

Common Areas of Smart Specialisations as well as the Innovation Potential and Possibilities of East Poland Voivodeships

Alina WALENIA

University of Rzeszow, Rzeszow, Poland
alinawalenia@poczta.onet.pl

Abstract. In East Poland voivodeships as poorly developed regions the outlined areas of smart specialisations pertained mainly to building the competitive advantage based on traditional sectors lacking in innovation. In the remaining highly developed regions, smart specialisations were more frequently based on innovative sectors and on increasing competitiveness through the increase of innovation. The regional strategies of smart specialisations are an instrument of building the regional consensus for the development of entrepreneurship. Their task is also to find specific sectors of regional economy that are important and give potential opportunities for development. The task of authorities acting for implementing the regional innovation systems is to cooperate with companies and business-related bodies with the aim of providing help to entrepreneurs with absorbing EU funds. The effects of implementation of the regional innovation systems largely depend on institutional effectiveness of the self-government administration involved in that process.

Keywords: Smart Specialisations, Innovation, Region.

1 Introduction

The strategy for smart specialisation constitutes the basic component of the European Cohesion Strategy in relation to the regions. The recommendations of the European Union pertaining to specifying fields and sectors deciding about the competitive advantage and the growth potential of a country and its regions are connected with a new approach to a more effective financing of innovation in years 2014–2020 [2]. Identifying strengths and weaknesses of regions within the smart specialisation strategy conditions the possibility of using EU funds in the current financial perspective. Implementing regional innovation strategies for smart specialisations (RIS3) is connected with undertaking actions in identified areas of science, economy constituting the development potential of regions, the aim of which is to increase the competitiveness and innovation of a voivodeship economy [9]. A characteristic feature of regional innovation systems is that they are rooted in the regional environment. A fundamental role in the process of building the innovative capacity of regions is played

by regional policy which constitutes the plane that binds the actions of individual items of the regional innovation scene. In that process, self-government authorities mainly play a supportive function and coordinate pro-innovation behaviours and actions undertaken in the region [10].

The assumption of RIS3 is to use the endogenous resources of regions deciding about their social and economic development with the consideration of the rules of sustainable development policy [14]. The size of the basic indicators typical for the research and development infrastructure places the East Poland regions last in the country. That determines the possibilities of using the identified areas of smart specialisations in the development of regions and indicates large disproportions in the scope of research and development activities at the regional scale in Poland [15]. Therefore, designing and implementing smart strategies required the participation of various stakeholders, including public administration, the science sector and research bodies, the circle of entrepreneurs and consumers as well as non-profit organisations. It means that a strategy should encompass a public, market and civil paradigm. The result of joint analyses is the vision of the future regional growth confirmed by all stakeholders which includes key targets [17]. The social and economic scenario, worked out jointly, should allow for long-term cooperation of all co-authors of RIS3. The aim of the created vision is the specification of a limited number of development priorities complementary to the identified potential of smart specialization [18]. They include both technological and sector priorities as well as horizontal priorities. An instrument that can be helpful in that scope may be a prepared plan of action including strategic targets, the schedule of works, the sources of financing and a general division of the budget. The system of monitoring and assessing the progress of strategy execution and achievement of set targets is a perfect component of the strategy [6]. Because of that, it is important to indicate non-measurable priorities, including the expected effects and indicators, as well as their initial and target values. In accordance with the assumption made by the European Union, the strategy for smart specialisation should be constantly developed and adjusted to the changing economic realities and the results of monitoring and assessment.

The aim of the article was to identify common areas of smart specializations of East Poland voivodeships which are mainly based on areas connected with natural resources: bio-economy, food, food processing, health. Based on the analysis of programme documents pertaining to the implementation of RIS3 in selected regions of East Poland, a role was presented of individual stakeholders in the process of coordination of RIS3. The results of surveys allowed for the identification of factors conditioning the rules of cooperation between the entities responsible for implementing RIS3, including also undertaking activities for the increase of competitiveness and innovation of those regions. Smart specialisations are based on market knowledge of business and local government entities in connection with the research and development and innovation potential of the region.

2 The Essence of the Smart Specialisation Concept

The basic assumption underlying the smart specialisation concept is the increase of innovation and competitiveness of regions on the basis of their endogenous potential and the sectors already existing in those regions. These may include both specialisations within one sector, as well as inter-sector undertakings allowing for achieving a specific competitive advantage [19]. The guidelines of the European Commission in the scope of the so called third generation strategies set an expectation towards the regions regarding the strengthening of smart specialisations basing on the following four mutually related rules (termed as 4 C): choices, competitive advantage, critical mass and collaborative leadership. The aim of that concept is achieving the critical mass in areas and sectors that are key for competitiveness, spreading general application technologies, especially by using them in products and services as well as strengthening local potentials in the scope of innovation activities [20]. With the use of knowledge and the specialised research and development activities considering social and economic features, the regions should achieve perfection in a specific field, which will make it possible for them to increase their competitiveness and innovation, among others by:

- indicating, on the basis of the analysis of strengths and weaknesses, as well as possibilities and directions of growth, several investment priorities in perspective areas of specialisation and building a competitive advantage on such basis,
- greater use of knowledge and combining the possibilities of the R&D and business sectors in the scope of research and development activities with the consideration of social and economic features of a given region,
- creating clusters and space for varied inter-sector connections causing the diversification processes through the participation in above-regional networks,
- engaging scientific facilities, public authorities as well as entities responsible for implementing innovations in pro-innovation processes.

Specific resources of the region integrated in global processes are presently becoming the key success factor. Possessing them conditions the uniqueness of regional space and should be perceived both as the basis for endogenous growth and a natural competitive advantage [1]. The leading regions may invest in improving general technologies or in innovation in services, while for the remaining regions it will be more beneficial to invest in innovations in a specific sector or in several related sectors. The hardest task encompassed in the requirement of a smart specialisation is the specification by self-government authorities the social and economic identity of the region as well as identifying the most beneficial areas of specialisation. When choosing smart specialisation, a real potential, that will be realistically adjusted to the capabilities, possibilities and needs in the region, should constitute the basis for the process of selection. Regional innovation strategies are the tool for building the regional innovation system. They are the tool specializing the policy of a regional self-government towards the sector of enterprises. Regional innovation systems constitute a regional environment developed in a way which is favourable for creating,

transferring and using knowledge which serves the social and economic development. A characteristic feature of regional innovation systems is that they are rooted in the regional environment [4].

Regional innovation and smart specialisation strategies (RIS3) are created in regions next to region development strategies, or they are included in revised voivodeship development strategies. The main target of RIS3 should include undertaken actions in identified areas of science, economy which are the growth potential of the regions, for increasing the level of competitiveness and innovation of the voivodeship economy with the consideration of the rule of sustainable development.

The regional strategies of research and innovation for smart specialisation (RIS3) are integrated defined programmes of economic transformation of individual regions which are based on:

- using the strengths and competitive advantages of a given region and its potential in order to achieve perfection when considering differences in innovation possibilities of regions,
- full commitment of stakeholders and joint identification of the most suitable areas of specialisation and on the indication of the factors that hinder implementing innovations in the region,
- concentrating the public support in the scope of carrying out the policy and investments on key regional priorities, challenges and needs in the scope of knowledge-based development,
- using the tools supporting innovation and stimulating the possibilities of the development of investment in research and development by private entities favouring technological and practical innovations, creating the effect of synergy,
- the system of monitoring and assessment based on objective data, evidence and indicators.

Most often, East Poland voivodeships indicated specialisations based on the fields connected with the natural resources: bio-economy, food, agricultural and food processing, health. Names of specialisations refer directly to key sectors (tourism, health, industry) or are formulated in a general way, e.g. by describing the mutual connections between sectors in the form of a supply chain (Tab. 1)

Table 1. Identified smart specialisations specified in the Strategy of Social and Economic Development of East Poland (as at the end of 2017).

Voivodeship	Example
Warmińsko – mazurskie	Water economy – production of yachts, boats, water transport, water sports, biological regeneration, agricultural and food industry, machine industry. Timber and furniture making, high quality food.
Podlaskie	Dairy industry, agricultural and food processing, construction and timber industry, tourism, metal and machine industry, boatbuilding, medical sector, health sciences, eco-innovations, environmental sciences.

Lubelskie t	Green power engineering, bio-economy, medicine and health, IT and automation.
Świętokrzyskie	Resource-efficient construction, metal and casting industry, health and pro-health tourism, modern agriculture and food processing, IT and communication technologies, sustainable energy development, fair and congress industry.
Podkarpackie	Aviation and astronautics, quality of life, IT and telecommunications.

Areas of specialisation in the mentioned regions of Poland were identified as a result of merging two approaches:

- bottom-up, i.e. various consultations with the representatives of companies, organisations of employers, the biggest companies in the region, as well as scientists,
- top-down, i.e. proposals of experts who at the request of voivodeship boards prepared the analyses of potentials of the regions.

The analysis of selected areas of smart specialisations in East Poland voivodeships indicated that it was visible that the horizontal connections, i.e. clusters were used when designing and implementing RIS3. Their creation allowed for identifying regional competitiveness and resources (indicate a sector, location or spatial division) as well as specify the priorities. That is why, in the 2014 – 2020 perspective clusters may be supported in mutual targets with the areas of smart specialisation. It is also recommended to strengthen the local and international cooperation, in particular in relation to the support of the developing sectors. In the East Poland regions the peculiar character of smart specialisations concentrating on agriculture and agricultural and food processing sectors is more visible. Common areas within determined specialisations are visible. The connections pertain in particular to the following industries and sectors encompassed by specialisations:

- food and agricultural and food products,
- ecology,
- tourism, medicine, health,
- power generation,
- IT and communication technologies,
- green construction,
- production of machinery and equipment.

Most common areas can be noticed in industries and sectors which are based on the natural resources of East Poland (ecology, food production and processing) and on the existing leading industrial sectors. The area of technology and research is common because in each region it supports endogenous economic sectors making them "smart". "Food and agricultural and food products" is a common area indicated in RIS3 by East Poland voivodesips. That area encompasses sectors connected with agricultural (vegetable and animal) production, agricultural and food processing (food industry), storing and logistics and the sale of agricultural and food products and food. It also

includes the production of machinery and equipment for agriculture and the food industry. Ecology is another common area within the determined specialisations. That area includes sectors directly connected with environmental protection (e.g. wildlife conservation, monitoring of the environment) as well as environmental engineering and environmental technologies (e.g. channelling and purifying wastewater, waste management, reclamation, regeneration). That area is complemented by the environmental research sector, R&D and eco-innovations. The last diagnosed common area within smart specialisations is tourism, medicine and health. That area also includes the tourist industry, medical research and technologies (e.g. biotechnology, genetics) and producing medicinal products, as well as medical services and treatments e.g. specialist treatments, rehabilitation, physiotherapy) and sectors connected with health prevention (e.g. dietetics, health lifestyle, wellness, health resorts).

Due to the occurrence of common diagnosed areas that constitute smart specialisations, joint initiatives should be undertaken in the scope of possibilities of executing projects that are interconnected in that macro-region. Moreover, activities for working out common above-regional smart specialisations should be undertaken. In the process of selection of smart specialisations in those regions their endogenous resources were considered. When selecting the areas of specialisation, self-government authorities were frequently keen on preserving the regional status quo than the redevelopment of the economy of the region through innovations.

3 Europe 2020 Strategy in relation to the Concept of Smart Specialisations of Regions Growth

Determining smart specialisations is one of the targets of the Strategy for smart, sustainable and inclusive growth – Europe 2020. The interdependence of smart specialisation occurs in particular in connection with the priority pertaining to smart growth. Within the Europe 2020 strategy, the problem of regional specialisations refers to the central project of Innovation Union which assumes the support of innovation growth, including the improvement of the conditions for conducting research activities leading to the conversion of novel ideas into innovative products and services launched on the European Single Market. The Innovation Union emphasizes the necessity of:

- facilitating and coordinating national and regional research and innovation systems,
- departing from the practices of copying or doubling the undertaken actions and supporting the development of only those technologies that are most popular at a given moment,
- engaging all entities in the process of creating and implementing innovations, both states and regions – leaders of innovation, as well as those marked by the lowest level of innovation in such a way that each of them focused on own potential and path of growth,
- combining smart specialisation with the instruments of cohesion policy and rural development policy in the financial perspective,

- determine innovations and smart specialisations among the targets of structural funds programmes of the above-mentioned policies.

Also, one of the central initiatives of the Europe 2020 strategy – Digital Agenda for Europe – is connected with that topic. Its aim is to achieve permanent social and economic advantages thanks to a broad use of ICT technologies. Notable effects of the fulfilment of the Agenda should pertain to whole member states, regions and rural areas [18].

In a regional dimension, Europe 2020 is implemented via smart specialisations. Therefore, the task of the regions was to prepare a general strategy of growth with the particular consideration of smart specialisations. According to the EU guidelines, one of the priorities in the financial perspective for years 2014–2020 includes the Regional innovation strategies for smart specialisation, RIS3. The specifically developed RIS3 Guide was the help in preparing RIS3. The aim of preparing those strategies is to improve the effectiveness of financing R&D with the obligatory consideration of the regional potential. Efficient and effective system of support of research, growth and innovations constitutes the basic aim of the fulfilment of the Europe 2020 programme. The European policy stresses the necessity to accelerate and strengthen the building of knowledge based economy, the strive for the effective use of resources, and the increase of innovative capacities of regions. In the process of building innovative capacities of regions, self-government authorities mainly play a supportive function and coordinate pro-innovation behaviours and actions undertaken in the region.

4 Factors Conditioning the Process of Implementing the Strategies of Innovation and Smart Specialisations in regions

Implementing the regional innovation and smart specialisation strategies in individual regions is connected with the necessity to look for new in terms of quality and methodology ways in local and regional growth. The key driving force behind the growth of the regions is their own intellectual potential, with the particular consideration of the cultural identity of the place and historical experiences, as well as the knowledge, skills and aspirations of the local and regional communities. Moreover, innovation is necessary as well as creating the so called entrepreneurial climate constituting the main argument in making the decision about the location of significant investments in the area of the region [5].

Innovation strategies constitute the foundation of general growth strategies of regions that include all aspects of permanent and sustainable development. In individual voivodeships these issues were included in the growth strategies of those voivodeships the aim of which is to increase the national and international competitiveness of the economy of the region through the increase of its innovation, hence effectiveness which will create the conditions for balancing the labour market and the increase of income and the level of life of the people. Key factors conditioning the competitiveness of the regional economy include: high innovation of companies as well as effective and

efficient use of knowledge and scientific research by the industry sector. In order to implement the main premises of the innovation strategy in individual regions, in particular the development of innovation, the support from structural funds is necessary as well as implementing the economic and legal instruments into practice that decrease costs and risk of innovative undertakings.

One of the most important challenges of the European Union was to determine a strategic and integrated approach to innovation in which all instruments of mid- and long-term policy, tools and financial resources were focused on supporting innovation. Such a model, also termed Innovation Union, also assumes that regional, national and EU policies should be closely interconnected and should be mutually complementary. Moreover, regular monitoring of the progress of the fulfilled strategic programmes should also be ensured.

The most significant target of the Regional Innovation Systems is the social and economic growth of a region through the creation of knowledge-based economy in an information society. An important aspect for the fulfilment of that target is building the regional consensus for increasing initiative, cooperation and openness in the region. However, no authorities are specified to which these actions would pertain. It might be any authority in the region the actions of which will contribute to the social and economic growth in that particular region. They should be a part of the system based on a field or fields constituting the specialty of the region. Thus, the most important target of the regional innovation strategies is not the implementation of new, considered state-of-the-art sectors of economy, but developing and adjusting to the new conditions of world competition of the sectors already existing in the region. In the same way, RIS3 might become the restructuring tool in the traditionally industrial regions. It might be concluded from the documents created by authorities that deal with the fulfilment and coordination of RIS3 programmes that the most important instruments of building the regional innovation systems, i.e. the instruments of intra-regional policy favouring the development of pro-innovation, include:

- identification of sectors and bodies in the region which might become the pillars of the system,
- increase of institutionalised and non-institutionalised cooperation between: companies, business-related entities and self-government administration, companies and business-related entities, companies and bodies creating or transferring knowledge, companies (large, small and medium-sized),
- creation of instruments opening the regional system.

These actions should be reflected in the process of creating the regional innovation strategies. Business-related entities, knowledge transfer entities should identify the needs of companies in the region in the process of creating the innovation strategy and should adjust their offer to those needs. It will allow not only for effective functioning of the innovation system in the region but will also ensure effective functioning on the market to those entities. The process of creating regional innovation strategies is to serve, among others, the realisation and fulfilment of that need at a regional level. Self-government administration of the regional level is the factor that initiates and coordinates the process of creation of strategies, so it has a significant impact on its

final shape. Because of that, it plays a very significant role both for the strategy and for own functioning in the region, in particular in the scope of the development of companies. The self-government sector may affect the process of implementing strategies in negative ways, especially in the case of the lack of cooperation with companies. The coordinating role of the regional self-government also comprises the actions connected with communicating the best experiences between European regions. Creating RIS3 may also stimulate the local self-government for the effective cooperation with the company sector and serve the creation of completely new bodies (most often connected with the transfer of knowledge or financing the process of creation and acquiring innovations). The most important role in the system is played by the companies, they are the subject of the described actions but at the same time their most important object. The key role in the regional innovation system is assigned to small and medium-sized companies as the environment for creating innovations. Large or the largest companies of the region played an important role in the regional innovation system. Their actions served mainly the development of small and medium-sized companies. Companies are the most important actors of the regional innovation system, but also its most important beneficiaries as the growth of companies delineates the growth of the remaining elements.

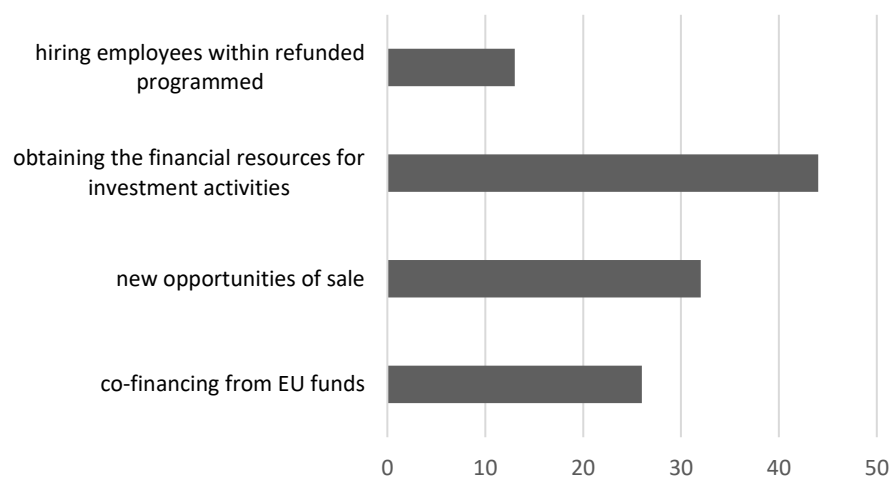


Fig. 1. The scope of cooperation of companies with self-governments, business-related entities in the process of implementing regional innovation systems (% of indications).

In the analysed East Poland regions, in the majority the cooperation of entrepreneurs with the institutional and self-government circle (Fig. 1) in the process of implementing RIS3 pertained to obtaining the financial resources for various investment undertakings (43% of indications), applying for EU structural funds (27% of indications), searching for new ways of sale (33% of indications) and hiring employees within refunded programmed (13% of indications). Business entities operating in individual regions used

the support from business-related bodies, i.e. regional development agencies, industrial parks, incubators of entrepreneurship.

Factors limiting the participation of authorities in the process of implementing regional smart innovation systems in the macro-region of East Poland were indicated mainly on the side of the self-government sector. The survey indicated that the factors that limit the cooperation of the self-government sector with the private sector in the vast majority included the unfavorable financial situation of self-government entities (80% of indications), insufficient knowledge (20% of indications), lack of conviction of self-government authorities to that kind of partnership (60% of indications), no private partner (40% of indications), as well as the belief that self-government is losing control over municipal property (80%). The results of research indicating the main barriers limiting the cooperation of the self-government sector with the private sector in the scope of the fulfilment of infrastructure projects in surveyed self-governments are presented in Fig. 2.

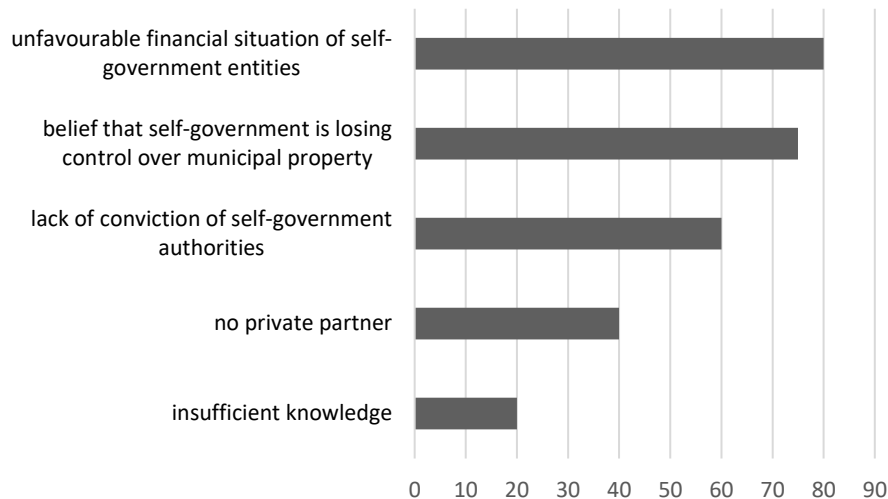


Fig. 2. The factors limiting the cooperation of the self-government sector with the private sector in the process of implementing the regional innovation systems (% of indications).

Summing up, it needs to be emphasized that the barriers that hinder building innovative capabilities of regions include the ineffective innovation policy carried out at the national level. The deficiency of financial resources for pro-innovation activities remains a significant problem. Other barriers that hinder building innovative capabilities of regions are connected with the lack of knowledge, experience, pro-innovation awareness of public entities that are responsible for the pro-innovation policy. Also, the barriers that hinder building innovative capabilities of regions include the incoherent and fragmented process of creating the innovation policy in the region for the creation of which the regional self-government authorities are responsible. It is the basic task assigned for fulfilment to the regional self-government. It needs to be remarked that the innovation policy carried out in regions most often consists in

implementing uncoordinated, individual projects, creating isolated often ineffective pro-innovation undertakings rather than building a permanent and consistent innovation system.

Recapitulation

In East Poland voivodeships as poorly developed regions the outlined areas of smart specialisations pertained mainly to building the competitive advantage based on traditional sectors lacking in innovation. In the remaining highly developed regions, smart specialisations were more frequently based on innovative sectors and on increasing competitiveness through the increase of innovation. Therefore, it might be feared that the concept of smart specialisations will not contribute to the convergence of regions as the most significant aim of the EU Cohesion Policy. The regional strategies of smart specialisations are an instrument of building the regional consensus for the development of entrepreneurship. They are to create the environment in which innovations will appear in the region and convert them into a system that obtains, produces and uses innovations effectively. Their task is also to find specific sectors of regional economy that are important and give potential opportunities for development. They are a significant tool of restructuring the regions. The task of authorities acting for implementing the regional innovation systems is to cooperate with companies and business-related bodies with the aim of providing help to entrepreneurs with absorbing EU funds. The effects of implementation of the regional innovation systems largely depend on institutional effectiveness of the self-government administration involved in that process.

References

1. Dobrzycka, M.: Inteligentna specjalizacja regionów. „Wspólnota” 2012, no. 1.
2. Dąbrowska, A. Traditional sectors based on natural resources –a blessing or a curse for less developed regions? A case study of Podlaskie Voivodeship, *Miscellanea Geographica – Regional Studies on Development*, Vol. 2, No. 3, 2017.
3. Domański, B.: Dylematy rozwoju polskich regionów [in:] Transformacja sceny europejskiej i globalnej XXI wieku. Strategie dla Polski, red. A. Kukliński, J. Woźniak, Biblioteka Małopolskiego Obserwatorium Polityki Rozwoju, vol. V, Kraków 2012.
4. Grosse, T.G.: Przegląd koncepcji teoretycznych rozwoju regionalnego, „*Studia Regionalne i Lokalne*” 2002, no. 180.
5. Lenain, P., Bützow Mogensen, U., Royuela-Mora, V.: Strategia Lizbońska na półmetku: oczekiwania a rzeczywistość. Report no. 58, CASE – Centrum Analiz Społeczno – Ekonomicznych, Warszawa 2005.
6. Olesiński, Z.: Zarządzanie w regionie Polska – Europa – Świat, Difin, Warszawa 2008.
7. Piontek, B.: Koncepcja rozwoju zrównoważonego i trwałego Polski, Publ. PWN, Warszawa 2008.
8. Proniewski, M.: Rozwój regionów peryferyjnych w UE, Publ. University of Białystok, Białystok 2012.

9. Pineda, R., Lopes, A., Tseng, B., Salcedo, O.: Service Systems Engineering: Emerging Skills and Tools, SciVerse ScienceDirect Procedia Computer Science 8 (2012).
10. The Creative Pathways of Everyday Life, The Journal of Creative Behavior, Volume 49, Issue 3, September 2015, pp. 181–193, Lene Tanggaard, Version of Record online: 25 JUN 2015, DOI: 10.1002/jocb.95, p. 181 (2015).
11. Słodowa-Helpa, M.: Lokalny wymiar konkurencyjności, [in:] Koncepcje i czynniki rozwoju lokalnego w warunkach funkcjonowania Polski w strukturach zintegrowanej Europy i przechodzenia do społeczeństwa informacyjnego, red. J.Olszewski, M.Słodowa – Helpa, Poznań 2008
12. Słodowa-Helpa, M.: Zrównoważony rozwój a konkurencyjność w wymiarze lokalnym [in:] Zrównoważony rozwój lokalny: warunki rozwoju regionalnego i lokalnego, Szczecin 2010.
13. Skowroński, A.: Zrównoważony rozwój perspektywą dalszego postępu cywilizacyjnego, „Problemy Ekorozwoju” 2008, no. 2.
14. Šipilova, V., Ostrovska, I.: Evaluation of Sustainable Development in Rural Territories in Latgale Region (Latvia) by Using the Conception of Smart Specialization Journal of Teacher Education for Sustainability, vol. 19, no. 1, 2017.
15. Szara K.: Determinants of Creative Capital Development at a Local Level: Case Study Municipalities of Podkarpackie, Poland, LEX LOCALIS - JOURNAL OF LOCAL SELF-GOVERNMENT Vol. 16, No. 3/2018
16. Zaleski, A. (ed.): Nowe Zarządzanie publiczne w polskim samorządzie terytorialnym, Publ. SGH Warszawa 2007.
17. De la Mothe, J., Paquet, G. (eds.): *Local and regional systems of innovation*. Vol. 14. Springer Science & Business Media, 2012.
18. Lundvall, B. (ed.): *National systems of innovation: Toward a theory of innovation and interactive learning*. Vol. 2. Anthem press, 2010.
19. Cooke, P.: Business processes in regional innovation systems in the European Union. *Regional Innovation And Global*. Routledge, 2013.
20. Nelson, R. R.: National Innovation Systems: It is. *Regional Innovation And Global*. Routledge, 2013.