

INVESTMENT IN ICT IN POLAND FROM THE EU FUNDS - OPPORTUNITIES AND CHALLENGES

Małgorzata Dziembała

Abstract: *Actions are undertaken in the EU in order to improve the competitiveness of this international grouping and the dynamics of economic growth, also via counteracting the digital exclusion. It should upgrade human capital and the innovativeness of the European economy. In the EU financial instruments supporting the digital inclusion are adopted. The goal of the paper is to present the significance of EU funds for supporting the infrastructure and ICT services in the EU and in Poland, as well as, to point out challenges related to the effective implementation of projects counteracting digital exclusion.*

Keywords: *digital exclusion, ICT, EU structural funds, EU cohesion policy, Digital Economy*

Introduction

Actions are undertaken in the EU in order to improve the competitiveness of this sector and the dynamics of economic growth, also via counteracting the digital exclusion. It should upgrade human capital and the innovativeness of the European economy. In the EU financial instruments are implemented, regulations supporting the digital inclusion are adopted, as well as, through the involvement of the stakeholders in projects aiming at the digital inclusion, it will be possible to reduce the existing inequalities in this field [European Parliament 2015, pp. 6-7]. Europe 2020 strategy points to three priorities: the smart, sustainable and inclusive growth [Komisja Europejska 2010]. The effective implementation of these priorities will be possible thanks to the support of information and communication technologies (ICT), also within the framework of the cohesion policy.

In the EU budget the amount of financial resources for the years 2014-2020 provided for under the structural and investment funds is 454.1 billion EUR, among which 43.3% of the allocation will come from the European Regional Development Fund (ERDF), 21.7% of funds shall be transferred to the European Agricultural Fund for Rural Development (EAFRD), 19% shall be transferred to the European Social Fund and 14% of the total amount of funds shall be transferred to the Cohesion Fund [<https://cohesiondata.ec.europa.eu/overview>]. These funds become an important investment support instrument of EU policies, in particular, through better access to broadband networks and ICT services [European Commission 2015, p. 2]

The goal of the article is to present the significance of EU funds for supporting the infrastructure and ICT services in the EU and in Poland, as well as, to point out challenges related to the effective implementation of projects counteracting digital exclusion.

ICT Development in Poland in contrast to the EU

Information and communication technologies cover the family “of technologies processing, collecting and forwarding information in electronic form” [GUS 2015, p. 17]. However, not all social groups benefit equally from advanced technology and its dynamic growth. Therefore a digital divide concept emerged which is recognized as a “gap between individuals, households, enterprises, businesses and geographic areas at a different socio-economic levels with regard both to their opportunities to access information and communication technologies [...] and to their use of the Internet for a wide variety of activities” [OECD 2001, p. 5]. However, the digital exclusion concerns two spheres: the material and the immaterial one relating to knowledge, motivation and needs [Bednarczyk 2014, pp. 1-2]. On the one hand, there are inequalities between those who have access to the Internet and those who lack the physical access to it. Attention is also drawn to the second level of digital exclusion occurring due to the diverse level of skills of people, bearing in mind their ability to efficiently find information. Therefore, it is essential not only to ensure access to the ICT infrastructure, but it is also necessary to consider investments within the range of trainings and support so that specific skills to use ICT could be acquired [Hargittai 2002].

According to the Digital Economy Index 2016 (DESI 2016) Poland ranked 22nd out of the 28 EU countries and thus found itself in the group of countries lagging behind to which Bulgaria, Cyprus, the Czech Republic, France, Hungary, Poland and Slovakia belong. These countries are improving their results more slowly than the others. Indicators concerning access to the broadband Internet in Poland are not satisfactory. ICT tools are not often used by the public sector. Poland experienced a moderate progress in the scope of the Internet use and the digital technology integration, improved results in terms of the quality of networks. However, results in the scope of the level of public digital services and human capital for the digital economy worsened. With regard to the assessment of consecutive indicators describing the quoted index, Poland is below the EU average in terms of the quality of networks. 86% of households (2015) were covered by the broadband network in Poland and thus our country remained in the last place in the EU. The indicator for the EU was 97%. Only 61% of households have access to high-speed fixed broadband, as compared to 71% in the EU (2015). Only 57% of households have such a fixed Internet connection and Poland ranked 26th. However, there is a particularly high level of development of mobile broadband services. With regard to the range of fixed communications 94 out of 100 Poles choose broadband (fifth place in the EU). This means that it is

necessary to develop broadband infrastructure – increase broadband coverage and boost its further growth. Poland's progress towards improving human capital for the needs of the digital economy is moderate. There are only 65% of network users (24th place in the EU). Only 40% of people (2015) have basic digital skills, as compared to 55% in the EU what qualifies Poland in 26th position. There is only a 3% share of ICT specialists among the employed, what ranks Poland 19th in the EU. Therefore, it is necessary to improve the digital skills of the consecutive social groups in Poland. In terms of the digital technology integration, results achieved by Poland are also below the average. The delays concern the digitization process of Polish enterprises, social media, cloud services are not frequently used. Only 9.6% of enterprises conduct sales via the Internet, as compared to 16% in the EU (2015). "The Strategy for Innovation and Efficiency of the Economy – Dynamic Poland 2020" whose aim is to support digitization was worked out in 2013. In the field of digital public services, indicators relating to Poland are also below the EU average, nevertheless progress in this field is significant. There is a low level of e-Administration. As far as e-Administration use is concerned, electronic forms are submitted by merely 22% of Internet users (21st place in the EU), 46% of people used online banking in Poland (22nd place), as compared to 57% in the EU in 2015. In terms of digitization of enterprises Poland also lags far behind [<https://ec.europa.eu/digital-single-market/en/scoreboard/poland>; Digital Economy and Society Index 2016; Sprawozdanie okresowe; Kwieciński 2014] (illustration 1).

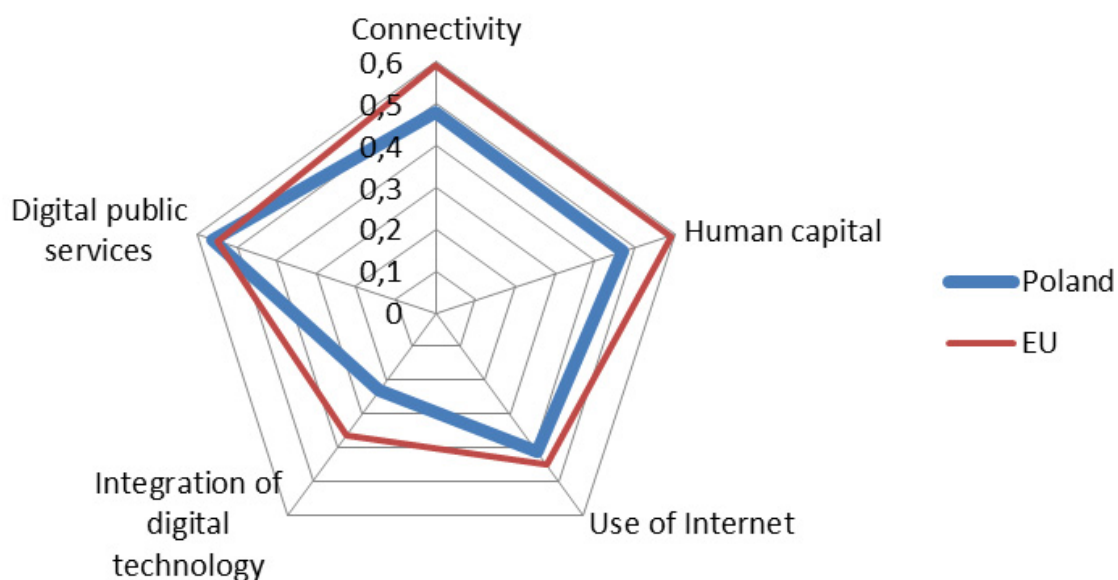


Illustration 1. Position of Poland and the EU in light of the dimensions of the Digital Economy and Society Index 2016

Source: [Digital Economy and Society Index 2016]

Development in Poland in contrast to the ICT support within the EU cohesion policy in the years 2007-2020

Promoting ICT development constitutes an important support guideline not only within the cohesion policy, but also other EU policies, including research and development. In this context a wide range of policies through the implementing instruments promotes ICT development, since they also help achieve the goals set within these policies. New opportunities were created by the instruments outlined in the Juncker plan and implemented from September 2015, ie. Connecting Europe Facility (CEF) supporting the development of projects of common interest in the following sectors: transport, telecommunications, energy (in the scope of infrastructure and services), as well as, the instrument: European Fund for Strategic Investment (EFSI) [Regulation (EU) No 1316/2013]. Within their frameworks new financial instruments are introduced, among them: guarantees or equity [Regulation (EU) No 1316/2013]. 1.141 billion EUR [Art. 5, Regulation (EU) No 1316/2013] will be appropriated from the total CEF budget for the telecommunications sector, out of which about 870 million EUR will be directed to the digital service infrastructure [<https://ec.europa.eu/digital-single-market/en/connecting-europe-facility>]. ICT support was also foreseen within the consecutive framework programmes and currently the Horizon 2020 programme is being implemented [European Parliament 2015, p. 6]. Further considerations shall be limited only to the support provided within the cohesion policy and the European investment funds in the two consecutive programming periods 2007-2013 and 2014-2020.

Within the cohesion policy in the years 2007-2013, investments concerning ICT or associated projects were, first of all, financed from ERDF and the funds amounted to about 14.6 billion EUR. Consequently access to the broadband network improved for more than 4.7 million EU citizens. Support also came from ESF, also through a better use of ICT, the adaptation of the skills of employees to the needs of employers or through the acquisition of skills related to the use of ICT among older people [http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/fiche_ict_pl.pdf]. The number of supported projects relating to ICT amounted to over 20 thousand. The support also related to investments associated with the broadband implementation and the incurred costs related, among others, to the use of the passive infrastructure, procedures connected with obtaining permits [Polityka spójności, pp. 4-5]. However, the largest number of ICT projects from the EU funds was supported in Spain – more than 10 thousand projects - and then in Hungary and Portugal. However, additionally 1.8 million people were supported in the scope of broadband access (EU countries) [Factsheet 2013, p. 4.] Despite investments in this field the percentage of people (aged 16-74) in some EU countries who have never used the Internet exceeded 20% and among these countries were: Latvia, Estonia, Hungary, Slovenia, Lithuania, Croatia, Cyprus, Poland (28.1%), Portugal, Italy, Greece, Bulgaria (37.1%) and

Romania (38.6%) in 2014. In Denmark, on the other hand, the percentage of people who have never used the Internet amounted to 2.62% [Polityka spójności, p. 5].

How are the funds from the programmes for the years 2007-2013 actually used for the infrastructure and ICT services? In the light of results of the Strategic Report on the implementation of cohesion policy programmes 2007-2013 [Komisja Europejska 2013; European Commission 2013 a], the biggest support in terms of ICT related to the convergence objective (table 1). ICT support constituted 4.2% of the budget for the cohesion policy [Factsheet 2013, p. 2].

Table 1. Support from structural funds and the Cohesion Fund for IT services and infrastructure in the years 2007-2011. Source: [European Commission 2013 a, pp. 49-50].

	Decided Ops Million € (a)	% share of total SF per obj	% of total all funds	Allocated to selected projects 2007-2011 Million € (b)	% (c=b/a)
All Objectives	346 717.2		100.0%	246 983.9	71.2%
IT services and infrastructure	14 446.0		4.2%	8 854.8	61.3%
Objective: Convergence	283 657,7	100.0%	81.8%	198 682.4	70.0%
IT services and infrastructure	11 537.8	4.1%	3.3%	7 158.4	62.0%
Objective: Regional Competitiveness and Employment	55 154.3	100.0%	15.9%	42 220.1	76.5%
IT services and infrastructure	2 382.3	4.3%	0.7%	1 385.5	58.2%
Objective: European Territorial Cooperation	7 905.1	100.0%	2.3%	6 081.3	76.9%
IT services and infrastructure	525.8	6.7%	0.2%	310.9	59.1%

In terms of the value of funds appropriated for ICT, the biggest funds were appropriated within the convergence objective – 11.5 billion EUR, what constituted 4.1% of the total allocation of EU funds for this objective. However, the highest share of the allocation of EU funds for ICT was noted within the European Territorial Cooperation objective, although in absolute terms funds allocated for ICT within this objective were the lowest (525.8 million EUR). Progress in the scope of the selection of projects was varied.

As far as the value of planned outlays is concerned, 2.3 billion EUR is planned for the telecommunications infrastructure, including the broadband network, whereas, 5.1 billion EUR was appropriated for services and applications for residents - circa 1/3 of the allocation for ICT. However, the rate of project selection amounted to 61.3%, being below the country average [see: Factsheet 2013]. Delays are also notable in terms of consecutive categories of expenditures (table 2).

Table 2. Categories of actions carried out within the thematic priority: IT services and infrastructure in the years 2007-2011

Source: [Factsheet: 2013, p. 5]

Category	Decided Ops – Million € (a)	% Decided Ops of Total Decided (b)	Allocated to selected projects 2007-2011 – million € ©	Rate for selection 2007-2011 (d=c/a)
Telephone infrastructures (including broadband networks)	2 244.6	0.6%	1 300.2	57.9%
Information and communication technologies (...)	3 516.4	1.0%	2 231.9	63.5%
Information and communication technologies (TEN-ICT)	490.8	0.1%	227.0	46.3%
Services and applications for citizens (e-health, e-government, e-learning, e-inclusion, etc.)	5 126.4	1.5%	3 683.9	71.9%
Services and applications for SMEs (e-commerce, education and training, networking, etc.)	1 499.6	0.4%	519.3	34.6%
Other measures for improving access to and efficient use of ICT by SMEs	1 568.1	0.5%	892.5	56.9%
Total IT networks and services	14 446.0	4.2%	8854.8	61.3%
Total all themes	346 717.2		246 983.9	71.2%

In the new financing perspective, the funds of the cohesion policy and the European investment funds are to contribute to the achievement of eleven thematic objectives, among which one objective regarding the accessibility improvement, as well as, the degree of using ICT and its quality was distinguished [Regulation (EC) No. 1303/2013]. The ERDF regulation precisely defines the investment priorities relating to ICT: improvement of broadband access and high-speed networks, promoting the adoption of new technologies and networks in favor of the digital economy, promoting the development of products and services relating to ICT and electronic commerce, increase of use [Regulation (EC) No. 1301/2013, Art. 5, item 2; http://ec.europa.eu/regional_policy/pl/policy/themes/ict/]. ERDF with a budget of 196 billion EUR is an important source of support and 13.3 billion EUR, ie. 6.7% of its funds shall be designated for ICT [<https://cohesiondata.ec.europa.eu/funds/erdf/>]. ICT will also be supported by EAFRD. Each member state in the operational programmes implementing this policy designated funds for supporting ICT development.

In connection therewith, in the new financing perspective the cohesion policy in the field of ICT concentrates on infrastructure investments in the European regions, especially in rural areas, in regions of a low level of development and remote regions. Investments are still going to be made in order to ensure access to the broadband networks, which are to improve the efficiency of the enterprises, increase the teleworking opportunities, and promote e-Health more intensively. The development and improvement of ICT instruments, the benefit from using the opportunities of ICT technology by different entities in order to render health services: e-Health, its application in the area of e-Administration, e-Education, e-Integration, e-Culture or improving digital and entrepreneurial skills – are important investment trends promoted in the new perspective 2014-2020. This support trend can also be implemented within other thematic objectives. Priorities relating to ICT investments and priorities connected therewith were formulated within the strategy of smart specializations. As highlighted, about 15% of priorities relating to RIS3 will be associated with ICT. Such a focus on ICT is especially visible in the following countries: Poland, Italy, Spain, Greece and Portugal [http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/fiche_ict_pl.pdf; Polityka spójności, p. 5, p. 7].

Poland, Spain, Italy, the Czech Republic, Greece, Slovakia, Hungary and Romania will receive the biggest funds for ICT in the new financing perspective 2014 –2020 (illustration 2). However, if the percentage of the support of this thematic objective were taken into consideration in relation to the total allocation of funds (within the cohesion and the investment policy) – the biggest share would be in Cyprus (11%), in Ireland (8%), Spain (7.5%), France (7.4%), Italy and in Slovakia (6.1%), in Sweden (5.8%). In Poland, on the other hand, it is planned to appropriate 4.2% of the total allocation for ICT in the new programming period [http://ec.europa.eu/regional_policy/pl/policy/themes/ict/]. It should be

noted that the total funds for the support of this area from EFRR and EAFRD are to amount to over 14 billion EUR, out of which 93.6% will come from EFRR, ie. over 13.3 billion EUR and the remaining amount, ie. 914.5 million EUR shall be allocated from the European Agricultural Fund for Rural Development [<https://cohesiondata.ec.europa.eu/themes/2>].

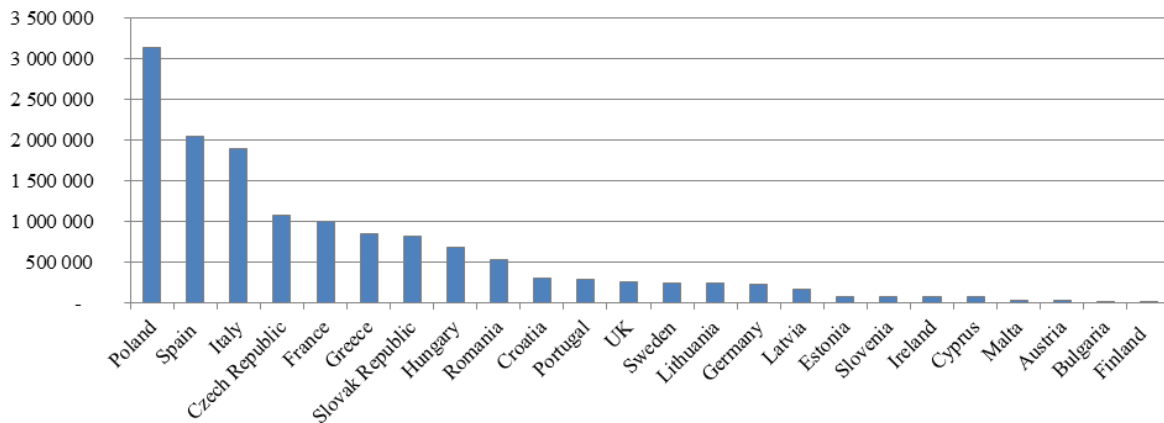


Illustration 2. Planned ICT support from investment funds in the years 2014-2020 in thousand EUR

Source: [<https://cohesiondata.ec.europa.eu/themes/2>]

The analysis of the main trends of financial support shows that 6 billion EUR will be disbursed from ERDF and the Cohesion Fund for the infrastructure and the digital broadband networks, up to 10 billion EUR will be appropriated for promoting new products and services in the scope of ICT and the e-Commerce market and two billion EUR will relate to the promotion and expansion of various e-Services [Polityka spójności, p. 4]. Objectives were also formulated which are to be achieved thanks to investments from ERDF in favor of ICT: 77 thousand enterprises should receive support, 54 thousand enterprises should receive grants, 5.8 thousand enterprises are to take advantage of financial instruments, consulting services will be provided to 13.8 thousand enterprises, over 14 thousand households are to gain access to the broadband networks. In order to use the EU funds, it is necessary to work out the digital development strategy [<https://cohesiondata.ec.europa.eu/themes/2>].

Challenge of ICT development in Poland within the cohesion policy

In Poland projects connected with ICT are intensively supported from cohesion funds. In the years 2007-2013 nearly 5.2 billion PLN was designated for projects related to the creation of the broadband Internet infrastructure, launched within the regional operational programmes, Eastern Poland Operational Programme and Innovative Economy Operational Programme (measure 8.4) [Sieni

szkieletowo-dystrybucyjne, p. 3]. What effects did the construction of the Regional Broadband Networks referred to as "construction projects of digital motorways" actually bring? An operating network of a length of 23 thousand kilometers was constructed, 2 927 nodes were developed. In the new financing perspective access networks are implemented within the Digital Poland Operational Programme [Sieci szkieletowo-dystrybucyjne, p. 34].

5.4% of funds from the total volume of funds allocated to Poland were used for the ICT infrastructure and services within the cohesion policy 2007-2013. A higher share of the allocation of funds for this objective was merely noted in Denmark (6.5%), Finland (9%), Greece (6.2%), Italy (6%), Sweden (11.8%), Slovakia (8.8%), CB (6.7%) (table 3).

Table 3. Value of the allocation and use of EU funds in Poland in the years 2007-2011

Source: Excel tables showing project selection by Objectives and Member State
http://ec.europa.eu/regional_policy/pl/policy/how/stages-step-by-step/strategic-report/

	Decided OPs (a) - in M.€	% of National SF/CF	Allocated to selected projects AIR 2011 (b) - in M.€	% (c=b/a)
Poland	67 185.5	100.0%	45 980.5	68.4%
Innovation & RTD	9 309.8	13.9%	6 144.2	66.0%
IT services and infrastructure	3 630.3	5.4%	2 280.3	62.8%
Other SME and Business support	3 473.6	5.2%	2 442.4	70.3%
Energy	2 311.5	3.4%	1 375.1	59.5%
Environment	6 770.7	10.1%	5 326.7	78.7%
Culture, heritage and tourism	1 995.7	3.0%	1 591.8	79.8%
Urban and territorial dimension	1 005.8	1.5%	879.2	87.4%
Rail	5 557.1	8.3%	2 186.5	39.3%
Road	15 741.1	23.4%	12 669.1	80.5%
Other transport	4 138.3	6.2%	2 004.3	48.4%
Labour market	2 833.6	4.2%	1 755.5	62.0%
Social Inclusion	1 158.0	1.7%	711.0	61.4%
Social infrastructure	2 710.8	4.0%	2 197.8	81.1%
Human capital	3 858.5	5.7%	3 079.7	79.8%
Capacity Building	2 690.9	4.0%	1 336.9	49.7%

In the years 2007 –2013, within the Innovative Economy Operational Programme, actions were undertaken in Poland in favor of the broadband Internet development, known as last mile construction projects. Regional programmes whose goal was to construct access networks were supported, however delays occurred in the course of carrying out a few projects. This objective received support within the Regional Operational Programme, Eastern Poland Operational Programme. However, there was little progress in carrying out projects supported from rural funds. Systemic problems also emerged, among them fragmentation of actions and their poor coordination, the delays resulted also, among others, from tender procedures. Irregularities emerged in the digitisation of public services. Information Society projects did not significantly improve the effective governance, either. Nevertheless, the funds contribute to the development of the Information Society, as well as, the ICT industry [Krzyżanowska 2014, Kwieciński 2014].

Special financing opportunities for these types of undertakings were created in the new financing perspective 2014-2020, as Poland is the main beneficiary of the cohesion policy. The funds foreseen in the Partnership Agreement for ICT amounted to 3.08 billion EUR, ie. 3.7% of allocation for Poland. Financing should only be provided by ERDF. Not enough attention was paid to the private sector in terms of supporting Information Society, focus on thematic objective 2 and a weak link with other thematic objectives. These are the weaknesses of solutions adopted in the current perspective [Kwieciński 2014].

Regional operational programmes and 5 horizontal programmes, among them the Digital Poland Operational Programme with a budget of 2 172.5 million EUR solely dedicated to the ICT sector will be executed in the years 2014-2020 [<https://www.polskacyfrowa.gov.pl/strony/o-programie/zasady/finansowanie/>]. A better coordination and a clear intervention logic distinguishes this Operational Programme [Krzyżanowska 2014]. Projects supported in this programme cover the following three groups: related to the broadband infrastructure – access to the high-speed Internet for all, increase of the availability of public services and projects expanding the use of the Internet and improving and developing the digital competences of the society [<https://www.polskacyfrowa.gov.pl/strony/o-programie/zasady/dla-kogo-jest-program/>; <https://www.polskacyfrowa.gov.pl/strony/o-programie/zasady/co-mozna-zrealizowac/>]. The support covers direct support, including infrastructure relating to the broadband Internet, as well as, indirect support, eg. relating to expenditure of different entities on ICT [Kwieciński 2014].

The programme supports investments relating to the expansion of the access to broadband networks, development of products and services based on ICT, an increase in the use of TIK in services, eg. e-Administration. The top priorities were: universal access to high-speed Internet, e-Administration and open office, digital competences of the society. Projects relating to the construction, expansion, as well

as, the reconstruction of the access network or the supplementation of the already existing telecommunications infrastructure will be supported within this first priority axis. Within the second priority axis the formulated objectives are related to the improvement of access and the quality of public e-Services, also the improvement of the functioning of the government administration – the so-called improvement of the digital efficiency of offices, the supported projects will relate to the improvement of the availability of public sector information [on the basis of Fundusze Europejskie 2014, pp. 18-20; Program Operacyjny 2014]. Support will be provided for ICT also within the Regional Operational Programmes, whereas the scope of supported actions is differentiated in regions, among others, by focusing on e-Services, supporting the use of ICT by enterprises or promoting ICT in order to limit the phenomenon of digital exclusion [Krzyżanowska 2014].

Benefits from financing ICT operations do not have to be direct and instantaneous and these types of investments do not always lead to the achievement of cohesion. As pointed out, there is a digital divide between rural and urban areas in the new EU member states, regional variations occur in terms of access to the broadband infrastructure, depending on the existing settlement pattern (lowest access) in rural areas. The varied settlement pattern also leads to the digital divide. The share of the rural population in the new EU member states is significant, however, it seems that the population living in those areas is lagging behind in terms of access to broadband networks, services connected therewith. Therefore different IT strategies, IT policies and regional strategies need to be adopted. It is emphasized that outdated technology is often supported from public funds, those funds are not effectively used for the development of broadband networks. Thus, increasing expenditure from EU funds for ICT may not reduce the existing digital divide. The key element is the support of the development of broadband networks in rural areas and by means of highly advanced technology. An effective national, sectoral and regional policy is also important [Fekó et al. 2011, pp. 152-160].

The use of EU funds is contingent upon the formulation of the strategy. However, as the studies show, the effectiveness of the regional strategies relating to ICT does not have a clear impact on the improvement of the access to the Internet and broadband networks. If appropriate expenditure from ERDF and other expenditure on the Internet infrastructure is dedicated to this objective, a positive effect will occur [Kleibrink et al. 2015]. The analysis of the use of funds from the cohesion policy from 2007-2013 also indicates that regions adopt varied regional digital strategies relating to Information Society. In less developed regions funds are allocated to strategic areas connected with Information Society and e-Services where the regions achieve relatively good results, thus strengthening the existing potential/strengths and not where they display specific weaknesses. Thus, they are not adapted to the requirements of the respective territories and they are not essentially linked to the specific territorial context [Reggi, Scicchitano 2014, pp. 530-538].

Conclusion and Future Work

It can be concluded that actions undertaken in the EU aim at reducing the digital divide and thus gradually help to implement the Digital Agenda. The scale of digital exclusion decreases in Poland, although changes are advancing slowly. In this context support is granted not only for improving the availability of the physical infrastructure, but also for upgrading skills in order to use these technologies competently and effectively. Poland received considerable support for this objective in the perspective 2007-2013 and the share of outlays from these EU backed funds for ICT was relatively high. Nevertheless, weaknesses were disclosed during the implementation of projects. In the new financing perspective ICT is financed, first of all, within the Operational Programme Digital Poland. A wide range of supported undertakings implies that they can prove to be effective. It is therefore essential to carry out the evaluation of the effectiveness of ICT projects supported within this cohesion policy in Poland, also in terms of their adaptation to the needs of the regions. The future research should focus on identification of the types of ICT projects which are needed in each of the Polish voivodeships and which could be supported from the external financial resources.

Bibliography

- [Bednarczyk 2014] Bednarczyk D., Przeciwdziałanie cyfrowemu wykluczeniu (e-integracja) w Polsce, Biuletyn EBIB, nr 9 (154)/2014, Gromadzenie i zabezpieczanie danych cyfrowych (<http://open.ebib.pl/ojs/index.php/ebib/article/view/297/469>).
- [Digital Economom and Society Index] Digital Economy and Society Index 2016, Country Profile, Poland (<https://ec.europa.eu/digital-single-market/en/scoreboard/poland>).
- [European Commission 2013 a] Commission Staff Working Document accompanying the document 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, Brussel, 18.04.2013, SEC (2013) 129.
- [European Commission 2013] Cohesion policy: Strategic report 2013 on programme implementation 2007-2013, Brussels, 18.04.2013, COM (2013) 210 final.
- [European Commission 2015] Investing in jobs and growth – maximizing the contribution of European Structural and Investment Funds, Communication from the Commission. Brussels, 14.12.2015, COM (2015) 639 final.
- [European Parliament 2015] Bridging the digital divide in the EU, European Parliament 2015, http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/573884/EPRS_BRI%282015%29573884_EN.pdf

-
- [Factsheet 2013] Factsheet: Information and Communication Technologies. Cohesion policy: Strategic Report 2013
(http://ec.europa.eu/regional_policy/sources/how/policy/doc/strategic_report/2013/factsheet2_ict_infrastructure_services.pdf).
- [Fekó et al. 2011] Fekó A., Sass M., Nagy G., The role of broadband developments financed from EU structural funds in the enhancement of regional cohesion in the NMS-10, „Studies in Agricultural Economics” 113 (2011).
- [Fundusze Europejskie 2014] Fundusze Europejskie 2014-2020 na badania, rozwój i cyfryzację, Warszawa 2014 r.
- [GUS 2015], Społeczeństwo informacyjne w Polsce. Wyniki badań statystycznych z lat 2011-2015. GUS, Urząd Statystyczny w Szczecinie, Informacje i Opracowania Statystyczne, Warszawa 2015.
- [Hargittai 2002] Hargittai E., Second-level digital divide: differences in people's online skills, „First Monday” 2002, vo. 7, no. 4-1.
- [Kleibrink et al. 2015] Kleibrink A., Niehaves B., Palop P., Sörvik J., Thapa B. E.P., Regional ICT innovation in the European Union: Prioritization and performance (2008-2012), „J. Knowl Econ” 2015, 6: 320-333, DOI 10.1007/s13132-015-0240-0.
- [Komisja Europejska 2010] Europa 2020. Strategia na rzecz inteligentnego i zrównoważonego rozwoju sprzyjającego włączeniu społecznemu, Komunikat Komisji, KOM 2010 (2020) wersja ostateczna, Bruksela 3.3. 2010.
- [Komisja Europejska 2013] Sprawozdanie Komisji dla Parlamentu Europejskiego, Rady. Europejskiego Komitetu Ekonomiczno-Społecznego i Komitetu Regionów. Polityka spójności: sprawozdanie strategiczne 2013 dotyczące realizacji programów na lata 2007-2013, Bruksela, dnia 18.4.2013, COM (2013) 210 final; Commission Staff Working Document accompanying the document Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.
- [Krzyżanowska 2014] Krzyżanowska A., Cyfrowa Polska 2020: Doświadczenia i wyzwania, Gdańsk, 12-13 czerwca 2014
(<https://www.google.pl/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwimjYb6pKjNAhXFHpoKHVZvAA4QFgggMAA&url=http%3A%2F%2F18.kmwi.pl%2Fprezentacje%2Fcategory%2F12-v-budzet-cyfrowej-polski.html%3Fdownload%3D28%3Aanna-krzyzanowska-cyfrowa-polska-2020-doswiadczenia-i-wyzwania&usg=AFQjCNHEYgeGd2F3926BZmLe6XdonhJCFg&cad=rja>)
- [Kwieciński 2014] Kwieciński J., Fundusze unijne na Cyfrową Polskę w starej i nowej perspektywie finansowej- ocena dotychczasowego wsparcia i wyzwania na przyszłość, Europejskie Centrum

- Przedsiębiorczości, Gdańsk 2014. , prezentacja (<https://www.google.pl/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwiPsb2KpajNAhUjAZoKHSSmD8QQFggdMAA&url=http%3A%2F%2F18.kmwi.pl%2Fprezentacje%2Fcategory%2F12-v-budzet-cyfrowej-polski.html%3Fdownload%3D30%3Ajerzy-kwiecinski-undusze-unijne-na-cyfrowa-polske-w-starej-i-nowej-perspektywie-finansowej-ocena-dotychczasowego-wsparcia-i-wyzwania-na-przyszlosc&usg=AFQjCNFIOHPizsgC-iebwJw8WrSgxj4-IQ&cad=rja>)
- [OECD 2001] Understanding the digital divide, OECD 2001.
- [Polityka spójności] Polityka spójności w centrum uwagi w kontekście budowy jednolitego cyfrowego rynku Europy, „Panorama inforegio” 2015, nr 53.
- [Program Operacyjny 2014] Program Operacyjny Polska Cyfrowa na lata 2014-2020, Wersja zaakceptowana decyzją Komisji Europejskiej z dnia 5 grudnia 2014 r.
- [Reggi, Scicchitano 2014], Are EU regional digital strategies evidence-based? An analysis of the allocation of 2007-2013 structural funds, “Telecommunications Policy” 38 (2014),530-538.
- [Regulation (EC) No. 1301/2013] Regulation (EC) No. 1301/2013 of the European Parliament and of the Council of 17 December 2013 on the European Regional Development Fund and on specific provisions concerning the Investment for growth and jobs goal and repealing Regulation (EC) No 1080/2006, OJ L 348/347 of 20th December 2013.
- [Regulation (EC) No. 1303/2013] Regulation (EC) No. 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006, OJ L 347/320 of 20th December 2013.
- [Regulation (EU) No 1316/2013] Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No 913/2010 and repealing Regulations (EC) No 680/2007 and (EC) No 67/2010, OJ L 348/129 of 20th December 2013.
- [Sieci szkieletowo-dystrybucyjne] Sieci szkieletowo-dystrybucyjne w perspektywie 2007-2013. Raport zamknięcia. Departament Telekomunikacji, Ministerstwo Cyfryzacji (https://mc.gov.pl/files/raport_zamknienia.pdf).

[Sprawozdanie okresowe] Sprawozdanie okresowe w sprawie digitalizacji Europy (EDPR) 2016

<https://ec.europa.eu/digital-single-market/en/scoreboard/poland>

http://ec.europa.eu/regional_policy/pl/policy/how/stages-step-by-step/strategic-report/

http://ec.europa.eu/regional_policy/pl/policy/themes/ict/

http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/fiche_ict_pl.pdf

<https://cohesiondata.ec.europa.eu/funds/erdf>

<https://cohesiondata.ec.europa.eu/overview>

<https://cohesiondata.ec.europa.eu/themes/2>

<https://ec.europa.eu/digital-single-market/en/connecting-europe-facility>

<https://ec.europa.eu/digital-single-market/en/scoreboard/poland>

[https://www.polskacyfrowa.gov.pl/strony/o-programie/zasady/dla-kogo-jest-program/;](https://www.polskacyfrowa.gov.pl/strony/o-programie/zasady/dla-kogo-jest-program/)

<https://www.polskacyfrowa.gov.pl/strony/o-programie/zasady/co-mozna-zrealizowac/>

<https://www.polskacyfrowa.gov.pl/strony/o-programie/zasady/finansowanie/>

Authors' Information



Małgorzata Dziembala – dr hab., Professor at the University of Economics in Katowice, 1 Maja 50, Poland

e-mail: malgorzata.dziembala@ue.katowice.pl

Major Fields of Scientific Research: International economics, EU cohesion policy, EU economic policies