

# EU Funds. The Challenge for Innovation and Regional Disparity in Poland

**Anna Lewandowska**

University of Information Technology and Management in Rzeszów, Poland

---

## Abstract

*The article concentrates on the role of European Union funds for innovation and balancing regional disparity in Poland. The challenge of regional innovativeness as a specific social process becomes more important to the regional policy and a structural Poland. The means of pro-innovative regional policy is particularly important in the light of globalization challenges and official policies made by the European Union and Member States. Analyses presented in the paper are based on the programming documents at EU level, the country and the region, as well as analyses, reports and statistical data on EU funds and their impact on innovation and socio-economic development. This paper analyses the regional disparities and tries to identify the causes and measures particularly in the socio-economic development and innovativeness. It also discusses the structural funds available in 2004–2006 and 2007–2013, which can be regarded as a remarkable opportunity to improve the competitive position relative to other European regions and experience for the financial possibilities of the structural funds in the new financial perspective 2014–2020.*

**Keywords:** EU funds, regional development, innovation

## Introduction

The regional differences in Poland are the result of centuries of social, economic, political and natural conditions. The formation of regions in the country can be divided into several stages associated with the growing capabilities of people to master and transform the natural environment as well as socio-economic and cultural life. Access to EU structural funds has become an important factor in the economic development of Poland, still significantly different from the level of economic development of the “old” European Union (EU-15) (Churski 2008). EU Cohesion policy is an investment policy: it supports job creation, competitiveness, economic growth and sustainable development (e.g., Cancelo, Faina, and Lopez-Rodriguez 2009). Sustainable growth is increasingly related to the capacity of regional economies to innovate and transform, adapting to an ever changing and more competitive environment (Gossling 2007). Therefore, a much greater effort needs to be put into creating the eco-systems that encourage innovation, research and development (R&D) and entrepreneurship, as stressed by the Europe 2020 strategy (Komlosi et al. 2015) and its Innovation Union flagship initiative.<sup>1</sup> The challenge of regional innovativeness as a specific social process becomes more important to the regional policy and a structural Poland. The means of pro-innovative regional policy is particularly important in the light of globalization challenges and official policies made by the European Union and Member States (Markowski 2004). Innovation,

---

1. See also: EUROPE 2020. A strategy for smart, sustainable and inclusive growth. (COM/2010/2020 final); Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Europe 2020 Flagship Initiative Innovation Union SEC(2010) 1161 (COM/2010/0546 final).

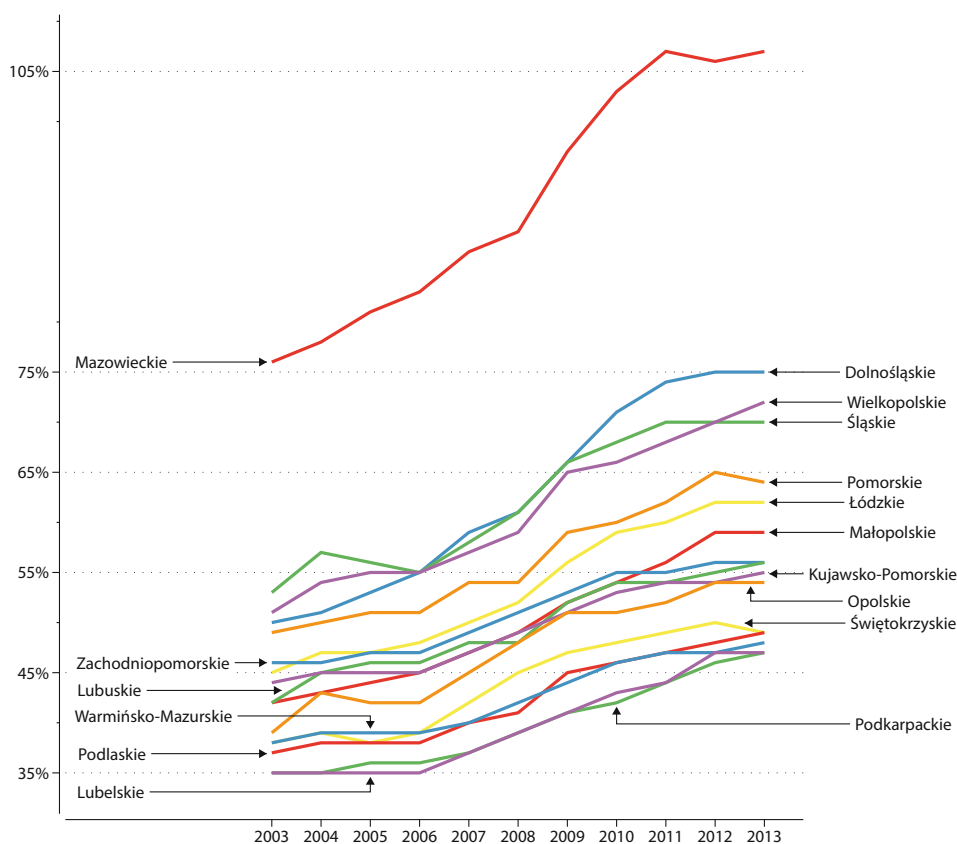
competitiveness and eco-efficiency therefore play a significant role in regional disparities of Poland and approximation of Poland in R&D can provide a double dividend for these low income regions.

This paper analyses the above-mentioned regional disparities and tries to identify the causes and measures particularly in socio-economic development and innovativeness. It also discusses the structural funds available in 2004–2006 and 2007–2013, which can be regarded as a remarkable opportunity to improve the competitive position relative to other European regions and experience for the financial possibilities of the structural funds in the new financial perspective 2014–2020. The paper contains information available before 2015.

## 1 Regional Disparity in Poland

The transition process from a command and control economy to a market economy and a democratic society included the numerous differences among the regions in Poland. Among the key observations are the high disparity in economic development and low competitiveness of regions that have led to a huge rise in unemployment in many regions and a decrease in income. After ten years of membership in EU, regional development is still affected by such forces, resulting in inflexibility, a low level of innovation and poor economic growth. As many as 60,74%<sup>(2)</sup> of the population resides in problematic regions (where GDP per inhabitant is below 50% of the EU average) (Eurostat).

The major differences between Polish regions (classified according to NUTS 2) can be observed on the north-south axis (fig. 1). In the years 2003–2013 only Mazowieckie exceeded 75% of the average GDP measured in PPS per inhabitant in the EU-28. Five regions NUTS 2 (Lubelskie, Podkarpackie, Podlaskie, Świętokrzyskie, and Warmińsko-Mazurskie voivodships) did exceed in this respect, 50% of the EU average. In 2013, the highest level of GDP per inhabitant was recorded in Mazowieckie (PLN 69 043, which accounted for 160,4% of the national average). Also exceeding



**Fig. 1.** Regional GDP per inhabitant from 2003 to 2013 as a percentage of the EU-28 average.

Data source: Eurostat [<http://ec.europa.eu/eurostat/cache/RSI/#?vis=nuts2.economy&lang=en>], [accessed 2015.10.14].

2. [In the journal European practice of number notation is followed — for example, 36 333,33 (European style) = 36 333.33 (Canadian style) = 36,333.33 (US and British style). — Ed.]

the national average GDP per inhabitant were the regions of Dolnośląskie, Śląskie, and Wielkopolskie. The lowest level of GDP per inhabitant was recorded in Podkarpackie (PLN 30 577—i.e., 71,1% of the national average) and Lublin (PLN 30 427—i.e., 70,7% of the average).<sup>3</sup>

Results of macroeconomic research indicate that innovation contributes between two-thirds and four-fifths of economic growth in developed countries. That means about 85% of productivity growth in advanced economies is driven by innovation.<sup>4</sup> However, large disparities between EU Member States and regions in the fields of innovation and R&D should be noted as well as a persistent gap compared to its main competitors at global level.

Despite the progress in the construction of the innovative potential, the level of innovativeness of the Polish economy is still unsatisfactory.<sup>5</sup> Expenditure on research and development (R&D) in relation to GDP are still at a low level. The R&D sector is mainly financed from public funds. In comparison with other European countries, accompanied by poor inventive activity and the low and declining proportion of innovation active enterprises. This confirms the still distant position of Poland in the European rankings on innovation.

According to the 2015 Innovation Union Scoreboard (IUS)<sup>6</sup> Poland was ranked 24th in the EU-28, two places lower than in 2010. In 2009, Poland was promoted in the ranking of the worst evaluated group of “modest innovators” to the preceding group of the “moderate innovators.” However, the distance between Poland and the European innovation leaders (Sweden, Denmark, Finland, and Germany), as well as the EU average is still significant. This applies to both the development of the synthetic indicator of innovation, as well as most of its components. In 2014 Poland occupied a distant 26th place in the category of linkages & entrepreneurship and innovators. Not much better was in the category of research systems and economic effects of innovation (22nd place), as well as intellectual assets (18th place). The biggest advantage of Polish innovation in the field of human resources has proved to be—only in this category, Poland has achieved a result close to the EU average—19th in the EU-28.

According to the 2014 Regional Innovation Scoreboard among “moderate innovators” beside Mazowieckie Voivodship (so far the only province in Poland in this group) were Podkarpackie, Małopolskie, Śląskie, and Dolnośląskie (fig. 2). Polish Voivodships are classified in the last group — “modest innovators” for most indicators (there are 11 in RIS). However, depending on the indicator, there are significant differences in Voivodships classified within the innovation performance group.

Poland best falls as a whole in terms of the indicator “population aged 24–64 with higher education.” Most Voivodships are classified at the level of 90%–120% of the EU average. Mazowieckie and Podlaskie have the highest indicators—more than 120% of the EU average. Lubuskie, Warmińsko-Mazurskie, and Opolskie are in the weakest group, less than 50% of the EU average. The indicator “R&D expenditures in the public sector (%)” shows a considerable diversity in particular Voivodships: for Mazowieckie it is above 120% of the EU average, and the lowest indicators—below 50% of the EU—are noted in Lubuskie, Zachodniopomorskie, Kujawsko-Pomorskie, Podlaskie, Świętokrzyskie, and Opolskie. “R&D expenditures in the business sector (%)” in all Voivodships (except Podkarpackie) are below 50% of the EU average. The indicator “innovation Expenditure for SMEs only, intramural and extramural excluding R&D expenditures (%)” has a value greater than 120% of the EU average in the regions: Warmińsko-Mazurskie and Zachodniopomorskie. Other Voivodships are classified into a group of “moderate innovators” and “follower innovators” (Regional Innovation Scoreboard 2014).

3. Data published by Central Statistical Office of Poland in 2015.

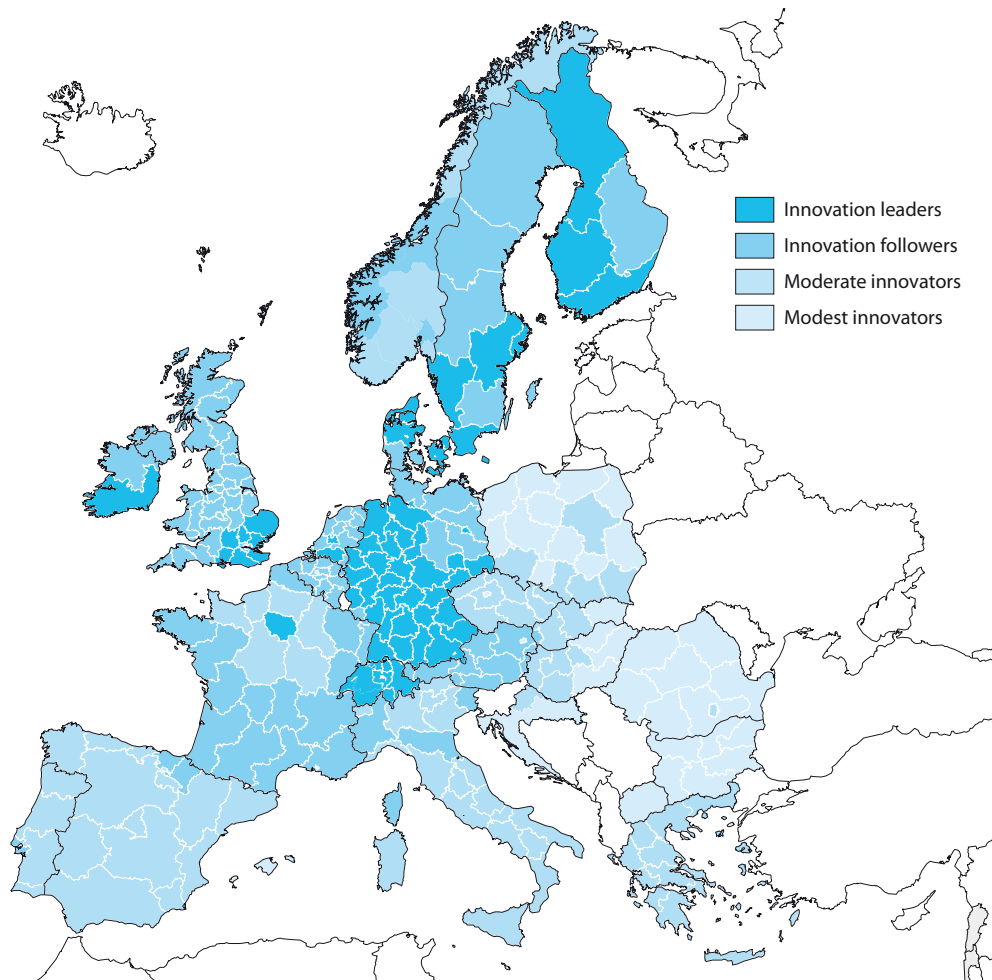
4. See: Research and Innovation. [a:] [http://ec.europa.eu/regional\\_policy/en/policy/themes/research-innovation/](http://ec.europa.eu/regional_policy/en/policy/themes/research-innovation/) [accessed 2014.10.14].

5. See: Strategia rozwoju kraju 2020. Aktywne społeczeństwo, konkurencyjna gospodarka, sprawne państwo. 2012. Warszawa: Ministerstwo Rozwoju Regionalnego.

6. See: Innovation Union Scoreboard 2015. Report prepared by Hugo Hollanders, Nordine Es-Sadki, and Minna Kanerva. [a:] <http://bookshop.europa.eu/en/innovation-union-scoreboard-2015-pbNBAY15001/>. Innovation Union Scoreboard European Innovation Scoreboard (EIS) published annually by 2010, and in 2011 is the continuation of the Innovation Union Scoreboard (IUS). The 2016 scoreboards are expected to be published in the beginning of July 2016 [the IUS for 2016 was published on 13th July 2016 (see: <http://ec.europa.eu/DocsRoom/documents/17822>)—Ed.].

Indicators: “SMEs innovating in-house (in %),” “Innovative SMEs collaborating with others (in %),” “Product or process innovators (in %),” “SMEs implementing marketing or organizational innovations,” and “EPO patent applications (per trillion GDP)” in all regions below 50% of the EU average. Indicator “Employment in medium-high/high-tech manufacturing and knowledge-intensive services (in %)” in Świętokrzyskie, Lubelskie, Warmińsko-Mazurskie, Podlaskie has the lowest value less than 50% of the EU average. Indicator “Sales of new-to-market and new-to-firm innovations (in %)” is less than 90% of the average rate for the EU countries. However, in six Voivodships this indicator is in the range of 50%–90% (Mazowieckie, Świętokrzyskie, Podkarpackie, Małopolskie, Opolskie and Dolnośląskie) and in other Voivodships the ratio is below 50% of the average EU rate.

Socio-economic development of regions (NUTS 2) in Europe, including in Poland is largely dependent on factors related to innovation and the level of innovativeness (Baumol 2003). At the same time socio-economic policy and regional policy are increasingly focused on strengthening regional innovation (Lewandowska and Pater 2012; Pellegrin 2007). An example is the Research and Innovation Strategies for Smart Specialisation (RIS3).<sup>7</sup> Regional innovation is relevant for all



**Fig. 2.** EU Member States’ innovation performance based on Regional Innovation Scoreboard 2014.

*Data source:* Regional Innovation Scoreboard 2014. Report prepared by Hugo Hollanders and Nordine Es-Sadki. [@:] <http://bookshop.europa.eu/en/innovation-union-scoreboard-2014-pbNBAY14001/?CatalogCategoryID=Gj0KABst5F4AAAEjsZAY4e5L>

7. Smart specialisation strategy means the national or regional innovation strategies which set priorities in order to build competitive advantage by developing and matching research and innovation strengths to business needs in order to address emerging opportunities and market developments in a coherent manner, while avoiding duplication and fragmentation of efforts; a smart specialisation strategy may take the form of, or be included in, a national or regional research and innovation (R&I) strategic policy framework. See: RIS3 Guide: <http://s3platform.jrc.ec.europa.eu/s3pguide>.

regions in Europe: in technologically leading regions to remain ahead, in peripheral regions to catch up, but innovation strategies should differ.<sup>8</sup>

## 2 EU Funding and its role for innovation and balancing regional disparity

The European Union within the framework of its Cohesion policy has supported Poland with huge financial resources in order to modernize the economy and develop human capital. These funds contribute to increasing the international competitiveness of Poland, especially in the conditions of globalization. The enormous scale and scope of intervention of the structural funds and the Cohesion Fund in Poland has become a great opportunity and a challenge for the Polish beneficiaries and public administration. Financial resources available in Poland in 2004–2006 and 2007–2013 were programmed in areas of key importance to strengthen the competitiveness of Poland:

- the development of transport infrastructure (which was the biggest gap in relation to other Member States)
- the development of environmental, cultural, and health infrastructure
- the development of enterprises, and strengthening of the innovativeness of the Polish economy
- actions to improve the situation on the labor market

### 2.1 National Development Plan 2004–2006

The strategic objective of the National Development Plan 2004–2006<sup>(9)</sup> (NDP) in Poland was the development of the competitive economy based on knowledge and entrepreneurship, capable of sustained and balanced development that would ensure employment growth and improvement of social, economic and spatial cohesion with the European Union on a regional and national level.<sup>10</sup> NDP became the basis for indicating the direction and the volume of planned involvement of structural funds, the Cohesion Fund and the national resources. The European Union for the implementation of the NDP granted Poland a total amount of funds EUR 12 800 million.

Poland on the implementation of measures within the National Development Plan 2004–2006 has been awarded the total amount of over EUR 12 800 million, including EUR 8 600 million from structural funds and EUR 4 200 million from the Cohesion Fund. The Cohesion Fund also continues projects financed by ISPA pre-accession instruments, therefore, the total allocation of funds for implementation of the Strategy for the Cohesion Fund amounted to EUR 5 600 million. Within the framework of the National Development Plan funding was received for 89 thousand projects. The value of EU co-financing for these projects amounted to PLN 60 500 million.

Competitive enterprises and an innovative economy are necessary conditions for development (Pater and Lewandowska 2015). Therefore, investments supporting entrepreneurship are so important among the projects financed from EU funds. Due to the horizontal dimension of the kind of investments these were realized in almost all programs. The number of projects implemented by entrepreneurs was about 18,5 thousand, including about 16 thousand investments were carried out by micro, small and medium-sized enterprises (SMEs). 2,2 thousand SMEs benefited from advisory services, including 401 which implemented new technologies. Financial support was allocated to about 7,5 thousand projects for participation in fairs and exhibitions, as well as over 1,2 thousand to participate in economic missions.<sup>11</sup> One of the most important elements was also supporting the business environment. EU funds have supported, among other things, recapitalization of 98 micro-loan funds, guarantee funds and seed capital; the creation of 63 industrial parks, science and technology parks and incubators. In order to strengthen cooperation of the R&D sector of the

8. See: The regional impact of technological change in 2020. Framework Service Contract 150083–2005–02–BE (Ref SC36 Regional Impact). Synthesis report by René Wintjes and Hugo Hollanders For Directorate-General Regional Policy on behalf of: The network for European Techno-Economic Policy Support ETEPS AISBL. [[:]] [http://ec.europa.eu/regional\\_policy/sources/docgener/studies/pdf/2010\\_technological\\_change.pdf](http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/2010_technological_change.pdf).

9. See: Poland National Development Plan 2004–2006. Adapted by The Council of Ministries on the 14th of January 2003. [[:]] [http://www.funduszestrukturalne.gov.pl/NR/rdonlyres/07FACA74-E350-4A7B-869D-B20744987C20/0/npr\\_complete\\_final.doc](http://www.funduszestrukturalne.gov.pl/NR/rdonlyres/07FACA74-E350-4A7B-869D-B20744987C20/0/npr_complete_final.doc).

10. See: Narodowy Plan Rozwoju 2004–2006. Efekty. Ministerstwo Rozwoju Regionalnego, Warszawa, 2009.

11. Ibidem.



economy were implemented 80 earmarked projects, which modernized or built 134 research laboratories and specialized, and published 36 reports on technology forecasting.

As regards the horizontal objective 4 of the NDP (horizontal objective 4: Enhancing the structure of the economy to increase the share of sectors with high added value) the specified level of the indicator “expenditures on R&D as % of GDP” noted some progress.<sup>12</sup> The share of expenditure on R&D in GDP increased from 0,54% in 2003 to 0,74% in 2010, but remained significantly lower than the target set in the National Development Plan for 2006 (1,5%). The continuing low—compared to the average for the EU of 2%—level of this relationship is the result of the situation both in terms of public spending and business spending (0,2% of GDP). Noteworthy is also more than a threefold increase in the number of patents granted to Polish residents (from 16,1 per 1 million inhabitants in 2003 to 51,6 per 1 million inhabitants in 2011).

## 2.2 National Cohesion Strategy 2007–2013

The promotion of innovation was a central feature in the Cohesion Policy programmes for 2007–2013,<sup>13</sup> where about EUR 86,4 billion or nearly 25% of the total allocation went towards innovation in the wider sense. This commitment is further strengthened in the new 2014–2020 programming period, where 30% of the total allocations are going to be deployed for innovation in the wider sense. In the future, smart specialisation strategies will also mobilise the innovation potential of all EU regions.<sup>14</sup> In Poland between 2007 and 2013, EU Cohesion Policy instruments provided some EUR 22,3 billion (over 30% of the total) to R&D and innovation, including the mainstreaming of innovative actions and experimentation. Out of this total:

- EUR 11,5 billion goes to research and technological development (R&TD), innovation and entrepreneurship
- EUR 3,5 billion to other SME and Business support
- EUR 3,6 billion to information society (IT services and infrastructure)
- EUR 3,7 billion to human capital

At the end of 2012 almost 80% of the innovation related budget had been allocated to projects.<sup>15</sup> From a statistical point of view, the character of public help within EU funds was related to the economic conditions in each voivodship. Therefore—e.g., in the Podlaskie Voivodship the average sum was PLN 8 325,8 while at the same time in the Śląskie Voivodship it was PLN 3 310,5. Therefore, it is not surprising that the correlation between the scale of GDP and the scale of structural funds showed that bigger sums were directed to Voivodships with lower economic growth (Lewandowska, Stopa, and Humenny 2015). Theoretically, such a strategy is expected to influence the relation between the poorest and the richest Voivodships in Poland: strengthening the weaker and reducing the differences. Actually, that did not happen: “major preferences in allocation of EU funds for Voivodships of Eastern Poland did not give assumed acceleration of economic growth of these Voivodships and did not start the process of ‘catching up’ with the rest of the country” (Misiąg, Misiąg, and Tomalak 2013, 46).

## 2.3 Research and Innovation in the new programming period 2014–2020

Innovation and research investments will further increase in the 2014–2020 Cohesion Policy programmes. In the new programming period, investments under the European Regional Development Fund (ERDF) will be concentrated on 4 key thematic priorities:<sup>16</sup>

12. See: Ocena postępów Polski w konwergencji z krajami UE oraz wpływ funduszy unijnych na gospodarkę w latach 2004–2007. Warszawa, 2008, Ministerstwo Rozwoju Regionalnego; Sprawozdanie końcowe z realizacji Narodowego Planu Rozwoju na lata 2004–2006. Ministerstwo Rozwoju Regionalnego, Warszawa, maj 2013. [@:] [https://www.mr.gov.pl/media/4527/Sprawozdanie\\_koncowe\\_z\\_realizacji\\_NPR\\_2004\\_2006\\_071013.pdf](https://www.mr.gov.pl/media/4527/Sprawozdanie_koncowe_z_realizacji_NPR_2004_2006_071013.pdf).

13. See: Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Cohesion policy: Strategic report 2013 on programme implementation 2007–2013, COM/2013/0210.

14. See: Research and Innovation. [@:] [http://ec.europa.eu/regional\\_policy/en/policy/themes/research-innovation/](http://ec.europa.eu/regional_policy/en/policy/themes/research-innovation/) [accessed 2014.10.14].

15. See: EU Cohesion Policy 2014–2020. Targeting Investments on Key Growth Priorities. [@:] [http://ec.europa.eu/regional\\_policy/sources/docgener/informat/2014/fiche\\_innovation\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/fiche_innovation_en.pdf); Research and Innovation, op. cit.

16. See: Enabling synergies between European Structural and Investment Funds, Horizon 2020 and other research,

- Research and Innovation
- Information and Communication Technologies (ICT)
- Enhancing the competitiveness of small and medium-sized enterprises (SMEs)
- Supporting the shift towards a low-carbon economy

The ERDF investments in innovation will be used to support the implementation of smart specialisation strategies (RIS3) to have a greater and more sustainable impact on jobs and growth in the different regions.

For decades macroeconomic research has shown that innovation drives up to 80% of economic growth in developed countries. Cohesion Policy 2014–2020 will go even further in terms of concentrating funding on research and innovation:<sup>17</sup>

- supporting innovation actors (especially research centres and SMEs) which are directly engaged in developing innovative solutions and the economic exploitation of new ideas
- investing in infrastructure, equipment, pilot product lines, and advanced manufacturing necessary for applied research and innovation activities, including technologies that create capabilities for further innovation in a range of other sectors
- facilitating the cooperation, networking activities and partnerships among different innovation actors working in the same field—universities, research and technological centres, SMEs and large firms—to achieve synergies and technology transfers
- investing in innovation by SMEs in order to increase their competitiveness
- focussing on the training of researchers, development of post-graduate courses of study and entrepreneurial skills

Before the allocation of funds from the European Regional Development Fund for investments in research and innovation, Member States and regions will have to develop so-called smart specialisation strategies. These smart specialisation strategies will help regions tap into their innovative potential and specific resources and strengths. Each region will focus on a limited set of priority areas, in which it already has a competitive advantage.

## Conclusions

In the first years of Poland's membership in the EU (2004–2013) crucial for the growth of innovation and competitiveness was the NDP 2004–2006 and the NCS 2007–2013 and related operational programs co-financed from EU funds. The aim of both strategies was to develop an economy based on knowledge and entrepreneurship, capable of sustained and balanced development, ensuring employment growth and improvement in social, economic and spatial cohesion with the EU on a regional and national level. This was done, in part, by enhancing the competitiveness and innovation, particularly in the manufacturing sector with high added value and the service sector. The totality of existing initiatives, also included expanding the area of activities related to policy support for SMEs.

The evaluation research confirms that the NDP resulted in an increase of the total public scale, development-oriented structural expenditure in Poland. EU funds accounted for about 30% of these expenses. They were so crucial for the country's development policy, including by: intensification of the process of increasing participation in the economic structure of sectors with high added value—investment support received from the European funds under the NDP was a relatively effective and efficient instrument for raising competitiveness and innovation. For example, the effect of support in the term 2004–2006 was about 15% of total expenditure on R&D in GDP (without the support of the cohesion policy spending on research and development would fall), and the growth of innovative companies spending was higher by about 6 percentage points than in the situation if the NDP was not implemented. Without EU funding opportunities for the development of less developed regions, including innovation regional support, would be greatly limited.

---

innovation and competitiveness-related Union programmes. Guidance for policy-makers and implementing bodies. [@:] [http://ec.europa.eu/regional\\_policy/sources/docgener/guides/synergy/synergies\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docgener/guides/synergy/synergies_en.pdf).

17. See: EU Cohesion Policy 2014–2020, op. cit.

Assessment of NDP 2004–2006 (e.g., Polish Ministry of Regional Development) and NCS 2007–2013 shows the positive role of EU funds in the socio-economic development in Poland, both at the macro level and micro-level (e.g., increase in the competitiveness and innovativeness of Polish enterprises). On the other hand, despite all these activities this has not led to a fundamental change in the situation in the form of a significant increase in the competitiveness and innovativeness of Poland. Although Poland in recent years has shifted to the rank in IUS from “innovation modest” on the line “innovation moderate,” but still has a very low rate of innovation; it is only in 24th position among the 28 countries of the European Union. Weaker than Poland are only Romania, Latvia, Bulgaria, and Lithuania. Likewise Polish Voivodships have a weak innovative position.

To change this, Europe and European regions need to become more inventive, reacting more quickly to changing market conditions and consumer preferences in order to become an innovation-friendly society and economy. The key drivers of research and innovation are most effectively addressed at the regional level. Reducing the innovation deficit between European regions is therefore a key task for Cohesion Policy. Due to the limited resources available, it is important to have a strategic approach in the form of a national and/or regional smart specialisation strategy (RIS3) bringing together the relevant business, research, education and public actors to develop and implement strategies that focus their resources on a limited number of areas with competitive advantages. Despite the above mentioned reviews, EU funds will be important and continue to be a strong stimulus to modernization in the new financial perspective of the 2020 years. And their appropriate use would help to build a solid foundation for development. This is especially important, since the current decade is the time gradually increasing the share of domestic financial resources in development expenditure. This process should force the acceleration of changes in the structure of expenditure within the Polish public finance sector.

## References

- BAUMOL, W.J. 2003. “Innovations and Growth: Two Common Misapprehensions.” *Journal of Policy Modeling* no. 25 (5):435–444. doi: 10.1016/S0161–8938(03)00038–3.
- CANCELO, J.R., J.A. FAINA, and J. LOPEZ-RODRIGUEZ. 2009. “Measuring the Permanent Impact of European Structural Funds on Peripheral Objective 1 Regions: The Case of Galicia.” *European Planning Studies* no. 17 (10):1535–1558. doi: 10.1080/09654310903141771.
- CHURSKI, P. 2008. “Structural Funds of the European Union in Poland—Experience of the First Period of Membership.” *European Planning Studies* no. 16 (4):579–607. doi: 10.1080/09654310801983506.
- GOSSLING, T. 2007. “Innovation in Regions.” *European Planning Studies* no. 15 (2):253–270. doi: 10.1080/09654310601078788.
- KOMLOSI, E., L. SZERB, Z.J. ACS, and R. ORTEGA-ARGILES. 2015. “Quality-Related Regional Differences in Entrepreneurship Based on the Gedi Methodology: The Case of Hungary.” *Acta Oeconomica* no. 65 (3):455–477. doi: 10.1556/032.65.2015.3.6.
- LEWANDOWSKA, A., and R. PATER. 2012. “Innovativeness of Podkarpackie District on the Background of the European Union.” *Nierówności Społeczne a Wzrost Gospodarczy* (28):299–306.
- LEWANDOWSKA, A., M. STOPA, and G. HUMENNY. 2015. “The European Union Structural Funds and Regional Development. The Perspective of Small and Medium Enterprises in Eastern Poland.” *European Planning Studies* no. 23 (4):785–797.
- MARKOWSKI, T. 2004. “Konkurencyjność i innowacyjność polskich regionów wobec akcesji do UE.” In *Ekonomiczno-organizacyjne uwarunkowania rozwoju regionu — teoria i praktyka*, edited by D. Stawasz. Łódź: Wydawnictwo Uniwersytetu Łódzkiego.
- MISIĄG, J., W. MISIĄG, and M. TOMALAK. 2013. *Ocena efektywności wykorzystania pomocy finansowej Unii Europejskiej jako instrumentu polityki spójności społeczno-gospodarczej oraz poprawy warunków życia*. Rzeszów: WSiZ z siedzibą w Rzeszowie.
- PATER, R., and A. LEWANDOWSKA. 2015. “Human Capital and Innovativeness of the European Union Regions.” *Innovation — the European Journal of Social Science Research* no. 28 (1): 31–51. doi: 10.1080/13511610.2014.962487.
- PELLEGRIN, J. 2007. “Regional Innovation Strategies in the EU or a Regionalized EU Innovation Strategy? Conceptual and Empirical Underpinnings of the EU Approach.” *Innovation — the European Journal of Social Science Research* no. 20 (3):203–221. doi: 10.1080/13511610701707367.