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INTELLIGENT SPECIALIZATION OF REGIONS AS AN INSTRUMENT TO SUPPORT INNOVATION

The current policy of the European Union calls for new solutions for the equalization of opportunities for the development of various regions. The solution which is emphasized today is smart growth, finding each region's potential for faster and more efficient development. Implementation of the smart specialization philosophy is a test for local communities. They know best what potential lies dormant in their environment. In order to implement the smart growth policy, all the actors of social life and economy should be involved.

Keywords: innovation, clusters, smart specialization.

JEL classification: O1, O3, K00.

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ІНТЕЛЕКТУАЛЬНА СПЕЦІАЛІЗАЦІЯ РЕГІОНІВ ЯК ІНСТРУМЕНТ ПІДТРИМКИ ІННОВАЦІЙ

У статті показано, що сучасна політика Європейського Союзу вимагає нових рішень для забезпечення рівних можливостей розвитку регіонів. Основне запропоноване рішення – так званий інтелектуальний ріст, пошук потенціалу для більш швидкого і ефективного розвитку кожного регіону. Впровадження такої філософії розвитку – основне завдання місцевої влади, яка краще орієнтується в потенціалах керованої області. Усі суб'єкти суспільного життя і економіки повинні бути залучені в реалізацію політики гармонійного росту.

Ключові слова: інновації, кластери, інтелектуальна спеціалізація.

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ИНТЕЛЛЕКТУАЛЬНАЯ СПЕЦИАЛИЗАЦИЯ РЕГИОНОВ КАК ИНСТРУМЕНТ ПОДДЕРЖКИ ИННОВАЦИЙ

В статье показано, что современная политика Европейского Союза требует новых решений для обеспечения равных возможностей развития регионов. Основное предлагаемое решение – так называемый интеллектуальный рост, поиск потенциала для более быстрого и эффективного развития каждого региона. Внедрение такой философии развития – основная задача местных властей, лучше ориентирующихся в потенциалах управляемой области. Все субъекты общественной жизни и экономики должны быть вовлечены в реализацию политики гармоничного роста.

Ключевые слова: инновации, кластеры, интеллектуальная специализация.

Introduction. Smart specialization is a new approach to the formulating strategies of innovative development of regions. It involves the identification of areas of science, technology and business, on which comparative advantages and future growth can be built on. This is a unique opportunity for regional governments to get funding from the European Union in the new financial perspective for 2014–2020.

Poland is a country with moderate diversity of territorial development, but inequalities in the country have the tendency to spread. This is also evident in other

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European countries. The largest income in Poland, in per capita terms, is reached by the metropolitan areas of major cities. Areas in Eastern Poland belong to the poorest ones, especially Lubelskie and Podkarpackie Voivodships. From the perspective of more than 20 years from the political transformation many positive changes in the field of regional development can be seen, but Poland and all of Europe are at the turning point now. The global crisis has put an urgent task before the governing people to prepare development plans for the XXI century. Poland also has to look for new opportunities, despite the backlog in the areas of transport, new technologies etc.; these new features include the use of intellectual potential of the young generation, development potential of research and scientific centers. It is important to level the developmental possibilities of all the regions of Poland – Eastern areas of the country are still beyond dynamic economic growth. Regional development disparities are evident across Europe, despite the implementation of many programs designed to support poorer regions. Differences between peripheral and central regions, where economic development is mainly accumulated, are still visible. With the adoption of the document "Europe 2020" the concept of smart specialization of areas appeared. The concept is supported by 3 initiatives: the European Digital Agenda, Innovation Union and the Mobile Youth.

This article is an attempt to show the advantages of Podlaskie Voivodship in the context of smart specialization of regions. The authors conducted a preliminary analysis of all areas of economic and social development and have chosen those on the basis of which this region can be competitive in Europe and around the world.

1. Outline of the smart specialization philosophy. The latest concept of the EU regarding regional development from 2010, in connection with the new strategy "Europe 2020", focuses on the intelligent development. This is a requirement for the new programming period. The region needs to assess its strengths – industries and decide which will be clever to specialize in. It does not have to be high-tech sectors, only those in which the region has an advantage and which can create the greatest added value. It has a chance to be competitive on European or even global scale. The needed types of interventions must be selected and specified. For example, in the case of the software industry, for instance, an incubator and investment in R&D in companies associated with software may be needed. Of course, the choice of the sector cannot be accidental. A danger of peak the losers appears here, i.e. selection of a losing business, but still, the risk needs to be taken.

Preparation of the regional development strategy based on smart specialization should be preceded by the research of economy starters. It is necessary to check whether the seedbed sector, which is not very highly developed, is likely to become important for the region.

Smart specialization of regions occupies a significant place in the important documents of the European Union and Poland. Strategic documents developed at the central level also refer to the issue of innovation. Creators of the "Poland 2030" report include intellectual capital of our society as the source of our competitiveness in Europe. Education and innovation are naturally linked together; universities providing knowledge and technology can support regional innovative processes. The National Development Strategy 2020 sets the activities for more innovative economy

as a target. The main problems in the development of innovations were identified as: an inefficient system of financing, including low private investment in research and development, poor cooperation between science and business, small percentage of the enterprises engaged in innovation activities, low number of patents. In 2010, the total of 3,203 patents were reported, 43.3% of which were granted. The innovative activity is conducted only by 10.37% of the enterprises in the services sector and 13.85% of the industrial enterprises (The Local Data Bank of the Central Statistical Office, 16.09.2012). Currently, Poland spends around 0.7% of GDP on R&D, which is only 1/3 of the average for all EU countries; therefore, it is necessary to increase investment in this sphere. An important role is assigned to urban agglomerations, where focus is put on national universities. Of particular importance is the utilization of the potential of Warsaw, so that it becomes a scientific center with significant potential of knowledge and innovation, not only in the country but also in Europe. In the remaining regional centers and major cities, those fields of study should be developed of which research units and companies of the region belong to the leaders in Poland, Europe and the world (The National Development Strategy 2020, 2011).

The EU wants to spend 3% of its GDP R&D. To realize these assumptions improvement of conditions and access to funding research must take place, so that innovative ideas could be turned into new products and services, and fuel economic growth and job creation. The condition for obtaining financial resources from the EU funds after 2013 will be the possession of smart specialization of the region by every region. Each region needs to find its strengths, this sphere in which it will specialize and which sphere will provide a chance for better development. They need to develop regional innovation strategies and the objectives of these strategies must be primarily subordinated to the aims contained in the "Europe 2020" document and the "National Strategy for Regional Development". Therefore, many objectives of regional strategies are common to the whole country, for instance, building a knowledge-based economy, improving collaboration of research and development centers with business, supporting the development of clusters, the revival of business environment institution, and better access of small and medium-sized firms to external financing. However, as it was mentioned before, each voivodship must identify key areas for its development.

2. Polish and European Innovativeness. The measurement of innovativeness of the economy is the number of patents; the important criteria of innovativeness are: the number of patent applications, the number of registered patents and the number of cited patents. The number of patent applications shows the awareness of the need to protect intellectual property, the number of granted patents indicates the quality of solutions. However, to what extent others use the registered invention indicates the flow of knowledge in the global economy and presents the ability to identify the countries whose patents are the most widely used in the world (Polska 2030). The WIPO (World Intellectual Property Organization) data confirms that the progress of technology in the world is determined by scientists of a small number of countries. For years, the top 3 in the rankings are the USA, Japan and China, whose joint share of the global patent applications in 2011 was 82%. Europe's most innovative country is Germany. Poland takes 31th place in the ranking. From our country comes only

0.12% of the world output (Economics and Statistics Division, 15.09.2012). In this comparison: central and southern voivodships dominate (Figure 1). Quite significant is the fact that despite the global financial crisis in 2011, a record was broken when it comes to patent applications – 181.9 mln. entries. Most entrepreneurs are aware of the fact that the development of innovation policy of a company will have positive effects in the long term; nowadays, entrepreneurs wanting to be competitive at the global market need to invest in innovation and consciously manage intangible goods, which constitute an essential component of the company as material goods. Most European governments perceive an innovation policy as a way to solve economic problems.

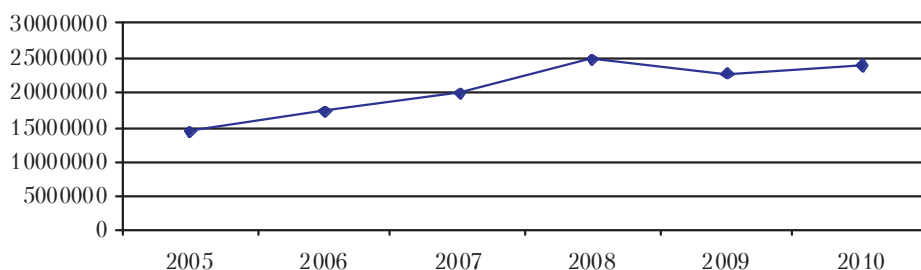


Source: Own calculations based on the Local Data Bank of the Central Statistical Office, 16.09.2012.

Figure 1. **Granted patents in Poland, 2010**

In Poland, the level of knowledge in the field of intellectual property is quite low among entrepreneurs; not all recognize the need to introduce deliberate management strategy in this sphere. Even if they recognize the importance of the protection and promotion of intellectual property, in the case of small businesses financial constraints discourage from entrusting such matters to qualified entities such patent

attorneys or law firms. According to the Central Statistical Office's data regarding the period 2008–2010, Polish entrepreneurs often indicated high costs of innovations as a barrier to innovation development; lack of financial resources and lack of financing from external sources was indicated as another barrier (GUS, 2011: 9). *The very awareness of the need to implement innovations is one of the elements of the potential of innovative business. Another – equally important part – is to provide companies with the information technology, cooperation with the R&D sphere, as well as the level of education* (Zolnierski, 2005: 5). The driving force behind the development of Polish economy are mainly small and medium-sized and microenterprises accounting for about 95% of all registered businesses in Poland. The range of the concept of innovation includes the solutions of research, technical, organizational, financial and commercial nature, so considering these aspects of Polish companies the situation does not look good. Polish companies occupy one of the last places in terms of average expenditure on innovative activities, the percentage of companies implementing innovation, and the average value of sales of new or significantly improved products. Polish companies maintain a low position in comparison to other EU countries in the field of research and development activities, both in respect of investment and the number of companies engaged in these activities. The major difference to the detriment of Polish companies within the range of percentage of innovative firms divides small Polish and European companies. Even the situation of our neighbors on the South – Czechs, Slovaks and Hungarians – is much better (Innowacyjność 2010: 5). Expenditures on industrial enterprises in the recent years have decreased. The graphic illustration of the dependency in 2005–2010 is shown in Figure 2. The proportion of industrial firms engaged in innovation activities in 2006–2008 in different regions differed quite substantially. In Podlaskie Voivodship, in relation to the period before 2006, the index of innovative companies has declined. However, in comparison to the rest of the country in terms of the quantity of innovative companies, the Podlaskie Voivodship looks quite well, taking fourth place, after the Mazowieckie Voivodship, Pomerania and Silesia. Polish companies implement more process innovations, which improve the process of production rather than create new products. Per 6900 innovative companies employing more than 9 persons, 80% introduced new or significantly improved processes, and 73% of them – new or significantly improved products. The highest percentage of product innovations was implemented by large Subcarpathian and Podlaskie companies (respectively 90 and 85%), and process innovation – small Lublin companies (93%) and large Zachodniopomorskie (92%) as well as Swietokrzyskie (91%). It is also worth noting that Podlaskie companies were more likely to implement new methods of manufacturing than others. The most important indicators of economic innovation are expenditures on innovative activity. In the case of medium-sized companies in the private sector, the highest expenditures in 2008 were on innovations in Podlaskie – 5.6 mln. (Innowacyjność, 2010: 5). Unfortunately, among large companies Podlaskie had the lowest investments in the country. The above data shows that Podlaskie has the potential for innovation; small and medium-sized enterprises can compete with other companies in the country, and as practice shows, there are innovative companies that can be competitive in the whole of Europe.



Source: Own calculations based on the Local Data Bank of the Central Statistical Office, 16.09.2012.

Figure 2. Expenditures of industrial enterprises, 2005–2010, mln. PLN

3. Possibilities of smart specialization of Podlaskie Voivodship. Polish Eastern regions are among the least developed in the country. Podlaskie Voivodship is currently at the stage of actualization of the Regional Innovation Strategy, which is one of the 15 tasks within the "Podlaska Innovation Strategy – building a system implementation" project defining problematic issues and strategic goals and development directions. First of all, the Voivodship assumes strengthening of economic competitiveness of the region through innovation, establishment of institutional mechanisms of innovation support, transformation of the capacity of scientific and research institutions. The strategy takes into consideration working with consulting firms, universities, R&D units and technological centers. The strategy creators propose pilot projects, for instance, the creation of the Virtual Crafts Incubator within the scope of which an online portal will be developed – Virtual Crafts Incubator, promoting crafts and small manufacturing, national multiculturalism, growing tourism and its associated services in the region, as well as institutions supporting regional business and caring for its stimulation and promotion. It is a project combining modern exchange of technological ideas and methods of management of small businesses and handicrafts enterprises with traditional industries. The region puts attention to the richness of local culture and traditions, multiculturalism characteristic of the North-East Poland. An important element in the development of Podlaskie Voivodship is its educational system. In the area there are 17 universities, which educate 53 ths. students (The Local Data Bank of the Central Statistical Office, 16.09.2012). The strategy proposes the creation of a database for research work, masters' and doctoral theses at the provincial level. Through existing businesses, the project will allow the submission of the demand for products, technologies, software, analyses and to make it available to the universities in the voivodship. In this way, masters', engineer and doctoral theses may be used by companies, and in addition, there will be an opportunity for graduates, who prepare their works to be employed.

The Podlaskie Voivodship has a high scientific potential. It is necessary to intensify cooperation between universities and private sector. This would help the voivodship to switch to a more future-oriented development path. Cooperation of companies with the representatives of scientific communities can constitute a strong side of Podlaskie Voivodship. In Poland, such cooperation is still developing. Recent changes in legislation provide a better basis for such cooperation, changes in the higher education system and public finances in the recent years positively improved the situa-

tion. Now we need more activity on the part of business, because in the field of communication between research institutions and businesses the situation is still unsatisfactory. Although in principle the research is not focused on commercialization, research institutions look for a plan to work with businesses and the possibility of implementing developed solutions more and more often. Research work is mainly focused on the purpose of scientific research or teaching, but more and more attention is drawn to the fact that the research center, wanting to be competitive internationally, should also take into account the possibility of transferring technology and know-how into practice. Selection of potential recipients of research results must be preceded by the analysis of local industry to meet the needs of entrepreneurs, the manner of management of intellectual property, the possibility of introducing innovations, including the analysis of legal possibilities in this regard (sale, transfer of rights, granting licensing). This is obviously not a task for an individual researcher; research units take different approaches in this field. They cooperate with other research entities, for instance, from abroad, build research consortia, form partnership strategies to generate intellectual property. Among the strategies for transfer of technology from research to business is creating technology companies of spin-off, spin-out and spin-in and start-up type. The company of this type undertakes the implementation of technologies based on the directly applied technology or research results through the use of intellectual property rights of parent units (Trzmielak and Byczko, 2011: 31–32).

In the North-Eastern region new forms of cooperation are used. The BTU Institute of Innovation and Technology Ltd. established in 2011 at the Bialystok Technical University may serve as an example. The company's objective is to commercialize scientific research and promote innovation in the industry. The Institute's purpose is to manage patents, support the implementation of inventions of the staff and students of Bialystok Technical University financially and organizationally and help finding investors. The most important tasks of the company include, among others, supporting inventors and investors in pre-incubation, executing the processes from invention to market, searching for sources of equity financing, selling licenses, performing services ranging from technology audit to the transfer of construction, design and advice, handling industry – university contracts, prototyping and production of small series of innovative products, establishment of spin off / spin out companies. The first spin-off company established in the region is "Edome" Ltd. The partners of this company are the Bialystok Technical University, Institute of Innovation and Technology Ltd. Spin-off companies realize the idea of introducing scientific workers into the realm of entrepreneurship. Researchers bring intellectual property as contribution (patents, utility models, copyright) into the company and become co-owners. The task of entrepreneurs is to contribute necessary capital and business management is taken over by a special purpose company of the university. These companies differ from companies, previously established by academia, above all, through the division of profits – in a spin-off company part of profits will go to college. The Institute conducts research on several other inventions, but it is the most difficult to find an entrepreneur who is willing to invest capital necessary for the implementation of developed solutions.

An example of university involvement in socio-economic development of the region is the participation of the University of Bialystok in the creation of "Podlaska Innovation Strategy – building a system of implementation". University of Bialystok is the main partner of the project. In June 2012 the University was ranked third in the competition for the most innovative and creative university in Poland. The assessment included not only the base and the scientific potential of the university as a in a classic ranking, but also the way, in which it functions in the information society and whether it is keeping up with the changing reality. In 2012, the Synthesis and BioNanoTechno Analysis Center was established at the University of Bialystok. It is a combination of 3 development potentials of Podlaskie Voivodship: knowledge, science and entrepreneurship, integrated and innovation and application of new technologies. The idea of setting up a Centre was born out of the need to modernize the laboratory infrastructure, necessary to conduct research at the global level, at the Institute of Chemistry, University of Bialystok. Thanks to high-tech equipment, the University can work with local businesses, agencies and police and carry out specialized studies.

In May 2012 the Center for Innovative Research at the Medical University of Bialystok was given the status of the National Scientific Leading Centre (KNOW) in the field of medical and health sciences. It is a prestigious award by the Minister of Science and Higher Education. In the field of medical science it is one of the 3 awards of the national scale. The research undertaken by the Centre focuses mainly on the detection of lifestyle diseases and their effective, individualized therapy, based on innovative technologies. The Medical University of Bialystok successfully obtains financial resources from the EU funds, an example of which may be building an instrument database for the Innovative Research Center within the framework of the Development of Eastern Poland program.

The share of universities and other research institutions in the national patent applications in 2010 amounts to 1,577 entries; it is almost half of all the applications in the country. There were 56 applications from Podlaskie Voivodship, of which eventually 11 were granted patents. It is not an impressive number compared to other provinces (Raport roczny, 2010: 58). Despite having a different purpose than an economic one, the university should also specify its own strategy for managing intellectual property. The resource of intangible goods at the university is extensive. It includes not only technological solutions but also the results of research, publications, or any other activities protected by copyright. It is important that apart from the university itself, also the environment, the local industry and the society of the region should receive benefits. The cooperation of local businesses with universities is also carried out with joint preparation of plans and studies, organizing internships and apprenticeships for students, which may, in the future, be translated into greater employment of graduates in local businesses.

Most small and medium-sized and microenterprises in Podlasie have no high internal innovation potential, so the chance to change the situation may be the collaboration with external entities. This cooperation already takes place at various levels. These include: clusters, science and technology parks and special economic zones. One of the most innovative companies in Podlaskie Voivodship is PRO-MOTECH, whose R&D department has produced a numerically controlled portable

MCM machine facilitating the creation of hatches and welding frames in wind towers. This solution is the first of its kind in the world. Due to the increasing popularity of wind power plants, certainly, the demand for Polish solution will grow.

In creating a competitive advantage of Podlasie, companies use instruments in the form of cluster initiatives. In 2011, in Podlaskie Voivodship 13 cluster initiatives were reported, of which only a part remained active. Among these structures the dominating industries are: food processing (Podlaski Food Cluster, Food Cluster "Naturalnie z Podlasia", Podlaski Bakery Cluster), clothing (Podlaski Underwear Cluster), construction products and services, and construction equipment and materials (Eastern Construction Cluster), furniture (Northeastern Wood Cluster), and education and knowledge creation (Northeastern Digital Education Cluster). The high activity in the food sector is particularly noticeable, which perfectly corresponds with the direction of economic potential of the region. Food industry is very strong in the region and is considered to be crucial. There are also other cluster initiatives that have developed their operations, even though strong concentration of employment in certain industries has not been identified in the voivodship. This type of initiatives include: Green Technology Cluster, North-East Tourism Cluster "Crystal of Europe" Polish Yachts Foundation Cluster, Polish Eastern Medical Cluster, Metal Processing Cluster and Business Environment Institutions Cluster (Klasy w wojewodztwie podlaskim, 16.09.2012).

The innovativeness of economy depends on cooperation and mutual influence of institutions functioning in the region. Small businesses do not have adequate capacity to implement new technological solutions. These companies need the support of business environment as an intermediary in providing information, technology transfer and creating links with research centers. Technological parks are such institutions (Matusiak et al., 16.09.2012). Small and micro enterprises in Podlaskie Voivodship can count on the support of: Bialystok Science and Technology Park in Bialystok, Poland-East Science and Technology Park in Suwalki and Podlaski Industrial Park in Czarna Bialostocka.

Special economic zones have been functioning in Poland for 17 years and became incorporated in the catalog of instruments encouraging investments. Their popularity is based on tax exemption for entrepreneurs. Leading industries in the Suwalki Special Economic Zone established in 1996 are metal, wood, paper and plastic branches. The exemption was granted to 66 investors. The total investment amounted to more than 1.6 bln. PLN so far. Currently, investors employ over 5700 people within the Zone (Tynel et al., 16.09.2012).

Summary. The main challenge now is to identify the regions' potential for innovation. Certainly, it can be said that Podlasie has such a potential. It is therefore important to clarify action strategies and the involvement of all actors of social life and economy for its implementation. The development of a good quality document is the foundation, but its effective implementation is no less important. As mentioned in the article, a strategy for the development of region's innovativeness in Podlasie is being developed. Currently measures must be taken for the dissemination of knowledge concerning intellectual property rights, dissemination of information among entrepreneurs about the opportunities in the field of R&D funding, cooperation with specialized bodies carrying out such activities, and academic institutions. Bialystok

has the potential to become a center of innovation and business development in the North-Eastern Poland, thanks to its quite good use of the EU funds, Podlasie ranks well on the national scale and the participation in the EU programs has a considerable effect. Podlaskie universities have great potential for the development of not only local but also national innovations; leading universities of Podlasie are already competitive at the domestic market.

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