

## AN ENDOGENOUS POTENTIAL OF POLAND AND ITS REGIONS

### WEWNĘTRZNY POTENCJAŁ POLSKI I JEJ REGIONÓW

Iwona Koza ✉

Poland, State School of Higher Education in Chełm  
Institute of Neophology

**Abstract.** In this article I will present a brief introduction to the issues of innovation, intellectual capital, knowledge-based economy and entrepreneurship and human resources management. Research results were presented relating to Poland in comparison to the European Community. The results of the study of regional innovation for Polish regions will be presented to select some of them. It was decided on two regions with very different economic performance, i.e. Małopolskie and Mazowieckie provinces. In the course of the work, the entities examined have been found to be modest or moderate innovators. Delays has been observed in the sphere of infrastructure, availability of transport or advanced services. A unique opportunity for provinces and the whole country seems to be the intellectual capital, mobility, agility and dynamism of rapidly gaining new skills by the young generation. A good method to think in a creative way about the future of the regions, and at the same time create a conceptual framework for strategic policy in the region seems to be foresight studies.

**Keywords:** innovation, intellectual capital, knowledge-based economy, entrepreneurship, human resources

**Streszczenie.** W niniejszym artykule przybliżone zostaną zagadnienia endogenicznego potencjału regionów, w tym problematyka innowacyjności, kapitału intelektualnego, gospodarki opartej na wiedzy oraz przedsiębiorczości i zarządzania zasobami ludzkimi. Zaprezentowane zostaną wyniki badań, odnoszące się do Polski przedstawionej na tle Wspólnoty Europejskiej. Wyniki badania regionalnej innowacyjności polskich regionów, zaprezentowane zostaną dla kilku wybranych z nich. Zdecydowano się na dwa województwa o bardzo zróżnicowanych wynikach gospodarczych, tj. województwo małopolskie i mazowieckie. W toku pracy, badane podmioty okazały się być skromnymi lub umiarkowanymi innowatorami. Zauważyć się dały zapóźnienia w sferze infrastruktury, dostępności transportowej czy zaawansowanych usług teleinformatycznych. Wyjątkową szansą dla województw i całego naszego kraju wydaje się być kapitał intelektualny, gotowość do mobilności i adaptacyjności oraz dynamizm szybko zdobywającego nowe umiejętności młodego pokolenia. Dobrą metodą, gwarantującą kreatywność myślenia o przyszłości regionów, a jednocześnie porządkującą tworzenie ram koncepcyjnych polityki strategicznej regionu wydają się też studia foresightowe.

**Słowa kluczowe:** innowacyjność, kapitał intelektualny, gospodarka oparta na wiedzy, przedsiębiorczość, zasoby ludzkie

#### Introduction

Currently, special attention in the research and studies relating to regional development focuses on improving the competitiveness of regions, with particular importance given to their endogenous resources. This involves both the national level and the issues concerning the European Union as well

as the dynamic development of international capital movements. The weight and value of the developed endogenous resources is proved, above all, by their relatively strong link with the local socio-economic development and the life of the local community (Broszkiewicz (ed), 1997, pp. 128 and n.).

The main factors of growth and economic development of each region and therefore its competitiveness are: innovation, intellectual capital, knowledge-based economy, entrepreneurship and human resources.

The modern economy poses new challenges for regions for competitiveness. This implies a tendency towards innovation based on the use of intellectual capital and introducing a knowledge-based economy. One can even point out that today the economy is driven by knowledge. Regions of the 21st century are forced to seek and create new solutions or enhance their achievements and also search for effective ways to manage the endogenous potential, i.e. the capital, both tangible and intangible. Now we have to deal with the high mobility of capital and the increasing mobility of labour resources. As a result, territorially conditioned and immobile factors in economic growth are increasingly important. An example would be the smart, sustainable and inclusive development, which requires well-developed cities, properly structured functional regions and cities and economic operators to enter into the network bindings. Also, one cannot abstract from specific regional mechanisms to create and absorb innovation. A variety of factors are territorially-based and result from the activities of the public authorities or public-private partnerships. Spatial management becomes an important factor in the local or subregional competitiveness (Korenik, Przybyła, 2011, pp. 233-242; Gaczek, 2013, pp. 237-250). One of the conditions for the efficient use of resources is their appropriate identification and measurement. This happens also in the case of the widely understood knowledge, intellectual capital, and other attributes that build the endogenous potential (Nowakowska-Grunt, Miciuła (ed), 2016, pp. 14-27).

In this article I will present a brief introduction to the above mentioned issues. Then I will discuss the outcome of the tests. Thus, it will be both a research and review article. The test area will be Poland presented in comparison to the European Community. Special attention will be given to a few selected provinces of our country, especially Mazowieckie and Małopolskie provinces. To describe adopted characteristics specifically chosen indicators will be used.

## Material and methods

### *Innovation*

In today's world, with constant scientific and technological progress, innovation plays a very important role. It is important in the economy as it leads

to the creation of new products, improvement and implementation of new technologies and an increase in their efficiency, therefore enhancing the competitiveness of a given economy in relation to other countries. However, in order to achieve this, one needs the motivation and ability of entrepreneurs to do research and to search for new and better solutions, ideas and concepts. Thanks to the constant increase of knowledge and the implementation of innovative solutions, some countries increase their innovative positions, becoming leaders on the international market (Szatkowski, 2016, pp. 17-60). The development of innovation is dependent on a variety of factors. These are, first of all, investments in research and development, access to information and the support of many institutions (Nowakowska-Grunt, Miciuła (ed), 2016, pp. 119-132). It is often mentioned that an essential condition for the creation of innovation is having information that comes from different sources. Especially important information is this concerning the sectors and areas where there is a need for development or new solutions. Thus, in the economy one can observe the continuously growing demand for a research and development sector, increasing investment for this purpose, which will increase the competitiveness of countries (Woźniak, 2011, pp. 219-231; Bukowski, Szpor, Śniegocki, 2012, p. 21).

### *Intellectual capital*

The concept of intellectual capital so far has not been clearly defined. The lack of a single coherent and universally acceptable definition creates problems at each stage of the management of knowledge and intellectual capital. In literature there is no single definition that determines what is intellectual capital and what role it plays as a component of the company. Nevertheless, all researchers and practitioners will confirm that this is extremely important and necessary to possess (Sopińska, Wachowiak, 2016, p. 104). Executives, knowing the value of intellectual capital, may use this information to create the right strategy, to identify the areas that need investment the most and undertake steps towards improvement and enhancement. The economic result may depend on the efficient and effective use of existing knowledge (Okoń-Horodyńska, Wisła (ed), 2009, p. 112).

### *Knowledge-based economy*

The concept of a knowledge-based economy has been propagated in the last decade of the last century on the basis of the endogenous growth theory. According to the basic assumptions of models of

such growth, both processes of accumulation of scientific and technical knowledge, and human capital are treated as technological progress and are the main sources of economic growth. The processes of in-kind capital accumulation and growth of the labour force become less important in the economy. It is the ability to use new knowledge in a productive way, that is, saturate the economy with innovations that becomes a benchmark of the development of the knowledge-based economy. From the point of view of individual regions, the development of knowledge acquisition of external knowledge requires the possession of tangible and intangible resources, particularly human capital. The growing importance of knowledge for the functioning of a given region does not mean that operators actively investing in the enlargement of knowledge resources are going to achieve above-average results. In addition, the effectiveness of the transfer of knowledge from external sources requires absorption abilities to use it in a proper manner. Regions have also limited possibility to exclude other entities from the access and use of knowledge (Woźniak, 2011, pp. 25-35; Kijek, 2016, pp. 53 and n.).

#### *Entrepreneurship*

Entrepreneurship is a way of working based on the tendency of making new, risky and unconventional projects and demonstrating initiative in their search and implementation in practice. Entrepreneurship is now becoming a more and more desirable attitude of economic operators. Regions that employ entrepreneurship develop faster, employ more people, invest more money. From an economic point of view, entrepreneurial activities involve organizing capital resources to the implementation of projects involving varying degrees of risk in order to obtain benefits. The essence of entrepreneurship is, therefore, the use of emerging opportunities and taking action to make a profit (Makiela, 2013, pp. 25 and n.). Both increasing competition and technological advances mean that the future belongs to the regions open to change, which consider it as a condition of survival and development. At the same time, these changes in perception require appropriate conditions inspiring and stimulating entrepreneurship, where efficiency and development is largely determined by the knowledge and innovation and also the competent management of these resources (Siuta-Stolarska, Siuta-Brodzińska, 2011, pp. 398-407).

#### *Human resources*

Currently there is also increasing interest in the area of human resources management, which can be

observed both in international and Polish literature. This is the answer to the needs of today's organizations. Management of human resources is a strategic, coherent approach to drive the most valuable asset any organization- the people who work there and who individually or collectively contribute to the achievement of the objectives. Changes in the economy, concerning the approach to the person, to the requirements to them and their capabilities, contributed to the metamorphosis of human resource management in modern organizations (Armstrong, 2010, pp. 10 and n.). The idea of human resources management is, first of all, the recognition of the employee as one of the most valuable parts of the modern organization. Proper management of human resources plays a vital role in the functioning of a company. It is founded on the presumption that people are the most valuable asset that must be systematically developed and inspired. It is the only enterprise resource capable of learning and improving their potential. In addition, it is necessary to shape organizational culture, implement the decentralization of decision, thoroughly use the capabilities and skills of all persons employed, focus on the individualization of employment relations, the maintenance of readiness for flexible operation, as well as the involvement of senior management (Nowakowska-Grunt, Miciuła (ed.), 2016, pp. 28-45).

The facts mentioned above show brief information about the growth and economic development of the regions, relating to innovation, intellectual capital, knowledge-based economy, entrepreneurship and human resources. The rest of this paper will present the tests, their results and the conclusions that may be presumed.

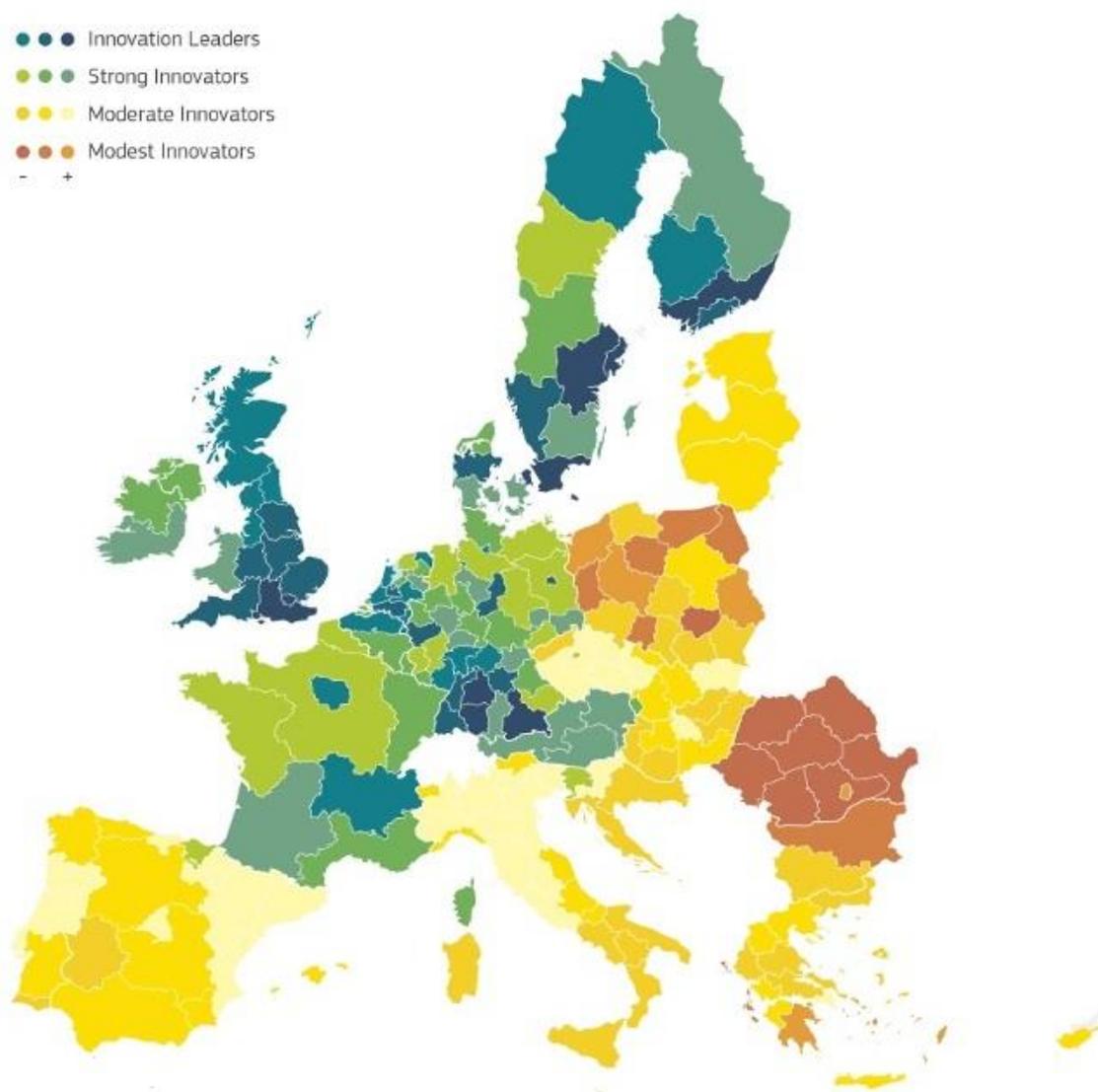
## **Results and discussion**

### *The results of the study of regional innovation at European level*

There are more and more tools and methods to help evaluate and solve the problems characterized above. The regional innovation scoreboard is an essential tool for the measurement of innovation potential and its variations in regional terms. In the year 2017 the scoreboard replicated the European innovation scoreboard methodology used at national level to measure the performance of regional innovation systems (in the case of Poland there are provincial levels). To build the relevant indicators, included in the regional innovation scoreboard for 2017, the data from 220 regions in Europe have been used. In this way, the scoreboard provides a comparative assessment of the performance of the innovation system in

those regions of the European Union, and also includes Cyprus, Estonia, Latvia, Lithuania, Luxembourg and Malta. The European Innovation Board contains the evaluation of performance of national innovation systems, and is also the basis for the annual indicator of innovation performance of Member States as well as other European countries and regional neighbours. Indicators of innovation at regional level are less detailed due to the general lack of data of innovation at that level. However, the regional innovation scoreboard resolves this vulnerability by providing statistical data on the level of innovation for the regions. Compared to the regional board of innovation, the European board puts more emphasis on the performance of small and medium-sized enterprises. In the regional innovation scoreboard countries were divided into four groups according to the

results of innovation. First of all, the regions of Europe have been classified to the leaders of the regional innovation (53 strongest regions) and strong regional innovators (60 regions). Other categories included moderate innovators (85 regions) and humble regional innovators (22 regions). A more detailed breakdown of these groups performance was obtained by dividing each group into the upper, middle and lower third. The most innovative regions are leaders in innovation +, and - is for the least innovative regions. It turned out that only one country has regions in more than two different performance groups, although in the case of 12 countries regions ranked in four or more different subgroups of the performance, as shown in the following figure.



**Figure. 1.** Regional map of innovation

Source: [http://ec.europa.eu/growth/industry/innovation/facts-figures/regional\\_pl](http://ec.europa.eu/growth/industry/innovation/facts-figures/regional_pl) [16.10.2].

The most innovative regions are usually the most innovative countries. Innovation leaders came off best in all indicators, in particular in those indicators which measure the research and scientific publications and business innovation. Most of the leaders of the regional innovation are among the countries referred to as leaders in the European innovation scoreboard. Almost all moderate and modest regional innovators are in the countries referred to as moderates and modest innovators. However, regional pockets of excellence were also identified in some countries classified as moderate innovators (for example, Prague in the Czech Republic, the Bratislava Region in Slovakia, or the Basque Country in Spain). At the same time, certain regions of the countries that are leaders in innovation or strong innovators are very backward.

Ranking results revealed that Stockholm is the most innovative region in the European Union. In second place was the Hovedstaden Region in Denmark and South-East Region in the UK. In general, the most innovative region in Europe has been proven to be Zurich in Switzerland.

In addition, by comparing the results with previous years, it was noted that innovation in most of the regions has improved. Increase in performance has been observed for all regions of Austria, Belgium, France, the Netherlands, Norway, Slovakia, Switzerland and the United Kingdom, as well as most regions of Greece, Italy, Poland and Sweden. Performance degradation has been observed mainly in the geographically peripheral regions of Europe. Productivity fell in all regions in Romania and more than half of the regions in the Czech Republic, Denmark, Finland, Germany, Hungary, Portugal and Spain. Over time, there has been a process of regional divergence of performance and increased differences in performance between regions. A strong link has been observed between innovation and regional competitiveness (*Regionalna tablica innowacyjności*, 2017).

#### *The results of the study of Polish regional innovation*

Poland in the above studies has proved to be a moderate innovator. With the passage of time (2010) the productivity increased by 2.0% compared to the EU. The relative advantages of the innovation system derive from the influence of employment, investment and environment-friendly innovations. The relative weaknesses relate to the innovators, links and innovation research systems. The difference is the greater share of employment in agriculture and in exploration and production, a lower proportion of

employment in high and medium high-tech manufacturing and services, a greater share of foreign-controlled enterprises, fewer expenses in companies for research and development, lower GDP per capita, a higher rate of GDP growth and a lower rate of population growth ([http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards\\_pl](http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_pl)).

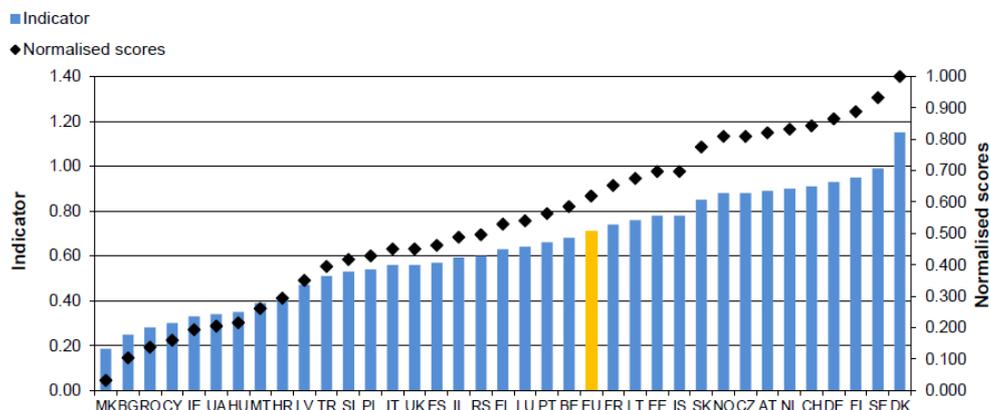
With regard to Poland, I am going to interpret the results relating to two indicators: expenditure on research and development in the public sector and public-private co-publications per million population.

For the first of the indicators, expenditure on research and development in the public sector, the definition of the numerator are all research and development expenditures in the government sector and the higher education sector. Research and development expenditure represents one of the major drivers of economic growth in a knowledge-based economy. As such, trends in the research and development expenditure indicator provide key indications of the future competitiveness and wealth of the EU. Research and development spending is essential for making the transition to a knowledge-based economy as well as for improving production technologies and stimulating growth.

For the second of the indicators, public-private co-publications per million population, the definition of the numerator is the number of public-private co-authored research publications. The definition of the private sector excludes the private medical and health sector. Publications are assigned to the country/countries in which business companies or other private sector organizations are located. This indicator captures public-private research linkages and active collaboration activities between business sector researchers and public sector researchers resulting in academic publications.

In the case of both indicators data source was Eurostat, and the data refer to the year 2015. The average research and development intensity in the public sector is 0.71% for the EU. research and development expenditure in the public sector is close to or above 1% of GDP in Denmark, Sweden, and Finland. In the Former Yugoslav Republic of Macedonia, Bulgaria, and Romania, research and development intensities in the public sector are below 0.30% of GDP.

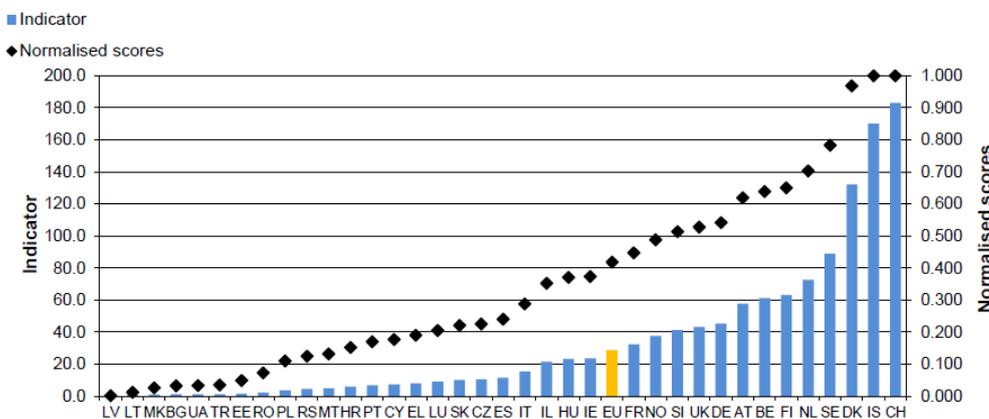
Compared to 2010, performance has increased in 18 countries and decreased in 16 countries. Performance has increased most in Slovakia and the Czech Republic, and decreased most in Ireland, Serbia, and Hungary. Compared to the previous year, performance has increased in 15 countries and decreased in 15 countries. Compared to the previous year, performance has increased most in Slovakia and decreased most in Ireland as shown in the following figure.



**Figure 2.** Research and development expenditure in the public sector  
[http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards\\_pl\\_Annex\\_B](http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_pl_Annex_B) [30.10.2017]

In the case of development in the public sector and public-private co-publications per million population, on average, there are 28.7 public-private scientific co-publications per million population in the EU. However, there are large differences between countries, with more than 100 co-publications per million population in Switzerland, Iceland, and Denmark, and less than 5 co-publications per million

population in 11 countries. Compared to 2010, performance has increased in two countries and decreased in 33 countries. Compared to the previous year, performance has increased in three countries and decreased in 31. This performance decrease in so many countries might be the result of having used preliminary 2015 data not completely capturing all public-private co-publications in that year, as shown in the following figure.



**Figure 3.** Development in the public sector and public-private co-publications per million population  
 Source: [http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards\\_pl\\_Annex\\_B](http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_pl_Annex_B) [30.10.2017].

The results of the study of regional innovation for Polish regions will be presented to the select some of them. Selection is made on the basis of gross domestic product per capita achieved in Polish regions in the year 2014 ([http://stat.gov.pl/files \(...\)](http://stat.gov.pl/files (...)), 2017). It was decided on two regions with very different economic performance, i.e. Malopolskie and Mazowieckie provinces.

In the past few years, the population of the Malopolskie voivodship has been growing systematically. The increase contributed both a positive natural increase and total net migration. On the labour market in Malopolskie voivodship, there was an increase in the average paid employment in the enterprise sector in recent years. At the same time both the number of registered unemployed persons and registered unemployment decreased. The number of inhabitants of

the Mazowieckie voivodship has been systematically growing, while demographic development of the voivodship has been spatially diverse. The highest natural increase occurred in powiats (districts) concentrated around Warsaw, and the highest loss in powiats situated on the fringes of the voivodship. Further improvement on the labour market took place in 2016. Regular growth in the average employment in the enterprise sector year-on-year, a decrease in the number of registered unemployed persons and the unemployment rate had been observed since 2014 (*Raport o sytuacji społeczno-gospodarczej województwa*).

In the study, the results of which are presented in this article, Małopolskie appeared to be a Moderate - Innovator, and innovation performance has increased over time. The region is more densely populated, with somewhat higher than average employment share in utilities and construction, and lower share in public administration. Mazowieckie is a Moderate Innovator and innovation performance has remained stable over time. The region is more urban, with higher employment shares in services and public administration, lower share in manufacturing, and a significantly higher GDP per capita ([http://ec.europa.eu/growth/industry/innovation/facts-figures/regional\\_pl](http://ec.europa.eu/growth/industry/innovation/facts-figures/regional_pl), 2017).

## Conclusions

Europe has good conditions to take advantage of opportunities to stimulate economic growth and competitiveness. As the largest internal market in the world it is home to many innovative enterprises belonging to the forefront and takes a leading position in many fields of knowledge and key technologies, such as health, food, renewable energy, environmental technologies and transport (*Sprawozdanie z 2013 r. na temat konkurencyjności Unii innowacji*, 2017). It has also extremely valuable resources created by a highly skilled workforce and outstanding talents in cultural and creative activities. However, efforts are necessary to ensure the smooth functioning of the single market, improving the framework conditions for innovation in enterprises and accelerate investment in breakthrough technologies in the rapidly developing areas (*For a European Industrial Renaissance*, 2017). New opportunities for growth are associated with the delivery of new products and services, as a result of technological breakthroughs, new processes and business models, non-technological innovations and innovation in the service sector, those combined

together form the driving force of creativity, ability and talents, in other words as a result of the broader innovation. These opportunities can be developed by putting a strong emphasis on economic policy and strategy whose goal is to meet social challenges, such as ageing, energy security, climate change, including disaster risk management, as well as social inclusion, all of which require breakthrough innovation. To take full advantage of these favourable conditions to achieve economic prosperity and a high quality of life, governments across Europe have to actively engage in promoting the strategy for growth especially strategies for research and innovation. The gradual improvement in the economic situation now allows Europe to focus on boosting growth while maintaining the pace of reform in order to ensure a sustainable economic recovery. Now, when Europe comes out of the crisis, it can be clearly seen that the promotion of a growth-enhancing strategy ultimately has come to effect.

Polish regions have stabilised now a new model of regional management, which is included in the development strategies for the region and the regional operational programmes focused mainly on the use of European funds. This model encourages the regions to think about medium-term objectives, according to the period of the financial perspective of the European Union. Forward, long-term thinking has lost its importance. Calling for the strategic policy of the region is an attempt to integrate long- and medium-term thinking into one thought and strategic concept covering all the basic dimensions of the functioning and the development and management of the spatial region. Strategic policy of the region requires, on the one hand, a strategic management system, and, on the other hand, the methodology to develop strategic thinking and translate them into the appropriate development policies. Such leading categories designating the framework strategic thinking and strategic policy as vision, development goals, challenges, strategies, have found a permanent place in the dictionary of management practices. The thing is that they are used in a nonchalant and simplified manner. Often various contents and simplified associations are used without due attention to methodological rigor. A good method to ensure the creativity of thinking about the future of the regions, and at the same time to create a conceptual framework for strategic policy for the region are foresight studies. Foresight studies are the core of thinking about strategic policy and can be thought of as a good tool to run strategic policy in the region. The studies are a tool for professional preparation of

strategic policy objectives. Whether they will continue effectively depends on the sustainability of cooperation between the specialists from different fields and different political and decision-making factors. A precondition for pursuing foresight studies, useful in strategic and political terms, is the ability and effectiveness of interdisciplinary cooperation of professionals with expertise and representing the particular points of view, and people involved in the decision-making processes in the public sector, as well as in business and civil sector. Foresight studies have shown the essential trends and practical path to integrate thinking, design and conduct of an integrated strategic policy in the region. Research teams undertaking the regional foresight studies out of their own initiative as well as those to which the public authorities are willing to entrust the handling of this type of study, should, first of all focus on the usefulness of the results of their work for a decision-making process (Gaczek, 2013, pp. 203-221).

Today's Poland is in a specific time. On the one hand, one can see great delays in the sphere of infrastructure, accessibility, universality of application of the Internet and advanced communication services, but also for example, energy and the potential failure of transmission lines or the lack of diversified sources of energy security. In all these areas an improvement in the situation requires a strong increase of financial inputs and focus of energy on increasing the efficiency of the state in the management of these processes. On the other hand, despite the civilization gap associated with only partial modernisation of the economy and low development potential areas that for years have been beyond the reach of the environmental impact of economic centres – there emerge leaders of new competitive advantages. By leveraging the intellectual capital, mobility and agility and dynamism of rapidly gaining new skills by the young generation, metropolitan areas are developing in accordance with modern paradigms and successfully compete with other European urban agglomerations. Therefore, to take advantage of opportunities that will appear before the Poland 2030 perspective, and to prepare the country for the risks of long-term world trends – model development must strengthen the dynamics of growth, encourage the fullest development in the use of opportunities and gradually remove the obstacles that prevent more and larger group of the regions and the communities from participation in the process. This is because it seems that the appropriate model for the incoming 20 years, is the polariza-

tion-diffusion model of development. Taking the uneven pace of development as a natural part of economic processes and being aware of the risks that arise from, at least a temporary, increase in disparities between regions, social groups or economic sectors – economic policy must at the same time face the challenges connected with removing the delays and supporting the creation of new competitive advantages. Therefore, apart from the support for growth (that is, the polarizing processes), the policy, first of all, needs to create the conditions for the diffusion- everything that will help to equalize educational opportunities, increase the availability of transport anywhere in the country, eliminate the threat of digital exclusion, improve the level of social integration, build solidarity between generations, give them a sense of the possibility of realizing their own aspirations. The aim always is: economic growth and improving the quality of life. Strategy is a skillful diagnosis- in which areas polarization appears as a side effect, and creating tools to minimize its social and developmental effects, not undermining the emerging, new opportunities to further increase or support growth using the rules of competition and the market. This is apparent, that the primary task for the state is to support the processes of diffusion-the creation and continuous update on effective and efficient alignment tools, levels of development potential and living conditions. Development policy needs a comprehensive approach and choices projected by the scenario. You cannot build future competitive advantages on the inherently transient phenomena (like cheap labour) or the potential benefits from catching up on the delays on the functioning of the infrastructure: ICT, energy or transport (*Polska 2030. Wyzwania rozwojowe*, 2017).

## References

- Armstrong, M. (2010). *Strategiczne zarządzanie zasobami ludzkimi*. Warszawa: Wyd. Wolters Kluwer.
- Broszkiewicz, R. (ed.). (1997). *Związki polityki gospodarczej z polityką regionalną*. Wrocław: Wydawnictwo AE.
- Bukowski, M., Szpor, A, Śniegocki, A. (2012), *Potencjał i bariery polskiej innowacyjności*. Warszawa: Instytut Badań Strukturalnych.
- Gaczek, W.M. (ed.) (2013). *Dynamika. cele i polityka zintegrowanego rozwoju regionów: aspekty teoretyczne i zarządzanie w przestrzeni*. Poznań: Bogucki Wydawnictwo Naukowe.

- Kijek, T. (2016). Kapitał innowacyjny przedsiębiorstwa: akumulacja i wykorzystanie. Lublin: Wydawnictwo Uniwersytetu Marii Curie-Skłodowskiej.
- Korenik, S., Przybyła, Z. (2011). Gospodarka przeszrenna XXI wieku - nowe wyzwania. Wrocław: Wydawnictwo Uniwersytetu Ekonomicznego.
- Makiela, Z. (2013). Przedsiębiorczość i innowacyjność terytorialna. Warszawa: Wyd. C.H. Beck.
- Nowakowska-Grunt, J., Miciuła, I. (eds.). (2016). Wybrane aspekty zarządzania organizacją w XXI wieku. Katowice: WN Sophia.
- Okoń-Horodyńska, E., Wisła, R. (eds.). (2009). Kapitał intelektualny i jego ochrona. Warszawa: Instytut Wiedzy i Innowacji.
- Szatkowski, K. (2016). Zarządzanie innowacjami i transferem technologii. Warszawa: PWN.
- Woźniak, M.G. (2011). Uwarunkowania sprawnego działania w przedsiębiorstwie i regionie. Rzeszów: Wydawnictwo Uniwersytetu Rzeszowskiego.
- <http://ec.europa.eu/eurostat/data/database>.
- [http://ec.europa.eu/growth/industry/innovation/facts-figures/regional\\_pl](http://ec.europa.eu/growth/industry/innovation/facts-figures/regional_pl).
- [http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards\\_pl](http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_pl).
- [http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards\\_pl\\_Annex\\_B](http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_pl_Annex_B).
- [http://stat.gov.pl/files/gfx/portalinformacyjny/pl/defaultaktualnosci/5482/4/3/1/notatka\\_wstepne\\_szacunki\\_pkb\\_nts\\_2\\_2014.pdf](http://stat.gov.pl/files/gfx/portalinformacyjny/pl/defaultaktualnosci/5482/4/3/1/notatka_wstepne_szacunki_pkb_nts_2_2014.pdf).
- Komunikat Komisji do Parlamentu Europejskiego. Rady Europejskiej. Europejskiego Komitetu Ekonomiczno-Społecznego i Komitetu Regionów. For a European Industrial Renaissance / COM(2014)014. <http://eur-lex.europa.eu/legal-content/PL/TXT/?uri=OJ:L:2014:014:TOC>.
- Polska 2030. Wyzwania rozwojowe. [https://www.mpips.gov.pl/gfx/mpips/./1./pl\\_2030\\_wyzwania\\_rozwojowe.pdf](https://www.mpips.gov.pl/gfx/mpips/./1./pl_2030_wyzwania_rozwojowe.pdf).
- Raport OECD z 2011 r. Productivity and growth accounting. <https://www.oecd.org/std/productivity-stats/2352458.pdf>.
- Raport o sytuacji społeczno-gospodarczej województwa. <http://stat.gov.pl/statystyka-regionalna/publikacje-regionalne/system-regionalnych-opracowan-analitycznych/raport-o-sytuacji-spoeczno-gospodarczej-wojewodztwa>.
- Regionalna tablica innowacyjności. [http://ec.europa.eu/growth/industry/innovation/facts-figures/regional\\_pl](http://ec.europa.eu/growth/industry/innovation/facts-figures/regional_pl).
- Siuta-Stolarska, B., Siuta-Brodzińska M. (2011). Rola przedsiębiorczości w zarządzaniu. Zeszyty Naukowe WSOWL Nr 4 (162). <http://yadda.icm.edu.pl/baztech/element/bwmeta1.element.baztech-article-BPW6-0024-0032>.
- Sopińska, A., Wachowiak, P., (2016). Jak mierzyć kapitał intelektualny w przedsiębiorstwie. <http://www.e-mentor.edu.pl/artukul/index/numer/4/id/51>.
- Sprawozdanie z 2013 r. na temat konkurencyjności Unii innowacji. SWD (2013) 505. <http://eur-lex.europa.eu/legal-content/PL/TXT/?uri=CELEX%3A52014DC0339>.