

Regional Policy of the European Union and the Stimulation of Innovation: The Role of the Operational Programmes in Poland

Abstract

The effectiveness of Operational Programmes under the regional policy is a key issue of spending of EU funds in Poland. One of the most important priorities of the mentioned Programmes in the last financial perspectives is innovation, treated as an essential factor of development. In Poland, we can talk about treating innovation as a priority starting from the period 2007–2013. At that time, about 17% of funds under regional policy (about PLN 49.7 billion) were allocated to activities related to innovativeness and competitiveness of the economy, similarly is in the current perspective for 2014–2020. It can be argued that funds under the EU Regional Policy Operational Programmes in Poland contribute to the achievement of innovation goals in a highly diversified manner. There are areas in which the effects should be assessed negatively (eg some dependence of Business environment institutions on EU funds). There are also such effects that are definitely positive (eg improvement of public research infrastructure).

Key words: The European Union Funds, Regional Policy, Public Policy, Evaluation, Operational Programmes

There is no area that currently would generate more interest from the point of view of regional policy than innovation. This is because presently dominant development paradigm assigns innovation as a factor of development.¹ Accord-

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¹ T. Farole, A. Rodríguez-Pose, M. Storper, *Cohesion Policy in the European Union: Growth, Geography, Institutions*, “Journal of Common Market Studies”, no. 49/2011, p. 1093; S. Kinnear, I. Ogden, *Planning the innovation agenda for sustainable development in resource regions: A central Queensland case study*, “Resources Policy”, no. 39/2014, pp. 42–53.

ing to the aforementioned paradigm, innovation is treated as a motor of development and as such it can change the face of a less-developed region into a developed region, where not only investments are located, but above all, citizens want to inhabit. This text refers to the ways of supporting innovation in Poland with the help of Operational Programmes. However, it should be noted that supporting innovation in the economy is not an easy task, as we are told by experience of, for example Western European countries.² The systemic approach that dominates in the social sciences, which draws attention to the comprehensive nature of supporting innovation requires that decision makers consider many aspects on which the position of the country or region depends. From a political point of view, this makes it very difficult and complex to support innovation (innovation policy). Nevertheless, according to the innovation-driven development paradigm, it is estimated that in developed countries, about two-thirds of economic growth is attributed to the introduction of innovation.

Contextuality of activities within the framework of regional policy, in particular in the field of innovation³ or the implementation of Operational Programmes, draws attention to the need to identify the appropriate elements and interaction of the participants of the innovation system. In Poland, supporting innovation takes place largely from EU funds. As part of the funds earmarked for Operational Programmes, it was assumed to support projects and activities of an innovative nature. Taking into account the next EU financial perspectives, the allocation of funds for innovation is increasing. Therefore, it is all the more legitimate to ask the question how the achievement of the objectives of the Operational Programmes is presented. in the field of innovation.

With the considerable amounts earmarked for innovation from EU funds, one should look at the experience of the old EU member states. Their experiences can become very useful for Poland. Without fear of making a mistake, it should be stated that starting from 1989 in the old EU member states, as a result of changing the paradigms of regional policy, including its reform, there has been a significant increase in expenditure on innovation. Such a long period meant that these countries and regions have acquired extensive experience in supporting the research and development sphere, or, more generally, supporting the innovation system. Experiences of old member states indicate very diverse effects that can be identified in three dimensions: time (EU financial perspectives), thematic (priority area), spatial (region). Meanwhile, in Poland, we can speak of treating innovation as a priority from the period 2007–2013. At that

² M. Bellandi, A. Caloffi, *An analysis of regional policies promoting networks for innovation*, "European Planning Studies", no. 18/2010, pp. 80–81.

³ J.W. Tkaczyński, M. Świstak, *Encyklopedia polityki regionalnej i funduszy europejskich (Encyclopedia of regional policy and European funds)*, Wydawnictwo C.H. Beck, Warszawa 2013, pp. 172–176.

time, about 17% of funds under regional policy (about 49.7 billion PLN) were allocated to activities related to innovativeness and competitiveness of the economy, similarly it is in the current perspective for 2014–2020. Such a short period of time does not allow for final grading, but it is also necessary to be able to create support for innovations in subsequent programming periods. The aim of this article is an attempt to verify the effectiveness of the OP in supporting innovative activity. At the same time, the author expresses the thesis that measures of OP regional policy in Poland contribute to the achievement of innovation goals in a highly diversified manner, and what is more, their impact on the demand character. There are areas in which this impact may be of a debatable nature, but at the same time we can identify areas in which this impact can be assessed positively. Moreover, the Operational Programmes contribute to a temporary stimulation in the field of innovation, and to a lesser extent result in a durable increase in the potential in this area.

The progress of the beneficiary countries of the regional policy in the area of spending funds for innovation will determine the will or lack of continuity among the Member States. In Western European countries there is a growing conviction that regional policy whose main task is to equalize disproportions, ceases to be attractive in this form. There is a view that subsequent programming periods in which funds were to be spent on investments improving at most the quality of life, mainly in the form of investments in infrastructure (e.g. roads, railways, public infrastructure) will not build lasting advantage, are not sustainable in the long-term.⁴ Because the road once built will need renovation in time, which means that funding from regional policy funds will never end. Regional policy in the future is a policy that not only emphasizes cohesion, convergence, but also stimulates economic growth or competitiveness.⁵ The role that innovations are attributed to should also be seen as the effect of the transition from industrial good to post-industrial, where quality and innovation are important.

Innovation and Operational Programmes as Instruments of Regional Development

According to Oxford Dictionary, innovation means something new, making something new in the existing state, attention is paid to a new idea, method

⁴ More on the role of infrastructure in regional development, see M. Jarosz, M.W. Kozak, *Eksplzja nierówności? (Explosion of inequality?)*, Instytut Studiów Politycznych PAN, Warszawa 2015, p. 216.

⁵ M. Baun, D. Marek, *Cohesion Policy in the European Union*, Palgrave, New York 2014, p. 223.

or product.⁶ Innovation is often associated with a significant or even a breakthrough change. However, innovation can not only be treated in accordance with the above approach. Innovative changes also gain less spectacular changes, such as incremental changes, which are a combination of old and new solutions.⁷ In the perception of innovation one should also pay attention to the process of making changes, which are not always associated with breakthrough corrections and are often burdened with failures, which in turn emphasizes another feature of supporting innovation – risk. One thing is without doubt that the goal of this process is to create new solutions in various areas such as products, processes, services, technologies or ideas.

Creation of innovations understood as an innovation policy is an intentional and purposeful activity, including impact on many processes and development factors. The above systemic perception of innovation is reflected in the form of national or regional innovation systems. These systems are characterized as a network of institutions⁸ from the public and private sectors that initiate activity, interactions in order to implement, modify and diffuse new technologies. Among many definitions of the innovation system,⁹ not only interactions with the aim of new technology are emphasized. It is noted that the innovation system consists of elements, relations that, as part of the interaction, contribute to the emergence, diffusion and use of new economically useful knowledge.¹⁰ Research shows that awareness and sharing common goals by all entities involved in this process is one of the key factors of the effectiveness of the innovation system.¹¹ Innovation should be treated not as an end in itself, but a key instrument / mechanism by which diverse regional policy objectives can be achieved. Sustainable development may have an opportunity to be implemented by treating innovation as an element that implements regional development, which is identified as a strengthening and supporting factor.

⁶ Oxford Dictionaries, <https://en.oxforddictionaries.com/definition/innovation> (24.08.2018).

⁷ P. Cooke, *Four minutes to four years: the advantage of recombinant over specialized innovation – RIS3 versus 'smartspec'*, "European Planning Studies", no. 24/2016, p. 1496.

⁸ L. Liu, *Regional institutions and their impact on the connectedness of firm's innovation networks*, "Institutions and Economies", no. 1/2016, pp. 102–129; D. Doloreux, *What we should know about regional systems of innovation*, "Technology in Society", no. 24/2002, pp. 243–263.

⁹ M. Bellandi, A. Caloffi, op. cit., pp. 67–82.

¹⁰ *Regional Advantage and Innovation: Achieving Australia's National Outcomes*, eds. S. Kinnear, K. Charters, P. Vitartas, Springer, Berlin–Heidelberg 2012, p. 9.

¹¹ A. Gautam, *Collaboration networks, structural holes, and innovation: A longitudinal study*, "Administrative Science Quarterly", no. 45/2000, pp. 425–455.

Operational Programmes are an instrument of regional policy whose task is to achieve the specific objectives of this public action. It should be noted that these are documents developed at the national or regional level depending on the selected fund management model in a given country.¹² Different models are allowed here depending on the Member State, its size, level of decentralization or even the administrative culture. Member States and their partners must ensure that the objectives of the OP will be implemented while meeting the management and control requirements and spend these funds. In this sense, OP are one of the key elements of programming measures under the Multiannual Financial Framework (MFF). The OP is a document submitted by the state members or a region subject to negotiations, and then the approval of the EC. This document defines the development strategy together with a coherent set of priorities, which are a kind of explanation of how a given country or region understands the general priorities¹³ expressed in EU strategic documents (e.g. for 2014–2020 in the Europe 2020 Strategy) and individual funds (for the years 2014–2020 European Structural and Investment Funds).¹⁴ What is more, within the OP, specific financial resources are planned, while what the Programme is supposed to implement is described in the form of quantifiable goals and presented by means of indicators. It should also be noted, in the context of the effectiveness of achievement of innovation objectives under the OP, that this document can not contain any content, on the contrary, the programmes have a predetermined structure, which is also subject to the EC's assessment. As already mentioned, the OP is approved by the EC, which in this process takes into account the coherence of the Programme with regulations regarding regional policy, the programme's contribution to the so-called thematic objectives and coherence with the directional document for a given country. The purpose of this article is not to analyze the OP as such, but to reflect on the extent to which these innovation goals are being pursued.

¹² P. de Buhr, C. Heider, *European Structural and Cohesion Policy*, in: *EU Policies an Overview: From Decision-Making to implementation*, eds. R.W. Strohmeier, I. Habets, Centre for European Studies, Brussels 2013, p. 395.

¹³ J.W. Tkaczyński, M. Świstak, op. cit., p. 397.

¹⁴ Compare art. 97 of Regulation No. 1303/2013 establishing common rules on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development, the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No. 1083/2006 [in:] OJ EU No. L 347 of 20 December 2013.

Taking into account the results of the research¹⁵ so far, it is difficult to make one unambiguous conclusion regarding the effectiveness of external assistance¹⁶ which is related to the Operational Programmes in the entire EU regional policy.¹⁷ In the scale of all EU Member States, reaching back to the reform of the regional policy of the 1980s,¹⁸ the problem is not the lack of research, but rather the diversified conclusions of these studies in terms of the effectiveness of the OP,¹⁹ or, more broadly, external assistance.²⁰ It can be said that just as there is a lot of research in this area, the consensus is so limited in terms of reducing regional disparities, supporting competitiveness and improving the quality of governance²¹ in the context of the OP effects.

¹⁵ F. Barca, *An Agenda for a Reformed Cohesion Policy. A place-based approach to meeting European Union challenges and expectations*, Independent Report prepared at the request of Danuta Hübner, Commissioner for Regional Policy, April 2009, p. XXII, http://www.europarl.europa.eu/meetdocs/2009_2014/documents/regi/dv/barca_report_barca_report_en.pdf (17.12.2018); A. Cappelen, F. Castellacci, J. Fagerberg, B. Verspagen, *The Impact of EU Regional Support on Growth and Convergence in the European Union*, “Journal of Common Market Studies”, no. 4/2003, pp. 621–640; J. Bachtler, I. Begg, D. Charles, L. Polverari, *EU Cohesion Policy in Practice: What Does it Achieve?*, Rowman & Littlefield International, London 2016, pp. 59–64.

¹⁶ Cf. G. Gorzelak, *Cohesion policy and regional development*, in: *EU Cohesion Policy, Reassessing Performance and Direction*, eds. J. Bachtler, P. Berkowitz, S. Hardy, T. Muravska, Milton Park, London, New York 2017, pp. 34–38.

¹⁷ J. Bachtler, *Ewaluacja regionalnej polityki w Europie: kultura, zaangażowanie, potencjał (Evaluation of regional policy in Europe: culture, commitment, potential)*, in: *Teoria i praktyka ewaluacji interwencji publicznych (Theory and practice of evaluation of public interventions)*, eds. K. Olejniczak, M. Kozak, B. Lendzion, Akademia Leona Koźmińskiego, Warszawa 2008, pp. 60–74; M. Boldrin, F. Canova, *Inequality and Convergence in Europe's Regions: Reconsidering European Regional Policies*, “Economic Policy”, no. 32/2001, pp. 207–245; A. Rodriguez-Pose, U. Fratesi, *Between Development and Social Policies: The Impact of European Structural Funds in Objective 1 Regions*, “Regional Studies”, no. 38/2004, pp. 97–113.

¹⁸ R. Michie, R. Fitzgerald, *The Evolution of the Structural Funds*, in: *The Coherence of EU Regional Policy: Contrasting Perspectives on the Structural Funds*, eds. J. Bachtler, I. Turok, Jessica Kingsley Publishers, New York 2013, pp. 14–19.

¹⁹ Cf. J. Bachtler, I. Begg, D. Charles, L. Polverari, *The long-term effectiveness of EU Cohesion Policy Assessing the achievements of the ERDF, 1989–2012*, in: *EU Cohesion Policy, Reassessing Performance and Direction*, eds. J. Bachtler, P. Berkowitz, S. Hardy, T. Muravska, Milton Park, London, New York 2017, p. 20.

²⁰ P.T. Bauer, *From Subsistence to Exchange, and Other Essays*, Princeton University Press, Princeton, New York 2000; B. Ramalingam, *Aid on the Edge of Chaos: Rethinking International Cooperation in a Complex World*, Oxford University Press, Oxford 2012.

²¹ J. Tosun, *Absorption of Regional Funds: A Comparative Analysis*, “Journal of Common Market Studies”, no. 52/2014, pp. 371–384.

Referring to the literature of the subject issue,²² it should be noted that OP effectiveness can be measured in a longer time perspective counting from their completion. Hence the estimations based on the observation of the last few years, although significant, because they show the latest tendencies, is far from the optimum and cannot be at the same time the nature of final conclusions. Hence, it is not exaggerated to say that the considerations about the effectiveness of the OP may relate to the period up to 2007. This is because the effects of newly completed projects in the 2007–2013 perspective are very difficult to measure. The last of them were implemented in 2015.

The Effects of OP in Supporting Innovation and Competitiveness in Poland

The effects of the Programmes are quite diverse in Poland. In this part, author will focus on the effects of competitiveness and innovation on the basis of available reports mainly from the period 2007–2013, in which for the first time innovation was taken into account as a significant priority. It should be noted that in this programming period, innovation has become the second largest field of activity right after transport. In the period 2004–2006, innovation was not an important point of reference, despite the fact that the priority axis was to increase the competitiveness of enterprises in which the creation of conditions for the growth of enterprises' innovativeness and support for business environment institutions was assumed.²³ In view of the low level of interest in some of the activities under which innovative projects could be implemented, these funds have been moved to activities related to standard investments in enterprises.²⁴ In the programming period 2007–2013, innovation has been reflected in the third objective of the National Strategic Reference Framework, i.e. increasing competitiveness and innovation of enterprises, especially the manufacturing sector with high added value and the development of the services sector.²⁵

²² M. Beugelsdijk, S. Eijffinger, *The effectiveness of structural policy in the European union: An empirical analysis for the EU-15 in 1995–2001*, "Journal of Common Market Studies", no. 43/2005, pp. 49–50.

²³ Narodowy Plan Rozwoju. Podstawowe informacje (National Development Plan. Basic information), Ministerstwo Gospodarki, Pracy i Polityki Społecznej, Warszawa 2004, pp. 4–6.

²⁴ J.W. Tkaczyński, R. Willa, M. Świstak, *Fundusze Unii Europejskiej, Cele – działania – środki (European Union Funds, Objectives – action – measures)*, Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków 2008, pp. 530–541.

²⁵ Ministry of Regional Development, National Strategic Reference Framework 2007–2013 in support of growth and jobs, Warsaw 2006, p. 92.

The basic assumption of this document was the conviction that an increase in expenditure on investments and innovations will increase the innovative capacity of enterprises, which in the long-term will translate into an increase in innovation in the scale of the entire economy. The support was two-way. On the one hand, it was direct investment support (mainly basic investments building up innovative capacity or implementation of information and communication technologies), on the other hand it was decided to support the potential of the environment creating innovation through business environment institutions – BEI (sureties, loans, consultancy in the field of innovative activity, technology transfer, etc.). Assistance was also planned to support the research and development infrastructure, which was supposed to increase the effectiveness of the research sphere, from which the innovative potential of the country depended on its effectiveness. In this respect, the investments consisted in supporting, for example, laboratories, intellectual property protection and implementation, as well as the construction and modernization of the infrastructure of strategic research units, including those constituting the regional innovation potential.

The programme which for the years 2007–2013 was to have the greatest impact on the improvement in innovation was the Innovative Economy Operational Programme (IE OP). If we look at the indicators of achievements in the areas of R&D, innovation and patent activity reported within the framework of the Programme, it can be concluded that they were implemented to a large extent. For example, the beneficiaries of projects under Priority Axis 1 of the Programme reported the number of commercialized R&D results carried out in scientific units and the amount of R&D expenditure in connection with the implementation of projects. The targets set for these indicators have been more than met in 152% and 176% respectively. In addition, a significant number of beneficiaries from Axis 4 started R&D as a result of the support received. This applies to 479 enterprises, which corresponds to as much as 532% of the previously assumed target value. Another aspect was the broadly defined innovations introduced by companies and cooperation with business environment institutions (BEI). Cooperation with BEI as well as the activity of companies in clusters should stimulate faster and more effective development. As regards the construction of the BEI ecosystem, the number of newly established and supported investor service centers was reported (the value of indicator 15 with the assumed target value of 16) and the number of enterprises that have used BEI assistance or have been handled by them. The actual implementation of the projects exceeded the assumed goals several times (e.g. the number of investment projects served by the supported investor service centers, which was 50 times larger than the target value). The number of patent applications made by beneficiaries of projects significantly exceeded expectations, as it amounted to as much as 437% of the assumed target value.

In Axis 1 and 4, the achievement of the target was 500% or more, and among SMEs implementing projects from Axis 4 up to 1 062.50%.²⁶ Looking at the objectives of the IE OP only from the perspective of the analysis of indicators, it should be stated that the Programme has achieved the assumed goals in the field of innovation. However, the situation is a bit more complex.

The results of the evaluation show that a significant part of the implemented projects contributed to the increase in the scope of production, which was not necessarily the aftermath of R&D. These were largely quite standard investment projects, which understandably contribute to increasing fixed assets, and not necessarily related to conducting research and their subsequent implementation. The action: 1.4–4.1 IE OP were an exception. The evaluation of projects in the aspect of their innovativeness was based mainly on the subjective opinions of the applicants themselves, which also raised doubts among the evaluating projects.²⁷ Formally, more than half of the product innovations being the subject of the project under the IE OP has been an innovation on the international scale.²⁸ In the case of actions 1.4–4.1 IE OP, 93% of beneficiaries introduced new or improved products. Therefore, at the level of beneficiaries, the objectives have been achieved. The problematic issue is the actual innovation of the implemented exchanges on a national or global scale. Within projects, much more can be identified by innovations involving the implementation of existing solutions rather than the creation of own original innovations. What is more, the results of qualitative research, mainly interviews conducted with beneficiaries, indicate that research in projects was implemented mainly due to the fact that they were an obligatory condition for receiving funding.²⁹

²⁶ B. Ciężka, J. Gąska, O. Mazurowska, K. Pastor, U. Siedlecka, Ł. Widła-Domaradzki, *Wpływ polityki spójności 2007–2013 na konkurencyjność przedsiębiorstw i rozwój przedsiębiorczości w Polsce. Raport końcowy (The impact of cohesion policy 2007–2013 on the competitiveness of enterprises and the development of entrepreneurship in Poland. Final Report)*, WiseEuropa, Warszawa 2017, p. 62.

²⁷ P. Gorgol, J. Kotrański, A. Weremiuk, *Metaewaluacja wyników badań ewaluacyjnych Programu Operacyjnego Innowacyjna Gospodarka 2007–2013, raport końcowy (Metaevaluation of the results of evaluation studies of the Innovative Economy Operational Program 2007–2013, final report)*, Warszawa 2012, p. 48, http://www.poig.2007-2013.gov.pl/AnalizyRaportyPodsumowania/Documents/Raport_Koncowy_Metaewaluacja_12_12_2012.pdf (17.12.2018).

²⁸ Cf. T. Klimczak, A. Lis, A. Miller, A. Rauzer, Sz. Piotrowski, W. Pander, A. Weremiuk, E. Wojnicka-Sycz, *Ocena wpływu Programu Operacyjnego Innowacyjna Gospodarka na zwiększenie innowacyjności przedsiębiorstw. Raport końcowy (Assessment of the impact of the Innovative Economy Operational Program on increasing the innovation of enterprises. Final report)*, p. 200, http://www.poig.2007-2013.gov.pl/AnalizyRaportyPodsumowania/Documents/Raport_Koncowy_inowacyjnosc_POIG_grudzien_2014.7z (24.11.2018).

²⁹ B. Ciężka, J. Gąska, O. Mazurowska, K. Pastor, U. Siedlecka, Ł. Widła-Domaradzki, op. cit., pp. 65–66.

The above approach favored a relatively high dynamics of spending funds on priorities related to innovations and at the same time allowed the use of allocated funds.³⁰ It should be clearly stated that the outlined strategy was at the same time a response to the needs of potential beneficiaries (mainly entrepreneurs), who most often paid attention to the purchase of new machines and equipment for the company.³¹ This is confirmed by the results of other studies, according to which the internal innovation capabilities of Polish enterprises are quite limited. Most companies use an imitative strategy and are focused on finding niches at the national level. They do not create solutions that would become the basis for innovation, instead they use external knowledge extensively.³²

Financing projects that actually concern increasing competitiveness through the purchase of fixed assets or intangible assets, while not giving rise to an advantage based on significant innovation, can be an adequate exemplification of supporting innovation. This is due to the fact that in the general perception the possibility of raising capital for standard projects was relatively easier than for instruments supporting breakthrough innovations. In the literature on the subject, such a process is defined as the replacement of ambitious innovation goals by objectives related to the development of infrastructure.³³ This effect can also be observed in other areas of OP support in Poland.

The results of the audit carried out by the Supreme Audit Office (SAO) indicated that the OP did not constitute a coherent system of supporting the most innovative undertakings. The applied mechanisms, despite the high level of complexity, did not ensure the selection of innovative projects, the implementation of which would contribute to the creation of products or breakthrough services. These, in turn, could affect innovation in the scale of the entire economy. In the opinion of the SAO, the programmes audited inadequately preferred products or technologies that were to be introduced for the first time, e.g. on a regional, national or international scale. Therefore, they did not ensure the implementation of innovative products or technologies that would significantly increase competitiveness. It did not allow for the actual and effective implementation of goals (in the field of innovation) formulated

³⁰ M. Jarosz, M.W. Kozak, op.cit., pp. 216–220.

³¹ B. Ciężka, J. Gąska, O. Mazurowska, K. Pastor, U. Siedlecka, Ł. Widła-Domaradzki, op. cit., p. 53.

³² A. Wziątek-Kubiak, E. Balcerowicz, M. Pęczkowski, *Differentiation of innovation strategies of manufacturing firms in the new Member States: cluster analysis on firm level data*, "Argumenta Oeconomica", no. 31/2013, pp. 22–23.

³³ M.W. Kozak, *Deklarowane czy rzeczywiste priorytety rozwoju (Declared or actual development priorities)*, in: *Polska europejska czy narodowa (Polish European or national)*, ed. M. Jarosz, Instytut Studiów Politycznych PAN, Warszawa 2014, pp. 143–152.

earlier in the strategic documents.³⁴ Other research shows that the problem was the lack of concentration on specific priorities, areas in which innovation excellence will strive. In the case of the IE OP, here we are talking about the dispersal of funds for many areas such as: innovation, regional development, production productivity, etc. To a certain extent, the instrument to prevent the fragmentation of funds in many areas was defining INFO-TECHNO-BIO areas for the implementation of some activities, which fulfilled this its role only partially.³⁵

The large scale of financing contributed to the increase in employment at aid beneficiaries, which temporarily translated into a temporary reduction in their productivity. Co-financed enterprises recorded an improvement in financial results,³⁶ increased profits and return on assets, as well as sales revenues. The intervention in financing infrastructure and R&D works was sent to, among others, to enterprises representing key industries for the economy development and the strongest clusters. The implementation of so many projects has also contributed to a significant increase in employment throughout the research and development sphere.³⁷

The cooperative relations sector also benefited from funds allocated for innovative actions under the OP. Meanwhile, co-financed clusters are characterized by the weakness of cooperation between members of supported links, which undermines the effectiveness of their functioning. The reason is the lack of geographical proximity and the lack of a criterion of appropriately long documented cooperation as a condition of support at the application stage. It points out the low relational capital of entrepreneurs who are reluctant to share knowledge, ideas or plans with other entities. Clusters projects, especially where it was possible to obtain funds for the so-called hard infrastructure was successful. Funds were allocated, among others for such expenses as office, conference rooms, research laboratories, halls, buildings for testing innovative solutions, research equipment, specialist devices or IT tools. The main motivation for the participation of economic entities in

³⁴ Najwyższa Izba Kontroli, *Wykorzystanie przez przedsiębiorców środków publicznych na innowacje i prace badawczo-rozwojowe (The use of public funds by enterprises for innovation and research and development)*, Najwyższa Izba Kontroli, Warszawa 2018, p. 13.

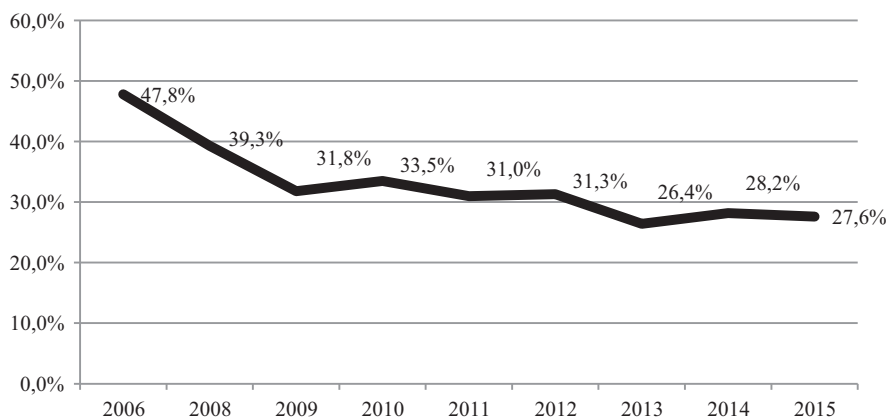
³⁵ T. Klimczak, A. Lis, A. Miller, A. Rauzer, Sz. Piotrowski, W. Pander, A. Weremiuk, E. Wojnicka-Sycz, op. cit., p. 199.

³⁶ This is also confirmed by research under Professor Grzegorz Gorzelak. Cf. J.T. Hryniewicz, *Lokalny rozwój gospodarczy oraz znaczenie środków europejskich (Local economic development and the importance of European funds)*, in: *Polska gmina 2015 (Polish gmina 2015)*, ed. G. Gorzelak, Wydawnictwo Naukowe Scholar, Warszawa 2016, p. 103.

³⁷ IMAPP, *Efekty polityki spójności 2007–2013 w Polsce (Effects of cohesion policy 2007–2013 in Poland)*, Warszawa 2015, p. 27, https://www.ewaluacja.gov.pl/media/47055/raport_synteza_PL.pdf (17.12.2018).

the cluster was the willingness to establish business contacts, the possibility of using a common infrastructure or increasing the credibility of the company.³⁸ The weakness of cooperation within clusters is an important aspect if we talk about supporting them, because if the cooperation is not factual, it does not bring added value (increase in competitiveness, innovation), and cluster projects can become only standard investment activities. Such projects can be implemented by individual enterprises, and not cooperative connections of supra-regional importance (the subject of co-financing under the IE OP). Therefore, we have to deal with co-operation at least in the formal dimension through the cooperative relations sector also benefited from funds allocated for innovative actions in IE OP.

As part of innovation support, it was not possible to implement the basic assumption of intervention, which was better cooperation of two areas: science and business, and business and business in the field of innovative activity. This confirms the participation of companies that cooperated in the field of innovative activity.

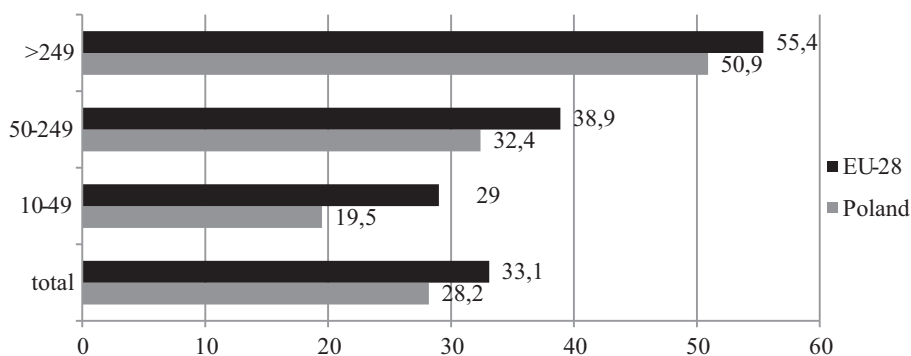


Graph 1. Share of enterprises that cooperated in the field of innovative activity (in %)

Source: author's own elaboration based on: M. Antosiewicz, P. Bartkiewicz, J. Frankowski, H. Kalinowski, M. Ośka, A. Regulski, J. Witajewski-Baltvilks, *Ewaluacja ex-post wpływu funduszy unijnych w ramach perspektywy finansowej 2007–2013 na podstawowe wskaźniki innowacyjności i działalności B+R (Ex-post evaluation of the impact of EU funds under the 2007–2013 financial perspective on basic innovation and R&D activity indicators)*, Fundacja Naukowa Instytut Badań Strukturalnych, Warszawa 2017, p. 39.

³⁸ T. Klimczak, A. Lis, A. Miller, A. Rauzer, Sz. Piotrowski, W.H. Pander, A. Wermiuk, E. Wojnicka-Sycz, op. cit., pp. 126–127, 200–201.

The percentage of enterprises cooperating in the field of innovation is systematically decreasing (in 2006 it amounted to 47.8%). In 2015, only slightly more than a quarter of active enterprises innovatively cooperated with other entities in this area (27.6%). Importantly, this trend is opposite to that recorded in the EU-28 countries. There, in 2010–2014, the share of cooperating enterprises in the field of innovative activity increased from 25.5 to 33.1%.³⁹ The likely drop in cooperation could have been the result of the economic crisis of recent years in Europe. Analyzing the scale of cooperation of Polish enterprises in the European context, it should be stated that it differs from the EU average to a moderate degree, which is confirmed by data concerning Poland and the entire EU.



Graph 2. Cooperation in the field of innovative activity in Poland and EU-28 in 2014 by size of enterprises (% of companies)

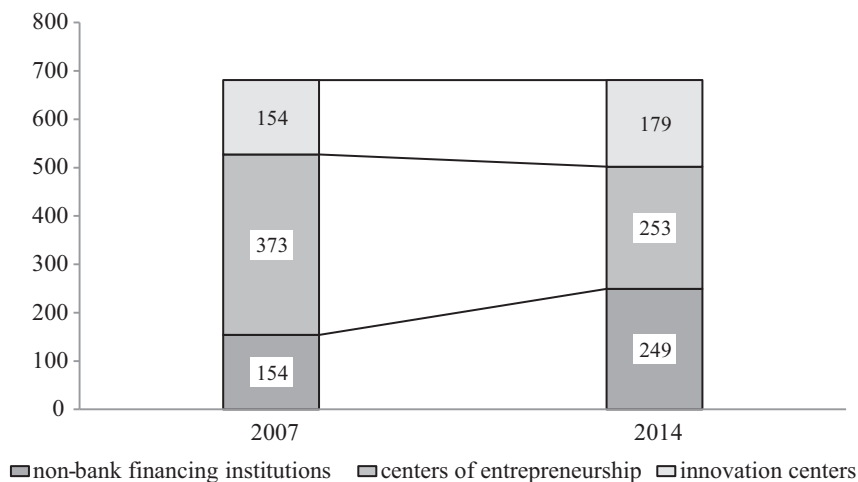
Source: M. Antosiewicz, P. Bartkiewicz, J. Frankowski, H. Kalinowski, M. Ośka, A. Regulski, J. Witajewski-Baltvilks, op. cit., p. 39.

The biggest difference can be identified for small businesses. Research shows that the larger the enterprise, the more often it cooperates with other entities in the field of innovative activity. This is important because EU innovation policy assumes that innovations should also involve the smallest companies, and they may result from cooperation. Among large enterprises, every second company decided to cooperate. In Poland, companies most often cooperate in the field of innovation with their suppliers (equipment, materials, components, software), as well as with other enterprises within the same capital group as well as universities and research institutions. On the other hand, such cooperation is relatively rarely undertaken with competitive companies from the same sector and with clients.⁴⁰

³⁹ M. Antosiewicz, P. Bartkiewicz, J. Frankowski, H. Kalinowski, M. Ośka, A. Regulski, J. Witajewski-Baltvilks, op. cit., p. 39.

⁴⁰ Ibidem.

Another form of innovation support mentioned above was the creation of an environment conducive to innovation (individuals and institutions) in the form of business environment institutions (BEI). This category includes, for example, technology incubators, science and technology parks, innovation centers, entrepreneurship centers, academic business incubators, etc. Funds allocated to BEI were used mainly in centers with the greatest innovation potential. The funds allocated for the support of BEI have not translated into the growth of enterprises' innovativeness so far. The share of revenues of these entities from the provision of research and pro-innovation services remains on one of the next positions. Funds for innovations also influenced the structure of BEI, which in the light of the lack of interest from enterprises on innovative support for BEIs became mainly distributors of non-bank financial instruments co-financed from EU funds. In this way, institutions that are supposed to animate cooperation for innovation, technology transfer have become institutions participating in the distribution system of EU funds.⁴¹ This is not entirely favorable because it checks BEI for the function of issuing EU funds, which in the situation of their reduction may result in lack of justification for the functioning of BEI.

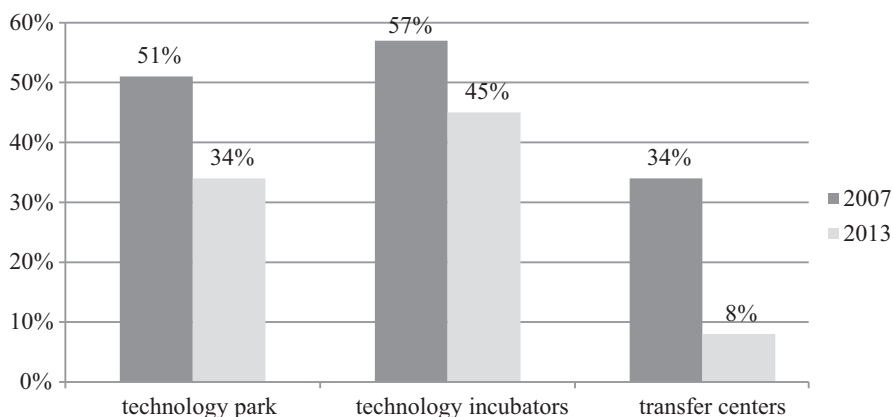


Graph 3. The structure of BEI in Poland in 2007 and 2014

Source: author's own elaboration based on: A. Bąkowski, M. Marzewska, *Ośrodki Innowacji i Przedsiębiorczości w Polsce Raport 2014 (Innovation and Entrepreneurship Centers in Poland. Report 2014)*, Polska Agencja Rozwoju Przedsiębiorczości, Poznań–Warszawa 2015, p. 17.

⁴¹ IMAPP, *Efekty polityki spójności 2007–2013 w Polsce (Effects of cohesion policy 2007–2013 in Poland)*, op. cit., p. 33.

At the beginning of the programming period in 2007, most of the BEI were business centers (mainly training and consulting centers). In 2014, the share of non-bank financial institutions (mainly servicing guarantee and loan funds from the funds of Regional Operational Programmes) and innovation centers was higher. The most visible changes relate to centers of innovation, whose infrastructure was almost entirely created thanks to the EU support. In the period 2007–2014, the number of technology parks in Poland increased almost three times (from 15 to 42),⁴² and the number of technology incubators increased by half (from 16 to 24). EU funds had even greater causative power if weighed against the fact that most centers of innovation in Poland were established thanks to the support of operational programmes (IE OP, ROP or DEP OP).⁴³ What is more, the scale of dependence of innovation centers on EU funding is demonstrated by the relatively low level of own income of these centers in individual years. The effect of financing is the reduction of this value in relation to all types of these institutions, i.e. from technology parks, through technology incubators to technology transfer centers.



Graph 4. Share of own revenues in the budgets of innovation centers in Poland in 2007 and 2013 (in %)

Source: IMAPP, *Efekty polityki spójności 2007–2013 w Polsce (Effects of cohesion policy 2007–2013 in Poland)*, op. cit., s. 30.

The research results show that the cumulating resources for creating the conditions for conducting scientific research and business environment services generate benefits that from such activities relate primarily to research and development units (mainly universities), and not to the enterprise sector.

⁴² Ibidem, p. 30.

⁴³ Ibidem, p. 32.

This means that the announced revival of cooperation between companies and the world of science has not been satisfactorily implemented. It was not possible to achieve better cooperation between these two areas. It probably results from a different logic of the functioning of science and business. Research units, universities are primarily focused on creating new knowledge, conducting scientific research, which is one of the criteria for their evaluation. Meanwhile, a flexible business environment expects such solutions, new knowledge that can in fact be translated into a new product, service or method thanks to which the company will increase its business advantage. Meanwhile, the road from research to implementation of a given solution on the market is very long. It should be noted that formal regulation plays an important role here, as well as investments in basic research as well as parallel investments in human capital. It does not change the fact that EU subsidies were a very important source of financing R&D in the enterprise sector.⁴⁴

Numerous OP actions aimed at supporting innovation do not translate into raising the innovation rate of the Polish economy. This is due to from the fact that we are still struggling with the phenomenon of low use of scientific research, innovative technologies in the production or services of Polish companies. Instead, we are dealing with the use of innovations that are not breakthrough, i.e. innovation at the level of a given enterprise.⁴⁵ The effect is that in the European Innovation Scoreboard Poland in 2010–2017 increased its innovation by 3.2 points compared to the EU-28 average of 5.8, ranking in the group of moderate innovators.⁴⁶ In the ranking for 2018, Poland is only 25th in the 28 EU Member States.⁴⁷

Conclusion

The analysis carried out so far to fulfill the objectives of the OP in the area of innovation brings ambiguous conclusions. Looking at the efficiency of spending funds under OP in the area of innovation only from the point of view of quantitative indicators, it can be concluded that the programmes met the expectations they had to meet. The vast majority of indicators have been fully implemented, and some of them have been achieved with an excess. Enterprises that received support for introducing innovations into business practice have done their aims. However, what's interesting, the innovations introduced with EU funding did not translate significantly into revenues from sales. The most important co-fi-

⁴⁴ Ibidem.

⁴⁵ Najwyższa Izba Kontroli, op. cit., p. 6.

⁴⁶ EIS 2018 database, <https://ec.europa.eu/docsroom/documents/30282> (24.08.2018).

⁴⁷ European Commission, European Innovation Scoreboard 2018, European Commission, Luxembourg 2018, p. 7.

nancing has in the sale of innovative products. In the years 2014–2015, about 14–15% of sales of new and significantly improved products resulted from co-financed projects.⁴⁸ This means that innovations introduced by companies through EU co-financing do not increase the competitiveness of these entities in a fundamental way. The reasons for this state of affairs cannot be explained by the fact that the implemented innovations were not groundbreaking.

A large supply of funds for financing institutions acting for innovation resulted in the improvement of the terms of providing services to business entities interested in innovations. In the long run, this may translate into the achievement of a certain critical mass, which will result in the appearance of what in the literature of the subject is referred to as the critical mass of the innovation environment. However, when you look at the amount of funds allocated to the BEI's activity, it should be noted that this has not translated into an increase in the innovativeness of enterprises in the scale of the economy. The moderate elements include the fact that the implementation of so many projects to support the cooperation of the R&D sector with the business sphere has not translated into actual activity in this area. Only large companies undertake cooperation with research and development units. In the case of small companies, this happens sporadically, only large companies undertake cooperation to a noticeable degree. In Poland, only 7 clusters of about 200 operating have a transnational meaning.

As it was intended above, the BEI became one of the main institutional beneficiaries of EU funding in Poland. Data on the number and structure of BEIs indicate that most often these entities deal with the distribution of EU funds as non-bank financing institutions. This means that institutions, in the absence of interest in other services, are becoming the next link in the issue of EU funds in Poland. This leads to a kind of dependence of BEIs on EU funds, especially if you look at the level of own revenues of these entities. If this situation persists, financing innovation will depend on the supply of EU funds for this purpose. It deprives people of the possibility to create their own national innovation policy, unless it is impossible to create mechanisms that they will replace or will be a supplement to EU funding through EU funds. Therefore, the thesis is confirmed that in the case of innovation, the funds are mainly of demand. This is because, until now, it has not been possible to create permanent mechanisms to stimulate innovations that will not be fully dependent on EU funding. The stimulation of activities in the area of innovation so much desirable from the point of view of competitiveness, economic growth of the whole economy is temporary. This, however, will be possible to be verified after the programming period for 2014–2020.

⁴⁸ M. Antosiewicz, P. Bartkiewicz, J. Frankowski, H. Kalinowski, M. Ośka, A. Regulski, J. Witajewski-Baltvilks, *op. cit.*, p. 7.

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