policy in 2007-2013: WPO: Data collection and</p>	<p>Corrected targets and achievements for 2012 and 2013 for each operational programme, with additional data on:</p> <ul style="list-style-type: none"> - indicator level (programme vs priority) 	<p>The database consists of ERDF/CF reported achievements, drawn from the AIRs 2012 and 2013, for each operational programme. It includes indicators both at a programme and a priority level, both core indicators recommended by the Commission, and specific indicators devised by Managing Authorities. All indicators reported by Member States was quality controlled by authors of the</p>

specific indicators	quality assessment - link to the database - link to the website	- indicator specification - consistency between indicator definition and EC guidelines Dimension: ACHIEVEMENTS	evaluation study, and corrected where necessary, to ensure reliability of the data. The dataset reflects the current knowledge on corrected programme targets and achievements as of December 2014. Guide to the database is available here .
[5] Priority theme overview	DG Regio: Data for research - link to the database	Allocation to selected projects compared with amounts decided for OPs, broken down by: - Member state - 15 main themes - 86 priority themes Dimension: SCALE, STRUCTURE	This country-level report compares two sets of data on implementation of the CP programmes (covering ERDF, CF, and ESF) in the programming period 2007-2013: information on estimated allocations to selected projects was set against financial figures adopted in programming documents. Thus, it allows for a comparison of the estimates of investment with the actual rate of selection of projects. Two sets of categories are used to present the thematic breakdown of the CP investment, i.e. 15 main themes and 86 priority themes. Importantly, the database presents in a consistent manner data on ERDF/CF, and also on ESF investments. It is based on the categorisation data presented in Annual Implementation Reports 2013.
[6] Background dataset for the 6 th Cohesion Report	DG Regio: obtained upon request	Reported achievements across core indicators (as of 2013), broken down by: - Member state - Operational programme - Year - Objective Dimension: ACHIEVEMENTS	This dataset consists of both country-level and operational programme-level data on reported achievements (under ERDF/CF funds) as measured by the set of 56 core indicators proposed by European Commission. Cumulative achievements are presented for each year between 2007 and 2013 and set against the final target. It draws on data reported by Managing Authorities in their Annual Implementation Reports. The database has been used as a background for results presented in the 6 th Cohesion Report.
[7] ERDF CF 2007 2013 output indicators - synthesis country reports	Ex Post Evaluation of the ERDF and CF: Key outcomes of Cohesion Policy in 2007-2013: WP1: Synthesis - link to the website	Country-level achievements for selected core indicators as of end-2014 Dimension: ACHIEVEMENTS	As a reference for the regional reported achievements data, the respective national values were taken from country synthesis reports, Table 10 - Values of core indicators for ERDF co-financed programmes for the 2007-2013 period, as at end-2014. It draws on 2014 Annual Implementation Reports submitted by Managing Authorities and DG Regional Policy post-processing of these. Core indicators for which no data were reported by the Member State are not included.

			Published: August 2016
2014-2020 programming period			
[8] European Structural and Investment Funds 2014-2020_categorisation	DG Regio: Data for research - link to the database - link to the website	Planned allocations under ESIF 2014-2020 for each operational programme Dimension: SCALE, STRUCTURE	This database provides information on planned financing under the different ESI Funds (2014-2020), i.e. ERDF, CF, ESF, YEI. The data is broken down by fund, programme, a detailed set of 123 intervention fields, form of finance, territorial dimension, etc. It does not contain any specific regional-level data, but allows for a comprehensive analysis of operational programmes, including the regional ones.
[9] European Structural and Investment Funds 2014-2020_achievements	DG Regio: Data for research - link to the database - link to the website	Expected final achievements (targets) for each operational programme under ESIF 2014-2020 Dimension: ACHIEVEMENTS	This dataset provides information on expected final achievements (targets for year 2023) set for common indicators defined for each of the ESI Funds (ERDF, CF, ESF, YEI, as well as EARDF, EMFF) by operational programmes. It contains also additional information on priority axis, thematic objective, and investment priority (where available) for each of the indicators. The data is reported from the System for Fund Management in the European Union (SFC2014), as of November 2015. Description of variables can be found here .

Source: authors' own elaboration

The *Open Data Platform* run by the DG Regio is a separate source that was considered in the review of data on CP implementation and performance. The website's main interface provides structured data only for the 2014-20 period, organised by theme, by Member State, or by selected fund. There is also a catalogue that allows to explore over 500 datasets and data visualizations, including both 2007-13 and 2014-20 programming periods. Some of this datasets are being updated by DG Regio representatives, thus giving access to statistics that have not been yet published at the *Data for researchers* website. However, the catalogue is poorly structured which hampers its user-friendliness. Also, it is focused mainly on the country-level data, thus being of limited use for sub-national analyses.

The datasets presented above were used to prepare the primary version of the WP3 database on CP implementation and performance. It consisted of four sections, namely scale, structure, concentration and achievements. The exact content of these sections and links between them and the datasets described above can be found in the Appendix 1.

1.2.Data coverage

In this section we analyse the comprehensiveness of available data on CP implementation and performance according to the following categories: temporal and thematic scope, territorial level, as well as CP funds. Our analysis is focused mainly on the utility of data for sub-national investigations.

Temporal scope

The availability of data is increasing for successive programming periods. Scarce data for the 1994-99 period has been explored by authors of the ERDF/CF 2007-13 ex-post evaluation (WIIW and Iseri Europe, 2015), only to assert that due to its significant limitations it cannot be assembled with data for the two subsequent periods. According to this evaluation the main shortcomings of the 1994-1999

data are as follows: only expenditures are covered; amounts are not consistent across countries and programmes (e.g. not all figures have been officially approved by the Commission); objectives and funds could not be separated from one another; and typologies of expenditures are incompatible. Data for the 2000-06 period is more robust, but there are still some significant gaps at the regional level. As we have shown in the table above, elaborating the *Integrated database of allocations and expenditure for 2000-2006 / 2007-2013* required estimations of the 2000-06 expenditures data, drawing on the absorption rates by country and fund. Also, there were some obstacles for consolidation of regional data from two programming periods, e.g. minor changes in the NUTS system, unclear data on European Territorial Cooperation (that lead to the exclusion of this objective from the dataset mentioned above), and not fully compatible sets of thematic codes. Despite these barriers, there is a possibility to obtain a reliable picture of the thematic structure of 2000-06 investment at the NUTS-2 level, regional absorption rates, and to compare this characteristic with the subsequent programming period.

Data availability for the 2007-13 period has further increased, as compared to the previous period. First of all, both data on allocations and expenditures is available at the regional level (without a need for "raw" estimations, as it was in the case of 2000-06 period). Secondly, greater attention has been paid to improving consistency of data collected and reported by Managing Authorities. The European Commission prepared a categorization of funds (applying to ERDF, CF, and ESF), according to five dimensions: priority themes (86 items), form of finance (4), territory type (10), economic activity (23), and location – coherent with the NUTS system (Annex II of the Commission regulation no. 1828/2006.). Such data has been reported to the Commission annually for each operational programme. And third, a significant attempt to enhance monitoring of outputs has been undertaken. The Commission proposed a set of around 40 core indicators for assessing the outputs of ERDF/CF funds. But given the non-obligatory character of this monitoring tool, the quality of this data is limited.

The 2014-2020 period has seen further improvements in data availability and consistency, although it is still too early to assess the effectiveness of the whole monitoring system. The list of 86 priority themes has been modified, extended (also to include ESF) and labelled as intervention fields (123 items). Similarly, typologies of form of finance and of territorial dimension have been modified. A new dimension has been added, namely the territorial delivery mechanism, indicating e.g. integrated territorial investments. A list of output indicators has been refined and applied on a compulsory basis, extending also to other funds than ERDF and CF. Currently, only data on allocations and targets are available, broken down by operational programmes and Member States. Thus, it is too early to conduct comprehensive regional analyses using this data.

Thematic scope

There are various thematic typologies applied to exhibit the structure of CP investments. The most prevalent one is the set of 86 priority themes adopted by the Commission for the 2007-13 period, and used in the following datasets: [2], [3], and [5] – both with regard to regional and country-level data. The more concise set of 12 priorities has been applied in the dataset [1], in order to find a common denominator for expenditures from two programming periods, while an abridged set of 15 priority themes has been included in the dataset [5]. Another obligatory categorization system for the 2007-13 period is the economic dimension, which is based on the statistical classification of economic activities (NACE) and indicates the sector supported by particular investment.

There is also an important issue of defining allocations. Often, the term "allocation to selected projects" is used, that is not entirely consistent with allocations considered as financial resources secured for a given programme. The term "selected project" has not been regulated by particular EU definitions, but it is understood as a value of projects that have been selected by the Managing Authority (or other delegated body) following a selection process. This may typically involve a grant

decision. Selected projects should not be confused with those projects where expenditure has been declared or the projects are completed, as these are further steps in the project pipeline. The project selection data does not equate to payments by beneficiaries but, given the detailed coding system (5 dimensions described above), it is considered essential in terms of aggregated monitoring of the project pipeline and communicating on the investment activities of the policy. It is important to note that allocations to selected projects were referred to as commitments in 2000-2006.

Territorial level

The majority of CP data is provided either for Member States or for operational programmes. However, the number of datasets with specific regional data has significantly increased between the 2000-06 and 2007-13 periods – including the attempt to estimate a full set of allocation and expenditure data at the NUTS-3 level, broken down by 86 thematic priorities. The main challenge for sub-national analyses relates to reported achievements tied to particular operational programmes. Thus, we have undertaken the effort to establish a link between operational programmes and all European NUTS-2 regions. It turned out that roughly a half of EU27 NUTS-2 regions can be directly linked to a particular 2007-2013 ERDF/CF operational programme, but this picture varies significantly across countries. In the programming period 2014-2020 this share is even lower. In effect, the programme-level data on achievements is insufficient to provide a robust foundation for assessing outputs of CP investments across all European regions. Therefore, the estimations based on country-level data is needed – especially given the limited reliability of programme-level data (the data quality issue will be further elaborated in the next section of this paper).

Cohesion Policy funds

Our review was targeted at three structural funds – European Regional Development Fund (ERDF), Cohesion Fund (CF), and European Social Fund (ESF) – that together forms the financial backbone of the Cohesion Policy. However, data on ESF for the 2007-13 period proved to be very scarce and often not consistent with the ERDF/CF data. The online *ESF financial allocations database* for the 2007-13 (not available anymore) consisted only of original allocations (as decided in 2007) broken down by Member States, Operational Programmes and 16 thematic categories. Among the datasets for the 2007-13 period reviewed in the table above, ESF funds were included only in [5], which does not provide any regional data. Seemingly, the divide between DG Regio (responsible for ERDF and CF) and DG Employment (EFS) was transferred to data collection systems, rendering the elaboration of the common, regional database on CP impossible. But the situation has changed profoundly with the new programming period. Currently, ESF, along with ERDF and CF, is included in the same data framework – as indicated by datasets [8] and [9], as well as the *Open Data Platform*.

1.3. Data quality

In this section, we focus on limitations to data quality. The overall limitations are presented in explanatory note (EC 2013). We also made an attempt to assess them by comparison between different datasets. While data on structure and scale of CP investments turned out to be rather consistent, the reported achievements are more ambiguous. The latter data (for 2007-13 period) can be inferred from datasets [4], [6], [7] as well as the Open Data Platform. For analytical reasons we added also data on reported achievements published by the Polish Managing Authority (MA). Thus, we were able to compare values of selected core indicators both at a Member State level (for Poland), and for EU as a whole. In both cases there were significant deviations between values reported for a given core indicator – see table below for examples.

Tab. 2. Data quality – comparison of selected datasets

a)

Poland	[4] - 2013	[6] – 2013	[7] – 2014	Open Data Platform – 2014	MA publication – 2014
Aggregated jobs	62 674 (jobs created)	61 885 (jobs created)	87 427	87 427	157 890
Research jobs created	2075	2075	5000	8948	4066
Km of new & reconstructed railroads	334	335	484	484	1663

b)

EU	[4] – 2013	[6] – 2013	[7: Synthesis report] – 2014	Open Data Platform – 2014
Aggregated jobs	668 792 (jobs created)	650 272 (jobs created)	940 000	939 339
Research jobs created	34 811	27 956	41 600	44 142
Km of new & reconstructed railroads	3870	3445	5000	4894
Additional capacity of renewable energy production	2757	3 023 827	No data	No data

Source: authors' own elaboration

A few assumptions can be made regarding causes of the data discrepancies shown above. First, data in [4] is presented at a disaggregated level, for each operational programme and sometimes even for separate priorities of an OP, while datasets [6], [7] and ODP contain only data at the level of Member States. Ambiguities in the aggregation process may lead to some deviations of indicator values. Secondly, some issues may arise from inconsistencies in units of data reported by Managing Authorities – this is probably the cause of the vast discrepancy between [4] and [6] with regard to additional capacity of renewable energy production. The reason for high level of divergence of values reported in the MA publication for Poland may originate from a different methodological approach applied – taking into account expected achievements of selected projects instead of restricting only to data reported from projects being already under way or finalised. Finally, certain indicators ceased to be exploited by the Evaluation Unit of DG Regio, because of the weaknesses in reporting or methodologies used in collecting data. These indicators are jobs for men, jobs for women, investment induced, travel time savings from new and reconstructed railroads as well as roads, and reduction in greenhouse gas emissions. The list of core indicators has been further shortened in case of Open Data Platform and [7], where only up to 20 indicators are reported for Member States.

1.4 Construction of the final database

Taking into account available data and their coverage and quality constraints we selected a set of indicators that formed the final database (see Appendix 1). The database is a basis for analyses presented in the second part of the report. The database is limited in terms of the number of indicators – this is due to the elimination of indicators that raised significant doubts regarding quality, relevance, and sometimes coverage. However, the final NUT2 regional level database on implementation and performance of the EU cohesion policy is supplemented by data on different spatial levels. Those data could not be included in the unified database due to the fact, that they are not directly comparable to NUTS2 level. Nonetheless, they have to be taken into account for

analytical relevance and comprehensiveness. Two such datasets were identified: (1) financial correctness of CP spending in 2007-2013 programming period, (2) partnership in programme preparation and management in 2014-2014 programming period. The datasets describe programme level and due to data and technical limitations shall not be disaggregated at the regional level in the case of national or multiregional programmes..

PART 2. REGIONAL VARIATION IN THE IMPLEMENTATION AND PERFORMANCE OF COHESION POLICY

This part of the report investigates regional variations in the implementation and performance of Cohesion Policy in the period 2007-2013, drawing comparisons with earlier and current 2014-20 programming periods where possible. The analysis begins with the eligibility of individual countries and regions for Cohesion Policy funding, followed by an assessment of the scale and structure of allocations including the changes in comparison to the 2000-2006 period. The next section reviews the policy architecture and implementation system at the national level with a particular emphasis on the territorial level at which Cohesion Policy (national or regional programmes) and the role played by the regional-level authorities in implementation. To analyse the effectiveness of implementation, the next section assesses absorption patterns and error rates across countries and regions. The next part outlines the reported effects of Cohesion Policy both in the general dimension expressed by the number of new jobs, and in detailed sectoral analyses of R&D activities or SME assistance and the role of investments in transport and the environment. Finally, the impact of Cohesion Policy on the dynamics of regional economic growth is analysed.

2.1 Cohesion Policy eligibility

One of the key issues encountered in planning public intervention is defining its scope in thematic, sectoral or territorial scope – in other words, setting out the conditions which must be fulfilled for such assistance to be awarded. Territorial eligibility is particularly important for regional policies that draw a distinction between specific areas in terms of the intensity/scale of assistance, as well as availability of specific support instruments. In Cohesion Policy, funding eligibility is directly linked to its regional convergence objectives, which, in broad terms, are based on two groups of areas, namely less developed and the more developed regions. Such objectives and the resultant eligibility changed over time, as shown, in a simplified way, in the table below (Tab.4).

Tab. 3. Evolution of objectives/eligibility of EU Cohesion Policy regions

Objectives	1994–1999	2000–2006	2007–2013	2014–2020
Current:				
Less developed regions (period 2007-2013: 'Convergence', periods 1994-1999 and 2000-2006 'Objective 1')	x	x	x	x
Transition regions (period 2007-2013 – 'Phasing out' or 'Phasing in' regions)			x	x
More developed regions (period 2007-2013: 'Regional competitiveness and employment')			x	x
Former objectives:				
Objective 2: converting the regions or parts of regions seriously affected by industrial decline	x			
Objective 3: combating long-term unemployment and facilitating the integration into working life of young	x			

people and of persons exposed to exclusion from the labour market, promotion of equal employment opportunities for men and women				
Objective 4: facilitating the adaptation of workers to industrial changes and to changes in production systems	x			
Objective 5: promoting rural development	x			
Objective: development and structural adjustment of regions with an extremely low population density	x			

Source: authors' own elaboration based on DG Regio information/material.

From the very beginning of its operation, the European Regional Development Fund basically aimed to prioritise assistance to less developed regions. As a result, the bulk of its funds was allocated to EU regions characterised by low development expressed by per capita GDP (with the threshold set at 75% of the EU average). Its second major objective was to offer support to problem regions with declining traditional industries facing restructuring challenges. In this case, the eligibility criteria were as a rule set at a lower level of the hierarchy and involved the local tiers, i.e. counties or municipalities. In 2000–2006, these criteria covered the restructuring of traditional industries, diversification of rural areas or fishery centres, as well as socio-economic problems encountered in cities. These actions were also supported by the European Agricultural Guarantee Fund Orientation Section; the objective associated with the development of rural areas had for its purposes been adopted in the earlier programming period. For a short period associated with the round of enlargement involving two Nordic countries (Sweden, Finland) in 1995, support offered to peripheral regions with a very low population density constituted a separate category. Those objectives with a distinct spatial dimension were supplemented by horizontal objectives aimed to improve the labour market situation; these goals were pursued with the use of the European Social Fund (ESF), which was specifically intended to address the problems of structural unemployment and unemployment in the group of labour market entrants.

The years 2007–2013 saw a change in the policy objectives associated with a substantial change in territorial eligibility since the Objective 1 areas from the 2000–2006 period were termed 'Convergence' regions. To be eligible for EU assistance, the region's GDP per capita should be lower than 75% of the EU average. The aggregate allocation for the development of those regions altogether accounted for 81% of the Cohesion Policy funds, i.e. EUR 281 billion. There were 84 beneficiary regions inhabited by a total of 154 million people (30.7% of the entire EU population) in 18 Member States. Their distribution underwent certain changes in comparison to the 2004–2006 period owing to the 2004 and 2007 rounds of enlargement. The main differences included the addition of Romanian and Bulgarian regions to the group of beneficiaries and the group of Objective 1 regions on the one hand, and the leaving of the group comprising Objective 1 regions by some regions from the 'old' Member States due to a relative increase of their per capita GDP (a statistical effect associated with a fall in the EU average following the accession of poorer countries) on the other. In order to lessen the impact of this change on their socio-economic development, a transition period was adopted for those regions in which an increased access to EU funding was continued. That group of regions can be divided into two subgroups of transition assistance, i.e. 15 'phasing-out' regions covered by Objective 1 (8.6% of the overall Convergence budget) and also 15 'phasing-in' regions included in Objective 2 (16.5% the overall Competitiveness budget). In Central and Eastern Europe, the

mechanism in question has so far only encompassed the capital region of Budapest alongside Prague and the Bratislava region, both of which received Objective 2 assistance.

In the years 2007–2013, the practice of identifying areas in need of support for their economic restructuring processes was abandoned, and the funds were earmarked for the development of all the remaining NUTS2 regions as part of Objective 'Regional Competitiveness and Employment'. Altogether, assistance covered 168 regions having a population of 314 million. The value of planned expenditure totalled EUR 55 billion, i.e. 16% of the Community's budget, and some EUR 175 per head. This meant that the average value of assistance was ten times lower than in "Convergence" regions (EUR 1820 per capita).

The 2014-2020 financing perspective brought even more changes related to territorial eligibility. The main change was the identification of transition regions with per capita incomes at 75%-90% of the EU average. In addition, the regions were differentiated in terms of EU co-financing relative to domestic funding:

- 'Less developed' regions whose GDP per capita is less than 75% of the EU average, with a co-financing rate of 80-85%;
- 'Transition' regions, whose GDP per capita is between 75% and 90% of the EU average, having a co-financing rate of 60%; and
- 'More developed' regions, whose GDP per capita is above 90% of the average, and the co-financing rate of 50%.

The total value financial assistance allocated to the first group of regions was EUR 182 billion (51.8%) of a total of EUR 351.8 billion. The second group received assistance with a value of EUR 35.4 billion (10.0%), and the third - EUR 54.3 billion (15.4%). In addition to those, Cohesion Policy also encompasses European Territorial Cooperation (EUR 10 billion) (2.8%) plus other schemes such as Youth Employment Initiative (EUR 3.2 billion) (0.9%) or Urban Innovative Actions (EUR 0.4 billion) (0.1%).

The Cohesion Fund

Cohesion Policy also comprises the Cohesion Fund set up in 1992 with the aim of providing assistance to the poorest EU Member States (i.e. those with Gross National Income per capita below 90% of the EU average) and support progress towards Economic and Monetary Union. Initially, assistance was addressed to Greece, Spain, Portugal and Ireland. In the wake of the last enlargement rounds of 2004 and 2007, the group incorporated 10 new Member States from Central and Eastern Europe, plus Cyprus and Malta, alongside Greece and Portugal from the 'old' Member States. Ireland and Spain left the group of beneficiary countries, although the latter retained the right to receive aids in accordance with the transition rules. In 2014-2020, Croatia was the new entrant in the group of Cohesion countries. Altogether, the budget allocation to the Cohesion Fund in the 2014-2020 perspective was EUR 63.4 billion, which represented 17.7% of total Cohesion Policy expenditure.

2.2 The scale and structure of Cohesion Policy allocations by region

Although the volume of funding allocated to the implementation of a given public policy is an important measure of its role, its actual results and impacts are far more important, and largely depend on the effectiveness of policy implementation and cost efficiency of the implemented projects. Making an *a priori* assumption on a similar effectiveness and efficiency may lead to an evaluation of the policy impacts on the basis of the size of disbursed funds. This simplified assumption

usually underpins macroeconomic models - such as HERMIN, QUEST or REMI - that are used in ex ante and ex post evaluations of Cohesion policy.

Similar to the macroeconomic models mentioned above, this part of the study focuses on the scale and structure of Cohesion Policy expenditure, while the implementation principles and rate of absorption are discussed in later parts of the report. On this basis, the report aims to offer a tentative answer to the question of whether, and to what extent, expenditure from European funds and its structure influenced the growth dynamics of European regions in the years following the 2008 crisis.

Cohesion Policy allocation in 2007-2013 by NUTS2 regions

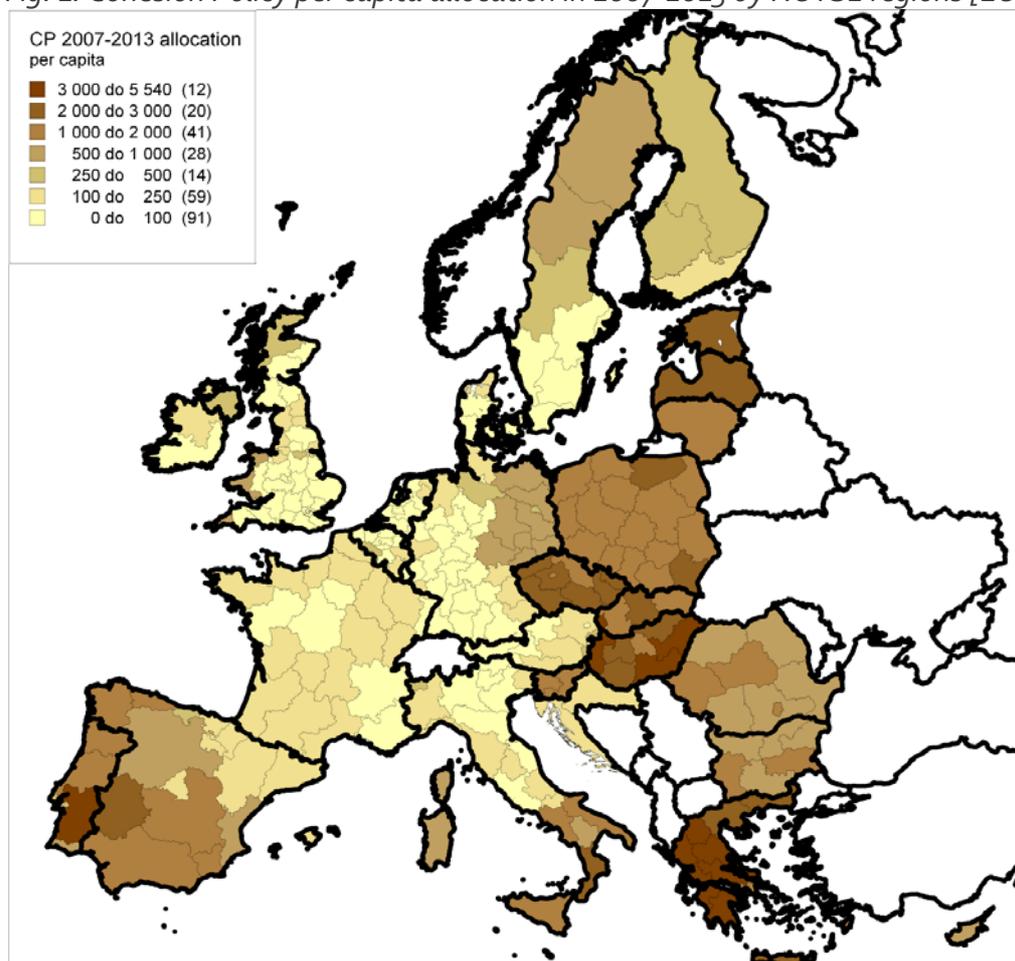
There can be little doubt that the volume of financial allocation in absolute terms is less significant than when related to the number of residents or to the economic potential of a given region. Moreover, the structure of expenditure and changes in the volume of the allocation between different financing perspectives are factors that play a role in the perception of Cohesion Policy by the residents and for the business decisions of enterprises.

The allocation of Cohesion Policy funds per capita strongly varied across European regions (Fig. 1), a natural consequence of this policy which is first and foremost addressed to Cohesion countries and less developed regions - known as 'Convergence' regions in the 2007-2013 programming perspective.

In the analysed period, the group of regions which received the highest support per capita (above EUR 3,000) included selected regions of Greece (especially in the western part of the country) and Hungary (the south-western part) plus the Alentejo region in Portugal. The next group, with an allocation between EUR 2,000 and 3,000 per capita, covered the majority of the remaining regions of Greece and Hungary in addition to Estonia, Latvia, as well as most regions of the Czech Republic and selected regions of Poland and Slovakia, and, in 'old' Member States, Extremadura in Spain and Calabria in Italy. Elsewhere in the Cohesion countries, except Romania and Bulgaria (which did not become EU members until 2007), Cyprus, and some of the Spanish regions, the allocated funds were in excess EUR 1,000 per capita. A similar allocation volume per capita was also observable in some of the Convergence regions in better developed countries, in particular southern Italy (together with Sicily and Sardinia), eastern Germany, as well as scarcely populated northern regions of Sweden.

In the remaining regions, the allocated support in per capita terms did not exceed EUR 500. However, certain spatial disparities were noted in all the countries, which could point to the existence of problem regions. For instance, this group includes Wallonia in Belgium; Wales, Scotland, Cornwall and some of northern English regions in the United Kingdom received more financing; while in Germany more assistance was directed to the Bavarian subregions situated near the border with the Czech Republic, plus the Ruhr and Saarland, in addition to the eastern part of the country mentioned above. Under the current perspective, some of these areas were classified as transition regions.

Fig. 1. Cohesion Policy per capita allocation in 2007-2013 by NUTS2 regions [EUR]



Source: authors' own elaboration, based on [3]¹

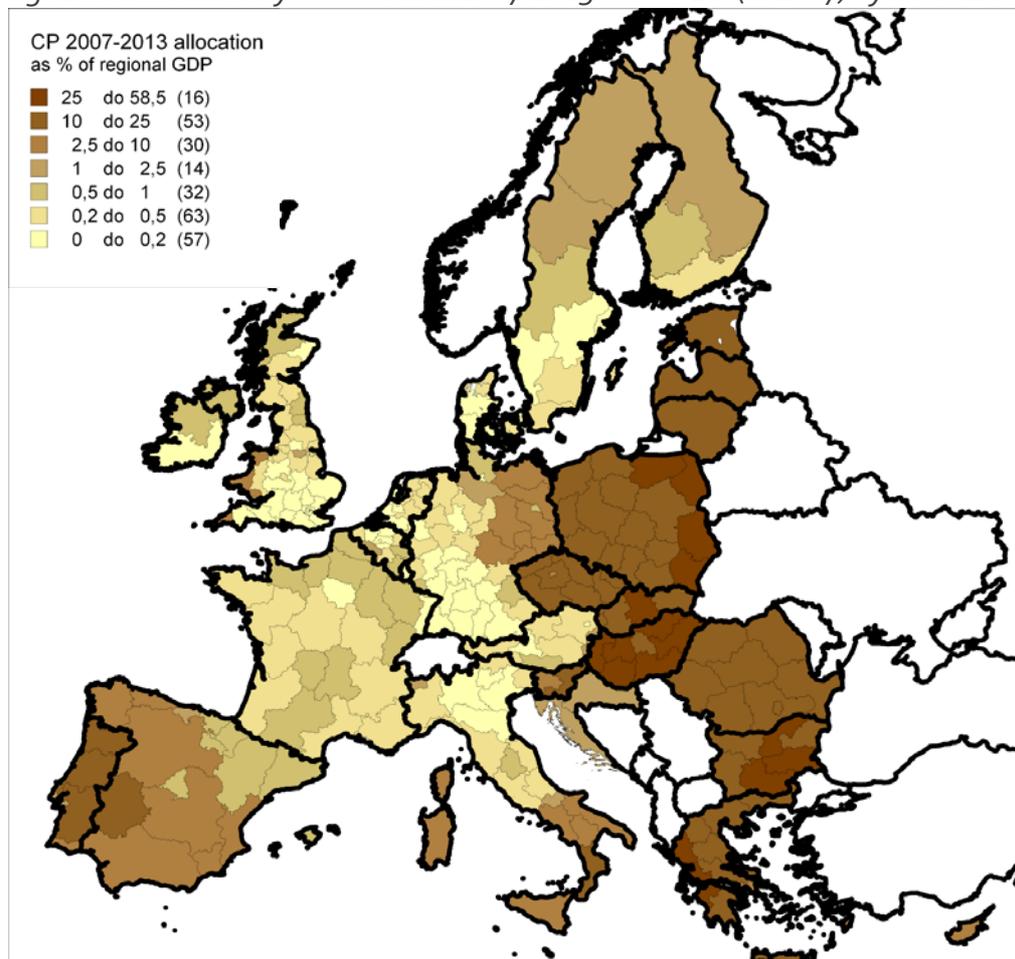
The role of Cohesion Policy funds in the processes of socio-economic development is more distinctly visible after it is related to the volume of the gross regional product (Fig. 2). It should be noted that the differences between the map showing this particular measure and the value of the allocation per capita are not very wide.

Among the greatest beneficiaries of Cohesion Policy funds relative to GDP are the regions of Hungary (except Budapest), selected eastern regions of Poland and Bulgaria, plus two regions in Greece and one in Slovakia. In their case, the aggregate value of the allocation awarded in 2007-2013 exceeded 25% of their regional income from 2008 expressed in EUR. On the other hand, nearly all the regions of Central and Eastern European countries (except western Slovenia) the volume of Cohesion Policy funds was above 10% of their GDP. A similar situation could be observed in the regions of Portugal (except the metropolitan region of Lisbon and the Algarve region), the Spanish Extremadura and the Italian Calabria. The allocation representing between 1% and 10% of the regional GDP was recorded for the regions of southern Italy (including Sardinia), eastern Germany (except Berlin) and a considerable number of the Spanish regions (except Madrid and the regions situated in the north-east of the country), Wales and Cornwall in the United Kingdom and Corsica in France. The allocation in the remaining cases, although relatively small (below 1% of the annual GDP), clearly shows the

¹ Hereafter we use numbers in square brackets to refer to Cohesion Policy databases described in Tab. 1.

division of individual countries into core and problem regions; this, in addition to Germany and Italy, could also be observed in Belgium, Sweden, Finland or Ireland.

Fig. 2. Cohesion Policy allocation in 2007-2013 as % GDP (in 2007) by NUTS2 regions



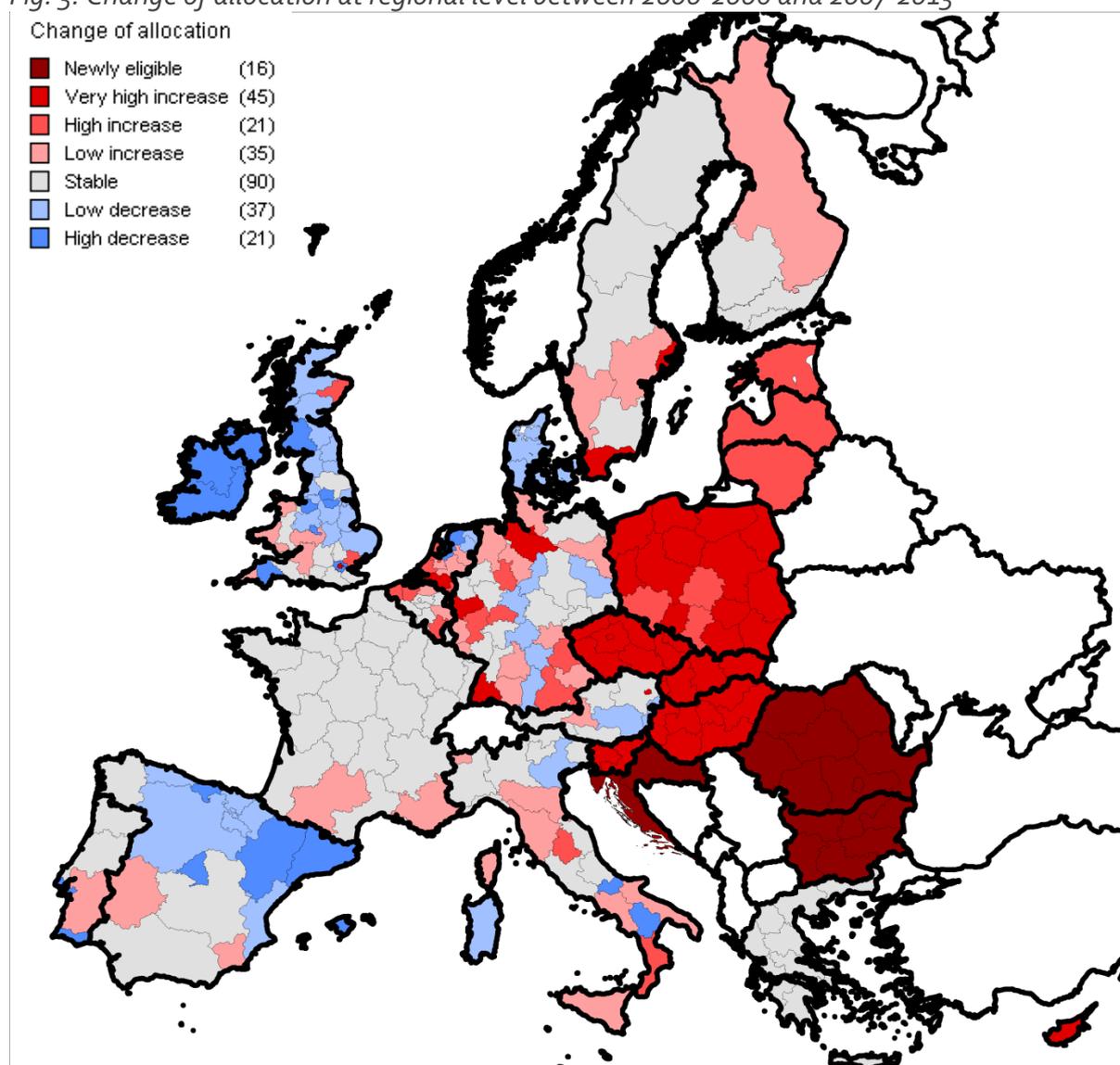
Source: authors' own elaboration, based on [3]

Changes in the value of the allocation arising from the evolution of Cohesion Policy may be depicted at the regional level to show the comparisons between the 2000-2006 and the 2007-2013 periods (Fig. 3), and at the national level for comparing the 2007-2013 period with the current programming perspective (Fig. 4). Due to the fact that the period 2004-2013 brought subsequent rounds of EU enlargement, and some of the acceding countries had earlier been covered by pre-accession assistance, these are estimates only, and are therefore expressed in the ordinal scale from -2 to 4.² Quite naturally, the regions of the countries which acquired access to Cohesion Policy funds (Romania and Bulgaria) or to pre-accession funds (Croatia) recorded growth of a qualitative nature. High and very high increases could also be observed in the regions of countries which joined the EU in 2004, gaining full access to Cohesion Policy funding. There was also a recorded increase, albeit smaller as a rule, in some regions of the 'old' Member States, a phenomenon visible mainly in the

² The following arbitrary intervals were used, with the following values: -2 for the allocation lower than 50% of its value in the former period; -1 for the allocation of 50%-80%; 0 for the allocation of 80%-120%; 1 for the allocation of 125%-200%; 2 for the allocation of 200-500%; 3 for the allocation of over 500%, and 4 when the region was not a beneficiary of Cohesion Policy in the former period (i.e. regions of Bulgaria and Romania that joined the EU in 2007, and Croatia, which became a Member State in 2013).

Benelux countries, Germany, Italy, as well as Sweden, France and the United Kingdom. On the other hand, the majority of the regions in France, Greece, Austria and Finland saw no major changes in the level of financing. Regional decreases in the allocation were visible mostly in Ireland, Denmark, some of the regions in the United Kingdom and Spain, and in several regions of the remaining 'old' Member States, particularly Portugal, Italy or Germany.

Fig. 3. Change of allocation at regional level between 2000-2006 and 2007-2013



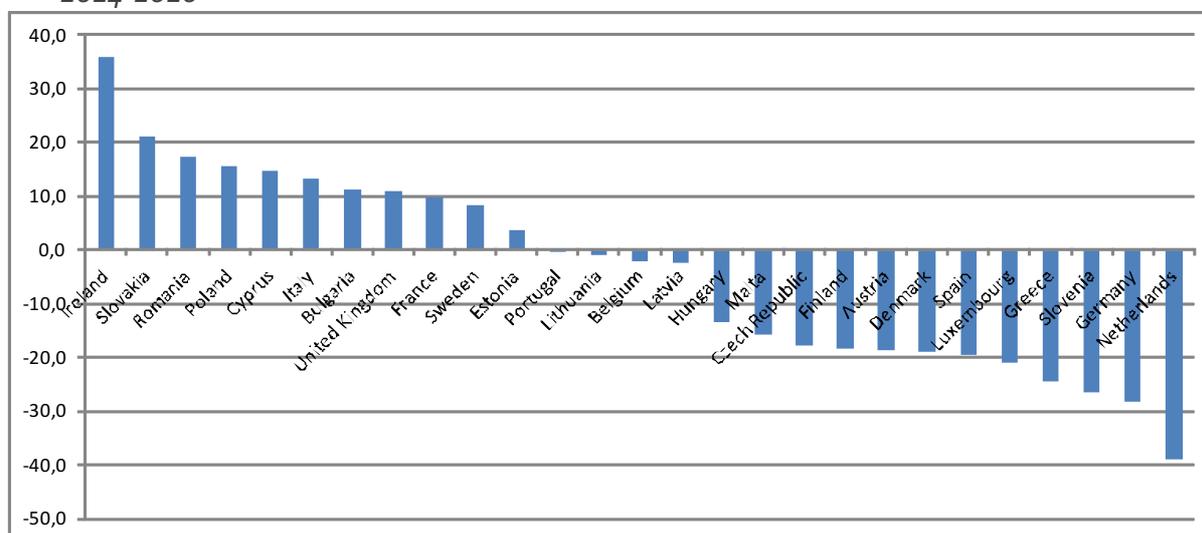
* the regions which received Cohesion Policy funding in 2007-2013 were termed 'newly eligible'

Source: authors' own elaboration, based on [1]

There are no data available for the new financing perspective as regards indicative allocation at the regional level. For this reason, the analysis only covers the changes taking place at the national level, manifested by a clear-cut division into two groups of countries. Croatia was a separate case altogether, since with an allocation of EUR 8.5 billion it recorded growth one order of magnitude higher in comparison to that driven by its pre-accession funds. In addition to Croatia, there was an

increase in the indicative allocation in 11 countries (Fig. 4), particularly in Ireland (by 36.0%) and Slovakia (21.2%). In the remaining countries of this group, the allocation grew on average by 10%, except France (9.8%) and Sweden (8.5%). This particular category comprised mainly 'new' Member States: Romania, Poland, Cyprus, Bulgaria, Estonia, and also Italy and the United Kingdom in addition to the 'old' Member States mentioned above. There were four countries with only a slight decrease: Portugal (-0.3%) in addition to Lithuania, Belgium, and particularly Latvia (-2.5%), while in the remaining 12 countries the allocation fell considerably, by as much as over 10%. The most drastic reduction was recorded in the Netherlands (-38.9%) and Germany (-28.3%), and Slovenia among the 'new' Member States (-26.6%). The latter category was also represented by Hungary, the Czech Republic and Malta. The countries of southern Europe, that is Greece and Spain, were also significantly affected, in addition to the Nordic countries, i.e. Denmark and Finland.

Fig. 4. Changes in the volume of indicative Cohesion Policy allocation between 2007-2013 and 2014-2020*



*except European Territorial Cooperation

Source: authors' calculations based on: a) Cohesion Policy 2007-13 Commentaries and official texts, and b) http://ec.europa.eu/regional_policy/pl/funding/available-budget/

Allocation structure

The structure of Cohesion Policy intervention can strongly affect not only its results but also the way in which this policy is perceived by the residents of individual countries and regions. In particular, it can be anticipated that infrastructure investments, especially those improving transport infrastructure and the quality of life, will be both more noticeable and recognisable, whereas such initiatives as e.g. assistance to SMEs may not be equally appreciated among the region's residents.

The available data on the structure of the intervention divide it into 10 main thematic categories and technical assistance. Since there exist considerable differences in this regard between the individual countries, it is desirable to use cumulative categories for the analysis. Moreover, due to considerable disagreement as to the way the thematic categories should be aggregated, a number of alternative classification of EU funded expenditure co-exist. For example, the study by WIIW and Iseri Europe (2015) proposes an aggregation distinguishing the following categories: 'Infrastructure' (encompassing: Information Society; Transport; Energy; Environmental Protection and Risk Prevention; Urban and Rural Regeneration), 'Production Environment' (comprising: Research and Technological Development; Innovation and Entrepreneurship; Tourism; Culture) and 'Human

Capital' (which predominantly covers ESF-related categories of intervention, i.e. Increasing the Adaptability of Workers and Firms; Enterprises and Entrepreneurs; Improving Access to Employment and Sustainability; Improving the Social Inclusion of Less-Favoured Persons; Improving Human Capital; Investment in Social Infrastructure, Mobilisation for Reforms in the Fields of Employment and Inclusion). On the other hand, the Sixth Cohesion Report (EC 2014) identified the following categories: 'Business Support' (including RTDI), 'Infrastructure' (Transport, Energy, Telecom, Social Infrastructure), 'Human Capital' (Labour Market, Education, Social Inclusion) and 'Environment'.

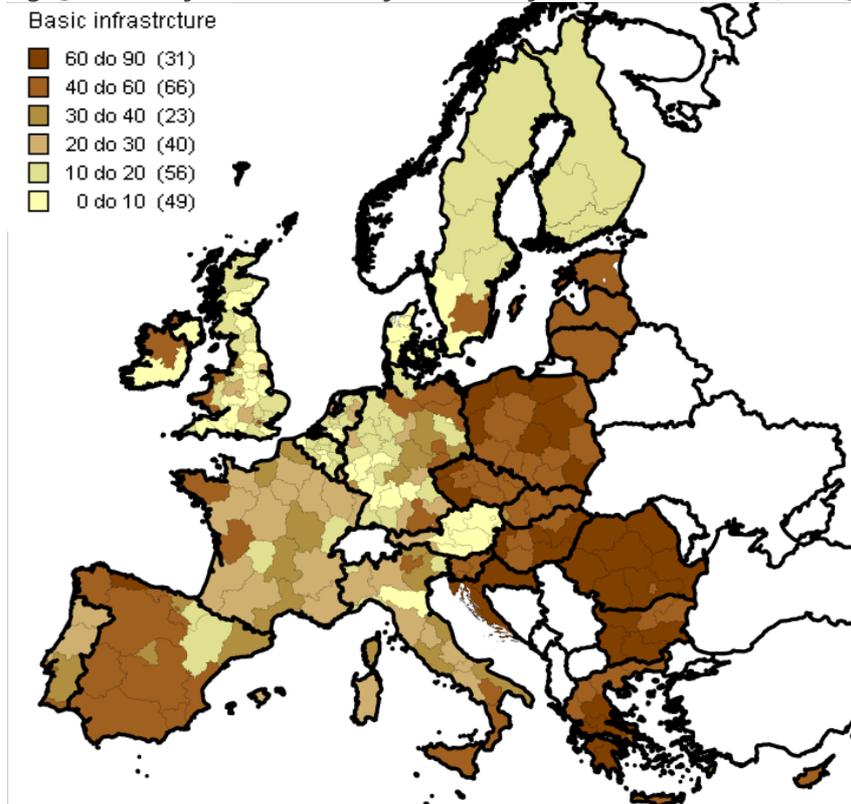
For the purposes of this study, three main groups of intervention have been distinguished as being of cardinal importance for the residents' perceptions, viz.:

- 'Basic Infrastructure' (Energy, Environment and Natural Resources, Transport Infrastructure)
- 'Innovative Environment' (Business Support, Human Capital, ICT Infrastructure, R&D)
- 'Quality of Life' (Social Infrastructure, Tourism and Culture, Revitalisation)

Like any thematic categorisation of Cohesion policy, the proposed generalisation can be regarded as overly simplified. On the other hand, however, analysing individual categories of intervention carries the risk of low values of the indicators for certain categories in individual regions, and this would mean introducing a random factor into the analysis, arising from different goals and preferences reflecting dissimilar regional needs in that regard. The proposed generalisation has the advantage that it reduces significant differences related to coefficients of variation between the individual categories of intervention.

The expenditure on the development of basic infrastructure was the highest in the new Member States and Greece (Fig. 5). The share of this particular category practically did not reach below 40%, and in 31 regions exceeded 60%. This group also included Spain and those of its regions which were not covered by the Convergence Objective but had access to Cohesion Policy funding. By comparison, the situation of Portugal was different because, according to the adopted classification, in most of its regions the share of expenditure on basic infrastructure was not higher than 40%. A high share of outlays on infrastructure was also visible in those regions of the old Member States which were covered by the Convergence Objective, i.e. southern Italy, eastern Germany and the geographically remote areas of the United Kingdom. This indicator showed high values in some regions of France, Germany, Italy and Sweden, which could suggest the implementation of large infrastructure. Conversely, this category of expenditure was of little importance in the case of Austria and Denmark in addition to many regions in the United Kingdom, western Germany, Belgium and several regions in the Netherlands, Italy, Sweden and Ireland.

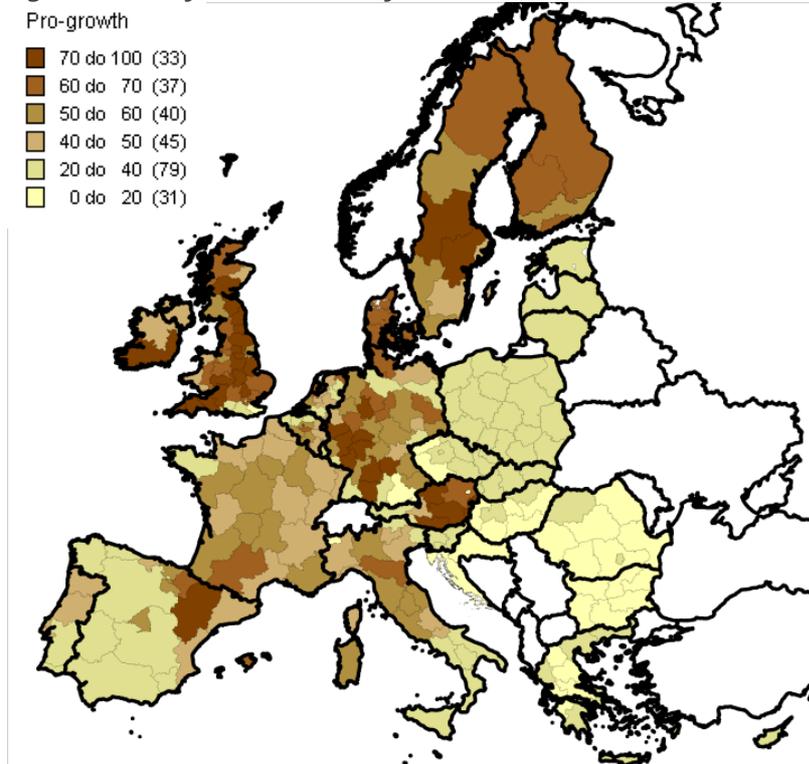
Fig. 5. Share of the allocation for 'basic infrastructure' in 2007-2013 [%]



Source: authors' own elaboration, based on [3]

The share of expenditure made on broadly understood innovative environment exceeded 70% in many areas of Europe (Fig. 6), particularly in the United Kingdom and Austria but also in many regions of Germany and several regions in Sweden, Spain and Ireland. Such expenditure was also high in Finland and Denmark and in some regions of France and Italy. At the other extreme, with a share under 20%, were regions in Bulgaria and Croatia, and most of the regions in Romania, Hungary and Greece. This particular group also included two Czech regions and, rather surprisingly, the region of Munich in Germany and Vienna in Austria. The share of regions in Poland, Slovakia, the Czech Republic, the Baltic States, central and western part of Spain, southern parts of Portugal and Italy plus the coastal areas of southern England and Flanders in Belgium was also under 40%.

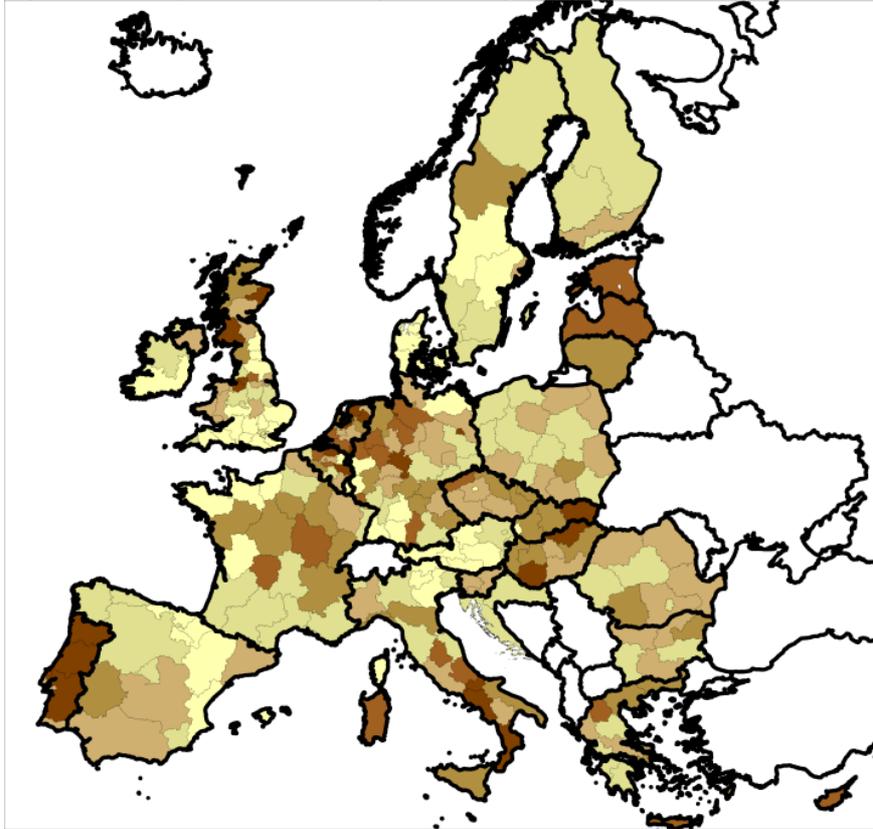
Fig. 6. Share of the allocation for 'innovative environment' in 2007-2013 [%]



Source: authors' own elaboration, based on [3]

Even wider differences could be observed as regards the share of outlays made to improve the quality of life in the total Cohesion Policy expenditure (Fig. 7). This could partly be due to a generally low level of this type of expenditure because such share exceeded 25% only in 26 regions, being lower than 5% in 55 regions. The group of regions that spent considerable funds on investments in this category included above all Estonia and Latvia, in addition to many regions in Portugal and the Netherlands. In some countries, these were only selected regions, e.g. in the United Kingdom, Germany, Belgium, and also Hungary and Slovakia. Conversely, scarce funds were spent on this category in the regions of Austria, Denmark and England, and in several regions in France, Spain, Sweden and Germany.

Fig. 7. Share of the allocation for 'quality of life' in 2007-2013 [%]



Source: authors' own elaboration, based on [3]

To sum up, the first two thematic categories (basic infrastructure and innovative environment) were rather closely associated with regional eligibility for receiving assistance from the Cohesion Policy funds. The Convergence regions were characterised by substantial expenditure on basic infrastructure, whereas the Competitiveness regions made considerable outlays on innovative environment. The quality of life as an expenditure category did not follow this overall pattern of expenditure since, with a relatively low share in the overall Cohesion Policy allocation, it showed by far the widest spatial variations. It should be noted that, despite the existing differences within individual countries, which nevertheless were as a rule reflected in the Cohesion Policy objectives (e.g. Italy, Germany, Spain, United Kingdom), the structure of expenditure across the regions of individual countries was relatively similar. This could partly arise from a harmonised way this policy was put to life, which reduced the possibility to freely adapt the structure of expenditure to the needs of individual regions.

2.3. The implementation and delivery systems of Cohesion Policy

This part of the report focuses on the implementation system of Cohesion Policy at national level in the EU Member States. In particular, the research dealt with the three following issues and their changes between the current and the previous financial perspective. The first one is the level at which Cohesion Policy is implemented in different countries i.e. the importance of national and regional programmes. The second is related to the degree of country decentralisation and the role played by regional authorities in the implementation of this policy. The third one is the so-called partnerships principle, i.e. involvement of various stakeholders in the implementation of Cohesion Policy programmes.

Any study on the implementation should be related to the Cohesion Policy cycle which, in general terms, could be characterised in the following manner (EP 2014). The first stage of the cycle covers programming, which, under the current programming perspective, comprises the Partnership Agreement (and the National Strategic Reference Framework in the previous perspective) and the operating programmes agreed between a given Member State and the European Commission. These documents identify the goals and mode of implementation of Cohesion Policy, including its financial allocation. The programmes must comply with specific rules, which in the current programming perspective are associated with the thematic concentration of funds, the partnership principle, and ex-ante conditionalities. At the next stage, decisions on the detailed implementation of such programmes are made. For this, a suitable administrative structure must be put in place, understood as a set of institutions (e.g. managing and paying authorities, intermediate bodies) furnished with decision-making powers regarding selection, financing and auditing of projects supported from the Structural Funds. The final stage involves the implementation of projects co-financed under Cohesion Policy with mandatory monitoring, auditing and evaluation.

Programming level – role of regional operational programmes

Position of regional programmes

Owing to their size, territorial divisions and administrative traditions, individual EU countries use various ways to deal with the regional level in the implementation of Cohesion Policy programmes. For instance, some of the smaller Member States are NUTS2 regions in light of the adopted nomenclature. In the remaining countries, depending on their current administrative structures, regional programmes can assume several basic forms.: 1) (inter)regional programmes at national level (e.g. Czech Republic); 2) multiregional programmes comprising more than one NUTS2 region either based on a specific area or specific issues (selected part of a country's area, e.g. Poland), or nationwide (with the whole country being divided into macroregions, e.g. the Netherlands); 3) (intra)regional NUTS2 programmes (e.g. Spain or Poland), and 4) regional programmes, but encompassing only selected NUTS2 regions (e.g. Hungary, Czech Republic).

Tab. 4. Number of operational programmes in 2007-2013 and 2014-2020 and the role of regional programmes

Member state	Number of OPs in 2007-2013	Number of OPs in 2014-2020	National programmes	including the national regional development programme	Territorial programmes (regional and multiregional)	Including NUTS 2 regional programmes
Austria	11	2	2			
Belgium	10	7	0		7	2
Bulgaria	7	7	7	1		
Cyprus	2	2	2			
Czech Republic	17	8	7	1	1	1
Germany	36	32	1		31	18*
Denmark	2	2	2			
Estonia	3	1	1			
Spain	45	44	6		38	38
Finland	7	2	2			
France	36	40	3		37	31
Greece	14	18	5		13	13

Croatia	4	2	2			
Hungary	15	7	6		1	1
Ireland	3	3	1		2	2
Italy	52	49	10		39	39
Lithuania	4	1	1			
Luxembourg	2	2	2			
Latvia	3	1	1			
Malta	2	2	2			
Netherlands	5	5	1		4	
Poland	21	22	5		17	16
Portugal	14	12	5		7	7
Romania	7	6	6	1		
Sweden	9	12	3	1	9	9
Slovenia	3	1	1			
Slovakia	11	7	7	1		
United Kingdom	22	12	91		12	8
Total	367	309	91	5	218	185

* not all German Länder corresponds to NUTS2 regions

Sources: authors' own elaboration, based on [3] and [8]

The data provided in the table above (Tab. 6) demonstrate that the total number of operational programmes, including technical assistance programmes, has in the current programming perspective shrunk to 309 from 367 in the 2007-2013 perspective. The likely reasons for this include the creation of multi-fund programmes, which in the majority of cases involve a combined use of the funds (mainly ERDF and ESF), a solution that became possible following the publication of Regulation (EU) No. 1303/2013 on common provisions (EP 2014), but also the adoption of a precautionary attitude inspired by the crises in the past. One consequence was the centralisation of operational programmes manifested by the diminishing of their number and/or financial management. The number of programmes fell in 17 countries, and in 10 countries at least three fewer programmes were set up. The largest centralisation in that regard could be observed in the United Kingdom, Czech Republic, Austria and Hungary. Generally speaking, it can be concluded that centralisation was visible both in federalised countries (such as Germany or Austria) and those which are strongly centralised (such as Hungary or Portugal). The number of programmes was tangibly increased only in France and Greece and, to a lesser extent, in Sweden (two programmes) and Poland (one programme). In seven countries the number of programmes remained the same, mainly in smaller countries with a relatively low number of programmes.

In quantitative terms, most of the programmes were territorial in character, usually regional. On the other hand, half of the Member States only had such programmes at the national level, especially countries with a smaller area and/or population, which usually meant a lower number of programmes. For instance the three Baltic States and Slovenia only set up one programme each, while most of the remaining countries in this category had two, with the exception of Bulgaria, Romania and Slovakia, where also one of the national programmes was regional/territorial in character. A similar situation could be observed in the Czech Republic and Sweden, both countries categorised in the equally numerous group which implemented regional programmes.

These programmes could be either multiregional, i.e. encompassing more than one NUTS2 region, or regional. The former arrangement was typically used in the Netherlands which did not have any

national-level programmes, and Belgium, which ran separate programmes for Wallonia, Flanders and the Brussels-Capital Region, plus the United Kingdom. Much more frequent was designing programmes for all the NUTS2 regions, an arrangement that was used in the remaining large EU countries, i.e. Germany, France, Italy, Spain and Poland, and in some of medium-sized countries such as Sweden, Portugal and Greece, also Ireland. Several countries had a separate operational programme designed solely for the capital city region, especially in a situation when the capital and its surroundings were not classified as a poorly developed region, as e.g. in the Czech Republic and Hungary.

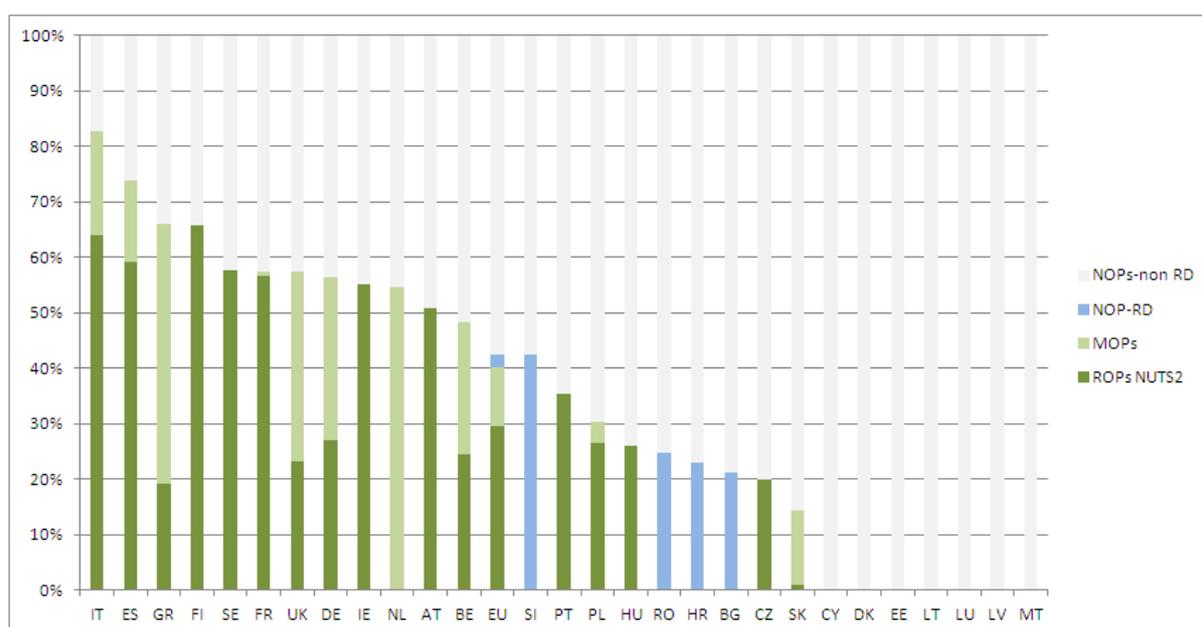
Financing of regional programmes

No less important than the role that regional/multiregional programmes or national programmes with a regional dimension play in the process of Cohesion Policy programming is the share of these funds which is earmarked for their execution. A relevant comparison of the two most recent programming periods shows the changes that have taken place under the current perspective (Fig. 8).

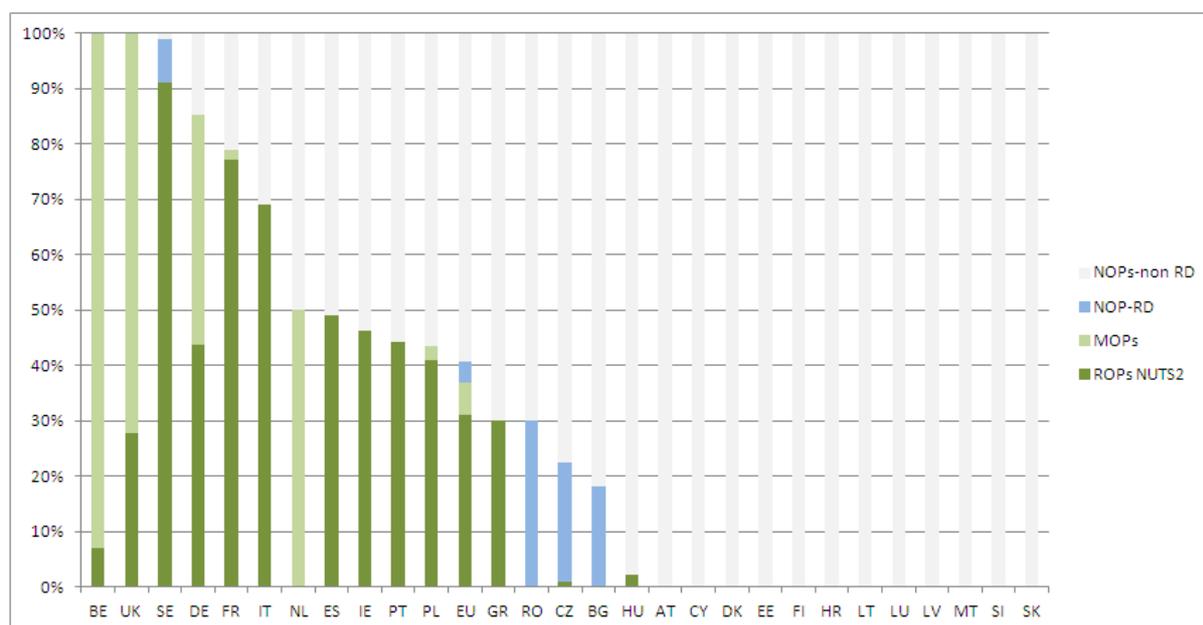
In 2007-2013, most countries (all except seven) were implementing programmes either regionally/multiregionally or as part of an integrated national operational programme. In terms of decentralisation measured by the funds allocated to these programmes, the countries of Southern Europe were particularly conspicuous, i.e. Italy, Spain and Greece. However, this group may also include Finland, where two thirds of all Cohesion Policy funds were earmarked for such programmes. In another seven countries, as a rule situated in North-Western Europe (with the exception of Austria), this share was higher than 50%, and reached nearly 50% in Belgium. In the Central and Eastern European countries, this value in most cases was below 30%, except Slovenia, where it exceeded 40% (although in the latter case, the NUTS3 regional programme was integrated at national level). This group also included Portugal. On the other hand, no regional programmes have been set up as yet in the remaining countries, a group made up solely of countries being NUTS2 regions (except Denmark).

Fig. 8. Share of funds allocated to regional/multiregional programmes in the recent financing perspectives

a) 2007-2013



b) 2014-2020



*ROPs – Regional Operational Programmes, MOPs – Multiregional Operational Programmes, NOP RD – National Operation Programmes with a regional dimension

Source: authors' own elaboration based on [3] and [8]

The years 2014-2020 saw a distinct change whereby the number of countries with regional programmes was reduced to 17 (including Hungary with a financially modest programme for the Budapest region). On the other hand, owing to the multi-fund principle adopted in two countries (Belgium and the United Kingdom), regional or multiregional programmes had a 100% share in the Cohesion Policy funds, whereas in Sweden their share was above 90%, alongside the national regional programme which provided additional support. In three other large countries – Germany, France and Italy – the share of these programmes ranged between 70% and 85%, and in another five countries – between 40% and 50%, that is above the EU average, mostly on account of their regional programmes (except the Netherlands, where these programmes covered NUTS1 macroregions). One last country where regional programmes played a tangible role financial was Greece, with a share of 30%. In other countries, i.e. Romania, Bulgaria and the Czech Republic, the issue of regional development was addressed in the national programme (even though in Bulgaria this was rather an urban policy), but their share in the overall allocation was not above 30%. In the remaining 12 countries, Cohesion Policy funds were allocated to the implementation of national programmes, also those where regional programmes played a significant part in the earlier regional perspective (e.g. Austria or Finland).

Governance and Cohesion Policy implementation

Governance and regional authorities

There is a wider range of classifications of European countries in terms of their administrative structures. All of these categories, except two broad ones such as centralised unitary states and federal states, are rather fluid owing to the varying degrees of decentralisation of their administrative structures which, depending on the role played by the regional authorities, can be described as

decentralised or regionalised (e.g. ESPON 2.3.2, 2006). In parallel, it should be borne in mind that these categories do not grasp all the situations that are possible at the regional level, also due to the specific status of certain areas, as a rule motivated by historical reasons (e.g. Northern Ireland, Åland Islands, Corsica, etc.).

Among the EU countries, the most common are centralised unitary states (14), some of them being so small that they are distinguished as NUTS2 units (six countries) (Tab. 1). In the remaining countries from this group, the NUTS2 level is mainly statistical in character, although in some countries this level is used for the programming/implementation of Cohesion Policy (e.g. Ireland, Portugal). Another large and varied group comprises decentralised unitary states, with self-governing authorities at regional level (even though their position in light of the NUTs nomenclature can vary, both at NUTS2 and NUTS3 levels) and a varied scope of competencies. However, not in all of these countries these authorities are involved in the implementation of Cohesion Policy (e.g. Czech Republic, Finland in the current programming perspective). On the other hand, where regions enjoy a high degree of autonomy we can speak of regionalised states, which is notably epitomised by Spain, also the United Kingdom and its regions, and, to a lesser extent, in Italy's regions. One last group of countries with the highest degree of decentralisation includes federal states made up of regions (Länder) at the NUTS2/NUTS1 level in the case of Germany and Austria, and the historic NUTS1 regions in the case of Belgium.

Such decentralisation may to a varying degree apply to regions corresponding to the NUTS2 level used for the purposes of Cohesion Policy throughout the Community, particularly in view of the fact that individual countries have their own distinctive administrative traditions expressed by the operation of a two or three tier territorial administration. In general, 18 EU countries have various forms of territorial self-governance at supralocal level, including 12 with the NUTS2 level and 7 where such authorities were also operating at the NUTS3 level (cf. CEMR, 2011).

The local level may also be quite pertinent for the implementation of Cohesion Policy since it is where various types of projects co-financed from Cohesion Policy funds can be prepared. The significant role of the authorities at this level is manifested by their share in overall public expenditure in a given country (cf. OECD 2015). Overall, four groups of countries can be identified here. The first brings together three Nordic countries characterised by a very high share of local governments in general government expenditure, led by Denmark with 62.2%, followed by Sweden (49.3%) and Finland (40.1%). The second group comprises, on the one hand, three old Member States (the Netherlands, Italy and United Kingdom), and on the other, three new Member States (Poland, Czech Republic and Estonia). The role that local governments play is less pronounced but still substantial financially (above 15%) in France, Germany and Austria, plus Slovenia, Slovakia and Hungary. In the remaining countries, the level in question is relatively of little significance, which is particularly strongly visible in Greece (6.1%) and Ireland (7.5%).

The existing variations of the administrative structures in individual countries can potentially affect the role played by regional programmes and the implementation of Cohesion Policy. For example, it can be expected that the more federalised, regional or similar the system, the potentially greater propensity of the authorities for decentralisation, that is delegating the management of Cohesion Policy implementation to the authorities at the level of NUTS2 regions. On the other hand, it is emphasised that this correlation is not straightforward, and wide differences are likely to occur in this regard between individual countries (EP 2014).

Tab. 5. Governance system and Cohesion Policy implementation

	Governance system	Cohesion Policy implementation
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Member State	Characteristics	NUTS 2 regions	Self-government at regional level	Share of local authorities in public expenditure*	Role of regional authorities**	Level of regions	System of implementation***
Austria	Federal	YES	YES (NUTS2)	15.1	Regionalised (x)	NUTS2	EU 'subsumed'(x)
Belgium	Federal	YES	YES (NUTS1/NU TS2)	13.2	Regionalised	NUTS1/NU TS2	Differentiated
Bulgaria	Centralised	YES		n/a	Centralised		EU 'dominant'
Cyprus	Centralised			n/a	Centralised		EU 'dominant'
Czech Republic	Decentralised	YES	YES (NUTS2)	27.0	Mixed (x)	NUTS2	Differentiated (x)
Germany	Federal	YES	YES (NUTS1/NU TS2)	16.9	Regionalised	NUTS2	EU 'subsumed'
Denmark	Centralised	YES	YES (NUTS2)	62.2	Centralised		EU 'subsumed'
Estonia	Centralised			23.2	Centralised		EU 'dominant'
Greece	Decentralised	YES	YES (NUTS2)	6.1	Centralised (x)	NUTS2	EU 'dominant'
Spain	Regionalised	YES	YES (NUTS2)	11.3	Mixed	NUTS2	EU 'subsumed'
Finland	Decentralised	YES	YES	40.1	Mixed (x)	NUTS2	Aligned (x)
France	Decentralised	YES	YES (NUTS2/NU TS3)	19.7	Mixed	NUTS2	Aligned
Croatia	Centralised	YES	YES (NUTS3)	n/a	n/a		n/a
Hungary	Centralised	YES	YES (NUTS3)	15.6	Centralised	NUTS2	EU 'dominant'
Ireland	Centralised	YES		7.5	Mixed	NUTS2	Aligned
Italy	Regionalised	YES	YES (NUTS2/NU TS3)	27.7	Regionalised	NUTS2	Aligned
Lithuania	Centralised			n/a	Centralised		EU 'dominant'
Luxembourg	Centralised			10.2	Centralised		EU 'dominant'
Latvia	Centralised			24.9	Centralised		EU 'dominant'
Malta	Centralised			n/a	Centralised		EU 'dominant'
Netherlands	Decentralised	YES	YES (NUTS2)	31.6	Regionalised	NUTS1	Differentiated
Poland	Decentralised	YES	YES (NUTS2)	30.4	Mixed	NUTS2	EU 'dominant'
Portugal	Centralised	YES		12.1	Mixed	NUTS2	Aligned
Romania	Centralised	YES	YES (NUTS3)	12.1	Centralised (x)	NUTS2	EU 'dominant' (x)

Sweden	Decentralised	YES	YES (NUTS ₃)	49.3	Centralised (x)	NUTS ₂	Differentiated (x)
Slovenia	Centralised	YES		18.7	Centralised	NUTS ₃	EU 'dominant'
Slovakia	Decentralised	YES	YES (NUTS ₂)	16.4	Centralised	NUTS ₂	EU 'dominant'
United Kingdom	Regionalised	YES	YES	25.2	Regionalised	NUTS ₂ /Other	Aligned

Sources: * OECD Fiscal Decentralisation Database (data for 2015), ** data for 2007-2013 (SWECO 2010 after Bachtler et al. 2006), *** data for 2007-2013 (Ferry et al. 2007), (x) significant changes in the 2014-2020 programming perspective.

The role of regional authorities in Cohesion Policy implementation

A typology of Cohesion policy management models distinguishes three types (EPRC 2008): a) centralised, where full responsibility rests with the central government and its agencies; b) shared management, where the responsibility is divided between the central government and the self-governing authorities at the regional level; c) decentralised, with the responsibility assumed by the regional government or intermediate institutions. It should also be pointed out that major changes were made in the subsequent rounds of Cohesion Policy programmes. In the strictly regional approach (SWECO 2010 after Bachtler et al. 2006), centralised, regionalised and mixed systems could be distinguished in the 2007-2013 perspective.

The centralised system was characterised by the leading role played by the national level, particularly by ministries and other government agencies responsible for preparing, implementing and monitoring of operational programmes. Even if the regional level was involved in the implementation of Cohesion Policy, its position was very weak. Such a system was typical of smaller countries such as Denmark, Lithuania, Estonia, Latvia, Slovenia, Hungary, Cyprus, Malta, Luxembourg, but its certain manifestations in the 2007-2013 perspective were also visible in Greece, Sweden and Romania. The latter countries saw relatively considerable changes in the present programming period.

At the other extreme was the regionalised system with the competencies being delegated to the regional level, found typically in countries with a federal structure such as Germany, Austria (albeit with serious changes in the present programming period in the latter), Belgium, also Italy and the Netherlands.

The final, mixed type, the outcome of the aforementioned arrangements and assuming limited empowerment of the regional tier in Cohesion Policy implementation, was found in Poland and the Czech Republic (although the latter country witnessed some changes in the current perspective), United Kingdom and Ireland, France and Spain, plus Portugal. In the implementation of Cohesion Policy, the NUTS₂ level is used most frequently (in 15 countries), whereas the NUTS₁ level is the prevalent one in the Netherlands and Belgium, and NUTS₃ is sometimes used on an auxiliary basis, especially in smaller countries (e.g. system of regional development agencies in Slovenia).

The existing administrative structures may be used for the implementation of Cohesion Policy in a number of ways. Generally speaking, three basic types of such arrangements can be distinguished (Ferry et al. 2007). In the first model, decisions on the implementation of Cohesion Policy are made by the same institutions that deal with national policies, a system that can be dubbed as integrated. In the 2007-2013 period, this was the prevalent mode of Cohesion Policy implementation found in 17 countries (SWECO 2010). The model comes in two subtypes, viz. a) subsumed, in which EU funds were subordinated to the national programmes, and typically employed by Germany, Austria, Denmark and Spain, and b) dominant, in which the role of EU funds was so critical that they

determined the focus of the national programmes, a situation observable in 13 countries, including nearly all new Member States (except the Czech Republic), Greece and Luxembourg. At the other extreme was a differentiated system in which new institutions specifically dedicated to the delivery of Cohesion Policy were set up; this was the case of Belgium, the Netherlands, Sweden plus the Czech Republic. In between these arrangements was the so-called aligned category, in which both systems, i.e. domestic and European, were separate but there existed well-developed mechanisms for coordinating activities between them. In the 2007-2013, this system was in place in the United Kingdom, Ireland, France, Italy, in addition to Finland and Portugal.

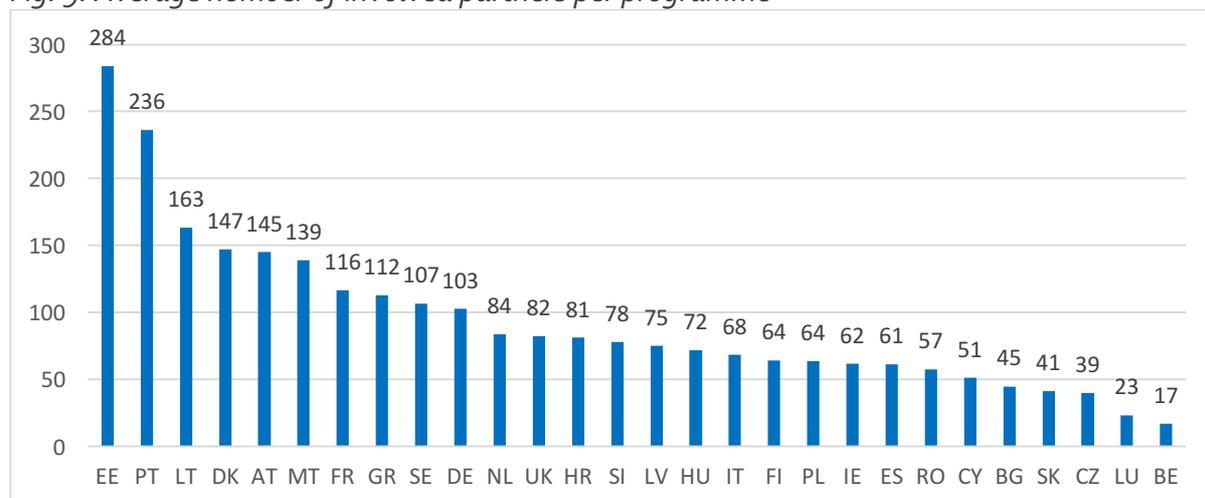
A comparative study of case studies (EP 2014) carried out for the present programming perspective found that, in many cases, no major changes in the administrative structures responsible for programme management could be observed despite the substantial centralisation of operational programmes described in this part of the report. A more detailed analysis of the relevant solutions will also be provided as part of case studies being carried out during the Cohesify project.

The role of partnerships in implementation of Cohesion Policy

EU increasingly tries to ensure that a broad range of stakeholders is involved at all stages of the implementation of Cohesion Policy. With this aim, in the 2014-2020 funds legislative framework, a European Code of Conduct on Partnership (CoC) has been set up. This code aims to reinforce the partnership principle which has been a regulatory obligation during previous periods. Member states are required to establish a partnership for each Partnership Agreement and each European Structural and Investment Fund programme. Partnerships should include various types of stakeholders, above all: different public authorities, economic and social partners, non-governmental organisations, including civil society and environmental voluntary organisations, etc. In particular, groups that may be affected by the given programme have to be represented.

This regulatory shift increased awareness and visibility of the partnership principle (SWECO *et al.* 2016). In consequence, the overall level of stakeholder involvement has improved in current programmes in comparison to the previous programming period. However, the level of participation varies across programmes and countries. In 23 EU countries, all programmes (except European Territorial Cooperation programmes) involved some partnership. But, in some cases the partnership was not observed: it is the case of 3 out of 7 Hungarian programmes (43%), 1 out of 3 Belgian programmes (33%), 4 out of 34 French programmes (12%), 2 out of 17 Greece programmes (12%), and 3 out of 29 Italian programmes (10%). An average number of involved partners per programme varied largely among countries. The lowest numbers were observed in Belgium (17 partners per programme) and Luxembourg (23). The highest partners' involvement was recorded in Estonia (284) and Portugal (236). All in all, the number of involved partners was reasonably high. In ten countries the average number of partners per programme exceeded 100. In 13 countries it was between 50 and 100. Only in 5 cases less than 50 partners per programme (on average) was involved (see Fig. 9).

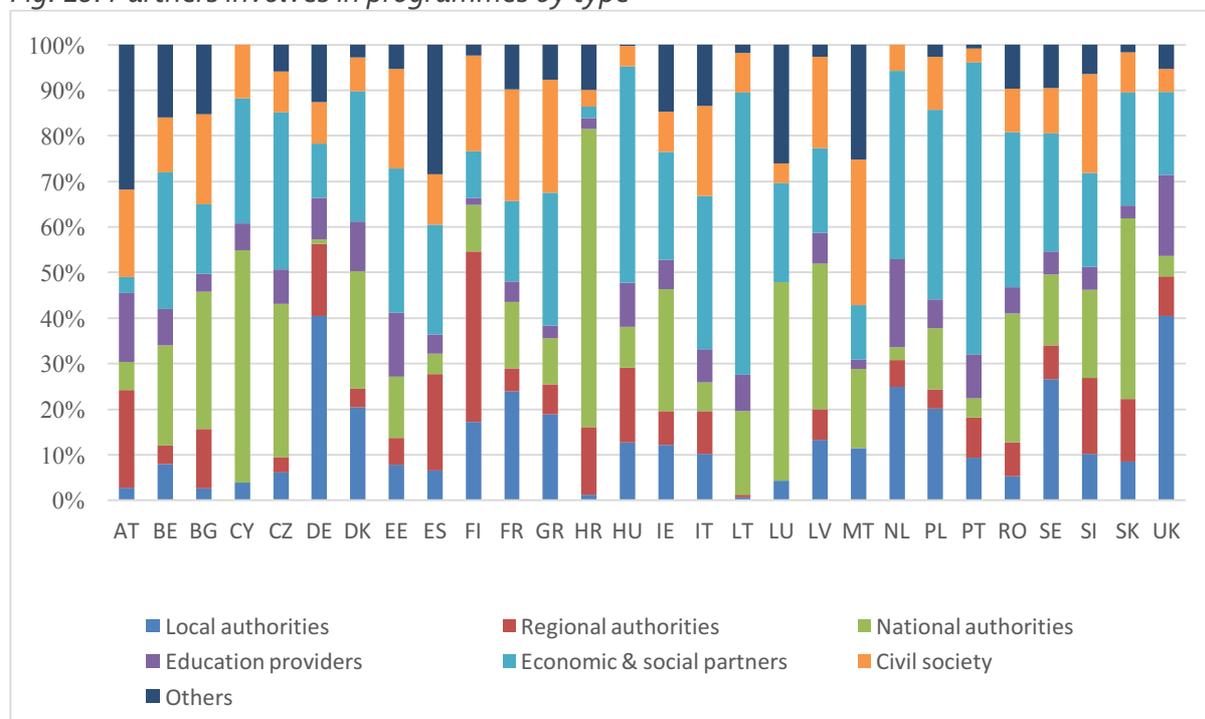
Fig. 9. Average number of involved partners per programme



Source: Own calculation based on: EU (2016).

Regarding the type of involved partners, the most frequently represented groups were: economic & social partners (26.8 per programme), local authorities (19.7) and civil society (13.8). Other groups were of slightly lesser importance: national authorities (10.3), regional authorities (9.9), and education providers (9.1). A significant group of stakeholders was labelled as “others” (10.9). Partnerships composition largely varied among countries (see Fig. 10) due to the differences in governance, administrative structures, the existence of different cultures and historical legacies.

Fig. 10. Partners involves in programmes by type



Source: Own calculation based on: SWECO et al. (2016).

The 2016 assessment of the partnership principle concluded that it contributes to the implementation cohesion policy in three ways: “Firstly, it ensures that experience and technical know-

how is considered during decision-making processes, enabling better thematic balance and focus. This can be exemplified through countries such as Estonia, Cyprus, Bulgaria, Ireland, Slovenia, Poland, Latvia and Malta. Secondly, the partnership principle brings commitment and ownership and thus facilitates policy implementation, such as could be observed in Estonia, Ireland, Bulgaria, Malta, Finland, Cyprus, Poland, the Netherlands, Germany, Spain, Sweden and Slovakia. Thirdly, the interviews show that partnerships have brought about complementarities in respect of other policies, strategies and funding sources in Finland, Poland, Bulgaria, Spain and Slovenia” (SWECO et al. 2016, p. VIII-IX).

Conclusions

There exist wide-ranging variations in the programming and implementation of Cohesion Policy in individual Member States concerning the relationships between the national and regional levels. Firstly, this is associated with the placing of territorial programmes in the overall Cohesion Policy management structure. Put simply, four model situations can be distinguished in that regard. In the first, a given country is implementing national programmes only; in the second, one of such programmes involves regional development; in the third territorial programmes are in place, but only at supraregional level, and finally, in the fourth regional programmes are designed at the NUTS2 level, which is also used for Cohesion Policy programming.

Secondly, it is the size of the allocation that determines the role of the regional Cohesion Policy component, particularly the share of funds earmarked for the implementation of programmes with a regional dimension. In this case, roughly four types of countries can be distinguished, ranging from those where nearly all Cohesion Policy funding is spent as part of regional programmes, those where the share of such programmes is relatively low, i.e. under 30%, to those which do not employ the regional tier at all. It should also be pointed out that while in the current programming perspective the number of countries with regional programmes has fallen in comparison to the previous perspective, in those countries where such programmes exist they, as a rule, have been strengthened financially, usually as a result of the allocation being combined under the ERDF and the ESF mechanisms.

The role of regions, including the self-governing regional authorities, in implementing Cohesion Policy programmes – indicated by the degree of delegating competences by the central authorities on one hand and by the use of the existing administrative structure for Cohesion Policy purposes on the other – was similarly varied. In the majority of countries with NUTS2 regions, and particularly those with self-governing authorities, such regions were used for the purposes of Cohesion Policy implementation, albeit with a varying degree of involvement. In some cases, however, an independent system dedicated to Cohesion Policy implementation was developed despite such regional structures being already in place. What is more, significant changes could be observed in that respect in individual programming periods, in some cases being introduced in response to the administrative reforms put in place by individual countries. Additionally, regional authorities were involved in programme implementation in the framework of the Partnership Principle (together with local authorities, economic and social partners, civil society, etc.), However, the intensity of this involvement varied largely among countries.

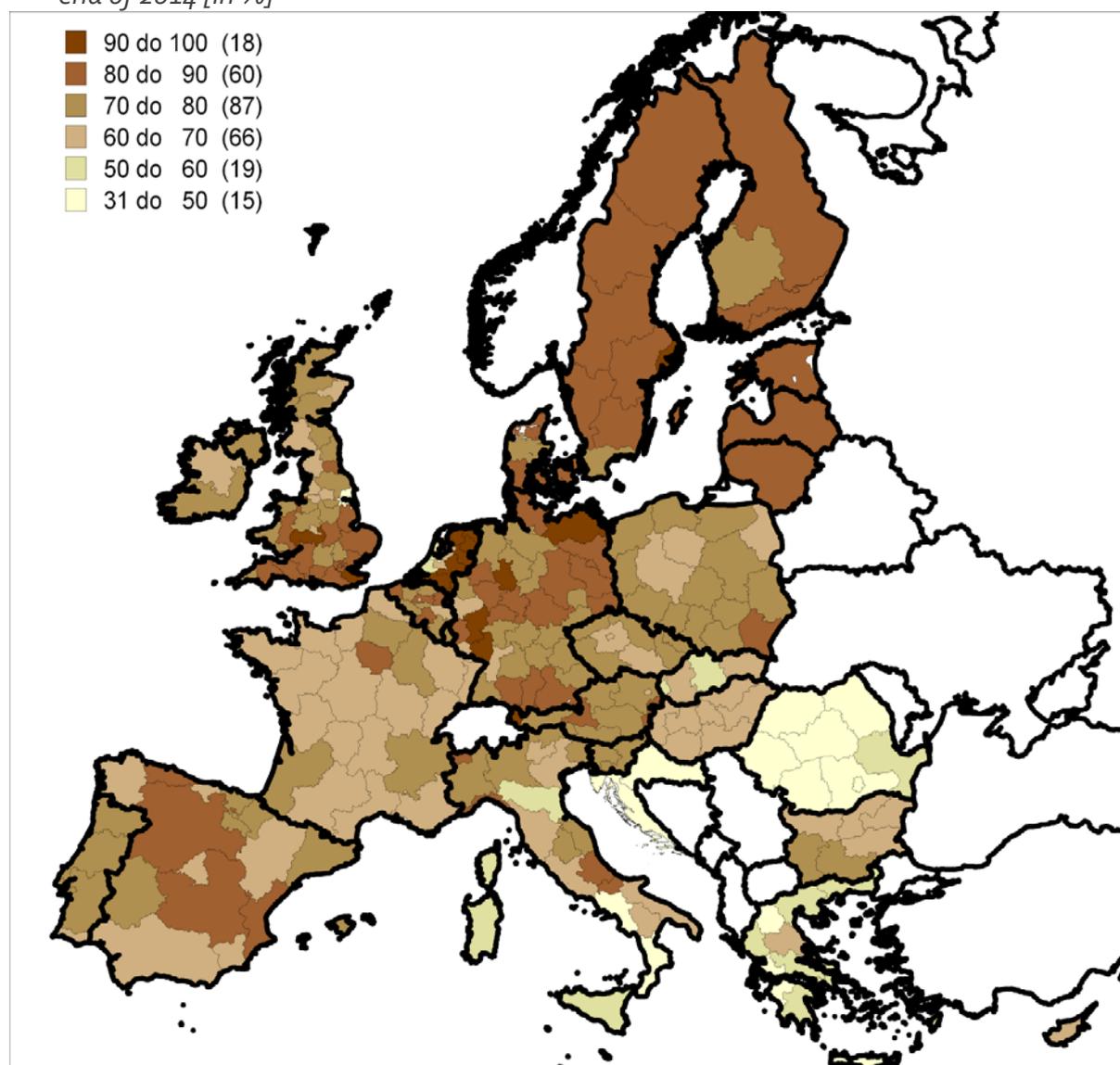
2.4. Implementation effectiveness: The absorption and regularity of expenditure

The level of spending of the allocated resources is the primary indication of CP implementation effectiveness. Absorption rate (expenditures as a percent of allocation) is also a key indicator used in the on-going monitoring of programmes. On the other hand, adopted implementation measures and approaches, as well as administrative structures and cultural factors influence the absorptive capacity

of countries and regions. Based on these assumptions one can expect that the absorption rates across European regions would vary significantly. The data that describes 2007-2013 programming period support this expectation.

The absorption rate of the funds allocated in the 2007-2013 programmes, measured at the end of the 2014, shows considerable regional differentiation (Fig. 11). Somewhat surprisingly, the complete absorption of allocated resources is a rare exception. Absorption rate above 90 percent was observed in only 18 regions (mainly German and Dutch). On the other hand, absorption rate below 50% is not very uncommon – this case was identified in 15 regions. The worst performing regions in terms of allocations are located mainly in Romania and Croatia. Also selected regions in Greece and southern Italy show very low absorption rates. Nonetheless, in the majority of European regions absorption rate amounts between 60 and 70 percent. Higher absorption rates can be found in regions located in well-developed countries, which are known for good quality of governance, e.g. Sweden, Finland, Denmark, the Netherlands. In a number of countries interesting internal differences can be found. This is the case of Italy, Germany, the United Kingdom, Spain. In France the capital region clearly outperforms other territories. The spatial pattern of absorption rates has to be interpreted in the light of the levels of allocation. Frequently, low absorption rates can be found in regions and countries that enjoy high allocations in per capita (e.g. already mentioned Romania, Greece, to some extent also Hungary and Slovakia). This can suggest that in these cases implementation quality was unsatisfactory and massive available funds exceeded the national/regional absorptive capacities. However, the difficulties in dealing with high allocation can be avoided. What is evidenced by high absorption rates reported in Baltic countries, but also in Spain, and to a lesser extent in Poland, Czech Republic, Slovenia and Bulgaria.

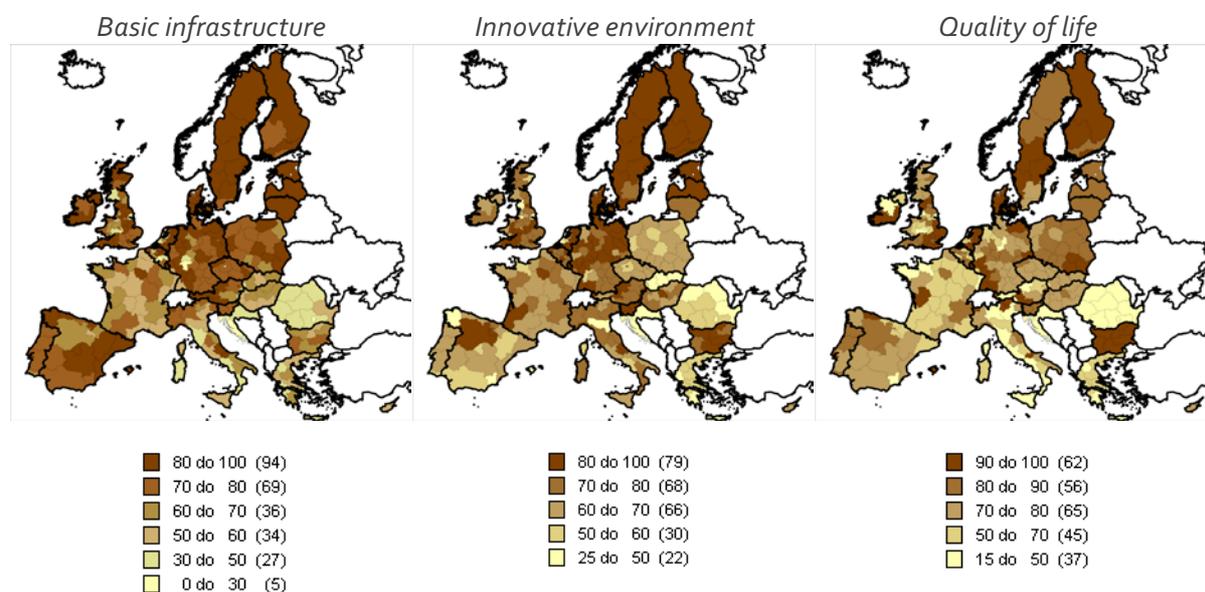
Fig. 11. Absorption rate of the CP 2007-2013 – expenditures as a per cent of allocation at the end of 2014 [in %]



Source: authors' own elaboration based on [1]

Noteworthy, absorption rates vary in relation to the type of the intervention. The highest absorption rates are observed in the "basic infrastructure" category (see Fig. 12). This can be due to the relatively simple implementation of projects in this category and their high costs. The absorption rates differ not only between thematic categories but also among countries within a given category. A case in point is Poland. The country enjoys very high absorption rates in terms of basic infrastructure, high rates in terms of quality of life, but rather modes rates in innovative environment category (similar pattern can be found in Czech Republic and Slovakia). This clearly shows that absorptive capacity is not a one-dimensional facet.

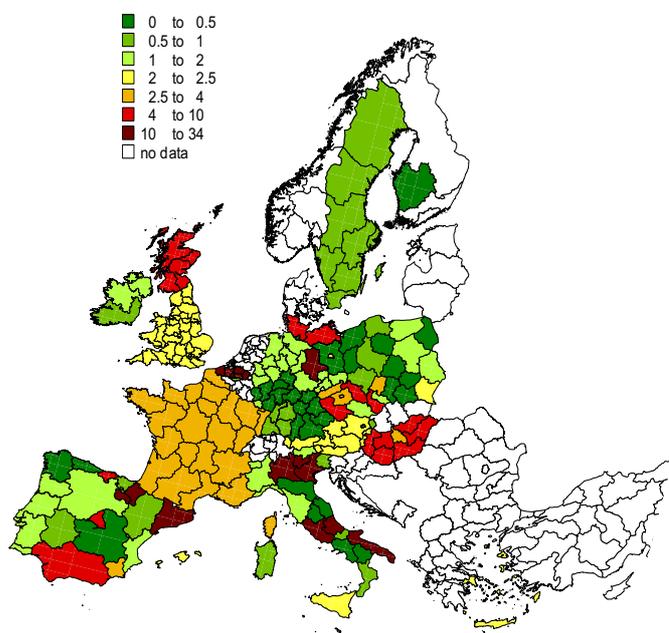
Fig. 12. Absorption rate of the CP 2007-2013 by type – expenditures as a per cent of allocation at the end of 2014 [in %]



Source: authors' own elaboration based on [1]

High absorption of available resources does not necessarily mean that the intervention was compliant, effective or efficient. The most simple indicator of non-compliance is the error rate defined as a percentage of expenditure that have been questioned by the European Commission in audit reports and by the national Courts of Auditors. Regrettably, those data are very selective (programme level, not for all programmes, etc.) and do not allow for the proper regional level analysis (see Fig. 13). However, some light on the issue can be shed by the analysis of achievements of the CP (see next section)

Fig. 13. Error rate identified in CP programmes 2013 – percentage of funding subject to financial corrections produced by the European Commission in audit report and by the national Courts of Auditors



Source: EIBURS project (Administrative Capacity-Building and EU Cohesion Policy).

2.5. Policy effectiveness: achievements and growth

The overriding goal of Cohesion Policy is to strive to ensure that the residents of all European Union regions enjoy good and relatively similar standards of living. As one would expect, the living conditions are less favourable in regions with a lower level of economic development, hence they can be improved by increasing the dynamics of economic processes. This leads to providing funds to less developed regions with the assumption that this will boost their economic growth and thereby improve the standards of living of their residents. This reasoning, however, is based on the assumption that external injections foster economic growth, an assumption that in many cases is at best questionable. In reality, the following processes could be observed (Rodriguez-Pose, Fratesi, 2004):

- The interregional differences have been growing in most countries, especially in the new EU Member States and other countries that have undergone accelerated socio-economic restructuring (e.g. Smętkowski 2013). This manifested itself mostly in the metropolitan – non-metropolitan dimension, in spite of all the attempts to overcome this differentiation and ensure that the less developed regions are growing faster than the more developed ones, to achieve at least beta-convergence, with some hopes for sigma-convergence in the longer run.
- Even massive spending in less developed regions has not accelerated their growth. As a result, funds earmarked for regional growth have had mostly social impact, and in several cases led

to the emergence of dependency culture (rent-seeking strategies) from both national and international donors.

- Traditional orientations of regional policies – with a bias towards basic, hard infrastructure – have in many cases diminished the structural competitiveness of lagging regions through delaying the development of human capital and improvement of institutional infrastructure.
- Institution building in several lagging countries and regions has probably been the weak spot in the efforts to achieve a more cohesive economy, society and territory of the European Union. This hypothesis is being currently validated by the nature and development of the economic crisis of the Eurozone and several Member States which (being triggered by the financial crisis) had institutional (and psychological) roots on all levels – the EU political leadership, the political elites in the Member States and the societies of the EU countries.

These patterns have not, in fact, changed in a dramatic way till now. As a result, we witness a strong persistence of the 'regional problem(s)' in several countries. The empirical evidence demonstrates a strong durability of historical regional patterns in spite of the hopes that these patterns would be changed by massive external assistance to the less well-off regions. Why does it happen? Why cannot the regional policies achieve their ambitious goals? There are several reasons for this.

Firstly, two opposing tendencies can be observed. In search of lower costs of production, capital is moving from the more expensive (higher developed) places (countries, continents) to the cheaper (less developed) ones. However, having arrived in such a 'cheaper' country, the capital seeks the most prosperous places that offer the best external conditions for economic activity. Thus, both theoretical approaches are correct: interregional differences in the level of development have a 'natural' tendency to equalise (labelled as the neoclassical approach); and the opposing one stating that 'by nature' the level of development has to be polarised (various theories from cumulative causation through growth poles to New Economic Geography). The first theoretical standpoint seems to be correct on the international scale while the second on the intranational, interregional scale. As a result, we witness international convergence, and at the same time interregional (intranational) divergence.

There is little that regional policy can do to counter these trends. This is because the end of the last millennium exacerbated the equity-efficiency dilemma. In the industrial ('Fordist') model, locating an industrial investment in a peripheral territory could have had positive effects on the regional economy. Such an investment was usually financed from public resources, since the state - according to the Keynesian principles – was an active economic actor. This is no longer the case in the current economic model, in which decisions on investment are no longer taken by public authorities but by private agents (mostly by the TNCs), and the quality of territorial business, social, institutional and natural environment are the most important factors in selecting the location for the new enterprise. Thus nowadays the lagging, peripheral regions may be in an even worse and less promising position than was the case some 30 years ago, and the only opportunity for the state – supporting innovation and research – is not producing the anticipated results.

It should also be indicated here that the specific type of advanced regions is currently of special importance - the metropolises. 'Metropolises govern the world', as Castells (1998) says. They concentrate management, finance, culture, innovations, and metropolisation is the most strongly pronounced process in most of the catching-up economies. Moreover, there is no relocation of metropolitan functions from the expensive 'core' to the cheaper 'periphery', since only the metropolitan cores can perform them.

These processes also explain why there seems to be a positive correlation between the rate of GDP growth and interregional differentiation. The catching-up countries – especially in CEE, but also

Ireland in the 15-year period 1994-2009 – have been growing rapidly at the expense – and maybe even because of – their increasing regional divergence (Smętkowski 2014). This corroborates the 'old' Williamson's (1965) hypothesis, which suggests that at the initial stages of development regional differentiation increases with the process of growth, while at the more advanced stages it begins to decrease.

Many empirical analyses were carried out in individual Member States and at the EU level to evaluate the effects of Cohesion Policy (Rodriguez-Pose, Fratesi, 2004; Bachtler, Gorzelak, 2007; Marzinotto, 2012; Molle, 2015; McCann, 2015; Gorzelak, 2017; Bachtler et al., 2017). The findings from these studies are not unequivocal: according to McCann (2015), the literature of the subject both presents the view that the Cohesion Policy intervention drives territorial convergence in individual countries and one that it in fact has an opposing effect, and actually widens territorial divergence. In parallel, others emphasise that Cohesion Policy does not affect territorial differentiation in any considerable way. The Cohesion reports published by the European Commission increasingly point to the co-existence of convergence between the Member States which, however, undergo internal territorial divergence, mainly as a result of the metropolisation of development processes.

Some analyses indicate that the success of Cohesion Policy depends on a wide array of conditions which need to be met. The clearest message is given by Mohl (2013) who states that 'Cohesion Policy does, in fact, have a positively significant impact on economic growth if the quality of the institutional setup is high (Ederveen et al., 2006), the governmental structures are decentralised (Bähr, 2008), or if it is spent for less-developed regions (Ramajo et al., 2008)'. The same author suggests that the funds have a significant positive impact on the total employment level in regions with a low share of low-skilled population, and have a negative effect in the case of a high share of low-skilled population. This means that the policy targeted mostly at the less developed regions has the least effect there which may be caused by the "resistance" of these regions (due to their structural challenges) to acceleration of economic growth.

This mixed picture of the overall impact of Cohesion Policy on development paths of particular regions may be due to the fact that this policy has long-range effects which might be difficult to capture in the mid-term perspective. Moreover, in the less developed regions it may be conceived as alleviating their deficiencies in the 'necessary conditions' for development (like basic infrastructure), and not being able to provide impulses for 'sufficient conditions' like attractiveness for external investment. How these 'necessary conditions' are later used for the economic "take off" is a matter of many other factors and processes.

Nevertheless, Cohesion Policy is acknowledged and positively received in these Member States where it is important. As the Eurobarometer of 2015 indicates (Flash no. 423) in the southern and eastern Member States the visibility of this policy is high (up to 78% of respondents in Poland being aware of projects financed by the Cohesion money), and the effects of this policy for the respondents' region or city being positively evaluated – in general – by three quarters of those who had noticed the activity of this policy. The negative opinions were delivered by only one third of the respondents, and it has to be stressed that this share has been diminishing over time.

These results suggest that Cohesion Policy – despite its under achievements – is a strong common policy of the European Union and its Member States, and that its reforms already achieved and planned for the future should result in stronger achievements and a wider and more positive perception among EU citizens.

This part of the report offers an analysis of selected achievements of Cohesion Policy, both in the general dimension expressed by the number of created jobs, as well as in the thematic analysis of different sectors including research and development, support for small and medium-sized

enterprises, and the role of transport and environment investments. The final section examines the impact on regional growth based on correlational analysis.

New jobs

Newly created jobs are among the most popular indicators illustrating the results of Cohesion Policy. It is estimated that Cohesion Policy funds led to a total of 940,000 new jobs created in the years 2007-2014, with an annual increase of some 200,000 per year since 2011 (InfoREGIO 2017). The information about the number of new jobs is derived from the Annual Implementation Reports prepared by all the Member States. The information submitted to the European Commission includes the data on the number of jobs created directly as a result of EU co-financed projects (Box 1). However, the requirement of the direct effect means that certain categories of intervention will play a greater role in that regard, especially those connected with assistance to enterprises. As a result, the categories which were, in simplified terms, defined in Part 2.2. of the Report as those promoting the development of an 'innovative environment' affect that particular indicator more significantly than the remaining categories. The latter include mainly outlays on the development of 'basic infrastructure', whose direct impact on the labour market is rather insignificant but which may create conducive conditions for economic development, including entrepreneurship, and increase employment in the already operating businesses.

Box 1. Definition of 'jobs created'

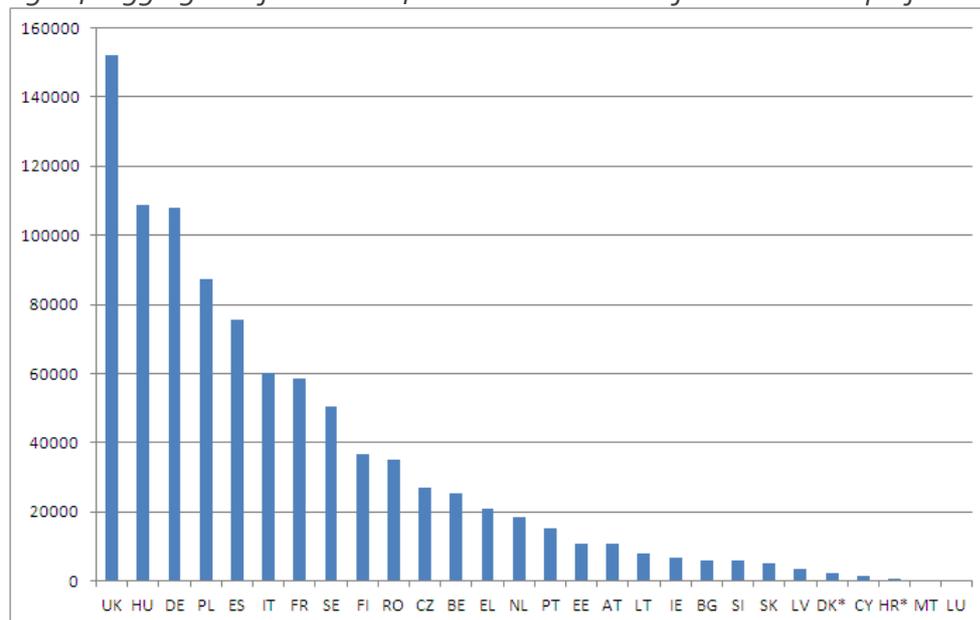
Jobs Created; *Gross direct jobs created, full time equivalents (FTE): A new working position created (did not exist before) as a direct result of project completion (workers employed to implement the project are not counted). The position needs to be filled (vacant posts are not counted) and increase the total number of jobs in the organisation. Full-time equivalent: Jobs can be full time, part time or seasonal. Seasonal and part time jobs are to be converted to FTE using ILO/statistical/other standards. Durability: Jobs are expected to be permanent, i.e. last for a reasonably long period depending on industrial-technological characteristics; seasonal jobs should be recurring. Gross: Not counting the origin of the jobholder as long as it directly contributes to the increase of total jobs in the organisation*

Source: EC 2009

This entails potential variations across individual countries as far as jobs are concerned, which may be due to the dissimilar thematic structures of Cohesion Policy expenditure. This is corroborated by the data provided in the *Core Indicator Database* (EC 2017) (Fig. 14) that show considerable differences observable between EU countries. On the other hand, the scale of such differences may suggest other reasons than the one indicated above, notably those arising from the dissimilarities in the systems of monitoring and reporting effects functioning in individual countries.

It can be said on the basis of these data that, until 2014, the highest number of new jobs were created in the United Kingdom (ca. 150,000). The only countries except the UK where the threshold of 100,000 new jobs was exceeded were Germany and Hungary. According to the reports, Cohesion Policy had a strong bearing on the labour market also in Poland, Spain and Hungary, in which between 60,000 and 90,000 new employees found work. In contrast, the highest numbers of new jobs in countries which were neither Cohesion Fund beneficiaries nor had any Convergence regions were recorded in France, Sweden and Finland. It should also be noted that, in many smaller countries, the number of new jobs did not exceed 10,000.

Fig. 14. Aggregated jobs in 2014 created as a result of ERDF and CF projects



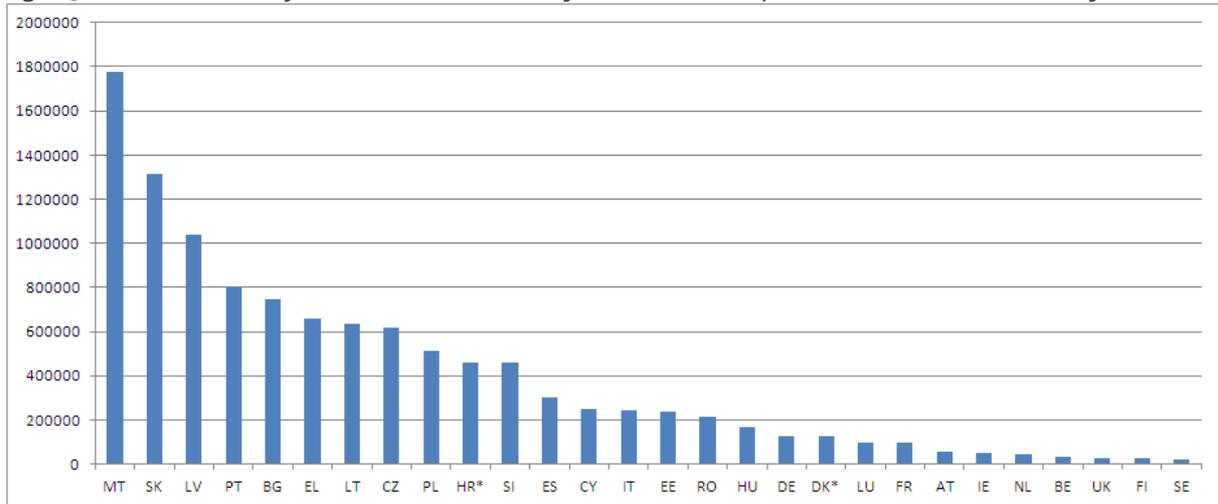
*estimations based on the assumption that the 'cost effectiveness' of created jobs is the same as in the neighbouring country – in case of Denmark - Germany, in case of Croatia - Slovenia.

Source: own elaboration based on Core Indicator Database EC (2017)

To determine the 'effectiveness' of Cohesion Policy for the creation of new jobs, the number of such jobs may be related to the size of the expenditure made as part of such an intervention. However, taking into account the above-mentioned reservation concerning the impact of the intervention structure on the results achieved and the disparities in the level of economic development (and the currency rates) between individual countries – let alone the dissimilar levels of co-financing – this indicator should be regarded as a general indication of Cohesion Policy effects on the creation of new jobs. To put it simply, the lesser expenditure needed for the creation of one new job, the more justified the conclusion that a given intervention was oriented towards job creation. In interpreting those results, the potential differences in the monitoring and reporting systems should also be borne in mind.

In effect, it can be concluded that Cohesion Policy was 'oriented' towards job creation mainly in North-Western Europe, especially the Nordic countries, the Benelux, Germany, France, United Kingdom and Ireland (Fig. 15). On the other hand, in the group of countries from Southern Europe and those from Central and Eastern Europe, those that most closely followed the aforementioned model included Italy, Spain and Cyprus in the former, and Hungary, Romania and Estonia in the latter group. In the remaining countries, the 'orientation' towards job creation remained weak. At the same time, the distinctness of certain countries, manifested by very high expenditure in relation to the created new jobs, observable in Malta, Slovakia and Latvia, probably arose from the differences in the system of monitoring and reporting Cohesion Policy results.

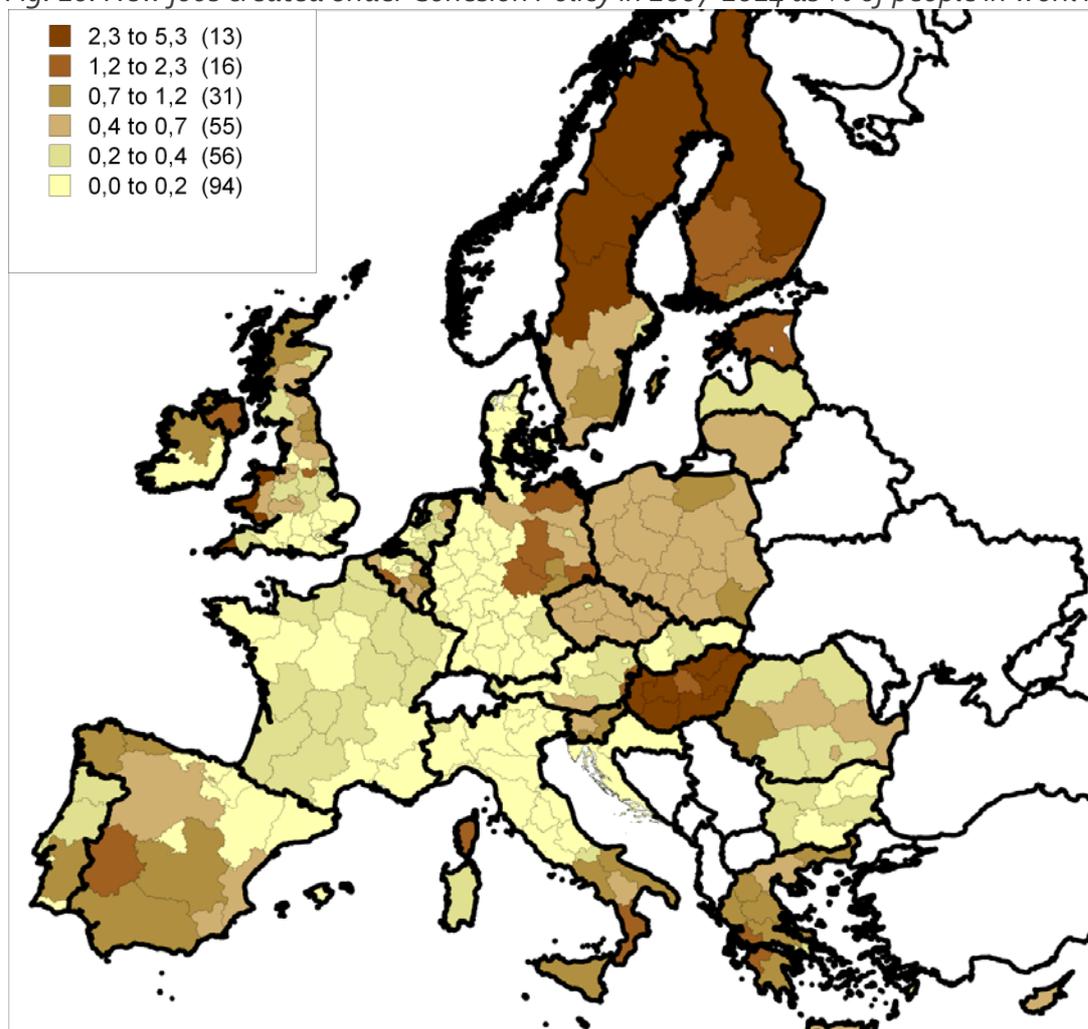
Fig. 15. Cohesion Policy orientation towards job creation (expenditure to create 1 new job)



Source: own elaboration based on Core Indicator Database EC (2017).

A comparison of the achievements reported by individual countries related to newly created jobs and their overall number allows formulating a tentative indicator of the intervention's impact on the labour market. The regional equivalent of the measure in question was obtained by disaggregating the number of jobs reported at national level into individual regions, taking into account their share in the total Cohesion Policy expenditure. As a result, a tentative indicator of the Cohesion Policy impact on the regional labour market was obtained.

Fig. 16. New jobs created under Cohesion Policy in 2007-2014 as % of people in work in 2014*



*a tentative disaggregation of the number of new jobs created by CP intervention at national level into individual regions

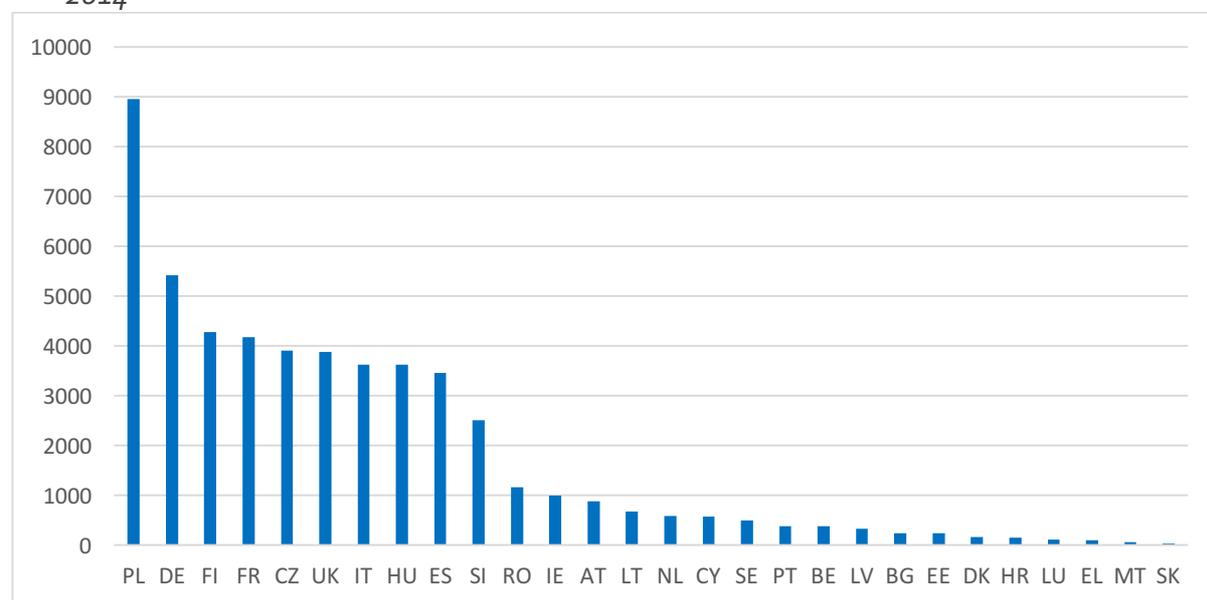
Source: own elaboration based on Core Indicator Database EC (2017) and Eurostat.

This particular indicator shows that the impact of Cohesion Policy on regional labour markets was the greatest in Hungary, the northern regions of Sweden and Finland, plus Estonia (Fig. 16). In some of these regions, the Cohesion Policy intervention potentially led to the creation of more than 2.3% of jobs existing in 2014. In addition, a significant impact of this policy was observable in the remaining Convergence regions of the old Member States, notably eastern Germany, but also some of the regions in Spain, southern Italy and Greece. On the other hand, the situation of the new Member States in Central and Eastern Europe was more differentiated. Creation of new jobs was of little significance in the regions of Slovakia and Bulgaria (not more than 0.4%), while in most of the regions in Poland and the Czech Republic the number of new jobs accounted for 0.4% to 0.7% of the existing jobs. The situation in Romania showed most interregional variations, with a clear prevalence of Banat, i.e. the Timișoara region. The adopted estimation method also demonstrated strong regional differences in that regard in Ireland, United Kingdom and Belgium, and, to some extent, the Netherlands.

Research and Development

Knowledge based economy, technological innovation, research and development occupy important place in Cohesion Policy. This focus was visible in not fully successful Lisbon strategy in the 2007-2013 programming period, and is still valid in the current 2014-2020 main strategic document: Europe 2020. On the formal level, CP programmes show a high level of consistency with the knowledge development paradigm. In the 2007-2013 period a vast portion of activities in the framework of CP programmes could be linked to innovativeness (compare: Nordregio 2009). In the present perspective, the consistency is secured by the Thematic Objectives requirements as well as ex-ante conditionality. However, the failure of the Lisbon agenda reveals that this strategic orientation could be seen – to some extent – as superficial. Nonetheless, the policy achieved non-trivial outcomes. In the period of 2007-2014 CP contributed to the creation of circa 51,4 thousand jobs in research and development. Those jobs were – however – distributed among countries in a very uneven way. The highest number of R&D positions resulted from programmes implemented in Poland (close to 9 thousand). The second performer was Germany (5,4 thousand). In Finland, France Czech Republic, United Kingdom, Italy Hungary and Spain the number of R&D jobs created under CP varied from 3,5 to 4,3 thousand. In Slovenia it was circa 2,5 thousand, in Romania 1,2 thousand and in Ireland 1 thousand. In the remaining countries the outcomes were lower than 1 thousand, with the smallest values in Greece (100), Malta (55) and Slovakia (40) (see Fig. 17). Certainly, these absolute numbers do not tell the whole story as the European countries largely vary in terms of population, as well as with regard to the level of the development of the R&D sector. Therefore, the contribution of the CP to the development of R&D sector have to be related to the state of the sector in a given country and region.

Fig. 17. Number of jobs in research and development created under Cohesion Policy in 2007-2014*

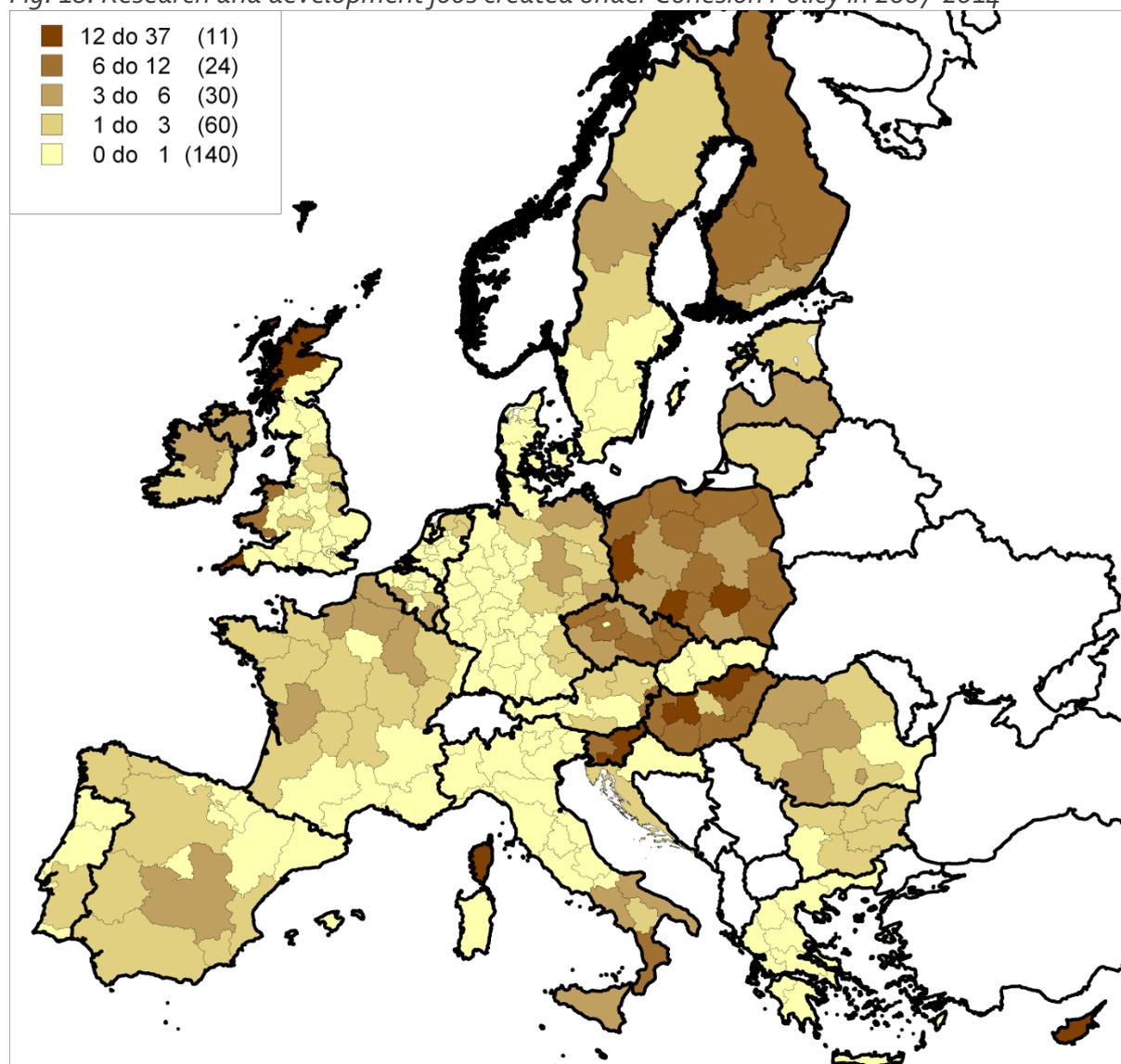


*estimations based on the assumption that the 'cost effectiveness' of created jobs is the same as in the neighbouring country – in case of Denmark - Germany, in case of Estonia – Latvia, in case of Greece – Portugal, in case of Spain – Italy, in case of Slovenia and Croatia – Hungary, in case of Malta – Italy, in case of Netherlands – Belgium..

Source: own elaboration based on Core Indicator Database EC (2017)

Comparison of the number of R&D jobs created under Cohesion Policy in the years 2007-2014 with the already existed jobs shows a great regional diversity of the European territory (see Fig. 18). While in the vast majority of regions (140) CP role in the creation of new R&D jobs was negligible, in other regions its contribution to the development of the R&D labour force was pivotal. In 11 regions CP contributed to the creation of 12 to 37 new jobs per 100 previously existed positions R&D. Moreover, in 24 regions the indicator amounted from 6 to 12, and in 30 regions from 3 to 6. The spatial pattern shows that CP influenced regional R&D sectors primarily in Hungary, Poland, Czech Republic, Slovenia, Cyprus, Finland, Ireland, southern Italy, and northernmost Scotland. The strong presence of the Central and Eastern Europe countries in this group is related to the scientific catching up observed in this part of the continent (cf. e.g. Ploszaj, Olechnicka 2015). And to a lesser extent in Romania, Bulgaria, Baltic countries, eastern Germany, and selected regions of France, Spain, Sweden – mostly regions with the R&D sector developed below the national average.

Fig. 18. Research and development jobs created under Cohesion Policy in 2007-2014



Source: own elaboration based on Core Indicator Database EC (2017) and EUROSTAT

Support for SMEs

The various forms of assistance offered to small and medium-sized enterprises make it difficult to come up with composite indicators to measure the outputs of the implemented projects. Such support is provided both in various forms of financial engagement (refundable, non-refundable, guarantees) and of enterprise types (start-ups, already operating businesses). It is estimated that in the years 2007-2014 the Cohesion Policy programmes altogether offered co-financing to ca. 400,000 investment projects delivered by SMEs, including ca. 120,000 start-ups (Inforegio 2017). Across the European Union, the growth dynamics of the latter has been about 25,000 per year since 2011. The detailed definitions of the above indicators are provided in Box. 2. Other than those two measures, also the number of created new jobs (which, however, is mostly covered by the category of new jobs discussed above) and the induced value of investment financed from other sources are used to assess the role of this category of intervention, even though, in the latter case, the data are available only for a small number of countries.

Box 2. Definition of 'Number of SME projects' and 'Start-ups supported'

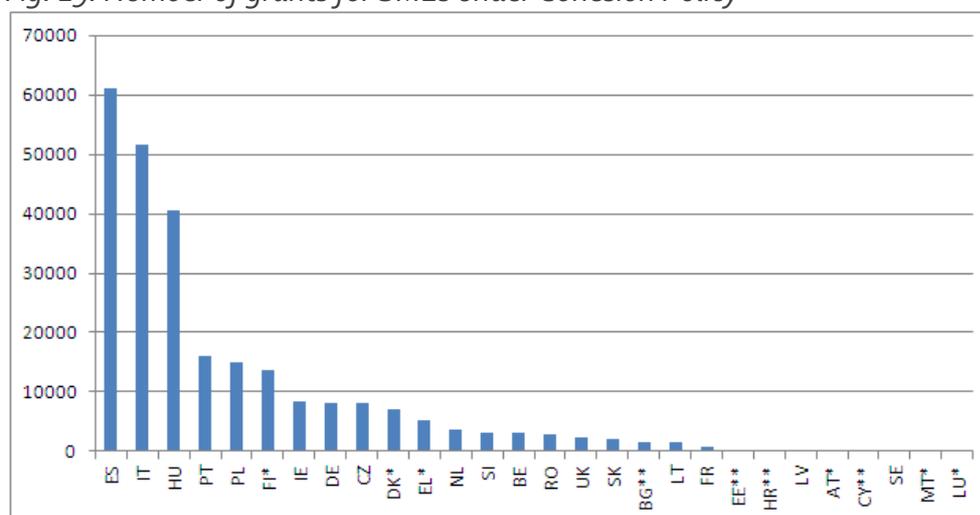
Number of projects (Direct investment aid to SME): Number of projects implemented by an SME using financial aid from Structural Funds. The form of the aid may vary (refundable, non-refundable, guarantee, etc.). The project should result in an investment (increasing the fixed or intangible assets of the enterprise). Project: an operation that lasts for a definite time and aims to produce a specified output. The output may or may not be tangible.

Number of start-ups supported: Number of enterprises created receiving financial aid or assistance (consultancy, guidance, etc.) from Structural Funds or Structural Funds financed facility. The created enterprise did not exist one year before the project's start.

Source: EC 2009

The EU countries can be split into five groups in terms of the number of reported investment projects completed by SMEs (Fig. 19). The first comprises Spain, Italy and Hungary, with the number of grants oscillating between 40,000 and 60,000. The second is made up of Portugal, Poland and Finland, which reported about 15,000 such grants each, while the third includes Ireland, Germany and the Czech Republic, with the number of SME projects at a level of ca. 8,000. In the remaining countries, the number of firms that were awarded co-financing did not exceed 7,000, but there were countries where the number of assisted SMEs was under 1,000, and in several countries fewer than 300 such businesses were awarded support.

Fig. 19. Number of grants for SMEs under Cohesion Policy

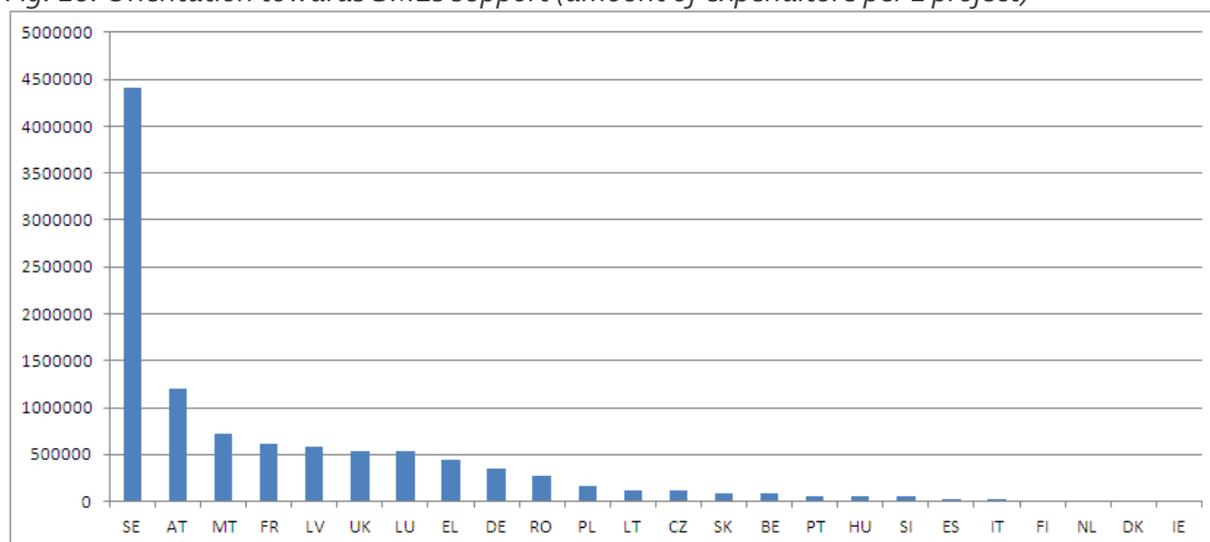


* the data on the number of start-ups was used for the estimations, assuming a fixed ratio between the number of grants and assistance to start-ups **estimations based on the assumption that the 'cost effectiveness' of SME support is the same as in the neighbouring country – in case of Estonia - Latvia, in case of Croatia - Slovenia, in case of Bulgaria - Romania, in case of Cyprus – Greece

Source: own elaboration based on Core Indicator Database EC (2017)

The number of projects implemented by SMEs compared to the overall volume of support to the business sector (i.e. without discriminating the firms' size) may indicate the pro-entrepreneurial orientation of Cohesion Policy, expressed by the low average amount of co-financing awarded per project, because a low average amount of co-financing may mean that support was provided to a relatively large number of investment projects completed mostly by small business entities (Fig. 20). Such an orientation prevailed in the majority of countries and was particularly well visible in Ireland and some other countries of North-Western Europe, i.e. the Benelux (except Luxembourg), Finland and Denmark). This group, however, was rather diverse as it also included countries from the south of the continent (e.g. Italy, Spain, Portugal) in addition to Central and Eastern European countries (Hungary, Slovakia, Czech Republic, Lithuania, Poland). In the remaining countries, the assistance was to a greater degree awarded to larger-scale investment projects or to bigger firms; these included (on the assumption of a full reliability of the reported achievements) Sweden, Austria and Malta and, though to a lesser extent, France, Germany, United Kingdom, Romania and Greece.

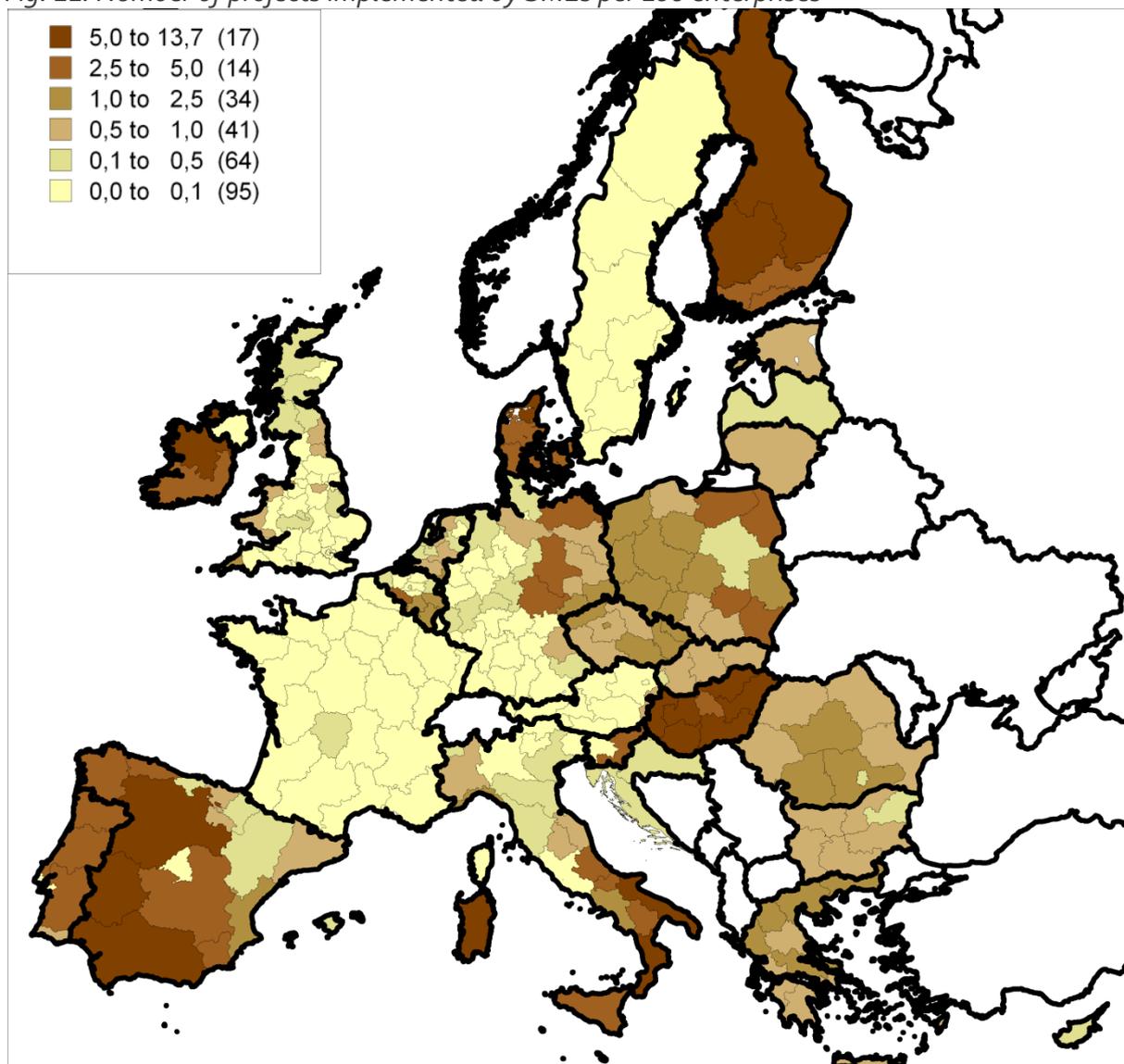
Fig. 20. Orientation towards SMEs support (amount of expenditure per 1 project)



Source: own elaboration based on Core Indicator Database EC (2017)

A comparison of the achievements reported by individual countries concerning the number of grants awarded to SMEs and the overall number businesses in a given region allows formulating a tentative indicator of the impact of the Cohesion Policy intervention on entrepreneurship. The regional equivalent of the measure in question was obtained by disaggregating the number of grants reported at national level into individual regions, taking into account their share in the total Cohesion Policy expenditure earmarked for business support. As a result, a tentative indicator of the Cohesion Policy impact on the regional entrepreneurship was produced.

Fig. 21. Number of projects implemented by SMEs per 100 enterprises



Source: own elaboration based on EC2017 and Eurostat.

There were considerable differences between individual countries with regard to the number of co-financed investment projects, which was also reflected in the intensity of this form of assistance in comparison to the number of enterprises in individual regions (Fig. 21). The small number of reported SME projects in Sweden, Austria and France meant their very low penetration rate compared to the overall number of enterprises. On the other hand, in such countries as Hungary, Finland, Denmark, Ireland or Portugal, the high number of projects meant that, in some regions, more than 5% of firms operating in 2014 could potentially be awarded co-financing (although it should be borne in mind that this group could also include firms that had implemented more than 1 project). This was also true for the Convergence regions in such countries as Germany, Italy and Spain. At the same time, in the CEE countries except Hungary and selected regions of the remaining countries, the intensity of assistance offered to SMEs compared to their overall number was not as substantial, in addition to being strongly differentiated regionally, which was particularly well visible in Poland and Slovenia, and less so – in Romania and the Czech Republic. It was also well visible in Belgium, where the potential

intensity of aids to Walloon firms was much higher than that offered to Flemish ones. Some differences in that regard could also be observed in the Netherlands, Italy and Germany.

Transport infrastructure

Transport infrastructure is a major focus of Cohesion Policy investments, with support from the ERDF and the CF in the 2007-13 period exceeding EUR 80 billion, or approximately 31% of total funds. Over two thirds of this sum was allocated to EU-12 countries, where the average level of allocations to transport infrastructure amounted to 37% of the total ERDF/CF funding. At the EU level, expenditure on transport infrastructure led to the construction of 4,900 km of new roads and 1,100 km of new railways, as well as the upgrading of 28,600 km of roads and 3,900 km of railroads (APPLICA AND ISMERI EUROPA, 2016). The majority of these investments were made in the Convergence regions.

Among the initial set of core indicators prepared by the Commission in order to monitor the ERDF/CF programme achievements, there were eight measures closely related to transport infrastructure, i.e.

1. Length of new roads (km)
2. Length of new TEN roads (km)
3. Length of reconstructed roads (km)
4. Length of new railroads (km)
5. Length of TEN railroads (km)
6. Length of reconstructed railroads (km)
7. Value for time savings in EUR / year produced by new and reconstructed roads
8. Value for time savings in EUR / year produced by new and reconstructed railroads

However, the latter two were among the indicators that DG Regio ceased to use because of the weaknesses in the reporting or the methodologies used for collecting data. Thus, the effects presented in this section rely only on the first six indicators listed above. Definitions of these measures are provided in the box below.

Box 3. Transport infrastructure – definitions of core indicators

Length of new roads: Length of roads constructed as part of projects where no road had existed before or the capacity and quality of the previously existing local/secondary road was significantly improved to reach a higher classification (e.g. national road or equivalent).

Length of new TEN roads: Length of roads developed in a Trans-European Transport Network (TEN) corridor; a subset of the previous indicator.

Length of reconstructed roads: Length of roads where the capacity or quality of the road (including safety standards) was improved; roads counted under indicator 'km of new roads' are excluded.
Length of new railroads: Length of railroads constructed as part of projects where no railroad existed before, including railroads developed in a TEN corridor.

Length of TEN railroads: Length of railroad that becomes part of the TEN transport network as a result of the project, either newly built or reconstructed.

Length of reconstructed railroads: Length of railroads the quality or capacity of which were improved. This can include electrification, converting a single track railroad into a double track, increasing the maximum speed on the track, or ensuring the European Rail Traffic Management System compatibility.

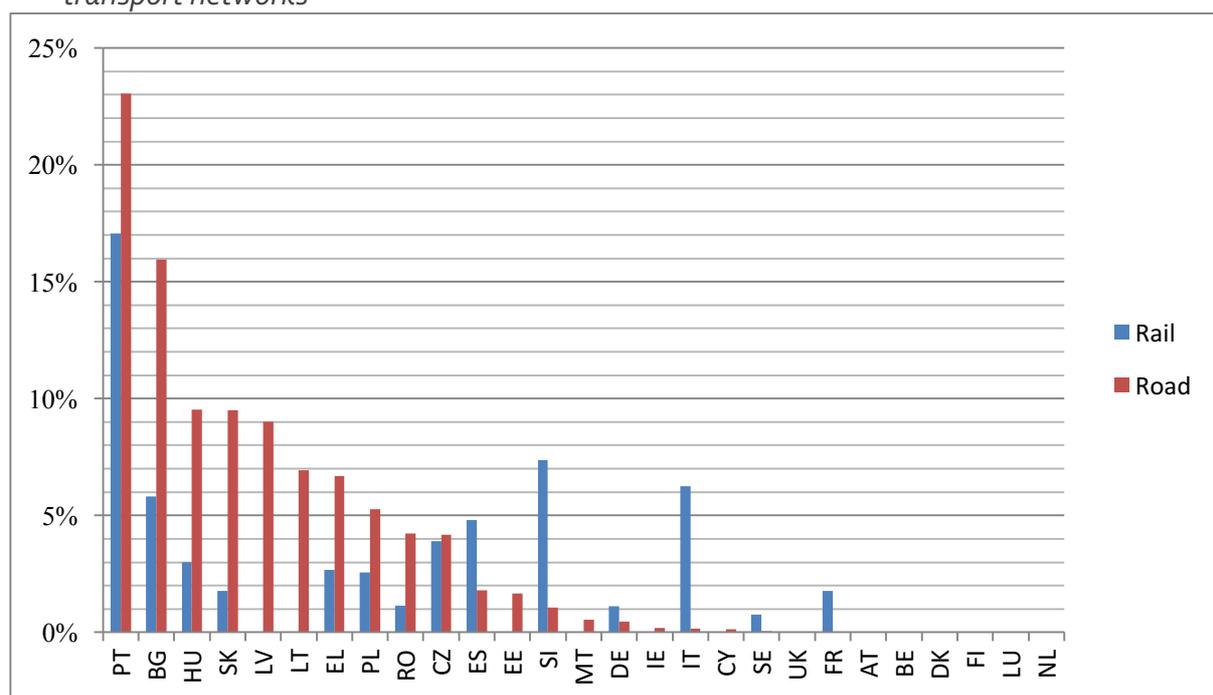
Source: EC 2009

Despite the relative unambiguity of the selected indicators, the data collection system itself limits the robustness of the reported achievements. The authors of the ERDF/CF evaluation (APPLICA AND ISMERI EUROPA, 2016) point to two reasons why the reported numbers may underestimate the

actual effects of Cohesion policy in this regard. Firstly, the reporting on core indicators was not made compulsory by the Commission, and some MAs used other measures to monitor the outputs of the transport infrastructure projects, which were not necessarily reported and thus not included in the final statistics. Secondly, even where the data were reported according to the proposed definitions, the point in time (along the project pipeline) when the output was recorded might vary considerably between countries.

In absolute terms, the effects of investing in road infrastructure were particularly well visible in Poland, with 1,900 km of newly constructed roads and 7,200 km of upgraded roads (39% and 26% of the EU-27 total, respectively). On the other hand, there were 10 countries that did not report any new roads built, although some of them invested substantially in road reconstruction (namely, Lithuania and Latvia). Generally, the new or upgraded road infrastructure is concentrated in new member states, but Greece, Portugal, Spain and Germany also having significant achievements in that respect. However, gaining a more reliable picture requires finding a point of reference for the data presented above. Relative to the currently existing road network, the aggregated effects of Cohesion Policy investment in road construction and upgrading are the highest in Portugal, with Bulgaria coming second, followed by Hungary, Latvia and Slovakia (Fig. 22).

Fig. 22. Newly constructed and upgraded road and rail infrastructure – relative to existing transport networks



Note: Length of new and reconstructed infrastructures has been aggregated in both cases (road and rail) in order to facilitate a comparison with the length of the currently existing networks. Railroad network: length of lines in use, 2014. Road network: Motorways, Main or national roads, and Secondary or regional roads, end of 2013.

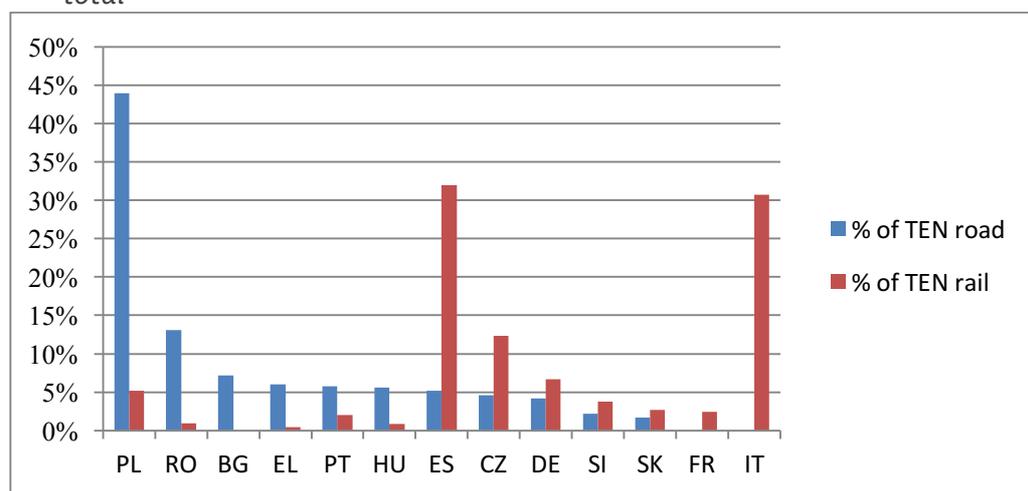
Source: Authors' own elaboration, based on data from DG Transport 2016; APPLICA AND ISMERI EUROPA, 2016

Cohesion Policy investments in railway infrastructure produced the most visible results in Italy and Spain, with the former upgrading over 1,000 km of its existing network, and the latter constructing over 750 km of new lines (i.e. 73% of the EU-27 total output). In the relative perspective, the highest

achievements were attained by Portugal, which outpaced Slovenia, Italy, Bulgaria, Spain and the Czech Republic (Fig. 22). Interestingly, Slovenia was the only country from the EU-12 which favoured investments in rail infrastructure over those in roads. A similar pattern was visible in most of the EU-15 countries (those where any significant outputs were reported), with notable exceptions of Portugal and Greece. Looking only at the newly built railroads, the bias towards EU-15 is even more pronounced, with 98% of the constructed lines located in the countries making up this group.

When considering only the infrastructure that is a part of the European-wide TEN network, a similar picture emerges. Over 40% of new TEN roads were constructed in Poland, three times as much as in Romania that took the second place. In the case of TEN railways, Spain and Italy take the lead, accounting for roughly one third of the total output each (Fig. 23). Compared to the statistics on outputs related to the existing network, the Czech Republic and Slovakia joined Slovenia in a subgroup of EU-12 countries that put a relatively higher emphasis on developing TEN railways rather than TEN roads.

Fig. 23. TEN rail and road infrastructure built and upgraded – the countries' share in the EU-27 total



Note: only countries that reported at least 10 km of any transport infrastructure build/upgraded with the ERDF/CF funds are included.

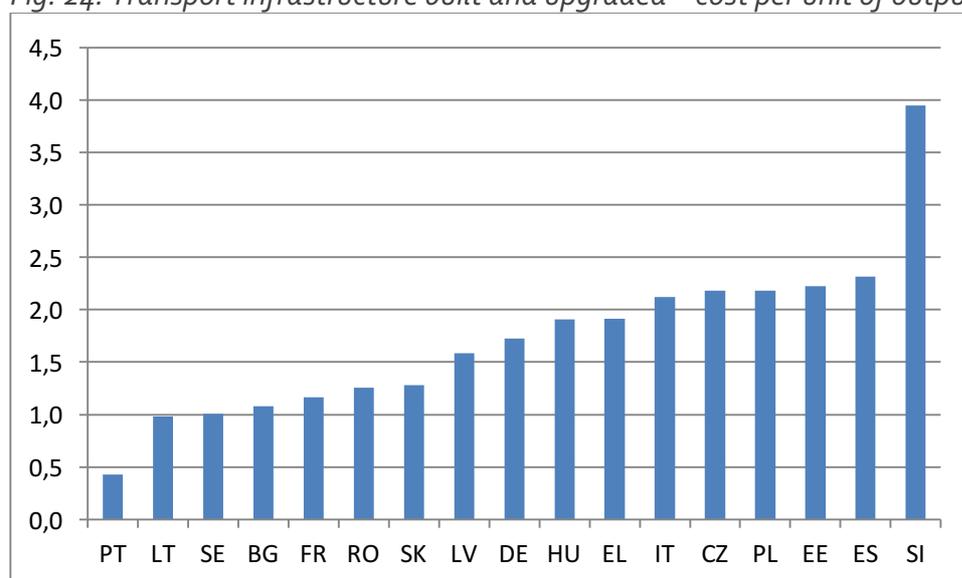
Source: Authors' own elaboration, based on data from APPLICA AND ISMERI EUROPA, 2016.

Using the amount of ERDF/CF funds spent on transport infrastructure, an attempt can be made to assess the cost effectiveness of such investments. However, such comparison has some serious shortcomings. First, the cost of building a road may vary substantially in different landscapes, with tunnels and bridges - often necessary in mountainous areas - being particularly costly. Secondly, outlays depend heavily on the type of roads being built or the type of upgrading that is being undertaken. Still, the authors of the ERDF/CF evaluation (APPLICA AND ISMERI EUROPA, 2016) consider the scale of the observed differences too wide to be explained solely by the variations in unit costs, assuming that limitations in the data collection system may play an important role in that regard.

Nevertheless, an attempt has been made to verify the variations of cost per unit of output, i.e. the amount spent to build or upgrade 1 km of railways or roads (Fig. 24). There are two outliers at the two ends of the distribution curve. Slovenia required almost EUR 4 million to deliver 1 km of transport infrastructure, compared to the EU-27 average of EUR 1.8 million EUR. The high value noted in the case of Slovenia can be linked to the structure of investment biased towards railways, which might

be more cost-intensive than roads. Portugal is the second outlier, with an average cost of transport infrastructure of EUR 0.4 million. Given the fact that Portugal outpaced all other countries in terms of outputs relative to the existing network, one may assume that there is some country-specific issue with reporting, thus corroborating the above-mentioned suggestions made by the authors of the ERDF/CF Ex-post evaluation (APPLICA AND ISMERI EUROPA, 2016).

Fig. 24. Transport infrastructure built and upgraded – cost per unit of output, mEUR per km



Note: Data on expenditure on transport infrastructure (as at 2014); Length of transport infrastructure is an aggregated measure of new and reconstructed roads and railroads. Countries with the values of this indicator below 50 km were excluded.

Source: authors' own elaboration, based on APPLICA AND ISMERI EUROPA, 2016 and [1]

No estimations have been made on the transport infrastructure achievements across NUTS-2 regions. Unlike jobs created or SMEs supported, transport infrastructure is much more place-specific, and thus cannot be simply extrapolated from the country-level data. Also, the achievements reported under operational programmes do not allow to offer a consistent and comprehensive picture spanning all NUTS-2 regions. The only indication of the intensity of Cohesion Policy investments in transport infrastructure can be inferred from the data on expenditure – as a percentage of total expenditure and in per capita terms (Tab. 8). The latter perspective emphasises the role of transport infrastructure investments in Greece – with four regions from this country found among the six locations with highest per capita spending. According to the share of funds spent on transport, Polish regions tend to dominate the top 10 list.

Tab. 6. Expenditure on transport infrastructure, NUTS-2 level, 2014

Per capita expenditure	[EUR pc]	Share of total ERDF/CF expenditure	[%]
EL63 - Dytiki Ellada	1653	RO42 - Vest	68%
EL61 - Thessalia	1234	EL63 - Dytiki Ellada	62%
PT20 - Região Autónoma dos Açores (PT)	1149	EL61 - Thessalia	60%
EL65 - Peloponnisos	1067	PL11 - Łódzkie	57%
CZ03 - Jihozápad	990	PL62 - Warmińsko-Mazurskie	55%
EL64 - Sterea Ellada	952	PL32 - Podkarpackie	54%
HU32 - Észak-Alföld	949	EL64 - Sterea Ellada	53%

PL62 - Warmińsko-Mazurskie	888	ES11 - Galicia	53%
HU33 - Dél-Alföld	888	PL63 - Pomorskie	52%
PL32 - Podkarpackie	868	PL12 - Mazowieckie	52%
<i>EU-27 average</i>	154	<i>EU-27 average</i>	15%

Note: EU-27 average calculated as an unweighted average for all EU-27 (excluding Croatia) NUTS-2 regions

Source: authors' own elaboration, based on [1]

Environment and energy

Environment has represented a considerable part of Cohesion Policy support since its inception. In the 2007-13 period, about 15% of total ERDF/CF funds were allocated under the environment and natural resources thematic category. Investments in energy amounted only to 4% of total ERDF/CF funds, but this share has quadrupled since the 2000-06 period. The reason to present these two fields together lies in the fact that Cohesion Policy's support for energy prioritises energy efficiency and decarbonisation of economy, thus overlapping with the major principle of environmental protection efforts to curb climate change. The main outputs of investments in environment infrastructure include increasing the number of people served by wastewater treatment facilities by 6.9 million, and by water projects – by 5.9 million. In the field of energy, the capacity of renewable energy production grew by 3,900 MW thanks to Cohesion Policy support.

Among the initial set of core indicators prepared by the Commission in order to monitor ERDF/CF programme achievements, there were five indicators related to environment or energy (excluding indicators based on counting the number of projects in a given field) – their definitions are provided below (Box 4).

Box 4. Environment and energy – definitions of core indicators

Additional population served by water projects: The number of people provided with drinking water through the drinking water transportation network as a result of increased drinking water production/transportation capacity developed by the project, and who were previously not connected. It includes reconstruction projects but excludes projects aiming to create/improve irrigation systems.

Additional population served by wastewater projects: Number of people (in population equivalent) whose wastewater is transported to wastewater treatment plants through wastewater transportation network as a result of increased wastewater treatment/transportation capacity developed by the project, and who were previously not connected.

Area rehabilitated (km²): Surface of contaminated or derelict land made available for economic (except agriculture) or community activities.

Additional capacity of renewable energy production (MW): Increase in energy production capacity of facilities using renewable energy resources, built/equipped by the project. Renewable energy resource is any energy source that is not fossil or nuclear.

Reduction greenhouse gas emissions (CO₂ and equivalents, kg per annum): The gross total reduction in greenhouse gas emissions as a result of interventions financed by the Structural Funds. Calculating CO₂ equivalent is in line with the United Nations Framework Convention on Climate Change (UNFCCC) standards.

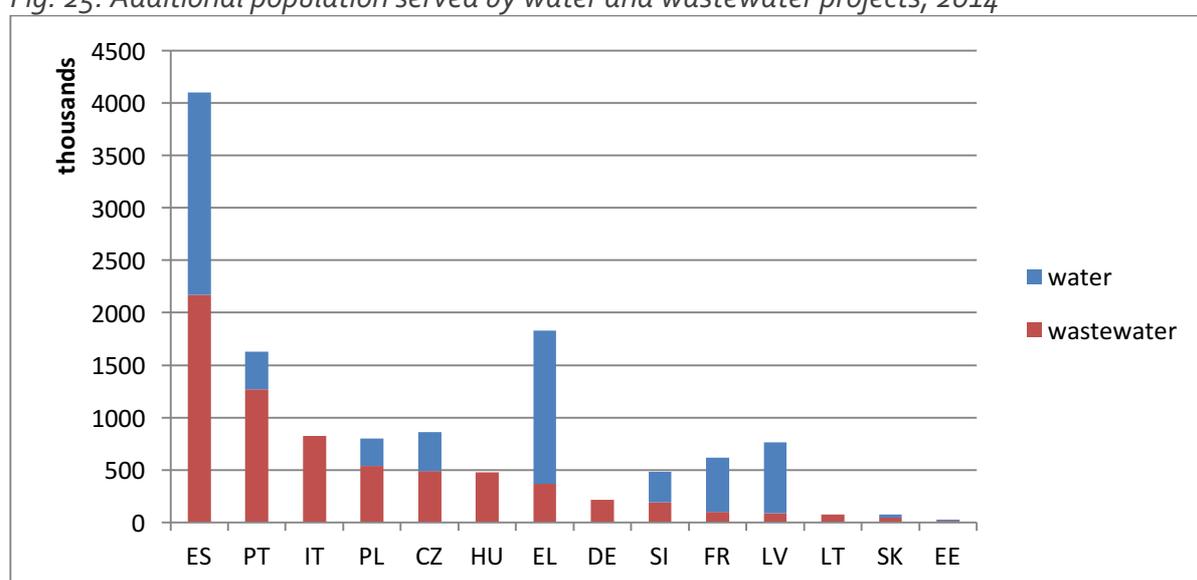
Source: EC 2009

The indicator of reductions in greenhouse gas emissions was dropped by the Commission during the 2007-13 period, due to weaknesses in the reporting and methodologies used by the Managing Authorities. The low level of reporting in the case of rehabilitated areas raises doubts regarding the usefulness of this indicator for assessing the territorial distribution of Cohesion Policy effects. Only 11 countries reported any outputs in this regard, with Hungary accounting for over 50% of the total achievements. Therefore, this section focuses on the remaining three indicators – with a reservation,

however, that the data concerned are probably incomplete due to the non-binding character of the monitoring system envisioned by the Commission.

Additional population served by water and wastewater projects financed by Cohesion Policy is clustered in two areas – the southern countries of the EU-15 and, to a lesser extent, in Central and Eastern European countries of the EU-12 (Fig. 25). The effects of water projects are particularly strongly concentrated, with Spain and Greece accounting for 57% of the total output. We may assume that some Convergence countries are missing from this picture by looking at the expenditure on potable water infrastructure and wastewater treatment. In particular, Bulgaria and Romania spent EUR 0.7 and 0.9 billion, respectively, on investments in these two fields – i.e. the amounts comparable to the respective outlays of Greece, Latvia or Lithuania.

Fig. 25. Additional population served by water and wastewater projects, 2014



Note: water supply and wastewater treatment are often part of the same project and the figures for each tend to include both types of investment. This means that there are strong grounds for considering these two categories together when assessing the distribution of funding. Many Member States take an integrated approach to the water sector. This means that they have combined drinking water supply and wastewater treatment needs into single projects, often referred to as 'integrated water management' or 'water cycle' projects.

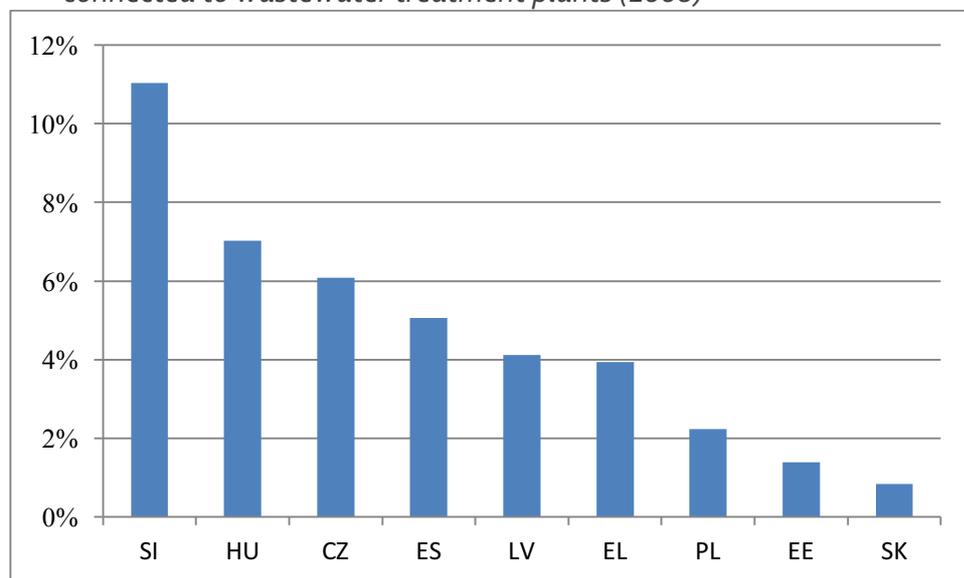
Source: authors' own elaboration, based on APPLICA AND ISMERI EUROPA, 2016

How do these effects relate to the existing infrastructure? We applied the Eurostat data on the percentage of the population connected to wastewater treatment plants in 2008 to address this question (Fig. 26). Relative to the already existing infrastructure, the effects of investments in wastewater projects seem to be the most conspicuous in Slovenia. However, the results of this analysis should be interpreted with caution, as the reported statistics concerning the additional population served by the new infrastructure deviate considerably from the absolute change in the population connected to wastewater treatment plants in a given country, in the respective period³ (in case of Slovenia, the former is 1.8 times higher than the latter). The observed discrepancy suggests

³ Due to gaps in the Eurostat data we use the 2008-2013 period as the reference for the outputs that were achieved between 2007 and 2014.

that there may be significant variations in the way particular Managing Authorities have been reporting their achievements.

Fig. 26. Additional population served by wastewater projects (2014) – relative to population connected to wastewater treatment plants (2008)

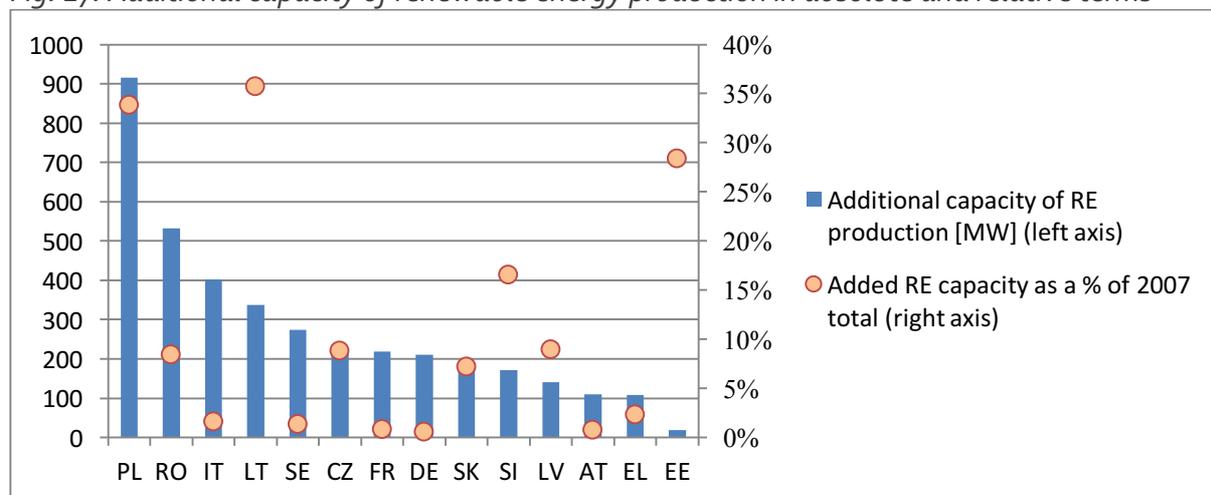


Note: only countries that reported any achievements under the indicator of additional population served by wastewater projects were included; no data on population connected to wastewater treatment plants for: DE, FR, IT, LT, LU, PT

Source: authors' own elaboration, based on Eurostat and APPLICA AND ISMERI EUROPA, 2016

Cohesion Policy support to renewable energy production was most successful in Poland, where almost 1000 MW of new capacity had been installed till 2014 (Fig. 27). The dominance of the Convergence countries is less pronounced in the case of renewable energy than it was in the case of water and wastewater projects. Sweden, France and Germany are among the countries that reported between 200 and 300 MW of new renewable energy capacity created with ERDF/CF funds. In relative terms – where the reported achievements are compared with the initial values of renewable energy capacity – the most significant results (around 30%) can be observed in Poland, Lithuania and Estonia. Using this perspective, a clear distinction between the EU-15 and EU-12 countries emerges, with the former group being much less dependent on Cohesion Policy funds in developing their renewable sources of energy.

Fig. 27. Additional capacity of renewable energy production in absolute and relative terms



Note: RE = renewable energy

Source: authors' own elaboration based on IRENA 2016; APPLICA AND ISMERI EUROPA, 2016

Similarly as with the transport infrastructure, country-level data on achievements in the field of environment and energy do not provide a good basis for regional estimations due to the place-specificity of these kind of investments. Thus, we can refer only to expenditure data, treated as an insight into the regional distribution of the efforts focusing, for example, on developing environmental infrastructure. The regional breakdown of per capita expenditure on environment and natural resources highlights the intensity of such investments in peripheral maritime regions of Portugal and Malta. In terms of the share of total ERDF/CF funds earmarked for the environment, the picture is less clear, but once again maritime regions (especially Spanish) are over-represented.

Tab. 7. Expenditures on environment and natural resources, NUTS-2 level, 2014

Per capita expenditure	[EUR pc]	Share of total ERDF/CF expenditure	[%]
PT20 - Região Autónoma dos Açores	770	ES13 - Cantabria	55%
PT18 - Alentejo	635	ES64 - Ciudad Autónoma de Melilla	51%
PT30 - Região Autónoma da Madeira	561	DE21 - Oberbayern	41%
HU32 - Észak-Alföld	546	BG31 - Severozapaden	39%
Slo3 - Vzhodna Slovenija	542	ES63 - Ciudad Autónoma de Ceuta	38%
HU33 - Dél-Alföld	538	PT15 - Algarve	36%
EE00 - Eesti	490	Slo3 - Vzhodna Slovenija	35%
HU22 - Nyugat-Dunántúl	434	RO31 - Sud - Muntenia	33%
MT00 - Malta	434	RO11 - Nord-Vest	33%
CZ06 - Jihovýchod	385	PT30 - Região Autónoma da Madeira	33%
EU-27 average	78	EU-27 average	11%

Note: EU-27 average calculated as an unweighted average for all EU-27 (excluding Croatia) NUTS-2 regions

Source: authors' own elaboration, based on [1]

The expenditure on energy expressed in per capita terms was the highest in the Greek regions, up to 15 times more than the average value for the European regions. The image changes significantly when the expenditure is presented as a share of total spending – the Competitiveness regions take the lead, with the Italian Trento allocating almost half of its Cohesion Policy funds to energy projects.

Tab. 8. Expenditure on energy, NUTS-2 level, 2014

Per capita expenditure	[EUR pc]	Share of total ERDF/CF expenditure	[%]
EL53 - Dytiki Makedonia	314	ITH2 - Provincia Autonoma di Trento	48%
EL65 - Peloponnisos	255	UKD3 - Greater Manchester	32%
LToo - Lietuva	189	UKI3 - Inner London - West	26%
EL64 - Sterea Ellada	183	FR53 - Poitou-Charentes	25%
PL42 - Zachodniopomorskie	172	DEA4 - Detmold	21%
MToo - Malta	162	ITC1 - Piemonte	20%
Slo3 - Vzhodna Slovenija	133	LU00 - Luxembourg	19%
CZo8 - Moravskoslezsko	117	EL53 - Dytiki Makedonia	18%
EL63 - Dytiki Ellada	116	ITF2 - Molise	17%
CZ07 - Střední Morava	115	FR26 - Bourgogne	17%
<i>EU-27 average</i>	20	<i>EU-27 average</i>	5%

Note: EU-27 average calculated as an unweighted average for all EU-27 (excluding Croatia) NUTS-2 regions

Source: authors' own elaboration, based on [1]

Conclusions

It is very difficult to evaluate or even summarise Cohesion Policy effects in the 2007-2013 perspective not only owing to the difficulty in capturing effects in measurable terms, but also due to the not fully harmonised way of reporting such achievements and the specific features of the monitoring and reporting systems in individual countries. In consequence, the reported effects could be largely shaped by the differences across individual countries. What is even more difficult is the reliability of evaluating cost effectiveness, which is the reason why the proposed indicators show a certain orientation, or bias, of Cohesion Policy in various terms rather than the actual differences relating to effectiveness. Therefore, in many cases the obtained results draw on the macroregional division of Europe into North-Western, Southern and Central and Eastern Europe, pointing to the structural underpinnings of the observable differences associated with dissimilar levels of development and the resultant thrust of Cohesion Policy interventions.

Regional growth and Cohesion Policy expenditure

The impact of Cohesion policy intervention can be broadly divided into two categories (e.g. Monfort et al. 2016). The first comprises short-term demand effects arising from the spending of public funds, transposed into a demand for goods and services. In many cases, such demand is satisfied by firms from a given region, which in turn generates Keynesian multiplier effects for the national or regional economy. The second comprises long-term supply side effects, which boost the productivity of the regional economy. This means that the projects on the ground improve the competitiveness of the regional enterprises since they increase their output.

While evaluating the impact of the intervention on the processes of socio-economic development one should not neglect external shocks that can severely disrupt development processes and initiate specific adaptation processes. Clearly, one such shock in the analysed period was the global financial crisis of 2008 which triggered recession in all the European countries except Poland. Its consequences were strongly varied across sectors and areas as well as certain population groups (McCann 2015). For this reason, any reflection on the impact of the intervention on the rate of economic growth of

European regions should start with identifying a suitable point of reference – like in this case, development taking place post the crisis year 2008.

This part of the report analyses whether there was a correlation between Cohesion Policy expenditure and the rate of regional economic growth in the period following the financial crisis. The analysis takes into account the territorial dimension by distinguishing less developed regions covered by the Convergence Objective, and more developed regions, termed as Competitiveness regions. In addition, the structure of the Cohesion Policy intervention was incorporated into the analysis, comprising three categories: 'Basic Infrastructure', 'Innovative Environment', and 'Quality of Life'. The level of socio-economic development expressed, for simplicity's sake, as GDP per capita, was adopted as the control variable; such an approach makes it also possible to conclude whether regional convergence or divergence processes were taking place.

An analysis of the relationship between the rate of regional growth and the measures mentioned above found a statistical correlation between GDP dynamics and the Cohesion Policy intervention structure (Tab. 5). On the other hand, however, no distinct trends regarding regional convergence/divergence could be observed in the post-crisis period because the GDP levels were not correlated with the rates of growth. Similarly, there was no correlation between GDP increase and the scale of Cohesion Policy expenditure. This could suggest that the role of the demand effect relating to such expenditure was not sufficiently significant to affect the trajectories of regional development in the turbulent and volatile years following the crisis. However, taking into account the fact that the growth dynamics showed dependence on the intervention structure, this could potentially demonstrate that certain supply effects arise from such intervention because a high share of expenditure support the innovative environment was a factor increasing the dynamics of growth. Conversely, intervention aimed to improve the quality of life or develop basic infrastructure was not reflected in the economic performance, and the negative correlation could even suggest that the pace of such growth was slower. Whether these hypothetical correlations really exist can be verified through analyses carried out separately for the two identified groups of regions.

In the Convergence regions, there was an observable convergence of development in that group arising from a faster rate of growth of less developed regions. This could indirectly indicate structural problems in regions of southern European countries (Italy, Greece, Portugal and Spain), which were relatively more developed than the new Member States. Such convergence, however, due to the absence of any statistically significant correlation, was not a result of Cohesion Policy intervention. In particular, both the volume of such funds and the trade-offs between the funds earmarked for the development of basic infrastructure and the innovative environment did not have a strong bearing on the rate of growth. What mattered instead was a high share of expenditure made on improving the quality of life of the region's residents, which was found to be negatively correlated with the rate of economic development. This means that, under specific circumstances, both the allocation of the intervention to the development of basic infrastructure (in a situation of deficiencies making it difficult to tap the endogenous potential, e.g. insufficient capacity of the transport infrastructure) and build the innovative environment (e.g. establishing effective links between academia and the business sector) could produce positive results for the region's development.

On the other hand, in the Competitiveness regions there was an observable divergence owing to a faster rate of growth of the core regions. What is more, such a phenomenon was taking place in the conditions of a negative correlation between the growth dynamics and the expenditure of Cohesion Policy funds. This could mean that problem regions were more severely affected as a result of the financial crisis, whereas the outlays made as part of the EU Cohesion Policy were in no position to prevent it. This was particularly true if the intervention was targeted at the development of basic infrastructure and could mean that, in better developed regions which the Competitiveness regions

certainly were, the penetration with infrastructure was sufficient and no longer unlocked simple reserves for growth, and in effect promoted improving the quality of life rather than building competitive advantage in the business sector.

Tab. 9. The correlation between the growth dynamics of regions, development level and expenditure and structure of Cohesion Policy funds [r Pearson value*]

ALL/ CON/COM	Real GDP change 2008- 2014	GDP per capita [EUR]	CP expenditure [% GDP in 2008]	Share of basic infrastructure [%]	Share of innovative environment [%]	Share of quality of life [%]
Real GDP change 2008-2014	x	0.10 / -0.34 / 0.23	0.03 / 0.17 / -0.31	-0.16 / 0.04 / -0.25	0.17 / 0.11 / 0.13	-0.19 / -0.27 / -0.12
GDP per capita [EUR]	0.10 / -0.34 / 0.23	x	-0.68 / -0.63 / -0.27	-0.66 / -0.57 / -0.14	0.52 / 0.67 / -0.01	-0.17 / 0.04 / -0.07
CP expenditure [% GDP in 2008]	0.03 / 0.17 / -0.31	-0.68 / -0.63 / -0.27	x	0.67 / 0.34 / 0.46	-0.59 / -0.46 / -0.30	0.20 / 0.18 / 0.03
Share of basic infrastructure [%]	-0.16 / 0.04 / -0.25	-0.66 / -0.57 / -0.14	0.67 / 0.34 / 0.46	x	-0.79 / -0.88 / -0.53	0.02 / -0.44 / 0.10
Share of innovative environment [%]	0.17 / 0.11 / 0.13	0.52 / 0.67 / -0.01	-0.59 / -0.46 / -0.30	-0.79 / -0.88 / -0.53	x	
Share of quality of life [%]	-0.19 / -0.27 / -0.12	-0.17 / 0.04 / -0.07	0.20 / 0.18 / 0.03	0.02 / -0.44 / 0.10	-0.23 / 0.03 / -0.19	x

* statistically significant (at level 5%) values were marked in bold

Source: authors' own elaboration.

The overall interpretation of the obtained results prompts a conclusion that the observable correlations, to some extent at least, were determined by the existence of three macro-areas within the European Union, which reacted differently to the crisis processes taking place in the global economy on the one hand, and which on the other were to varying extents beneficiaries of Cohesion Policy. The first was made up of highly developed countries and regions in the north and west of the continent, which were moderately affected by the crisis and derived modest benefits from Cohesion Policy. The second comprised the new Member States, which, although hit by the crisis, were to improve their situation later, but in which the impact of external financial injections as part of Cohesion Policy was difficult to evaluate. The third macro-area which could be regarded as being of crucial importance in view of the observable correlations included countries of southern Europe, most severely affected by the crisis which exposed their structural problems and which had still remained substantial Cohesion Policy beneficiaries. The fact that, in terms of the Cohesion Policy objectives, the regions of the latter macro-area were split and included into both the Convergence and Competitiveness areas, could influence the obtained results. The Competitiveness Objective group comprised less developed regions, which however reaped more benefits from Cohesion Policy; this, given their lower rate of growth, led to regional divergence being observed in this group. Conversely, the regions in the Convergence Objective group were better developed but received less Cohesion Policy funding. As a result of their overall slower growth, regional convergence processes could be observed.

The inclusion of these two opposing phenomena into the analysis carried out for all the regions meant that there was a lack of correlation between the pace of regional development and the level of development plus the scale of Cohesion Policy expenditure. In such an approach, however, the role of the structural factor manifested by a positive correlation between high expenditure on the

development of an innovative environment and the rate of regional growth became more visible. On the other hand, a negative correlation could be observed between the focus of the intervention on infrastructure or its being used for improving the quality of life.

In general terms, this corroborates the view of regional convergence between 'new' and 'old' Member States observable in other studies, associated with parallel structural problems of countries in the south of Europe. It also indicates that focusing the intervention on improving the innovation potential of the territorial systems may, under specific conditions, promote their faster growth.

APPENDIX 1. Structure of the primary WP3 database

Numbers in square brackets refer to a dataset described in Table 1, that was used as a source of data

1A_Scale

- Sheet: nuts2 2007-13: allocated & expenditures as of 2014, source [3]
- Sheet: nuts3 2007-13: allocated & expenditures as of 2014, source [3a]
- Sheet: nuts2 2000-06: commitments & payments, source [1]

Included in the final database: 4_2_SCALE – data for nuts2 on 2007-13 allocations and expenditures (as of 2014), and commitments and payments (total for 2000-06)

1B_Structure

- Sheet: MS and themes 2007-13: decided Operational Programmes & allocated to selected projects as in Annual Implementation Report 2013, source [5] → includes ERDF/CF as well as ESF; typology based on 13-15 categories (limited internal consistency)
- Sheet: nuts2 and themes 2007-13: allocated & expenditures as of 2014 across 12 thematic categories (full consistency), source [1]
- Sheet: nuts2 and themes 2000-06: commitments & payments across 12 thematic categories (full consistency), source [1]

Included in the final database: 4_3_STRUCTURE – data for nuts2 on 2007-13 allocations and expenditures (as of 2014) broken down by 12 thematic categories – later aggregated to 3 broader categories (see table below)

Tab. 10. Typologies of thematic categories of investments

Typology MS and themes	Typology nuts2 and themes (both programming periods)	
Capacity Building	Business support	Innovative environment
Culture, heritage and tourism	Energy	Basic infrastructure
Energy	Environment and natural resources	Basic infrastructure
Environment	Human resources	Innovative environment
Human capital	IT infrastructure and services	Innovative environment
Innovation & RTD	Other	Not included
IT services and infrastructure	Research and Technology	Innovative environment
Labour market	Social infrastructure	Quality of life
Other SME and Business support	Technical assistance	Not included
Other transport	Tourism & Culture	Quality of life
Rail	Transport infrastructure	Basic infrastructure
Road	Urban and rural regeneration	Quality of life
Social Inclusion		
Social infrastructure		
Urban and territorial dimension		

Source: authors' own elaboration

1C_Concentration

- Sheet: MS projects 2007-13: reported achievements (AIR 2013) with regard to a number of projects of a particular kind across MS; among 56 "core indicators" defined by DG Regio for 2007-13, 25 refers to number of projects, source [6]
- Sheet: OPs projects 2007-13: similar data as above, but across OPs – reported both at the programme and priority level (potentially implies double counting), both target and achieved number, source [4]

- Sheet: comparison of total number of projects of a given kind between two data sources [6] and [4]; relatively big variations observed in the number of transnational projects may be linked to double counting in case of [4]

Included in the final database: 4_4_CONCENTRATION – target and achieved number of projects recalculated from OPs to nuts2 level

1D_results 2013

- Sheet: MS results 2007-13: reported achievements on core indicators across MS, source [6]
- Sheet: OPs results 2007-13 verified: reported achievements on core indicators across OPs, source [4]
- Sheet: comparison of reported achievements for all core indicators between two data sources [6] and [4]; a part of observed variations refers to indicators that DG Regio ceased to collect, but still some significant variations remain unexplained

1Da_results 2014

- Sheet: MS 2014 results: reported achievements on 19 core indicators across MS for 2014, source: Open Data platform ([link](#))
- Sheet: MS 2014 results corrected: the same data as above, supplemented/corrected according with the ex-post evaluation report (APPLICA AND ISMERI EUROPA, 2016, pp.149-150)

Included in the final database: selected core indicators used as a measure of reported achievements – aggregated jobs, jobs created in R&D sector, grants for SMEs;

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